Research Proceedings by Postgraduate Saudi Arabian Students in Canada

بحوث الدراسات العليا للمبتعثين السعوديين في كندا

2014

وفوق كل ذي علم عليم

وزارة التعليم

Ministry of Education

الملحقية الثقافية السعودية في كندا

Saudi Arabian Cultural Bureau in Canada

مقدمة

يشكل برنامج الإبتعاث حجر أساس في تطوير الكوادر البشرية السعودية ونقل المعرفة العالمية وتوطينها. في البداية كانت البعثات محدودة وكانت مدرسة البعثات ترحب بمن لديه الإستعداد للدراسة بها ثم الحصول على البعثة الدراسية ولديه أساسيات التعليم المطلوبة، فلم يكن هناك جامعات سعودية بعد ولم تكن المدارس النظامية منتشرة بعد وبالتالي كان من يحمل شهادة المرحلة السادسة يمكنه الإلتحاق بمدرسة البعثات وكأنها مدرسة ثانوية يتاح له بعدها الدراسة الأكاديمية في مصر أو غيرها من البلاد. مدرسة البعثات أسست عام ١٩٣٦م وسبقها إرسال أول دفعة من الطلاب للدراسة بالخارج وكان عددهم ١٤ طالباً.

وها نحن الأن في العصر الزاهر وبعد أكثر من سبعين عاماً نشهد طفرة نوعية في برنامج البعثات السعودية، حيث تجاوز عدد المبتعثين السعوديين إلى مختلف دول العالم ١٥٠ ألف مبتعث ومبتعثة، وذلك بفضل دعم خادم الحرمين الشريفين –حفظه الله– وحرصه على تنمية هذا البرنامج بإعتبار تنمية العنصر البشري أهمية قصوى في سياسة حكومة المملكة العربية السعودية.

استراتيجية برنامج الإبتعاث ليس هدفها الحصول على الشهادة الأكاديمية فقط، وإنما تنمية الكوادر القادرة على نقل وتوطين المعرفة والتقنية وخدمة مجتمعها وفق أحدث المعايير العالمية. ومن أهم وسائل قياس النمو المعرفي وقدرة ابنائنا وبناتنا المبتعثين على الإسهام في إقتصاد المعرفة كما يجب، هي قدرتهم على البحث العلمي وتبني أليات النقد والدراسة العلمية بشكل متقن. ولتحقيق هذا الهدف تحرص الملحقية الثقافية بكندا على إلحاق المبتعثين السعوديين بأفضل الجامعات الكندية وتستلهم توجيهات وزارة التعليم العالي الدائمة في تكريم وتحفيز المبدعين والباحثين من أبناءنا وبناتنا المبتعثين في كافة المجالات بما فيها مجالات البحث العلمي.

من أجل ذلك تم إعداد هذا الدليل الذي يحوي الابحاث المنشورة كرسائل وأوراق علمية و تلك التي تم المشاركة بها في المؤتمرات من ابناءنا وبناتنا المبتعثين خلال عام ٢٠١٤م فقط. وهو يثبت دون جدال تميز المبتعثين السعوديين للدراسات العليا بكندا من جانب، كما يثبت تميز الجامعات الكندية في تطوير قدراتهم البحثية والمعرفية. وهو ايضاً يمثل فخر لنا بالملحقية الثقافية الإحتفاء بمنجز مبتعثينا وكون ما يقدم لهم من تحفيز في هذا الشأن يأتي أكله كإنتاج علمي متميز. إن أنتاج حوالي ٤٠٠ بحث سواء كانت بحوث منشورة أو مقدمة في مؤتمرات علمية متخصصة، خلال عام واحد، يعتبر نسبة ممتازة إذا ما علمنا بأن طلاب و الدراسات العلياوالأطباء المتدربين يبلغ عددهم ما يقارب ٣٠٠٠ مبتعث ومبتعثة وجزء كبير منهم يدرس وفق نظام المقررات الدراسية وليس البحث في مرحلة الماجستير أو يعمل في مستشفيات لا تشترط البحث العلمي ضمن مخرجاتها التدريبية.

نرجو أن يكون في هذا الدليل فائدة للمتلقي الراغب في التعرف على حجم ونوعية الإنتاج البحثي للمبتعثين السعوديين بكندا، كما نأمل أن يكون حافزاً لأبناءنا وبناتنا المبتعثين لبذل مزيد من الجهد في هذا الشأن لنشترك معاً بالإحتفاء بمزيد من التميز الذي يحققونه في ميادين العلم والمعرفة.

ختاماً، نجده واجباً علينا توجيه الشكر نيابة عن المبتعثين وأسرهم لخادم الحرمين الشريفين وسمو ولي عهد الأمين على عنايتهم ودعمهم لأبناءهم وبناتهم المبتعثين ودعمهم الدائم لبرنامج الإبتعاث، كما نشكر معالي وزير التعليم على دعمه لتنفيذ برنامج الإبتعاث وتسهيل مهامنا في هذا الشأن. كما نشكر أبناءنا وبناتنا المبتعثين على جهودهم وتعاونهم في تمثيل بلدهم خير تمثيل. كما نشكر قسم الدراسات العليا لمبتعثي برنامج خادم الحرمين الشريفين بالملحقية الثقافية على إعداد هذا الدليل.

والله ولي التوفيق.

د. علي بن محمد البشري

الملحق الثقافي بسفارة المملكة العربية السعودية في أوتاوا

Foreword

The King Abdullah Scholarship Program (KASP) continues to be one of the most promising human capital development initiatives in the world. Established by King Abdullah and the Saudi Government, in cooperation with the Ministry of Education (MOHE), the KASP was designed to be an important source of support for the Kingdom's public and private sectors by developing, qualifying and preparing human resources.

The program has achieved these objectives by sponsoring academically distinguished Saudi citizens for study in the world's best universities, with the expectation that they would return home afterward and contribute to the development of the Kindgom. The specializations of the program are selected in accordance with the needs of the Saudi labour market. More than 150 000 Saudi Arabian scholars are currently studying all over the world at the expense of the Saudi Arabian government. Among them, approximately 15 000 are allocated in Canada and studying at different levels: language, undergraduate, graduate, postgraduate and training programs.

The goal of the scholarship program is to prepare and qualify Saudi Arabian human resources in an effective manner to compete on an international level in the labor market and in scientific research. The scholarship program aims to create highly qualified individuals who will contribute to Saudi Arabian universities as well as the public and private sectors. The production of research is one of the main parameters by which the quality and success of postgraduate scholarship recipients is measured. This document provides information on the research achievements of Saudi Arabian scholarship students at Canadian Universities in 2014. This presentation focuses on students enrolled in postgraduate programs, which represents a number of approximately 2500 students.

This document is divided into four chapters: chapter one provides a statistical summary of the research productivity of Saudi Arabian students; chapter two provides abstracts of finished doctorate dissertations and master thesis; chapter three provides abstracts of published papers in referred journals; chapter four provides a list of conference presentations and posters.

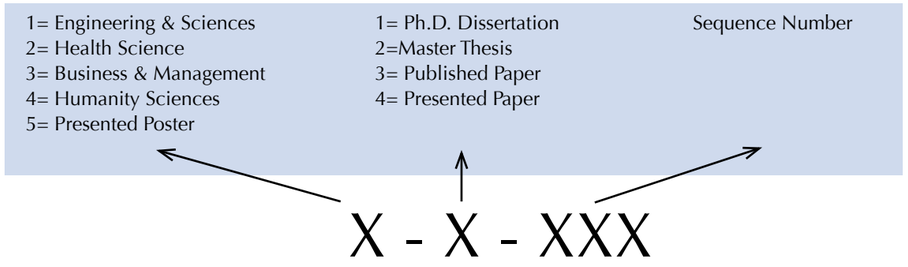
This proceeding summarizes over 400 research papers completed by our most distinguished scholarship holders. This document was compiled to highlight the great work accomplished by our students as well as the positive outcomes of the scholarship program. It is a testament of the excellent education our students are receiving from Canadian universities and colleges.

In conclusion, I would like to extend my congratulations on behalf of the King, the Minister of Higher Education and the Saudi Arabian Cultural Bureau to all scholarship recipients for their outsanding achievements. Through their hard work, they have been able to effectively realize the vision and goals of the scholarship program. I would also like to extend my gratitude to the Saudi Arabian Cultural Bureau's Department of Postgraduate Studies for compiling and editing this document.

Dr. Ali Albishri
Saudi Arabian Cultural Attaché in Canada

Editorial Note

The following graph shows the key for the numbering code that will be used throughout this proceeding.



It has to be noted that this proceeding contains researches submitted to the Saudi Arabian Cultural Bureau during 2014 only. Any work not received by the Bureau before the end of 2014 has not been included in this summary.

This is the first annual proceeding book that documents research achievements for Saudi students in Canada. For any related comment or suggestion please contact Dr. Mohammed Alghamdi, Head of the Department of Postgraduate Studies at the Saudi Arabian Cultural Bureau by email at: malghamdi@saudibureau.org.

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2015

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CHAPTER 1
Statistical Summary

Table 1:
Dissertation, Thesis, Published Papers, and Presentations for Saudi Scholarship Students in Canada, 2014

	Engineering & Sciences		Health Sciences		Business & Management		Humanity & Social Sciences		Total Per Gender		Total
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
Dissertations	15	0	0	0	0	0	0	1	15	1	**16**
Thesis	34	36	15	13	1	3	2	4	52	56	**108**
Published Papers	26	12	71	29	0	0	1	3	98	44	**142**
Conference papers	28	19	51	6	1	1	0	1	80	27	**107**
Conference Posters	3	4	24	14	0	0	0	0	27	18	**45**
Total Per Gender	106	71	161	62	2	4	3	9	**418**		
Total	**177**		**223**		**6**		**12**				

Figure (1): Number of PhD Dissertations by Students Graduated in 2014 according to their Area of Study.

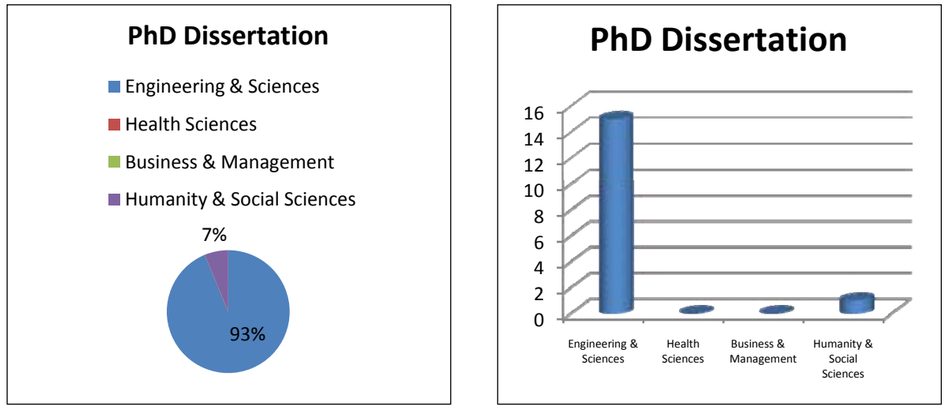


Figure (2): Number of Master Thesis by Students Graduated in 2014 according to their Area of Study.

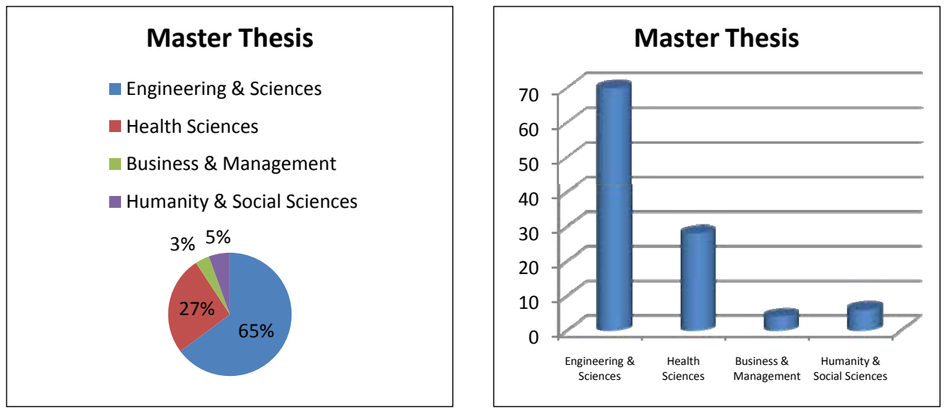


Figure (3): Number of Published Papers by Saudi Scholarship Students in 2014 according to the Area of Study.

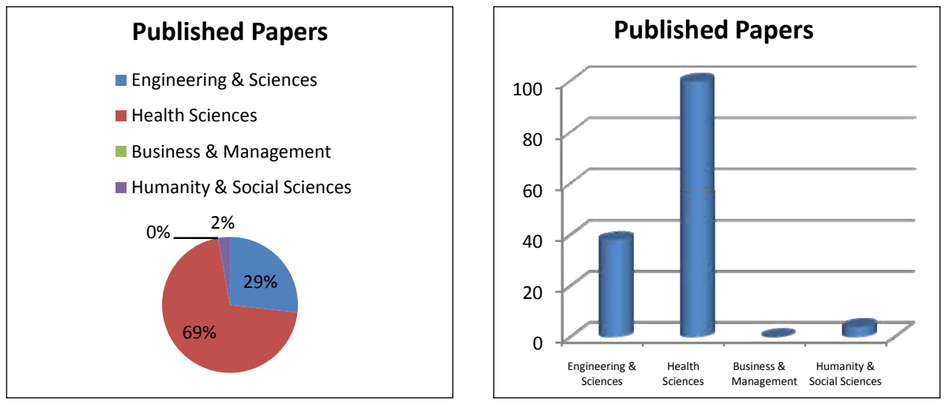


Figure (4): Number of Conference Presented papers by Saudi Scholarship Students in 2014 according to the Area of Study.

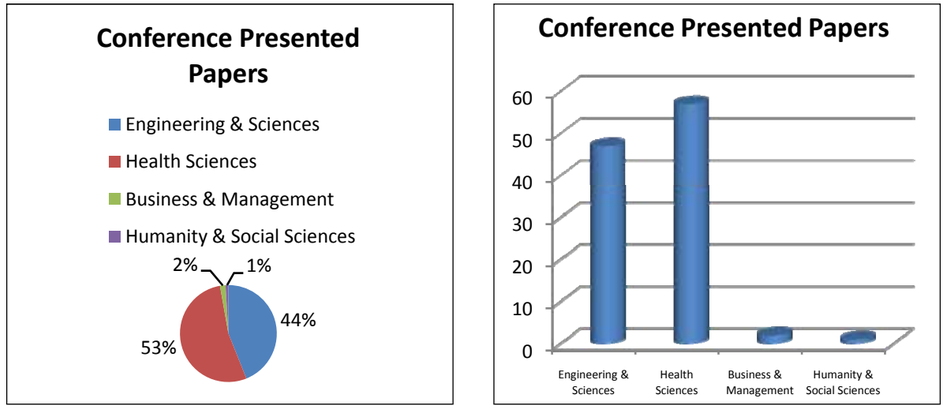


Figure (5): Number of Conference Posters by Saudi Scholarship Students in 2014 according to the Area of Study.

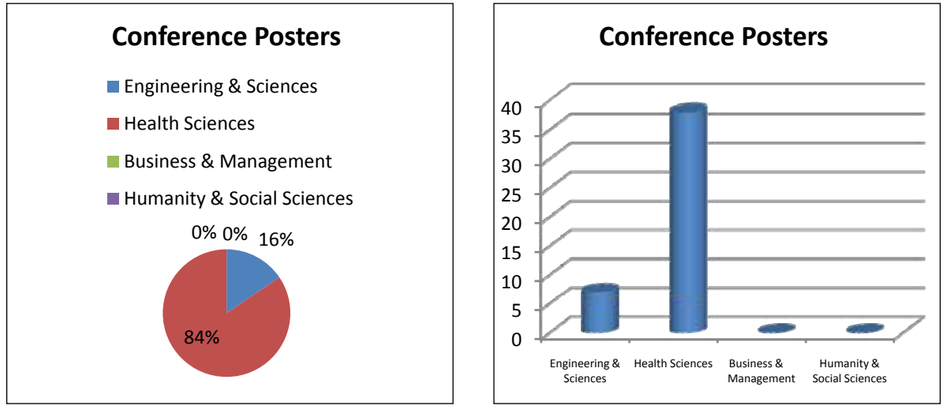


Figure (6): PhD Dissertations, MSc Thesis, Publication Papers, Presentation Papers and Presentation Posters by Saudi Scholarship Students in 2014 with respect to the area of study.

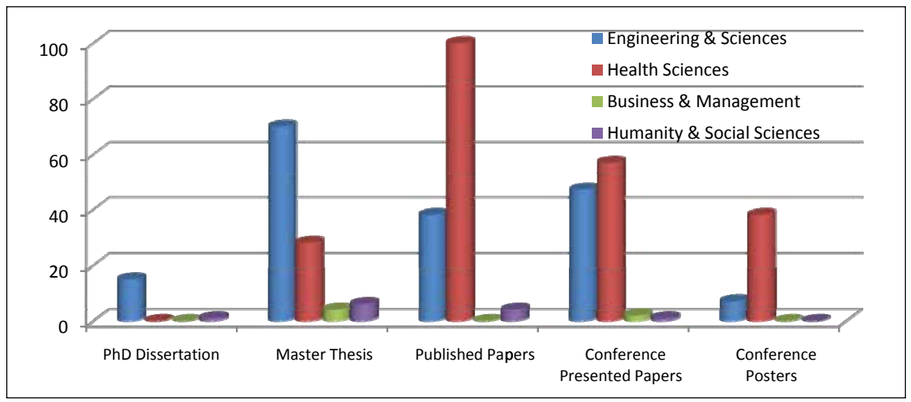


Figure (7): PhD Dissertations, MSc Thesis, Publication Papers, Presentation Papers and Presentation Posters by Saudi Scholarship Students stydying Engineering & Sciences in 2014 with Respect to Gender.

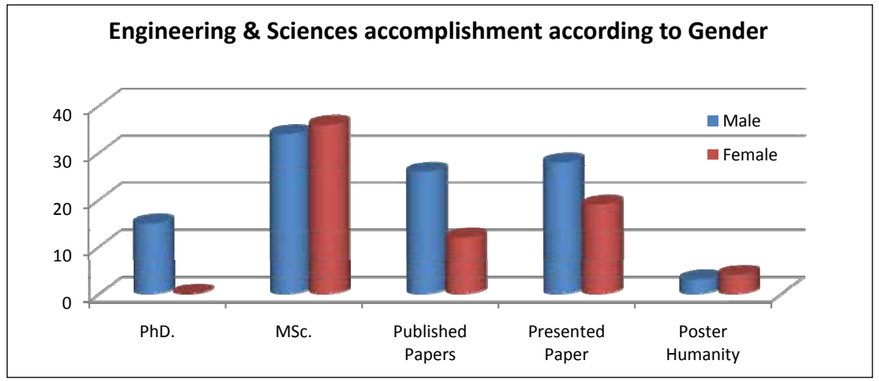


Figure (8): PhD Dissertations, MSc Thesis, Publication Papers, Presentation Papers and Presentation Posters by Saudi Scholarship Students studying Health Sciences in 2014 with Respect to Gender.

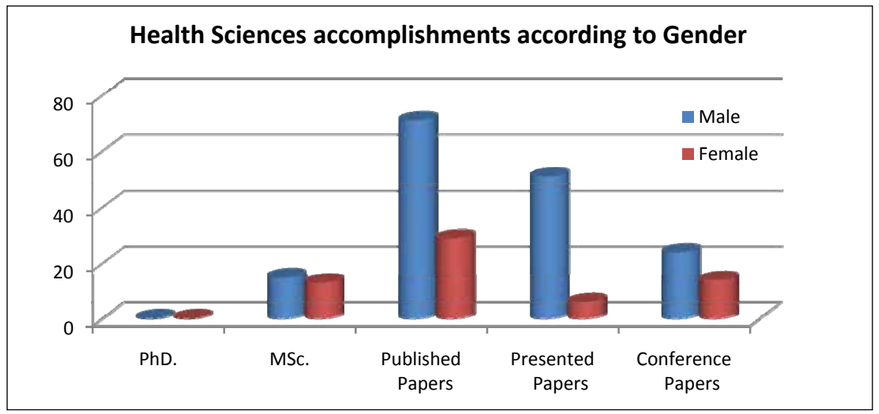
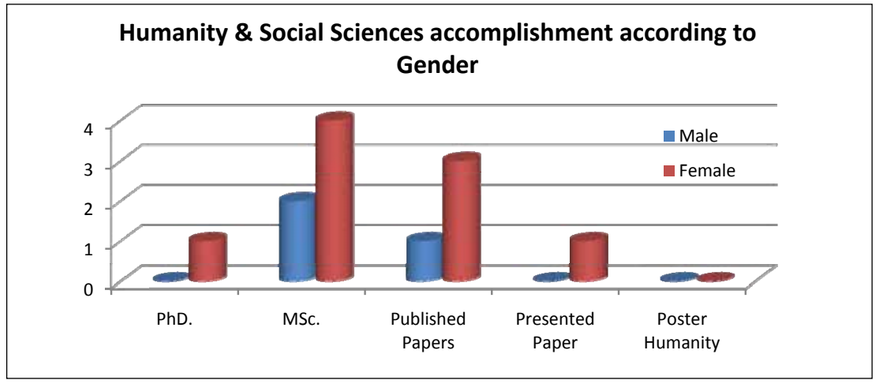


Figure (9): PhD Dissertations, MSc Thesis, Publication Papers, Presentation Papers and Presentation Posters by Saudi Scholarship Students studying Business & Management in 2014 with respect to Gender.

Figure (10): PhD Dissertations, MSc Thesis, Publication Papers, Presentation Papers and Presentation Posters by Saudi Scholarship Students studying Humanity & Social Sciences in 2014 with respect to Gender.



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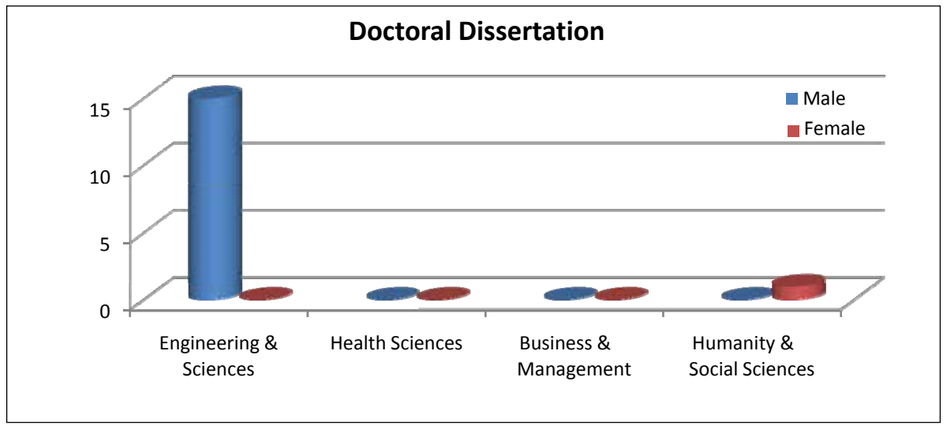
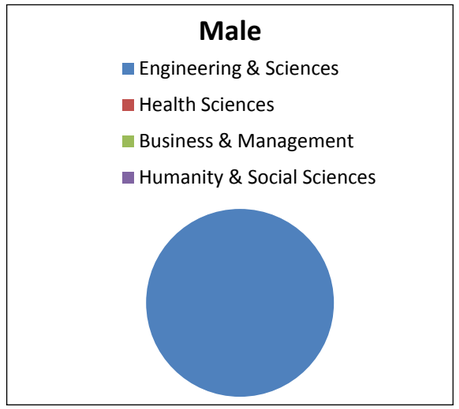




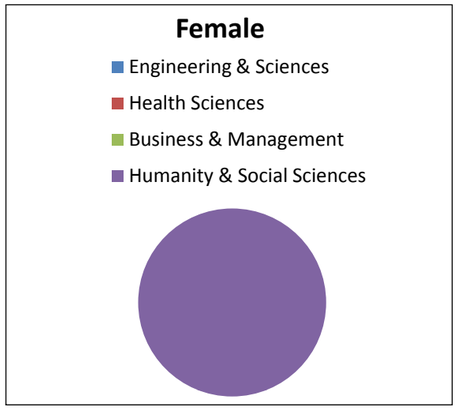
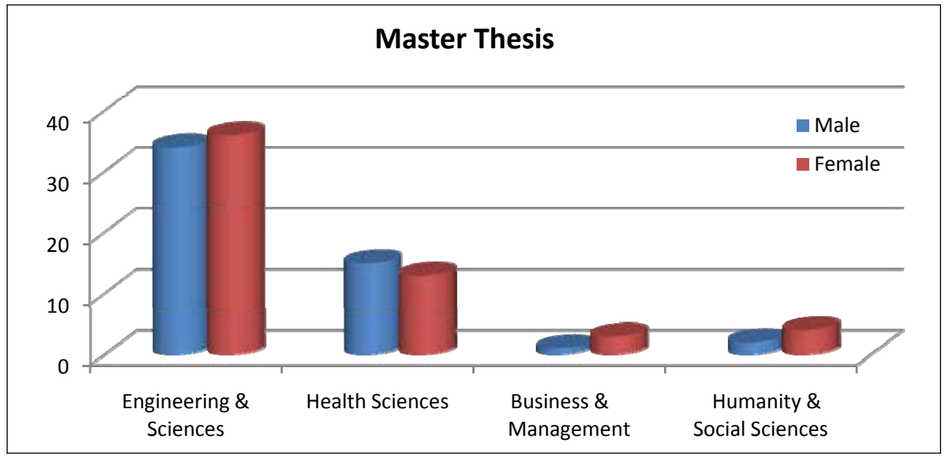
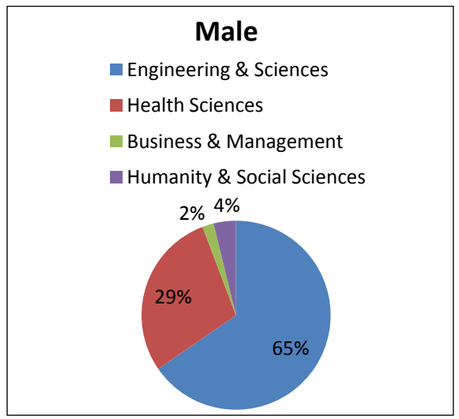
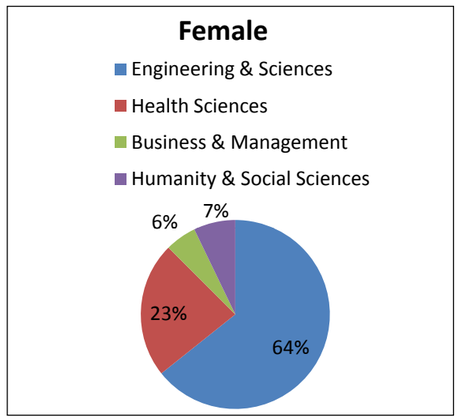


Figure (12): Masters Thesis in Engineering & Sciences, Health Sciences, Business & Management, and Humanity & Social Sciences by Saudi Scholarship Students in 2014 with respect to Gender.







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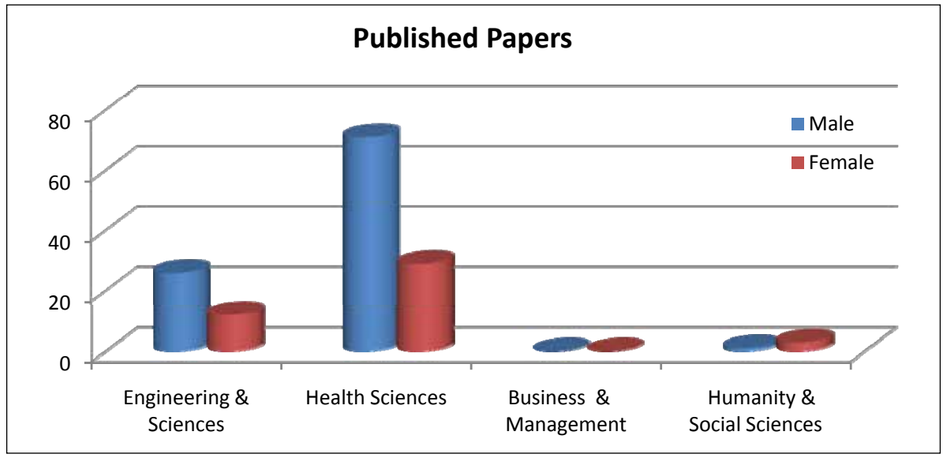

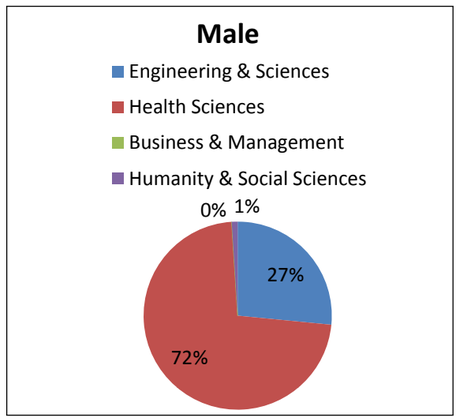

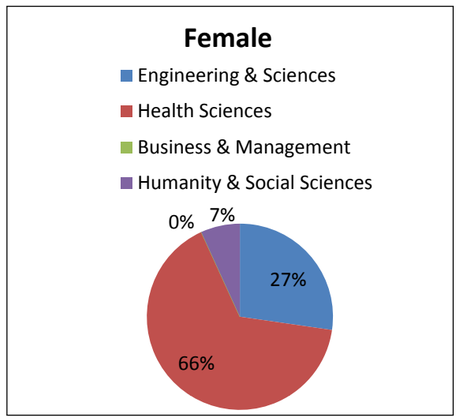

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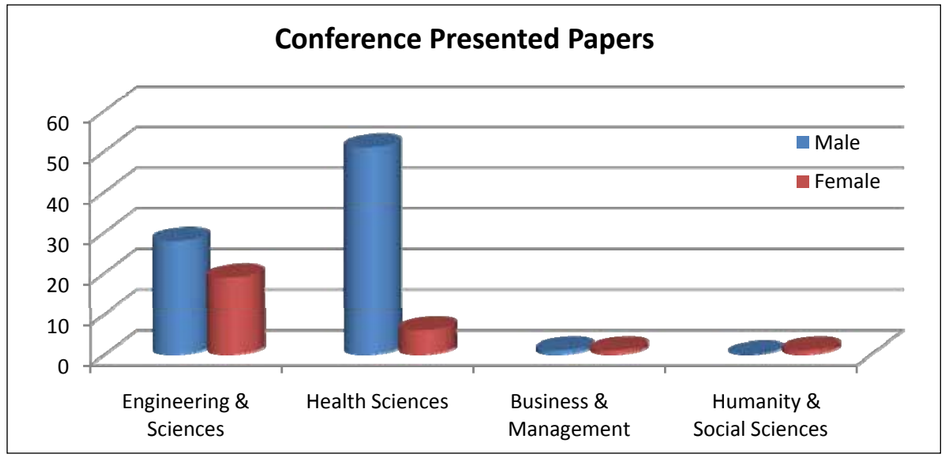

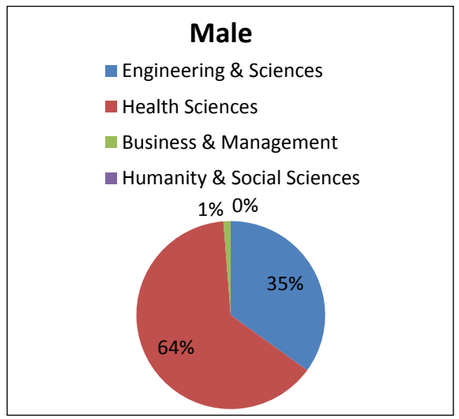

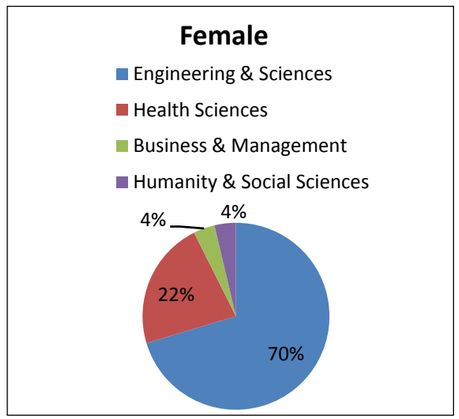

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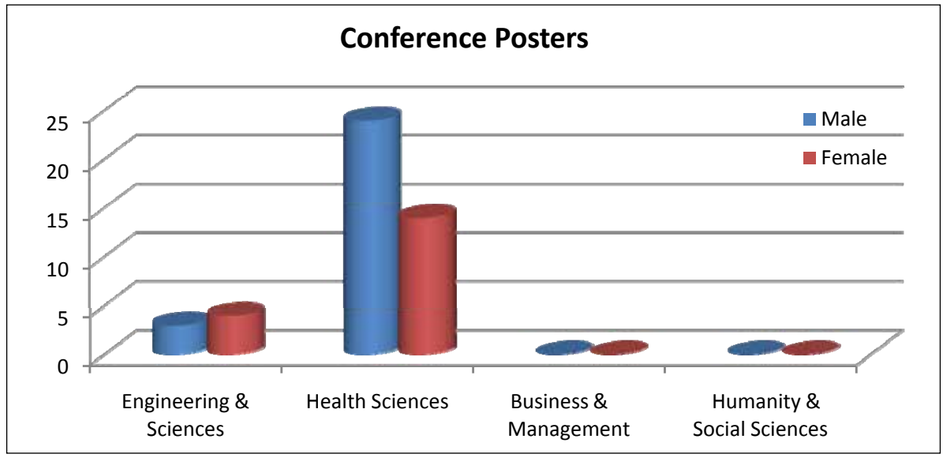

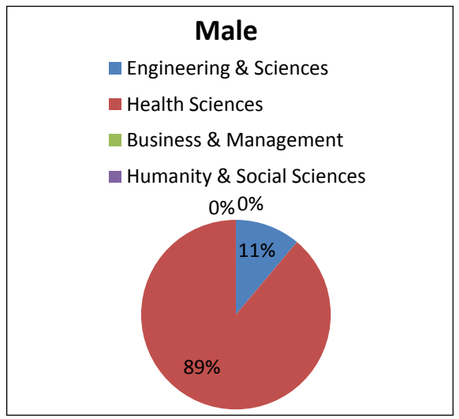

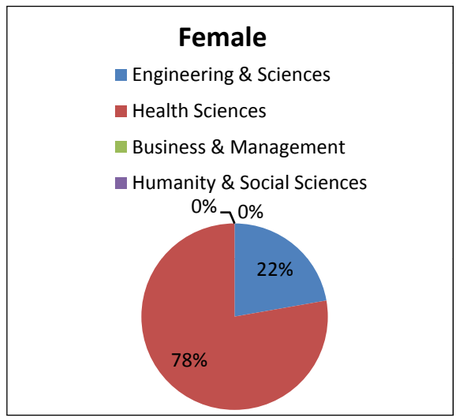

CHAPTER 2
Dissertations & Theses

1-1-001	
Title	**Microstructure and Tribology of Fe–Cr–B-Based Alloys**
Author	Ahmad A. Sorour
Program	Doctor of Philosophy in Mining and Materials Engineering
University	McGill University
Year	2014

Abstract
Wear causes loss of materials of moving parts and tools used in many fields. Wear can be reduced by employing appropriate materials and coatings, which requires an understanding of their microstructure, properties and tribological behavior. One of the high wear resistant materials is the Fe–Cr–B-based alloy system. Fe–Cr–B-based alloys have been fabricated using thermal spray, welding and sintering processes; and it has been found that their microstructure, properties and tribological performance vary from process to process. This dissertation focuses on advances made by employing recent processes to fabricate these alloys. The primary aim of this research is to understand the microstructure and tribology of the Fe–Cr–B-based alloys fabricated by the controlled short-circuit metal inert gas (CSC-MIG) welding and spark plasma sintering (SPS) processes. CSC-MIG was used to weld a Fe–28.2Cr–3.8B–1.5Si–1.5Mn (wt.%) cored wire alloy onto 1020 carbon steel substrate. SPS was employed to consolidate a Fe– 45Cr–5.9B–2Si–0.1C (wt.%) gas-atomized powder alloy. Solidification behaviors of the gas-atomized powder and weldments were investigated through thermodynamic calculations. Microstructure characterizations, hardness measurements and tribology testing were performed for these fabricated alloys. Upon cooling, the primary (Cr, Fe)2B phase began to form, followed by eutectic formation of the (Cr, Fe)2B and body-centered cubic (BCC) Fe-based solid solution phases. Because the powder contained a small amount of C, (Cr, Fe)7C3 was precipitated at the end of the solidification. The CSC-MIG weldment was composed of 44 wt.% primary and secondary orthorhombic (Cr, Fe)2B plates embedded in 56 wt.% BCC Fe-based solid solution, containing Fe, Cr, Mn and Si. The SPS specimen contained 65 wt.% (Cr, Fe)2B plates and 1 wt.% (Cr, Fe)7C3 precipitates dispersed in 34 wt.% BCC Fe-based solid solution, containing Fe, Cr and Si. The (Cr, Fe)2B phase was bigger in the weldment than the sintered specimen. The hardness of (Cr, Fe)2B was 24 GPa, independent of the alloy's composition and process parameters. As the B content increased, the fraction of (Cr, Fe)2B increased. As the (Cr, Fe)2B fraction increased, the bulk hardness of the specimens increased linearly. When the specimen's hardness and (Cr, Fe)2B size increased, abrasive wear resistance increased, while sliding wear resistance was independent of hardness but improved as the (Cr, Fe)2B size increased. The abrasive wear mechanism was microcutting, while sliding wear mechanisms were adhesion and mild oxidation.

1-1-002	
Title	**Synthesis, Characterization and Reactivity Study of Bio(imino)-N-Hetrocyclic Carbene Transdition Metal Complexes**
Author	Jameel Al Thagfi
Program	Doctor of Philosophy in Chemistry
University	York University
Year	2014

Abstract
Three generations of the first 1,3-bis(imino) N-heterocyclic carbene (NHC) ligand precursors were synthesized, isolated and characterized. The synthetic methodologies of the ligand precursors were controlled by the iminic carbon substituents. The corresponding complexes of Cr(III), Fe(II), Co(II), Pd(II), and Zn(II) were prepared from the in situ deprotonation of the NHC ligand precursors or from the related Cu(I) or Ag(I) adducts.
The NHC ring fragment and iminic carbon substituents had a significant impact on the solid-state structure of these complexes in which mono-, bi- and tridentate coordination modes were observed.
The catalytic activities of chromium, iron and cobalt complexes of 1,3-bis(imino) NHC ligands were evaluated in ethylene polymerization.

1-1-003	
Title	**A Design and Evaluation of a Secure Neighborhood Awareness Framework for Vehicular Ad-Hoc Networks**
Author	Osama Abumansoor
Program	Doctorate in Philosophy in Electrical and Computer Engineering
University	University of Ottawa
Year	2014

Abstract
Vehicular ad-hoc networks (VANETs) are envisioned to provide many road and safety applications that will improve drivers' awareness and enhance the driving experience. Many of proposed applications are location-based that depend on sharing the location information of vehicles and events among neighboring nodes. The location-based applications should provide vehicle operators with knowledge of the current surrounding conditions to help them make appropriate traveling decisions, such as avoiding traffic congestion. Drivers expect to receive accurate and reliable information from other vehicles. Therefore, securing localization service integrity is important to support a VANET's overall system reliability. In this thesis, we study the exchanged location information in VANETs and designed a framework to prevent potential security threats that will

violate users' privacy and overcome limitations that can impact the exchanged data integrity and reliability. The solution developed a secure neighborhood awareness service and shared localization information management protocol in a VANET. The proposed framework is constructed through several components: (i) a location verification protocol that will secure location information by providing a non-line-of-sight (NLOS) verification protocol to overcome moving obstacle effects; (ii) privacy-preserving location information management to detect data inconsistency and provide a recovery process while preventing attackers from tracking individual vehicles; (iii) a trust model evaluation mechanism based on neighborhood awareness; (iv) an adaptive beacon protocol that will reduce the number of messages and provide quality of service(QoS) control for network managers and authorities. We also propose a security evaluation model that quantifies the security attributes for the localization service in a VANET. The model will help evaluate an integrated security measures that are provided by different components of the network services.

1-1-004	
Title	**Escape of Charged Particles Moving around Weakly Magnetized Black Holes**
Author	Abdallah M. Al Zahrani
Program	Doctor of Philosophy in Physics
University	University of Alberta
Year	2014

Abstract
Magnetic fields have become an essential ingredient of black hole as trophysics. The study of simplified models of magnetized black holes can shed light on some of the complicated phenomena observed near as- trophysical black holes. In this thesis we studied the three-dimensional motion of charged particles in the background of Schwarzschild and Kerr black holes immersed in a weak uniform axisymmetric magnetic field. We studied in particular the escape of charged particles after they are kicked out of circular orbits. We started with neutral particles and gave analytical conditions for their escape. Unlike with the Schwarzschild black hole, the escape conditions were non-trivial when the black hole is rotating where escape de-pends essentially on the particle initial position. It was not possible to give analytical conditions for charged particles escape. The magnetic field renders their equations of motion non- integrable in general. Numerical study of the problem revealed that the dynamics of charged particles near magnetized black holes is generally chaotic. With the help of the basin of attraction approach, we could give empirical formulae for guaranteed escape. We found that the final fate of a charge particle is nearly determined by its proximity to the black holes. No general relationship between the chaoticness in the dynamics and black hole rotation could be found.

1-1-005	
Title	**On Message Fragmentation, Coding and Social Networking in Intermittently Connected Networks**
Author	Ahmed B. Altamimi
Program	Doctor of Philosophy in Electrical and Computer Engineering
University	University of Victoria
Year	2014

Abstract
An intermittently connected network (ICN) is defined as a mobile network that uses cooperation between nodes to facilitate communication. This cooperation consists of nodes carrying messages from other nodes to help deliver them to their destinations. An ICN does not require an infrastructure and routing information is not retained by the nodes. While this may be a useful environment for message dissemination, it creates routing challenges. In particular, providing satisfactory delivery performance while keeping the overhead low is difficult with no network infrastructure or routing information. This dissertation explores solutions that lead to a high delivery probability while maintaining a low overhead ratio. The efficiency of message fragmentation in ICNs is first examined. Next, the performance of the routing is investigated when erasure coding and network coding are employed in ICNs. Finally, the use of social networking in ICNs to achieve high routing performance is considered. The aim of this work is to improve the better delivery probability while maintaining a low overhead ratio. Message fragmentation is shown to improve the CDF of the message delivery probability compared to existing methods. The use of erasure coding in an ICN further improve this CDF. Finally, the use of network coding was examined. The advantage of network coding over message replication is quantified in terms of the message delivery probability. Results are presented which show that network coding can improve the delivery probability compared to using just message replication.

1-1-006	
Title	**Static and Seismic Performance of Geosyntheticss trencthened Pile Foundations**
Author	Ahmed Taha
Program	Doctor of Philosophy in Civil and Environmental Engineering
University	University of Western Ontario
Year	2014

Abstract
Geosynthetic reinforcement in earth structures has been used extensively over the last two decades. Extensive research has been carried out to investigate solutions to enhance the lateral stability of pile foundations. This research is motivated by the need to install piles in sites characterized by soft subsurface soil conditions, and often times, in seismicactive areas. This research work explores an innovative use of geosynthetics to enhance the lateral performance of pile foundations. The static and seismic soil-structure interaction behaviors of geosynthetics-reinforced pile foundation systems were evaluated using a series of reduced scale physical model tests performed on a shaking table in a 1G environment. A laminar shear box containing a pile foundation model supporting a single degree of freedom structure installed in different soil bed models was used in the experiments. The soil models included: a layer of synthetic clay (Modified Glyben) underlain by a sand layer (simulating a base case of soft soil); a layer of synthetic clay sandwiched between a sand layer and an aggregate layer (simulating the case of conventional ground replacement for the top soft soil); and a layer of synthetic clay sandwiched between a sand layer and a geosynthetic-reinforced aggregate layer (simulating the case of ground replacement of the top soft soil combined with geosynthetic reinforcement using a microgrid mesh). A series of sine-sweep, harmonic and scaled earthquake tests have been performed to identify the amplification and resonance conditions of the foundation system and to identify various aspects of seismicsoil-pile-geosynthetic reinforcement interaction effects. Lateral static load tests of this system were performed using a one directional load system that was fixed on the laminar shear box. The dynamic and static tests were simulated employing numerical models developed using the finite element program Plaxis 3D. The results of both static and dynamic tests showed that the microgrid reinforcement improved the lateral performance of the pile foundation and reduced the vibration amplitudes of the supported structure. The numerical analysis results were in close agreement with the dynamic and static experimental results. The results of a parametric study for the investigated foundation configuration and seismic loading demands showed that the requirements for engineered backfill can be reduced by more than 50% and the lateral seismic response can be reduced by 50% by using geosynthetic reinforcement.

1-1-007	
Title	**Automated Resolution Selection for Image Segmentation**
Author	Fares Al-Qunaieer
Program	Doctor of Philosophy-in Systems Design Engineering
University	University of Waterloo
Year	2014

Abstract
It is well known in image processing in general, and hence in image segmentation in particular, that computational cost increases rapidly with the number and dimensions of the images to be processed. Several fields, such as astronomy, remote sensing, and medical imaging, use very large images, which might also be 3D and/or captured at several frequency bands, all adding to the computational expense. Multiresolution analysis is one method of increasing the efficiency of the segmentation process. One multi resolution approach is the coarse-to-fine segmentation strategy, whereby the segmentation starts at a coarse resolution and is then fine-tuned during subsequent steps. Until now, the starting resolution for segmentation has been selected arbitrarily with no clear selection criteria. The research conducted for this thesis showed that starting from different resolutions for image segmentation results in different accuracies and speeds, even for images from the same dataset. An automated method for resolution selection for an input image would thus be beneficial. This thesis introduces a framework for the selection of the best resolution for image segmentation. First proposed is a measure for defining the best resolution based on user/system criteria, which offers a trade-off between accuracy and time. A learning approach is then described for the selection of the resolution, whereby extracted image features are mapped to the previously determined best resolution. In the learning process, class (i.e., resolution) distribution is imbalanced, making ef fective learning from the data difficult. A variant of AdaBoost, called RAMOBoost, is therefore used in this research for the learning-based selection of the best resolution for image segmentation. RAMOBoost is designed specifically for learning from imbalanced data. Two sets of features are used: Local Binary Patterns (LBP) and statistical features. Experiments conducted with four datasets using three different segmentation algorithms show that the resolutions selected through learning enable much faster segmentation than the original ones, while retaining at least the original accuracy. For three of the four datasets used, the segmentation results obtained with the proposed framework were significantly better than with the original resolution with respect to both accuracy and time.

1-1-008	
Title	**The Central Role of Collaborative Planning in Shaping the Future of the Metropolis: An Evaluation of Collective Decision Making in the Calgary Metropolitan Region**
Author	Anas Almujhairy
Program	Doctor of Philosophy in Environmental Design
University	University of Calgary
Year	2014

Abstract
In this research I evaluated the role of collaboration in regional planning in the Calgary Metropolitan Region (CMR), one of largest and fastest growing metropolitan

regions in North America. The CMR has a long tradition of regional planning, dating back to 1951, throughout which collaboration has been seen as a key tool to achieve integrated economic development, efficient water management, and sustainable urban growth. Despite these anticipated outcomes, the CMR has failed to develop effective collaborative planning processes to shape its future. Understanding the regional planning practices undertaken by the Calgary Regional Planning Commission (CRPC) from 1951- 1995 is critical to evaluating the current planning practices utilized by the Calgary Regional Partnership (CRP). Therefore, an evaluative framework was developed to analyze the actions and planning processes used by both organizations within their different historical contexts. The evaluation factors were organized and collected from three important sources: the literature on collaborative planning and metropolitan governance, the practices of regional planning in Calgary, and multiple case studies of regional collaboration in metropolitan regions across North America and Europe. I found that evaluation factors related to organizational capacity and leadership, communication and dialogical processes, and regional identity strongly affect the success or failure of collaborative planning in metropolitan regions. The CRPC did not develop these functions adequately, and as a result, conflicts rooted in differences in interests and values between urban and rural municipalities within the CMR arose. These conflicts eventually lead to the abolition of the CRPC in 1995. Following this, critical issues, such as urban sprawl, water scarcity, and imbalanced development predominated planning discourse. Municipalities in the CMR established the CRP as a voluntary organization to coordinate regional development. The CRP made significant improvements to its regional planning approach. However, there are still challenges to be addressed regarding organization, communicative action, and regional identity if the CRP's collaborative planning approach is to result in consensus around the Calgary Metropolitan Plan. After examining the socio economic and political circumstances that helped shape the region, I offer recommendations to improve planning processes in the CMR.

1-1-009	
Title	**Electrically Small Particles for Energy Harvesting in the Infrared and Microwave Regimes**
Author	Mohammed R. AlShareef
Program	Doctor of Philosophy in Electrical and Computer Engineering
University	University of Waterloo
Year	2014

Abstract
Harnessing energy from clean and sustainable resources is of crucial importance to our planet. Several attempts through different technologies have been pursued to achieve efficient and sustainable energy production systems. However, having systems with a high energy harvesting efficiency and at the same time low energy production cost are challenging with the existing technologies. In this research, several novel structures based on electrically small particles are proposed for harvesting the microwave and infrared energy efficiently. First, a proof of concept demonstrates a metamaterial unit cell's ability to harness the ambient electromagnetic energy. A split-ring resonator (SRR) representing the metamaterial unit cell is designed at a microwave frequency (5.8 GHz) and then fabricated by using printed circuit board technology to prove this concept. A bow-tie antenna, operating at the above frequency, is also designed to show the power efficiency improvement achieved by utilizing the SRR. More than 37% of power efficiency is achieved using SRRs- based structure compared to the 13% of the bow-tie antenna. A new efficiency term is also proposed to take into account the size reduction and efficiency advancement resulting from SRR structures. To this end, two comparable arrays of SRRs and bow-tie antennas are made. Power efficiency of 63.2% and 15.3% for the SRRs and bow-tie arrays, respectively, are achieved. Another structure composed of an ensemble of electrically small resonators for harvesting microwave energy is presented. A flower-like structure composed of four electrically small SRRs arranged in a cruciate pattern, each with a maximum dimension of less than λo/10, is shown to achieve more than 43% microwave-to-alternating current (AC) conversion efficiency at 5.67 GHz. Even- and odd-mode currents are realized in the proposed harvester to improve the efficiency and concurrently reduce the dielectric loss in the substrate. An experimental validation is conducted to prove the harvesting capability. To extend the work to operate at the far-infrared regime, a novel structure based on electrically small resonators is proposed for harvesting the infrared energy and yielding more than 80% harvesting efficiency. The dispersion effects of the dielectric and conductor materials of the resonators are taken into account by applying the Drude model. A new scheme to channel the infrared waves from an array of SRRs is proposed, whereby a wide-bandwidth collector is utilized by employing this new channeling concept. With the same pattern of the flower-like harvester operating in microwave regime, a new structure composed of electrically small SRRs, each of whose greatest length is less than λo/21, is proven to achieve more than 85% of power harvesting efficiency at 0.348 THz. Furthermore, the infrared energy harvesters are fabricated using nano-fabrication tools. At last, the infrared harvesters are experimentally validated with the numerical findings using THz time-domain spectroscopy (THz-TDS).

1-1-010	
Title	**Experimental Studies of the Hydrodynamics of Liquid Droplet Generation and Transport in Microchannels**
Author	Zeyad Almutairi
Program	Doctor of Philosophy in Mechanical Engineering
University	University of Waterloo
Year	2014

Abstract
Droplet microfluidics is a promising field since it overcomes many of the limitations of single phase microfluidic systems. The improved mixing time scale, the increase of number of samples and the isolation of droplets are some of its virtues. The core of droplet microfluidics is a two-phase flow condition that is subjected to scaling of the confining geometry. With the scaling the complexities of the flow phenomena arise. For that reason both the processes of droplet generation and transport are not fully understood for various flow and fluid conditions. The work in this thesis aims to experimentally examine droplet generation and transport in microchannels for flow and fluid conditions that are experimentally challenging to perform. Examination of droplet generation in a T-junction microchannel design was performed with a quantitative velocity field approach known as micro particle image velocimetry (μP I V). The studies on droplet generation focused on very fast generation regimes, namely transition and dripping that have not been studied for a T-junction design. This achievement was accomplished because of the development of a fast optical detection and triggering system that allowed for acquiring images of different identical droplets at the same position. μP I V results indicate that the quantitative velocity field patterns of different regimes share some similarities. The filling stage in the transition and dripping regimes had some resemblance in their velocity patterns. The velocity patterns for the start of droplet pinch-off were alike for the squeezing and transition regimes. Furthermore, the presence of a surfactant in the droplet phase above the critical micelle concentration (CMC) did not have an effect on the general velocity patterns as long as the capillary number Ca was matched with the no-surfactant condition. The studies of hydrodynamic properties of droplet transport were performed in hard materials to avoid cumulative error sources, such as material pressure compliance and swelling effects. The project had several parts: designing a microchannel network that allowed studying the hydrodynamic properties of small droplets, surface treatments of the channel material for stable droplet generation and examining the hydrodynamics of small liquid droplets with sizes that have not been reported in the literature. The studies examined effects of changing the interfacial tension, viscosity, and flow conditions on the transport of droplets. The experimental results from the hydrodynamic transport studies indicated that for the droplet sizes that were examined the pressure drop of droplets was affected by the capillary number Ca and length of the droplet Ld. Also, the presence of surfactants altered the hydrodynamic properties of droplets. At a high concentration of surfactants the droplets pressure drop was reduced significantly. Moreover, the type of surfactant affected the magnitude of the pressure drop. Experimental results indicate that if the concentration of surfactants was very low (below CMC) it did not have an effect on the droplet excess pressure. These findings are important to consider in designing droplet microfluidic systems with complex channel networks that involve droplet sorting, splitting, and merging for droplets that contain surfactants.

1-1-011	
Title	**Resource Allocation Optimization of A Disrupted Interdependent System Using Machine Learning**
Author	Mohammed Talat Khouj
Program	Doctor of Philosophy in Electrical and Computer Engineering
University	The University Of British Columbia
Year	2014

Abstract
National safety and homeland security of an urban community rely heavily on a system of interconnected critical infrastructures (CI's). The interdependencies in such complex systems give rise to vulnerabilities, which must be accounted for by a proper disaster management. It is a proactive step that is needed to address and mitigate any major interruption in a timely manner. Only then will the management of CI's be able to appropriately reallocate and distribute the available scarce resources of an existing interdependent system. In this research, we propose an intelligent decision making system that optimizes the allocation of the available resources following an infrastructure disruption. The novelty of our suggested model is based upon the application of a well-known Machine Learning (ML) technique called Reinforcement Learning (RL). This learning method is capable of using experience from a massive number of simulations to discover underlying statistical regularities. Two alternative approaches to intelligent decision-making are studied, learning by Temporal Differences (TD) and Monte Carlo (MC) based estimation. The learning paradigms are explored within the context of competing designs composed of simulators and learning agents architected either independently or together. The results indicate the best learning performance is obtained using MC within a homogeneous system. The goal here is to maximize the number of discharged patients from emergency units by intelligently utilizing the existing limited resources. We show that such a learning agent, through interactions with an environment of simulated catastrophic scenarios (i2Sim-infrastrucutre interdependency simulator), is capable of making informed decisions in a reasonable time.

1-1-012	
Title	**BIM-Based Decision Support for Evaluation of Architectural Submittals during Construction**
Author	Ibraheem N. Albukhari
Program	Doctor of Philosophy in Civil Engineering
University	University of Waterloo
Year	2014

Abstract
Submittal review is a formal process that takes place after construction has begun. All materials, equipment, and processes submitted by a contractor are evaluated for compliance with specifications before they can be installed in a project. For projects that involve unique architectural features, contractors often submit alternatives that entail minor deviations from some of the specifications. To save project time and avoid the acceptance of faulty items that can have a costly long-term impact on the project, thorough assessment is necessary. To improve the evaluation process, this research has developed a structured BIM-based decision support framework. The proposed framework does not reject submittals with minor deviations; rather, it determines the value of accepting them if they conform to the original design rationale and also meet acceptance thresholds for technical criteria. Additional construction and operational costs associated with acceptance of the submittals are also calculated; the contractor must cover/absorb these costs as a condition of acceptance. All approved submittals are then updated in a Building Information Model and recorded in a submittal log for tracking and verification purposes. For this research, windows were identified as key architectural submittals for high-profile buildings. To facilitate their evaluation, BIM is used for modeling and storing design rationale and specification data, which are then utilized by the proposed decision support system. The system evaluates the extent to which the window submittals comply with design rationale criteria, applies multi-attribute utility theory (MAUT) and the analytical hierarchy process (AHP) to assess compliance with performance-related criteria, and also computes the overall utility of a submittal and its related life cycle cost. BIM integration with the decision support tool results in the efficient automation of the submittal evaluation process, thus saving time and reducing subjectivity. Storing the design rationale and performance-related criteria in the BIM also enables specifications to be dynamically updated with the data from the approved submittals, thereby facilitating enhanced building operation. The integrated framework has been validated through a case study and is expected to help project managers make efficient, minimally subjective decisions that include consideration of long-term impact and the best value for a project.

1-1-013	
Title	**A Cluster Multi-Spacecraft Study of Earth's Bow Shock**
Author	Thamer Yousef Saeed Alrefay
Program	Doctor of Philosophy in Physics
University	University of New Brunswick
Year	July 2014

Abstract
The location, shape and motion of Earth's bow shock are investigated using observations based on measurements made by the Cluster spacecraft quartet. Several bow shock crossings have been identified and carefully characterized according to relevant plasma parameters; a collection of 133 shocks has been selected and analyzed using a timing method. The shock crossings cover or- bits in which the spacecraft separation is of the order of ~ 600 km or less. When present, the magnetic field fluctuations are suppressed using the conventional low-pass filtering technique prior to implementing timing method. The results of this investigation are compared with both Gas Dynamics and Magnetohydrodynamics (MHD) bow shock models. We have found, on a statistical basis, that the shock standoff position derived from the timing method agrees well with the Gas Dynamics predictions for high Mach-number cases only. We have also found that for half the crossings, the timing and the conic-based shock normal agree within an 11 degree-angle. Our results strongly indicate that the motion of the shock is predominantly along the Sun-Earth direction; a departure from this direction is not related to the shock-crossing location. Shock velocities below ~ 80 km/s satisfactorily follow a nearly Gaussian distribution with zero mean and a standard deviation of ~ 42 km/s. We show that high speed motions are correlated with sharp increases in the solar wind upstream ram pressure, and are consistent with gas dynamics model predictions.

1-1-014	
Title	**Fuel Cell Diagnostics using Electrochemical Impedance Spectroscopy**
Author	Ghassan Mousa
Program	Doctor of Philosophy in Mechatronic Systems Engineering
University	Simon Fraser University
Year	Fall 2014

Abstract
When a proton exchange membrane (PEM) fuel cell runs short of hydrogen, it suffers from a reverse potential fault. This fault, driven by neighboring cells, can lead to anode catalyst degradation and, through cell reversal, to holes in the membrane due to local heat generation. As a result, hydrogen leaks through the electrically-shorted membrane-electrode assembly (MEA) without being reacted, and it recombines directly with air. This recombination results in a reduction in oxygen concentration on the cathode side of the MEA and a fuel cell voltage reduction. Such voltage reduction can be detected by using electrochemical impedance spectroscopy (EIS). In this research, in order to fully understand the effect of this oxygen reduction fault, the impedances of single and multi-cell stacks at different leak rates were measured. Then the impedance signatures were compared with the signatures of stacks having non-leaky cells at different oxygen concentrations with the same current densities. The signatures were analyzed by fitting the leaky stacks and oxygen concentrations impedance data sets with the parameters of a Randles circuit. The correlation between the parameters of the two data sets allows us to understand the change in impedance signatures with respect to a reduction of oxygen in the cathode side. Using the circuit parameters, a model that establishes a relationship between impedance and voltage was also considered. With the help of this model along with the impedance signatures, we are able to detect the reduction of oxygen concentrations at the cathode by using fuzzy logic (FL). However, resolution of detection was reduced with the reduction of leak rate and/or increases in the stack cell-count. The amount of hydrogen leak rates were quantified by simulating the resulting reduced amount of oxygen with the use of neural network (NN) method. Successful implementation of FL and NN methods in a fuel cell system can result in an on-board diagnostics system that can be used to detect and possibly prevent cell reversal failures, and to permit understanding the status of crossover or transfer leaks versus time in operation. Using such system will increase the reliability and performance of fuel cell stacks, where leaks can be detected online and appropriate mitigation criteria can be applied.

1-1-015	
Title	**Proactive System for Digital Forensic Investigation**
Author	Soltan Abed Alharbi
Program	Doctor of Philosophy in Electrical & Computer
University	University of Victoria
Year	Fall 2014

Abstract
Digital Forensics (DF) is defined as the ensemble of methods, tools and techniques used to collect, preserve and analyze digital data originating from any type of digital media involved in an incident with the purpose of extracting valid evidence for a court of law DF investigations are usually performed as a response to a digital crime and, as such, they are termed Reactive Digital Forensic (RDF). An RDF investigation takes the traditional (or post-mortem) approach of investigating digital crimes after incidents have occurred. This involves identifying, preserving, collecting, analyzing, and generating the final report. Although RDF investigations are effective, they are faced with many challenges, especially when dealing with anti-forensic incidents, volatile data and event reconstruction. To tackle these challenges, Proactive Digital Forensic (PDF) is required. By being proactive, DF is prepared for incidents. In fact, the PDF investigation has the ability to proactively collect data, preserve it, detect suspicious events, analyze evidence and report an incident as it occurs. This dissertation focuses on the detection and analysis phase of the proactive investigation system, as it is the most expensive phase of the system. In addition, theories behind such systems will be discussed. Finally, implementation of the whole proactive system will be tested on a botnet use case (Zeus).

1-2-016	
Title	**The Supporting Role of Online Social Networks for Divorced Saudi Women**
Author	Ramzia Hisham Saleh
Program	Master of Science in Electronic Business Technologies
University	University of Ottawa
Year	2014

Abstract
This thesis aims to assess the supporting role social networks provide to divorced Saudi women who face after divorce challenges. After reviewing the impact that online social networks have on Saudi society and the legal context of divorce in Saudi Arabia, this study explores key issues faced by divorced Saudi women using a qualitative approach. Upon reviewing the limited amounts of literature and following two methodological phases, the key findings are: (1) identifications of primary challenges faced by divorced Saudi women namely; social, economic, psychological, and legal issues; (2) extraction of themes based on each identified issue, leading to the identification of four qualitative models; and (3) assessment of the supporting role social networks have in the identified themes of each issue of chromium(III) complexes of imidazol-2-ylidene showed slightly enhanced activities with a relatively electron-poor phenyl group (compared to methyl) installed on the iminic carbons. These results suggest that a decrease in the electron-donating or an increase in the π-accepting capability of the ligand may produce more active olefin polymerization catalysts. The ligand scaffold was then modified by introducing a benzimidazole moiety to reduce σ-electron donating and increase the π-accepting ability of the ligand and this may lead to a more electropositive metal center. Although these ligands were designed as a tridentate ligand, such coordination mode could not be achieved in the transition metal complexes of imidazole-2 ylidene and benzimidazol-2-ylidene. Steric and electronic parameters

perhaps prevent them from adopting this coordination fashion. The five membered ring of the carbene was then replaced by a six-membered ring of pyrimidin-2-ylidene to achieve a tridentate coordination mode. DFT calculations were performed to assess the electronic properties of the bis(imino)- NHC ligands. The pyrimidin-2-ylidene and the benzimidazol-2-ylidene are predicted to be the best σ–donor and the best π-acceptor of these NHC ligands based on their energy of the highest occupied and the lowest unoccupied molecular orbitals, respectively

1-2-017	
Title	**Numerical Computation of Time Independent & Dependent Dirac Equation Using Atomically Balanced operator & B-spline Basis**
Author	Hebah Rizq
Program	Master of Science in Applied Mathematics
University	Carleton University
Year	2014

Abstract
This thesis is devoted to the numerical computation of the time-independent Dirac equation (TIDE) and the time-dependent Dirac equation (TDDE) in the prolate spheroidal coordinates. Analytical and numerical techniques including Galerkin methods, Min-max principle, and Rayleigh-Ritz methods combined with atomically balanced basis are presented to solve the Dirac equation without spectral pollution. These numerical methods are used to compute the discrete spectrum of the Dirac operator in two-center Coulomb problems for molecules H+2and Th179+2. High order B-spline basis functions are used to obtain accurate results. As excepted, the numerical results do not show any spurious state

1-2-018	
Title	**Evaluation of Compressibility, Anisotropy and At-rest Lateral Earth Pressure in Champlain Sea Clays**
Author	Fahad Alshawmar
Program	Masters of Applied Science
University	Carleton University
Year	2014

Abstract
An experimental study is undertaken to evaluate the characteristics of the sensitive Champlain Sea clay. Undisturbed samples obtained from a site in Ottawa were trimmed along both the vertical and horizontal orientations for consolidation and simple shear tests. The results of the one-dimensional consolidation tests indicate that the vertical orientation has greater preconsolidation pressures than the horizontal orientation. The ratio of the horizontal to vertical preconsolidation pressure varies from 0.71 to 0.95. Consolidation along the horizontal orientation leads to higher (1% to 23%) compression indices than those in the vertical orientation. The values of the coefficients of consolidation and permeability in the horizontal orientation are found to be larger than those in the vertical orientation, and the ratios of both coefficients of consolidation and permeability in the horizontal orientation to that in the vertical orientation evolve as the effective vertical stress increases. Generally, the at rest lateral earth pressure coefficient in the horizontal orientation was greater than that in the vertical orientation. The average ratio of the at rest lateral earth pressure coefficient throughout all tests (5.82 m to 21.55 m) ranges from 0.90 to 1.82 during the entire stress history. Based on the observation of one-dimensional consolidation tests, it is noted that sensitive Champlain Sea clay shows anisotropic behavior with respect to the ratios of the horizontal-to-vertical coefficient of consolidation, permeability and the at rest lateral earth pressure coefficient. The undrained monotonic simple shear resistance is somewhat dependent on sample orientation. Test results indicate that samples in the vertical orientation have lower peak and residual shear strengths than those sampled along the horizontal orientation. The iii horizontal to vertical peak strength ratio varied between 1.05 and 1.42. However, the mobilized friction angle at peak and residual states appears to be not dependent on the loading orientation.

1-2-019	
Title	**Modeling of Renewable Resources in Distribution System Planning and Operation**
Author	Majed Alotaibi
Program	Master of Applied Science in Electrical and Computer Engineering
University	University of Waterloo
Year	2014

Abstract
In recent decades, interest in placing renewable resources in conventional power systems has increased because of their ability to reduce fossil fuel consumption, which leads to the preservation of the environment. The rapid increase in employing these renewable resource based DGs drives the system to be more dynamic, and causes many obstacles that need to be overcome. Power system planners and operators should look at the distribution system from another angle, taking into consideration the intermittent behavior of most renewable resources. Furthermore, solid models that are able to handle the uncertainty in generation levels are required. This thesis presents a comprehensive probabilistic model for representing renewable energy resources in long term planning problems. This model utilized large historical data sets, grouping technique, and statistical analysis in order to handle the uctuations that are caused by the variations in wind speed or solar irradiance. In this research, renewable resources (wind and PV based DGs) as well as dispatchable units are optimally allocated and sized using a probabilistic optimization model. This model incorporates the intermittent nature of wind speed and solar radiation into the deterministic optimal power of equations. The variability from the load side and the uncertainty from the feeding side are considered. Genetic algorithm is used in order to minimize the annual energy losses of a distribution system. This thesis proposes a new iterative-based optimization algorithm in order to determine the minimum number of states that can precisely describe or represent the behavior of wind speed and solar irradiance in operational planning problems. This algorithm is evaluated using a power system planning problem. The proposed algorithm takes into account the annual energy losses and the total DG penetration level and considers them as an indication of how far the proposed method's outcomes are from the actual results. Three different data groupings are applied (hourly, seasonally, and yearly) to investigate the variety of weather and electricity demands on the proposed method. The obtained results should be maintained within an acceptable limit of error which is in this thesis, 2:5%, and any violation of this limit will interrupt the algorithm sequences. The importance of this method actually lies in its ability to reduce the complexity in reliability analysis such that the number of overall system states will be minimized when the analytical evaluation methods are utilized.

1-2-020	
Title	**Co-simulation Environment for Modeling Networked Cyber-Physical Systems**
Author	Mohannad Alharthi
Program	Master of Science
University	Queen's University
Year	2014

Abstract
Cyber-physical systems (CPSs) represent a new generation of engineered systems that tightly integrates computations, communications (cyber) and physics. Simulation plays a considerable role in validating CPSs as it substantially reduces the costs and risks in the design-testing cycles. Reliable simulations, however, mandate realistic modeling for both the cyber and the physical aspects. This is especially the case in various networked mobile CPSs (e.g., excavation robots and vehicular networks), where cost and risk may become substantial. Current CPS modeling tools lack complete models of communication. Co-simulation attempts to overcome this limitation by integrating multiple modeling and simulation tools to offer complete models of all aspects of CPSs. In this thesis, we design and implement a co-simulation environment for modeling and simulating networked CPSs. The environment is called AcumenNS3 and it integrates Acumen, a language for modeling hybrid physical systems, with NS-3, a discrete-event network simulator. This environment allows users to augment network simulations with physical models using an easy-to-use modeling language. It provides a seamless integration between network and physics models by providing mobility based on the physical simulation in addition to generic access to the physical state. Using the AcumenNS3 environment, we demonstrate and model example simulation scenarios of networked CPSs. in various networked mobile CPSs (e.g., excavation robots and vehicular networks), where cost and risk may become substantial. Current CPS modeling tools lack complete models of communication. Co-simulation attempts to overcome this limitation by integrating multiple modeling and simulation tools to offer complete models of all aspects of CPSs.

1-2-021	
Title	**Optimization Filter Placement and Sizing Using Ant Colony Optimization in Electrical Distribution System**
Author	Fawaz Masoud Alhaddad
Program	Master of Applied Science
University	Dalhousie University
Year	2014

Abstract
This thesis presents an application of the Ant Colony algorithm for optimizing filter placement and sizing on a radial distribution system to reduce power losses and keep the effective harmonic voltage values and the total harmonic distortion (THD) within prescribed limits. First, a harmonic load flow (HLF) algorithm is performed to demonstrate the effect of harmonic sources on total power loss. Then the Ant Colony algorithm is used in conjunction with HLF to place a selection of filter sizes available at each possible location so that both power loss and THD are minimized. As a result the optimal adjustment of location and size of the filter are determined. Results of computational experiments on standard test systems are presented to demonstrate improvement and effectiveness of using the filters at the optimal location. The methodology used can be easily extended to different distribution network configurations.

1-2-022	
Title	**Electrically Small Probe for Near-field Detection Applications**
Author	Abdulaziz Ali Alqahtani
Program	Master of Science in Electrical and Computer Engineering
University	University of Waterloo
Year	2013

Abstract
The microwave near-field detection technique is of interest to many researchers for characterizing materials because of its high sensitivity. It is based on sensing buried objects by producing an evanescent field. The advantage of evanescent fields is their capability to interrogate electrically small objects. In the past, near-field probes have been designed to sense magnetic materials. For dielectric materials, a near-field probe that senses the permittivity of the materials is important. This work presents a novel design of a near-field probe that generates a dominant electric field. The probe is an electrically small dipole measuring approximately 0.07λ in length operating at 216.3 MHz. The antenna is matched to a 50Ω system using two chip inductors distributed symmetrically on the dipole. The numerical and measurement results show that the proposed design is highly sensitive and capable of sensing subsurface object. The proposed design is compact, lightweight and applicable for microwave applications.

1-2-023	
Title	**The Role of Secretogranin-IIa and its derived peptide Secretoneurin a in Feeding Regulation in Female Goldfish**
Author	Myy Mikwar
Program	Master of Science in Biology
University	University of Ottawa
Year	2014

Abstract
Secretoneurin (SN) is a 31-43 amino acid, functional peptide derived by proteolytic processing from the middle domain of the ~600 amino acid secretogranin-II (SgII) precursor. In teleosts there are 2 forms arising from 2 different genes, SgIIa and SgIIb. In turn, there are both SNa and SNb in teleost. Secretoneurin is a well-conserved peptide during evolution from fish to mammals and widely distributed in secretory granules of endocrine cells and neurons. Secretoneurin plays important roles in different biological processes, for example controlling vertebrate reproduction by stimulating luteinizing hormone release from the pituitary. A potential new role of SN in feeding in goldfish is the subject of the research presented in this thesis. Firstly, we looked at the distribution of SgIIa mRNA in various female goldfish tissues using both RT-PCR and Q-PCR techniques in order to determine which tissue expresses SgIIa mRNA and in which level. We found that SgIIa mRNA was detected in different amounts in all tissues examined. The main tissues of interest were hypothalamus, telencephalon and gut, they all expressed SgIIa. Secondly, we examined the effect of acute (26 h), short (3 days), medium (7 days) and long (14 days) fasting and periprandial changes on SgIIa mRNA level in hypothalamus, telencephalon and gut using Q-PCR method. The results showed that SgIIa mRNA increases under the effect of acute and short fasting, however, medium and long fasting did not affect SgIIa mRNA. Thirdly, we examined the effect of brain injection of goldfish SNa on food intake and locomotor behavior and the expression of some feeding neuropeptides such as neuropeptide Y, orexin, chocystokinin and cocaineand amphetamine-regulated transcript I after treatment. Injection of SNa in the third brain ventricle increased food intake and fish activity. Associated with this was an increase in NPY and decrease in CARTI mRNA levels in hypothalamus. The increase in SgIIa mRNA following fasting and the increase of food intake as a result of SNa treatment suggest a novel role for SNa in feeding processes.

1-2-024	
Title	**Terahertz Surface Plasmon Resonance Sensor for Material Sensing**
Author	Sondos Alqarni
Program	Master of Science in Electrical and Computer Engineering
University	University of Waterloo
Year	2014

Abstract
Terahertz wave (THz) is comprised of electromagnetic waves carrying frequencies from 0.1 to 30 THz. Terahertz radiation has the ability to interact with a wide range of materials, such as plastic and paper, and to provide low-energy probing of the system's electronic nature, including inter/intra-molecular motions and Debye relaxation - these are not accessible by other wavelengths. Further appealing feature for THz ray is the nonionizing nature and the distinctive optical response of various materials are important for analyzing diverse applications such. As material quality control, pharmaceutical, industrial production lines, and biological. Upon that THz waves have been utilized for imaging and spectroscopy, especially Terahertz Time-Domain Spectroscopy (THz-TDS) associated to its ability in measuring the change in the electric field with high sensitivity in time-domain. Surface plasmon-polaritons (SPPs) at metal dielectric interfaces have been proven for several decades as a reliable technique for surface analysis and investigation of thin films due to the two dimensional nature of SPPs and the strong electromagnetic field at the interface. Extraordinary transmission of light through sub wavelength hole arrays has attracted many areas of applications including optical data storage, near field microscopy, optical displays, and thin film sensing. The enhancement in the tunneled transmission light stemming from the coupling with SPP by the surface configurations has been explored through the waveguide theory and the grating theory of the frequency-selective characteristic of SPP resonances. At THz frequencies, the extraordinary transmission through thin metallic hole arrays has been demonstrated through the excitation of SPP on the metal–dielectric interface confining the incident THz pulse around the holes, hence precluding THz pulse from easily passing and attenuating into the conductor. Implementing THz SPP in thin film sensing has great potential for industrial applications because the two dimensional nature of SPPs and the strong electromagnetic field at the interface with the THz natural reaction with the material provides reliable measurements of Thin film spectroscopy including optical and dielectric constants, film thickness, and inhomogeneity at interfaces with high precision. This motivates the investigation of the characteristics such as purity of thin organic film including PMMA and those used in organic light emitting diode (OLED) through THz SPR devices. Two SPR devices contain either 2D periodic circular or square hole array in 500 nm Al on an 5 mm-thick intrinsic silicon, or a single sub wavelength aperture surrounded by concentric periodic grooves of a set period in a metal plate (which is known as a Bull's eye structure), and was fabricated by following the microfabrications process encompassed from UV photolithography and wet and dry etching to transfer the pattern into the Al film. The SPR device consisting of 2D periodic circular or square hole array with and without thin Poly(methyl methacrylate) (PMMA) film on it is placed at the focus of the THz beam in transmission THz-TDS, where the spectrum is obtained from the Fourier transformed sample and reference THz pulses. The transmission is obtained from the ratio between the sample spectrum and reference spectrum, whereas the phase change is the phase difference between the two spectra. To avoid overlap with water absorption lines, the optimal SPR device design has a period of 320 μm and square holes of 150 μm side length. We successfully confirmed the theoretical SPR frequencies for metal-silicon mode an demonstrate a shift to 0.9211 THz due to 2 μm of PMMA layer on the surface.

1-2-025	
Title	**Comparative Analysis of Soybean (Glycine Max) Accessions Using Inter Simple Sequence Repeat (ISSR) and Random Amplified Polymorphic DNA (RAPD) Markers**
Author	Sarah Alamri
Program	Master of Science in Biology
University	University of Waterloo
Year	2014

Abstract
Soybean (Glycine max) is an important crop in the world in terms of total production and usage. It is also among the least diverse species. The main objectives of the present study were 1) to determine differences between ISSR and RAPD marker systems in detecting genetic variation in soybeans and 2) to identify and characterize accession-diagnostic molecular markers in G. max accessions. Genomic DNAs from 108 G. max accessions from 11 different gene pools were analyzed using several ISSR and RAPD primers. The levels of polymorphic loci detected with the two marker systems were in general moderate and similar. Overall, 82% of genetic distance values were above 0.40 based on ISSR analysis. However, RAPD data revealed that the accessions from different countries are closely related with 64% genetic distance values below 0.40. The dendrograms constructed with ISSR data revealed that the South Korean accessions formed an out-group while the RAPD analysis showed that accessions from Sweden were separate from the other 10 gene pools. One variety-diagnostic marker generated with ISSR 5 primer was identified in the accession Kao Chien Tao from China. This marker was cloned, and sequenced. Although RAPD and ISSR marker systems detected similar levels of genetic variability, they target different regions of the soybean genome, resulting in different clustering of the 11 gene pools indicating different genetic relatedness among them. This finding demonstrates the usefulness of both marker systems in assessing diversity and relatedness among Glycine max gene pools.

1-2-026	
Title	**New Computional Approaches For The Transportation Models**
Author	Dalia Essa Almaatani
Program	Master of Science
University	Laurentian University
Year	2014

Abstract
The Transportation model (TP) is one of the oldest practical problems in mathematical programing. This model and its relevant extensions play important roles in Operations Research for finding the optimal solutions for several planning problems in Business and Industry. Several methods have been developed to solve these models, the most known is Vogels Approximation Method (VAM). A modified version of VAM is proposed to obtain near optimal solutions or the optimum in some defined cases. Modified Vogel Method (MVM) consists iteratively in constructing a reduced costmatrix before applying VAM. Beside to MVM, another approach has been developed, namely the Zero Case Penalty, which represents different penalty computational aspects. Through the research, the results of

methods-comparison studies and comparative analysis are presented. Furthermore, special classes, the Unbalanced TP and the Transshipment models, were studied and solved with different approaches. Additionally, we provide an application of MVM to Traveling Salesman Problem

1-2-027	
Title	**Synthesis and Characterization of Oligo/ Polythionphenes Bearing Stable Radicals**
Author	Somaiah Almubayedh
Program	Master of Science in Chemical Sciences
University	Laurentian University
Year	2014

Abstract
Two categories of verdazyl radical functionalized oligothiophenes have been prepared: 1,5-diisopropyl-6-oxoverdazyl radical directly linked to terthiophene (2.6), and 1,5-diisopropyl-6-oxoverdazyl radical attached to terthiophene through a π system bridge, e.g., pyridine (2.11). Compound radical 2.6 was prepared by a two steps process starting with the condensation of terthiophene carboxaldehyde and 2,4-diisopropylcarbonhydrazide bis-hydrochloride to give the tetrazane 2.5, which was subsequently oxidized chemically to give the corresponding verdazyl radical grafted at the 3′ position of the terthiophene moiety. The latter displays excellent stability toward organic solvents and moisture. The electropolymerization of radical 2.6 resulted in the formation of its polymer (poly(2.6)), which was characterized by cyclic voltammetry and infrared spectroscopy. The electrochemical oxidation of the tetrazane, 2.5, yielded surprisingly a poly(terthiophene) bearing verdazyl radical, with similar electrochemical and infrared properties of those found for the polymer produced in the electro-oxidation of the terthiophene bearing verdazyl radical (poly(2.6)). Moreover, the electrochemical oxidation of 2.5 (beyond its oxidation potential of the tetrazane motif) affords the radical 2.6. A similar strategy has been used for the synthesis and the characterization of tetrazane 2.10 and its corresponding verdazyl 2.11.

1-2-028	
Title	**Effects of Uncaria Tomentosa on The Growth & Survival of B16-BL6 Mouse Melanoma Cells**
Author	Ali Zari
Program	Master of Science in Biology
University	Laurentian University
Year	2014

Abstract
Uncaria tomentosa is a medicinal plant native to Peru that has been traditionally used in the treatment of various disorders, including cancer. U. tomentosa is one of the best-selling herbs in the world and is used as an immunomodulatory, anti-inflammatory and anti-cancer remedy. This study assessed the effectiveness of U. tomentosa on the growth and survival of B16-BL6 mouse melanoma cells. Both ethanol and PBS extracts of U. tomentosa extracts were tested in vitro and in vivo in order to evaluate their potential anticancer activity. In addition, different methods to measure the effect of treatment were used, including MTT assay, immunofluorescence (Ki67 protein and TUNEL assay) and the isogenic tumor transplantation model. The present results showed that U. tomentosa significantly inhibited cell proliferation and induced morphological changes in vitro. Furthermore, U. tomentosa was able to increase the percentage of apoptotic cells in a concentration-dependent manner. There was also decrease in the expression of Ki-67 (cell proliferation marker). Two experiments were performed to assess the ability of U. tomentosa to inhibit B16-BL6 cell growth in vivo. Mice were injected subcutaneously (on the top of the muscle) with B16-BL6 cells and tumors were allowed to progress for two weeks. In some animals, U. tomentosa extracts were injected intraperitoneal and intratumour. The animals were sacrificed and tumor diameters and weights were measured. The results showed that U. tomentosa caused a significant reduction in tumor weight but the tumor size was not significantly affected when compared to the controls. Interestingly, there were no significant differences in mouse weight for all treated groups.

1-2-029	
Title	**Conservation genetics of Bicknell's thrush (Catharus bicknelli) based on neutral and adaptive genes**
Author	Lamya Badokhon
Program	Master of Science
University	Trent University
Year	2014

Abstract
Conservation genetics of Bicknell's thrush (Catharus bicknelli) based on neutral and adaptive genes. Lamya Badokhon Genetic diversity is an important measurement, particularly for threatened species. It is common to use neutral genetic markers to examine genetic diversity; however, it is becoming even more important to use adaptive markers (or coding DNA) to obtain a complete evolutionary assessment. CLOCK, a well characterized gene that controls circadian rhythm along with other clock genes, functions in many taxa and has polyQ repeats, which are found to be inconsistently polymorphic in different species and apparently maintained by natural selection. Genotypes were obtained at this locus as well as from six neutral microsatellite loci in four populations of the threatened species Bicknell's thrush (Catharus bicknelli), to assess genetic diversity in two populations in Canada, and two in the United States. Bicknell`s U.S. populations have shown more stable population trends with respect to annual variations in population sizes compared to its Canadian populations. There was essentially no population genetic structure or isolation by distance based on either polyQ or neutral microsatellite loci, despite tendency of philopatry. Genetic diversity was high within all four populations based on microsatellite markers, but low based on polyQ. Although the decline in Bicknell's thrush has not reached the point to be adversely affecting neutral levels of genetic diversity, the low polyQ polymorphism in Bicknell`s thrush may indicate limited potential for future evolution in circadian behaviors. Keywords: polyQ, CLOCK gene, climate change, genetic diversity, microsatellites, adaptation, Catharus bicknelli, Bicknell`s thrus

1-2-030	
Title	**Social Network-Based Framework For Users and Web Services Discovery**
Author	Hiba H. Fallatah
Program	Master of Science in Applied Science (Information System Security)
University	Concordia University
Year	2014

Abstract
With the emergence of Web 2.0 and its applications, social networks have facilitated the discovery process of web services, a cornerstone to the development of service computing. Very recently, some frameworks have suggested adding a social element to services' description, discovery, binding and composition. By incorporating the social component in the Service-Oriented Architecture, web services become active entities that can form and be part of social networks. However, merging users and web services in the same social network and analyzing the influence of these entities (i.e., web services and users) on each other have not been examined in the previous proposals and yet to be investigated. In this thesis, we propose a new social network-based framework for analyzing the role and influence of users and web services in the discovery process. We advocate the idea of incorporating, not only social web services, but also social users in the discovery process by merging users and web services nodes in the same global social network. We first discuss the engineering process of such a social network that takes into consideration users and web services characteristics and the types of their interactions. Thereafter, we analyze those types of interactions that fall in one of two categories: web service discovery or user discovery. The goal is to involve social networks of users in the service discovery process and allow web services to be active parts by advertising and introducing themselves to other users. Simulation results show that the proposed approach provides an immediate and wider exposure for web services and makes the discovery easier and efficient.

1-2-031	
Title	**Disassembly of Diruthenium(II,III) Tetraacetate with Unsaturated P-P Donor Ligands**
Author	Meshari M. Aljohani
Program	Master of Science
University	St. Francis Xavier University
Year	2014

Abstract
A series of monoruthenium(II) acetate complexes was synthesized by a disassembly reaction from diruthenium(II,III) tetraacetate. This was done by reacting the diruthenium(II,III) tetraacetate, [Ru2(μ-O2CCH3)4(H2O)2](PF6)•3H2O (2), with the unsaturated diphosphines cis-1,2-bis(diphenylphosphino)ethylene (cis-dppet), trans-1,2-bis(diphenylphosphino)ethylene (trans-dppet), 1,1-bis-(diphenylphosphino)ethylene (1,1-dppet), and 1,2-bis(diphenylphosphino)benzene (dppben). The diphosphine ligands behaved as σ-donors and also π-acceptors through back-bonding. The complexes synthesized by this method include cis-[Ru(κ2-O2CCH3)(κ2-dppe)2](PF6) (3b) (where dppe = 1,2-bis(diphenylphosphino) ethane), cis-[Ru(κ2-O2CCH3)(κ2-cis-dppet)2](PF6) (4), cis-[Ru(κ2-O2CCH3)(κ2-1,1-dppet)2](PF6) (5), and cis-[Ru(κ2-O2CCH3)(κ2-dppben)2](PF6) (6). The known complex (3b) was formed as a result of an unexpected reduction (hydrogenation) during the reaction with trans-dppet. All complexes were characterized using elemental analysis, FT-IR, UV-Vis and NMR spectroscopies, electrochemistry, and X-ray crystallography. X-ray data revealed that complexes (4) - (6) adopt a distorted octahedral geometry with two chelating unsaturated diphosphine ligands and a bidentate (κ2) acetate. The 1,1-dppet complex was found to be the most distorted from octahedral geometry, while the dppben complex is the closest to being octahedral. The larger E½ potential values observed for the unsaturated diphosphine complexes indicate that they are more difficult to oxidize than those of the saturated complexes, and suggest that the unsaturated P-P ligands are better π-acceptors than the saturated diphosphines, stabilizing the Ru(II) to a greater extent. 31P{1H} NMR spectra for the unsaturated complexes also show a higher field resonance, relative to those of the analogous saturated complexes due to the effect of the double bond between or perpendicular to the two P-P atoms on the electronic delocalization.

1-2-032	
Title	**Investigating Dynamic Spatial Interactions between Mitochondria and Endoplasmic Reticulum in Living Plant Cells and Their Possible Role in Controlling Mitochondial Calcium Flux**
Author	Adel Saeed Alsufyani
Program	Master of Science in Biology
University	University of Saskatchewan
Year	2014

Abstract

Mitochondria are dynamic organelles known primarily for their roles in oxidative metabolism and programmed cell death. Both of these processes are regulated by the mitochondrial matrix calcium concentration. Little is known about how mitochondrial calcium is regulated: no plant mitochondrial Ca2+-ATPase pumps or no mitochondrial Ca2+ channels have been identified to date. In addition, little is known concerning any physical interactions between mitochondria and endoplasmic reticulum (ER), an important cellular calcium store, and how these modulate cellular calcium fluxes. In this work stable transgenic Arabidopsis lines expressing fluorescent marker proteins were generated to allow visualisation of mitochondria and the ER in the same cells, and to measure mitochondrial calcium fluxes using aequorin. According to my results, there is a physical association between mitochondria and ER and this association cannot be disrupted by chemical treatments (latrunculin B, methyl viologen and antimycin A). As part of this work I identified an Arabidopsis gene, Mitochondrial Calcium Uptake 1 (MCU1), which encodes a protein with features that suggest a role in mitochondrial calcium dynamics. Fluorescent protein fusions of this protein demonstrated that it localizes to mitochondria. An Arabidopsis T-DNA line was identified with an insertion in MCU1. However, little effect of the insertion on transcript abundance of MCU1 was observed.

1-2-033	
Title	**Vitamin D Deficiency and Possible Risk Factors Among Middle Eastern**
Author	Amal Alshahrani
Program	Master of Science in Foods and Nutrition
University	The University of Western Ontario
Year	2014

Abstract

Objectives: To Identify multiple risk factors for vitamin D deficiency in Middle Eastern men and women aged 18-33 years who have immigrated to Canada for 5 years or less and attending Western University by measuring the level of vitamin deficiency and insufficiency based on serum vitamin D 25hydroxyvitamin level. Hypothesis: Middle Eastern population who has been living in Canada for 5 years or less would commonly have vitamin D deficiency as a result of multiple risk factors. Null Hypothesis: Middle Eastern population who has been living in Canada for 5 years or less would have normal vitamin D levels. Methodology: Fifty-one healthy Middle Eastern men and women aged 18-33 years who have been living in Canada for five years or less studying at the University of Western Ontario participated in the study. Serum vitamin D 25 hydroxyvitamin was measured by collecting blood samples, which were analyzed at a medical laboratory. Questionnaires were used to collect dietary data, lifestyles, cultural practices, sunlight exposure, and any etiology of non-specific signs or symptoms of vitamin D deficiency. Results: Thirty three percent (33%) of the males and 35% of the females had insufficient vitamin D, where serum levels of [25- (OH) D] falls between 25-74 nmol/L. More females were significantly deficient (< 25 nmol/L) in vitamin D (22%) than males (8%). Forty three percent of the younger age within their cohort had more insufficient and deficient values compared to the slightly older group. Participants who have been in Canada for less than 3 years had more deficient and insufficient vitamin D values compared to participants who have been in Canada for 3 years and more. Twenty three percent of the participants who had suffered from malady were vitamin D deficient. Participants who were not taking vitamin D, calcium, and multivitamin supplements had deficient and insufficient vitamin D values. Additionally, only 4 % of the participants who spent more than 30 minutes per day outdoors under the sun were vitamin D deficient. Participants who were mostly covered by their clothing especially dark colors and thick material had more deficient and insufficient vitamin D values. Value of the research: Published studies in Middle Eastern population at home and abroad show a significant risk of vitamin D deficiency with other related diseases. A majority of this population share similar lifestyles, cultural practices and dietary habits. Further research needs to be done to help future dietitians become more knowledgeable about the major factors that threaten their vitamin D status. Implementation of programs based on the results of this study may increase awareness of the importance of vitamin D for bones and general health. Possible solutions may help this population get the needed vitamin D from different sources that are within their cultural practices and lifestyles.

1-2-034	
Title	**Simultaneous Statistical Inference for Low Dose Risk Estimation with Quantal Data in Benchmark Analysis**
Author	Abdelaziz Alsubie
Program	Master of Science in Mathematics and Statistics
University	Acadia University
Year	2014

Abstract

Risk assessment studies where data are collected to make safe low dose levels of a toxic compound/agent are challenging as dose-response information is constrained to high dose levels of the compound/agent (Piegorsch et al, 2005). Simultaneous hyperbolic bands for low-dose risk estimation with quantal data have been proposed in the literature. The quantal data is denied as binomial data where the subjects are classified by whether or not they display any adverse health effects. In this thesis, we propose to use three-segment bands instead of the currently used hyperbolic bands to make low dose inferences for quantal data in risk analysis. We will use the three-segment condence bands to construct simultaneous condence upper bounds on extra risk and simultaneous condence lower bounds on the benchmark dose for quantal data. The proposed method is illustrated with a real data application and simulation studies.

1-2-035	
Title	**Most Influential Variables For Solar Radiation Using Artificial Neural Networks**
Author	Bader M. Alluhaidah
Program	Master of Applied Science
University	Dalhousie University
Year	2014

Abstract

Decaying fossil fuel resources, international relation complexities, and the risks associated with nuclear power have led to an increased demand for alternative energy sources. Renewable energy sources offer adequate solutions to these challenges. Forecasting of solar energy has also increased over the past decade due to its use in photovoltaic (PV) system design, load balance in hybrid systems, and projected potential future PV system feasibility. Artificial neural networks (ANN) have been used successfully for solar energy forecasting. In this work, several meteorological variables from Saudi Arabia as a case study will be used to determine the most effective variables on Global Solar Radiation (GSR) prediction. Those variables will be used as inputs for a proposed GSR prediction model. This model will be applicable in different locations and conditions. This model has a simple structure and offers better results in terms of error between actual and predicted solar radiation values.

1-2-036	
Title	**Finding Patterns in Student and Medical Office Data Using Rough Sets**
Author	Anwar Alenezi
Program	Master of Science in Computational Science
University	Laurentian University
Year	2014

Abstract

Data have been obtained from King Khaled General Hospital in Saudi Arabia. In this project, I am trying to discover patterns in these data by using implemented algorithms in an experimental tool, called Rough Set Graphic User Interface (RSGUI). Several algorithms are available in RSGUI, each of which is based in Rough Set theory. My objective is to find short meaningful predictive rules. First, we need to find a minimum set of attributes that fully characterize the data. Some of the rules generated from this minimum set will be obvious, and therefore uninteresting.

1-2-037	
Title	**Reflectivity and Elastic Modulus of Nano-Aluminum Films on Silicon Crystal Substrates**
Author	Raed Alharbi
Program	Master of Science in Mechanical Engineering
University	University of Waterloo
Year	2014

Abstract

In this work, effect of film thickness on optical reflection and elastic modulus of the metal film at very low size was studied. We choose Aluminum as a reflective surface where it mostly used as a typical material for micro mirror device due to its high reflectivity. The effect of film thickness on the reflectivity had been performed at the range of 400-700 nm wavelengths for thin film thicknesses between 10 - 125 nm. The mirror fabricated by depositing the Al films on single crystal silicon (100) substrates using E beam evaporation deposition machine to get optimum flatness that is desired in the mirror fabrication. After that, reflection of the mirrors was measured using UV 2200 Spectrophotometer. Reflection also simulated using a powerful simulation tool, Opti-FDTD finite element package and the results were compared. Both of grain size and surface roughness of the films were measured using Scanning Electron Microscopy (SEM) and Atomic Force Microscope (AFM, tapping mode), respectively, to study the reason of deviation between the simulated and experimental results of reflection. In addition, elastic modulus of the films was measured using nanoindentation method using AFM (Contact mode) and the results compared to bulk value. General increasing in the reflection as the film thickness increased and decrease in

the reflection as the wavelength increased was observed. At lower film thickness, 10 nm, the film had very low reflection compared to other films. After comparison between the experiments and the simulation results, it appears that deviation between them increases as the film thickness decrease and the topography of the metal surface is the reason behind that. Finally, elastic modulus of the films was determined and it shows that there is decrease in the films modulus and sharp decrease at 50 nm film.

1-2-038	
Title	**Development of Antibacterial Structures and Films Using Ground Plants, Extracts/ Essential Oil**
Author	Hanan Abdali
Program	Master of Science in Chemistry
University	Montreal University
Year	2014

Abstract
Food packaging research has been mainly targeted towards improving food quality and safety. Based on international standards proper food packaging provides longer product shelf life. New active packaging strategies represent the focal point in development in the packaging industry, where new multifunctional materials and the use of natural antimicrobial agents are gaining increasing interest. The development of new materials, and particularly innovative natural antimicrobial materials, may assist to address these requirements coupled with other packaging functions such as: food protection and preservation, marketing and smart communication to consumers. Medicinal plants like clove, thyme, rosemary, lemon grass, cinnamon and others have the ability to inhibit the growth of a vast selection of pathogenic microorganisms due to the presence of essential oils (EOs) and their compounds. The antimicrobial properties of EOs and plant extracts have been known and used for many years. Nevertheless, some of these EOs and their compounds have shown varying degrees of toxicity and adverse effects on human health. The thermogravimetric analysis (TGA) results in our study have clearly demonstrated that while studying the release of thymol from LDPE and LLDPE films to the surface of the films over time, at high temperatures, the evaporation rate of thymol increased during blending with LDPE and LLDPE by using twin-screw extruder and Brabender. Therefore, it was decided to work with the plant powders themselves instead of the essentials oils. In the first step, the antimicrobial activities of ground powdered plants such as sage, clove bud, clove leaf, lemongrass, black mustard seed, wild mint leaf, and thyme leaf against Escherichia coli (E. coli (DH5α)) were evaluated and compared. The clove bud powder (Syzygium aromaticum) showed the highest antimicrobial activity compared to the other ground plants used in this study. Then the minimum bactericidal concentration (MBC) of the clove bud powder against E. coli was measured by using two different methods of sterilization. The results showed that, the MBC values of the clove bud powder without sterilization was 200 mg/ml and with two different methods of sterilization were ≥ 50 mg/ml. The second step of this study was to investigate the growth inhibitory effect of the powdered clove bud against one Gram-negative bacteria Escherichia coli (E. coli) (DH5α) and two Gram-positive Listeria innocua (L. innocua) (LSPQ3284) and Staphylococcus aureus (S. aureus) (54-73) microorganisms, the minimum inhibitory concentration (MIC) and the minimum bactericidal concentration (MBC) tests were carried out using the agar plate counting technique. The findings indicated that the clove bud powder had a growth inhibitory effect against the tested bacteria. The MIC and MBC values have clearly shown that the clove bud powder has higher antimicrobial activity against S. aureus than E. coli and L. innocua, where the MIC and MBC values of clove bud powder against S. aureus were 100 mg/ml and 120 mg/ml, respectively. The particle size distribution of clove bud powder was measured and the size of the particle was reduced by using the dry milling technique. In the final step, the antimicrobial activity of the clove bud powder was evaluated when applied into films and fibers. Poly (ε-caprolactone) (PCL) and clove bud powder was produced via the electospinning process, then, the clove bud powder was embedded into the low-density polyethylene (LDPE) film in this study. The antimicrobial activity of the clove bud powder did not show a strong antimicrobial effect when incorporated into PCL electrospun fibers, which was attributed to the improper dissolution of powders in the solvents (DCM: DMF). The LDPE film embedded with the clove bud powder when coated twice, showed the strongest antimicrobial effects against E. coli bacteria.

1-2-039	
Title	**The Effect of Nigelia Sativa on The Murine Melanoma Cell Line, B16-BL6**
Author	Hessah Aldawd
Program	Master of Science in Biology
University	Laurentian University
Year	2014

Abstract
Nigella sativa, commonly known as black seed, belongs to the botanical family of Ranunculaceae. Over recent years, there has been a growing interest in natural products including N. sativa due to their promising as anti-cancer effects. Several in vitro studies to determine the effect of N. sativa on the growth of the malignant melanoma cell line, B16-BL6, and non-malignant cell lines were performed. We have shown that treatment of cells with a 70% ethanol extract of N. sativa can significantly inhibit proliferation of both malignant and non-malignant cells. Treatment with an aqueous extract of N. sativa can reduce the growth of malignant cell proliferation while having a lesser effect on non- malignant cell proliferation. Ethanol extracts of N. sativa can induce apoptosis in treated B16-BL6 cells as confirmed using the Acridine Orange/Ethidium Bromide staining assay, Tunnel assay, and Caspase activity assay. Some studies revealed that Thymoquinone is an important bioactive component of N. sativa and has anti-cancer effect. However, we aim to further investigate the active components of N. sativa using High-Performance Liquid Chromatography (HPLC) to identify the components that may be more effective in inhibiting cancer cell proliferation.

1-2-040	
Title	**Risk Assessment of Arsenic in Arabic Area Rice Using Online Leaching and Speciation Analysis By Ion Exchange Chromatography Coupled to Inductively Coupled**
Author	Randa Althobiti
Program	Master of Science in Chemistry
University	Queen's University
Year	2014

Abstract
For the first time, a simple on-line continuous leaching method, where artificial gastrointestinal fluids are sequentially pumped through a mini-column of food while As is continuously monitored by inductively coupled plasma mass spectrometry (ICP-MS), is used to assess the bio-accessibility of As in Arabic area rice. This on-line leaching method offers several advantages over batch methods; most notably, it provides real-time leaching data and involves a shorter and simpler sample preparation, which reduces the risk of contamination. There was no significant difference between the bio-accessible As concentrations measured by on-line and batch methods, although, with the on-line method, the concentration sum of As leached and As left in the residue was closer to the total As concentration according to a Student's t-test at the 95 % confidence level, which is commensurate with the batch method being more subject to contamination. Leaching with artificial saliva released As the most, followed by artificial gastric juice and intestinal fluid. Both the on-line and batch methods showed that 20%-95% of As in rice samples is bio-accessible. The results of As bio-accessibility in unwashed raw rice and in washed cooked rice after simply washing the rice with water prior to cooking were similar, indicating that cooking had no significant effect on As bio-accessibility.
A method based on anion-exchange chromatography with on-line detection by ICP-MS was also used for the speciation analysis of As. For better risk assessment, speciation analysis was performed on washed and cooked samples. Because saliva leached the most as, the determination of As species was only conducted in saliva leachates. The results revealed that the concentration of inorganic as species in rice varies to some extent according to the samples' location. In general, As(V) predominated over As(III), monomethylarsonic acid (MMA), and dimethylarsinic acid (DMA). Although As(V) is considered to be more toxic than MMA and DMA, this investigation indicates that the concentration of As(V) can be reduced significantly by washing rice several times, thereby decreasing the risk of arsenic poisoning.

1-2-041	
Title	**Brillouin Light Scattering Studies of Topological Insulators Bi2Se3, Sb2Te3, and Bi2Te3**
Author	Jamal Najr Alnofiay
Program	Master of Science in Physics
University	Memorial University of Newfoundland
Year	2014

Abstract
Brillouin Light Scattering has been used to examine acoustic waves in three different Topological Insulators: Bismuth Selenide Bi2Se3, Antimony Telluride Sb2Te3, and Bismuth Telluride Bi2Te3. Two samples of each material were studied to ensure the accuracy of the results obtained. In general, surface mode, quasi-transverse, and quasi-longitudinal bulk modes were observed in all these materials. Rayleigh surface phonon velocities were obtained for the first time from the corresponding Brillouin peak frequency shifts. Quasi-transverse and quasi-longitudinal bulk mode velocities were also obtained. Elastic constants C33 and C44 were calculated from the measured bulk-velocities. Both bulk acoustic phonon velocities and elastic constants were compared to those obtained in previous studies. All results obtained have been found to be in good agreement with both experimental and some theoretical available studies.

1-2-042	
Title	**Synthesis and Complexation Studies of New Triazole Bridged-Calix[4]arenes and Attempts to Synthesize a Modified Homooxacalix [4] acenaphthene**
Author	Mahmood Aljabri
Program	Master of Science in Chemistry
University	Memorial University of Newfoundland
Year	2014

Abstract
The possibility of synthesizing compounds capable of selective binding to metal ions has been extensively investigated. Such investigations mainly aim at making

compounds available for metal ion testing. This work has been motivated by the fact that synthesizing proper receptors that can selectively and specifically interact with metal ions of interest is important for the development of supramolecular chemistry. This thesis begins by providing a brief introduction to the main concept of supramolecular chemistry, often referred to as "Host-Guest Chemistry". Chapter 1 also describes the forces that control supramolecular interactions between host and guest molecules. A thorough discussion about calixarenes, whose synthesis and complexation properties were one of the main objectives of this work, and the techniques used for the complexation studies are also presented in Chapter 1. In Chapter 2, the syntheses of two new molecular receptors namely bis(naphthyl)methane-bridged macrocycles are described. These two receptors were subsequently characterized by 1H- and 13C-NMR spectroscopy and mass spectrometry. Chapter 2 also presents a study of the complexation properties of these receptors with different metal ions of interest which have been investigated using 1H-NMR and fluorescence spectroscopy. Our results have shown that these two compounds are selective towards Fe3+, Hg2+ and Cu2+ in a mixed 4:1 acetonitrile: chloroform solvent. Chapter 3 presents the synthesis procedures that have been followed to develop fluorescent chemosensors based on acenaphthene-modified calix[4] arene-triazoles. The selectivity of these chemosensors towards metal ions has been studied using fluorescence and 1H-NMR spectroscopy. The results obtained from these techniques which show their complexation properties are explained in detail in this chapter. In Chapter 4, attempts made towards the modification of homooxacaxalix-acenaphthene are presented. This modification has been performed with the hope that such a compound could selectively bind C70 fullerene, since the prototype compound was found to be selective towards C60 fullerene. Synthetic work towards the modification of homooxacaxalix[4]acenaphthene is ongoing.

1-2-043	
Title	**Characterization of Two Component Systems of Acinetobacter baumannii**
Author	Yasser Alsaadi
Program	Masters of Science in Applied Bioscience
University	University of Ontario Institute of Technology
Year	2014

Abstract
Acinetobacter baumannii is an important opportunistic pathogen of hospital acquired infection, particularly in intensive care units. The emergence and rapid spread of multidrug-resistant A. baumannii strains has become a major health threat worldwide which severely limits the treatment options for this pathogen. This work investigated global mechanisms of antibiotic resistance and virulence of the problematic pathogen A. baumannii, in particular those mediated by two component regulatory systems (TCSs), that typically consist of a membrane bound sensor kinase and a cognate response regulator. Bacterial TCSs play an important role in the regulation of adaptation to different environmental conditions. Five TCSs in A. baumannii have been characterized; however, there are a number of putative two component systems encoded in the genome of A. baumannii that await detailed characterization. Differential expressions of six different TCSs was observed in two clinical isolates of A. baumannii AB030 and AB031, and whole-genome sequencing of both clinical isolates was performed. Data obtained from the comparative whole-genome analysis revealed the presence of an insertion element in the orphan TCSs response regulator A1S_2006 in AB030, mutation in the promoter region and an 1189 DNA insertion element were present in AdeRS system in AB031. The whole-genome sequencing analysis of TCSs operons in AB030 and AB031 also identified sequence polymorphisms that could alter the activities of these TCSs in AB030 and AB031. Finally, we identified A1S_3229_30 an excellent candidate that may act as global regulator of antibiotic and virulence in A. baumannii. The sequence of A1S_3229_30 was highly conserved among the wild-type ATCC17978, AB030 and AB031, and showed 73% identity to the amgRS operon that encodes for the well characterized AmgRS system that confer resistance to aminoglycoside antibiotics and required for the virulence of the problematic pathogen P. aeruginosa.

1-2-044	
Title	**A Map Reduce Relational-Database Index-Selection Tool**
Author	Fatimah Alsayoud
Program	Masters of Science in Computer Science
University	Ryerson University
Year	2014

Abstract
The physical design of data storage is a critical administrative task for optimizing system performance. Selecting indices properly is a fundamental aspect of the system design. Index selection optimization has been widely studied in Data Base Management Systems (DBMSs). However, current DBMS are not appropriate platforms for many data nowadays. As a result, several systems have been developed to deal with these data. An index-selection optimization approach is still needed in these systems. In fact, it is even more necessary since they process Big Data. Under these circumstances, developing an index-selection tool for large-scale systems is a vital requirement. This thesis focuses on the index-selection process in HadoopDB. The main contribution of the thesis is to utilize data mining techniques to develop a tool for recommending an optimal index-set configuration. Evaluation shows significant performance improvement on the tasks running time with the tool index-set configuration.

1-2-045	
Title	**Identifying Escherichia coli Factors that Selectively Bind the mRNA of Secreted Proteins**
Author	Walaa Abdulhadi H. Hakeem
Program	Masters of Science in Biology
University	Laurentian University
Year	2014

Abstract
It is well accepted that the majority of secreted proteins are targeted to the secretory pathway through amino acid signal sequences located at the N–terminus of the pre-protein during the initial stages of translation on the ribosome. This is true in both eukaryotic and prokaryotic systems. These signal sequences display distinct structural features such as charged/hydrophilic residues at each termini and a continuous hydrophobic stretch of amino acids between them. The signal-recognition particle (SRP), which targets the ribosome to the membrane translocon for secretion of the protein, is hypothesized to recognize and these features and therefore differentiate these proteins from non-secretory proteins. Recent work in other laboratories has suggested a role for the mRNA itself, rather than only the amino acid sequence of the N– terminus of the pre-protein as playing a role in targeting the pre-protein-ribosome complex to the translocon within the membrane. To test this hypothesis, direct interaction between mRNAs encoding secreted proteins and the E. coli SRP equivalent (Ffh) was pursued using pull down assays. The mRNA's used as bait corresponded to the N-terminal 40 amino acids of secreted and cytosolic proteins including periplasmic propyl isomerase chaperone SurA (as a model secretory protein with a cleavable signal peptide) and the cytoplasmic protein 3-isopropyl malate dehydrogenase (IsodH). Additionally, the mRNA of two other proteins, PhoA (secreted) and GMP (cytoplasmic), were used but in these mRNA the 5' UTR were also included in case these regions were involved in SRP recognition. Following extensive optimizations and modifications of these experiments, the Ffh protein (the Escherichia coli SRP homolog) could not be isolated from cytoplasmic extracts of E. coli with the pull down assays. One interesting finding however was that the mRNA of the IsodH protein was pulled down using its cognate mRNA transcript as bait. This implies a role for this enzyme in regulating its own levels in the cell by binding to and potentially modulating its translation. Other factors involved in DNA and RNA binding were also isolated and include RNase and ribosomal proteins, amongst others. It can therefore be concluded that under these experimental conditions, the mRNA hypothesis for targeting protein secretion could not be supported.

1-2-046	
Title	**Isolation and Characterization of Steroidal Alkaloids from Buxus macowanii Using Chromatographic and Spectroscopic Methods**
Author	Manal Almalki
Program	Masters of Science in Chemistry
University	University of Manitoba
Year	2014

Abstract
This thesis describes the isolation and characterization of four steroidal alkaloids from Buxus macowanii. Phytochemical investigation of Buxus macowanii resulted in the isolation of two novel steroidal alkaloids, Nb-demethyl-6-deoxy-16-acetoxy O2-natafuranamin (112), and 6-deoxy-16-acetoxy O10-natafuranamin (113) alongside two known steroidal alkaloids, cycloprotobuxine-D (114), and cycloprotobuxine-F (115). Compounds 114 and 115 have been isolated for the first time from B. macowanii. Structure of compounds 112-115 was elucidated with aid of UV, IR, mass, and 1D and 2D NMR spectroscopy. These compounds showed different level of anti-AChE activity. Among all the isolates, compound 112 was found to be significantly active against AChE with an IC50 value of 4.7 μM. The bioactivity of this new compound nearly comparable to those of huperzine (IC50 = 1.7 μM) and O2-natafuranamine (IC50 = 3.0 μM).

1-2-047	
Title	**Evaluating Wind Power Generating Capacity Adequacy Using MCMC Time Series Model**
Author	Abdulaziz Almutairi
Program	Masters of Science in Electrical and Computer Engineering
University	University of Waterloo
Year	2014

Abstract
In recent decades, there has been a dramatic increase in utilizing renewable energy resources by many power utilities around the world. The tendency toward using renewable energy resources is mainly due to the environmental concerns and fuel cost escalation associated with conventional generation. Among renewable resources, wind energy is a proven source for power generation that positively contributes to global, social, and economic environments. Nowadays, wind energy is a mature, abundant, and emission-free power generation technology, and a significant percentage of electrical power demand is supplied by wind. However, the intermittent nature of wind generation introduces various challenges for both

the operation and planning of power systems. One of the problems of increasing the use of wind generation can be seen from the reliability assessment point of view. Indeed, there is a recognized need to study the contribution of wind generation to overall system reliability and to ensure the adequacy of generation capacity. Wind power generation is different than conventional generation (i.e., fossil-based) in that wind power is variable and non-controllable, which can affect power system reliability. Therefore, modeling wind generation in a reliability assessment calls for reliable stochastic simulation techniques that can properly handle the uncertainty and precisely reflect the variable characteristics of the wind at a particular site. The research presented in this thesis focuses on developing a reliable and appropriate model for the reliability assessment of power system generation, including wind energy sources. This thesis uses the Monte Carlo Markov Chain (MCMC) technique due to its ability to produce synthetic wind power time series data that sufficiently consider the randomness of the wind along with keeping the statistical and temporal characteristics of the measured data. Thereafter, the synthetic wind power time series based on MCMC is coupled with a probabilistic sequential methodology for conventional generation in order to assess the overall adequacy of generating systems. The study presented in this thesis is applied to two test systems, designated the Roy Billinton Test System (RBTS) and the IEEE Reliability Test System (IEEE-RTS). A wide range of reliability indices are then calculated, including loss of load expectation (LOLE), loss of energy expectation (LOEE), loss of load frequency (LOLF), energy not supplied per interruption (ENSPI), demand not supplied per interruption (DNSPI), and expected duration per interruption (EDPI). To show the effectiveness of the proposed methodology, a further study is conducted to compare the obtained reliability indices using the MCMC model and the ARMA model, which is often used in reliability studies. The methodologies and the results illustrated in this thesis aim to provide useful information to planners or developers who endeavor to assess the reliability of power generation systems that contain wind generation.

1-2-048	
Title	**FAK and PYK2 Are Specifically Associated With The Activated Phagocytic Receptor Complexes From Human U937 Cells**
Author	Marwan G. Abid Althagafi
Program	Masters of Science in Molecular Science
University	Ryerson University
Year	2014

Abstract

The innate immune system is the first shield against foreign attack inside the human body, and it is usually carried out with phagocytosis. An essential macrophage cell surface protein is the Fc receptor which contributes to the engulfment of unknown antigens. One of the important members of Fc receptors is the gamma receptor that binds to the immunoglobulin G (IgG) ligand. Another key receptor in this study is the CD36 receptor, which plays a crucial role in the progression of atherosclerosis, the hardening of artieries, with its ligand oxidized low-density lipoprotein (OxLDL). In this report, protein tyrosine kinase enzymes have been detected in the involvement of receptor complexes with human U937 macrophages, specifically PTK2 and PTK2b genes. Protein tyrosine kinases were known to promote cell migration as a main player in intracellular signal transduction cascades in relation to extracellular stimuli. Cell surface proteins are essential for the immunization of various diseases; yet, the molecular machinery of surface receptors remains unclear. This research primarily examined the dynamic nature of protein tyrosine kinases in an ongoing investigation of macrophage cell surface receptors, particularly the role of Fc γ and CD36 receptors with their ligands IgG and oxLDL coated beads in phagocytosis. Our report demonstrates a novel role of PTK2 and PTK2b functions in relation to U937 CD36-mediated phagocytosis. The Phagocytic efficiency of U937 macrophages was analyzed using laser scanning confocal microscope after silencing the cells with siRNA followed by quantitative counting of phagocytosis. The PF drug FAK inhibitor was also introduced to compare the phagocytic efficiency of siRNA cells.

1-2-049	
Title	**Analysis of Malware and Domain Name System Traffic**
Author	Hamad Mohammed Binsalleeh
Program	Masters of Science in Computer Science
University	Concordia University
Year	2014

Abstract

Malicious domains host Command and Control servers that are used to instruct infected machines to perpetuate malicious activities such as sending spam, stealing credentials, and launching denial of service attacks. Both static and dynamic analysis of malware as well as monitoring Domain Name System (DNS) traffic provide valuable insight into such malicious activities and help security experts detect and protect against many cyber-attacks. Advanced crime ware toolkits were responsible for many recent cyber-attacks. In order to understand the inner workings of such toolkits, we present a detailed reverse engineering analysis of the Zeus crime ware toolkit to unveil its underlying architecture and enable its mitigation. Our analysis allows us to provide a breakdown for the structure of the Zeus botnet network messages. In the second part of this work, we develop a framework for analyzing dynamic analysis reports of malware samples. This framework can be used to extract valuable cyber intelligence from the analyzed malware. The obtained intelligence helps reveal more insight into different cyber-attacks and uncovers abused domains as well as malicious infrastructure networks. Based on this framework, we develop a severity ranking system for domain names. The system leverages the interaction between domain names and malware samples to extract indicators for malicious behaviors or abuse actions. The system utilizes these behavioral features on a daily basis to produce severity or abuse scores for domain names. Since our system assigns maliciousness scores that describe the level of abuse for each analyzed domain name, it can be considered as a complementary component to existing (binary) reputation systems, which produce long lists with no priorities. We also developed a severity system for name servers based on passive DNS traffic. The system leverages the domain names that reside under the authority of name servers to extract indicators for malicious behaviors or abuse actions. It also utilizes these behavioral features on a daily basis to dynamically produce severity or abuse scores for name servers. Finally, we present a system to characterize and detect the payload distribution channels within passive DNS traffic. Our system observes the DNS zone activities of access counts of each resource record type and determines payload distribution channels. Our experiments on near real-time passive DNS traffic demonstrate that our system can detect several resilient malicious payload distribution channels.

1-2-050	
Title	**Inferring systemic functional language models**
Author	Nasser Alsadhan
Program	Masters of Science in Computer Science
University	Queen's University
Year	2014

Abstract

Language production in the brain is a complicated process that is not yet fully understood. The bag-of-words model, which considers the frequencies of each word in a document, is a useful approach in many text mining fields, but it does not provide any information about how language is produced. Systemic networks model language as a set of choices, where each choice operates in a particular context. Capturing patterns of choices used to create a particular document provides useful information about the authors and what they were feeling and thinking when they created the document. However, producing systemic networks manually is expensive. We define an automated way of producing systemic networks. Given a set of documents, we cluster words of interest into smaller groups, by using Non-Negative Matrix Factorization (NNMF). We create hierarchical clusters that we interpret as systemic networks. We validate the produced systemic networks in a number of ways; we use them in an authorship prediction problem and compare their results to that of the bag-of-words model, as well as how well they cluster the different choices made by the authors. We also generate random systemic networks and compare their performance with the produced systemic networks.

1-2-051	
Title	**NFC-mobile Payment System Based on POS Terminal Authentication**
Author	Bader Munif Aldughayfiq
Program	Masters of Science in Computer Science
University	Dalhousie University
Year	2014

Abstract

Payment development has increased rapidly in recent years. A most recent development is contactless mobile payment systems that use NFC-enabled phones. Therefore, many researchers have proposed payment systems that use NFC-enabled phones in attempt to achieve availability, simplicity, security, and privacy in a transaction. Moreover, NFC can be subject to a number of attacks and more specifically a recent attack called relay attack. In this situation, an attacker will extend the range of communication using NFC devices and make an unauthorized payment with the victim's device. This thesis proposes a new mobile payment system using an NFC-enabled phone. Our proposed system is based on POS authentication by using the ability of NFC devices to read tags, where this tag will contain a random message generated by the POS. The proposed system also uses a new cryptography approach that offers a dynamic pre-shared symmetric key mechanism to protect banking information.

1-2-052	
Title	**Online Virtual Network Provisioning In Distributed Cloud Computing Data Centers**
Author	Khaled Mefarh Alhazmi
Program	Masters of Science in Computer Engineering
University	Western University
Year	2014

Abstract

Efficient virtualization methodologies constitute the core of cloud computing data center implementation. Clients are attracted to the cloud model by the ability to scale available resources dynamically and the flexibility in payment options. However, performance hiccups can push them to return to the buy-and-maintain model. Virtualization plays a key role in the synchronous management of the thousands

of servers along with clients' data residing on them. To achieve seamless virtualization, cloud providers require a system that performs the function of virtual network mapping. This includes receiving the cloud client requests and allocating computational and network resources in a way that guarantees the quality of service conditions for clients while maximizing the data center resource utilization and providers' revenue. In this thesis, we introduce a comprehensive system to solve the problem of virtual network mapping for a set of connection requests sent by cloud clients. Connections are collected in time intervals called windows. Subsequently, node mapping and link mapping are performed. Different window size selection schemes are introduced and evaluated. Three schemes to prioritize connections are used and their effect is assessed. Moreover, a technique dealing with connections spanning over more than a window is introduced. Simulation results show that the dynamic window size algorithm achieves cloud service providers objectives in terms of generated revenue, served connections ratio, resource utilization and computational overhead. In addition, experimental results show that handling spanning connections independently improves the results for the performance metrics measured. Moreover, in a cloud infrastructure, handling all resources efficiently in their usage, management and energy consumption is challenging. We propose an energy efficient technique for embedding online virtual network requests in cloud data centers. The core focus of this study is to manage energy efficiently in cloud environment. A fixed windowing technique with spanning connections is used. Our algorithm, and a technique for randomly embedding nodes and links are also explained. The results clearly show that the algorithm used in this study generated better results in terms of energy consumption, served connections and revenue generation.

1-2-053	
Title	**Down-Converter Gilbert-Cell Mixer for WiMax Applications using 0.15µm GaAs HEMT Technology**
Author	Abdullah Mohammed H. Almohaimeed
Program	Master of Science in Electrical Engineering
University	University of Ottawa
Year	2014

Abstract

The Worldwide Interoperability for Microwave Access, or WiMax, is a wireless communication technique based on IEEE 802.16 standards. Its advantage of sending high data rates over long distances, while using a single base station to cover a large area, has made this technique a flexible and reliable solution for public wireless networks. WiMax has two main types of networks: Fixed and Mobile. The most popular transceiver used in WiMax applications is the "Direct-Conversion Architecture" due to its high level of integration and less component requirements, which leads to reduced power dissipation.
In Direct Conversion Architecture, the mixer is a key block in the transceiver chain. Depending on design specifications and constraints, different types of mixers may be considered. However, the most appropriate down converter mixer for WiMax applications is the Gilbert-cell mixer. This thesis will then explore the design of a down converter Gilbert-Cell Mixer within the realm of Fixed WiMax technology. This design was achieved in the commercial circuit simulator Advanced Design System (ADS) using the 0.15mm InGaAs pHEMT technology process provided by Win Semiconductor Crop.

1-2-054	
Title	**Experimental Study Of The Performance Of a Vertical and a Horizontal Ground Loops Coupled To a Ground Source Heat Systems**
Author	Waleed Saeed Alzahrani
Program	Master of Science in Mechanical and Industrial Engineering
University	Ryerson University
Year	2014

Abstract

The performance of vertical and horizontal ground loops coupled to a Ground-Source Heat Pump (GSHP) was investigated under four different scenarios. For this purpose, an experimental set-up was designed and constructed at the Archetype Sustainable houses in Vaughan, Ontario, Canada. In the first two tests, the two vertical ground loops coupled to the GSHP were tested in heating, and cooling modes. In heating mode, the GSHP COP ranged between 2.7 and 3.15. In cooling mode, the GSHP performed better than the heating mode with COP range of 3.75 and 5.4. In the last two tests, two scenarios were tested to compare the horizontal and the vertical ground loops in cooling mode. In the first scenario, the ground loop flow was divided equally between the loops and the GSHP overall COP was 5.42. The last test used equal Reynolds number in both loops and the GSHP overall COP was 5.36

1-2-055	
Title	**Arabic E-Reading: Studies on Legibility and Readability for Personal Digital Assistants**
Author	Mrouj Almuhajri
Program	Master of Computer Science- Computer Science and Software Engineering
University	Concordia University
Year	2013

Abstract

Electronic reading opens new avenues especially with the advance of modern reading devices. The new generation of Personal Digital Assistants PDAs becomes more popular and more affordable. Therefore, while displays keep shrinking in size, it is needed to re-evaluate typefaces used in these devices as they form a substantial component in the reading field. In this research, a survey was conducted to identify Arab community preferences of 13 selected fonts on PDAs. Also, it inferred the popularity of using these devices for reading. From the participation of 53 subjects in this survey, it was deduced that e-reading using PDAs among Arab communities is increasing dramatically, which necessitates the need of investigation for better fonts used in these devices. Moreover, the results from font evaluation based on people preferences reduced the number of studied fonts to six for further examination. Three experiments have been conducted to investigate six Arabic fonts on PDAs from the perspective of legibility and readability to come up with the best fonts. In all three experiments, 138 subjects participated doing i3arabi Test over iPad and iPad mini devices. Two experiments were done to evaluate the legibility of the selected fonts. However, due to the nature of Arabic language, it was difficult to apply the same methods used to test Latin fonts. A pilot study was done to understand the problem, and results supported the mentioned difficulty. Therefore, a novel method named M-Short-Exposure method has been proposed to investigate the legibility of isolated Arabic letters and connected letters. The results indicate Geeza Pro and Uthman SH fonts yielded the best performance in the first and second experiments respectively. Then an integration result has been concluded for legibility experiments confirming Geeza Pro and Uthman SH as the most legible fonts to be used on PDAs. In readability experiment, reading speed and comprehension questions have been used over running texts of the selected fonts to measure their readability. It has been found that there is no correlation between reading speed and comprehension factors. Though, the results provide Yakout Reg and Uthman SH fonts as the most appropriate fonts to be used on PDAs for e-reading. Finally, Our findings provide the most legible and/or readable font(s) among the Tested set. Moreover, some recommendations have been made on better use of legible and/or readable Arabic fonts for different purposes.

1-2-056	
Title	**Integrated Modelling for Supply Chain Planning and Multi-Echelon Safety Stock Optimization in Manufacturing Systems**
Author	Abdullah Yahia M Alfaify
Program	Master of Applied Science in Mechanical Engineering
University	University of Ottawa
Year	2014

Abstract

Optimizing supply chain is the most successful key for manufacturing systems to be competitive. Supply chain (SC) has gotten intensive research works at all levels: strategic, tactical, and operational levels. These levels, in some researches, have integrated with each other or integrated with other planning issues such as inventory. Optimizing inventory location and level of safety stock at all supply chain partners is essential in high competitive markets to manage uncertain demand and service level. Many works have been developed to optimize the location of safety stock along supply chain, which is important for fast response to fluctuation in demand. However, most of these studies focus on the design stage of a supply chain. Because demand at different horizon times may vary according to different reasons such as the entry of different competitors on market or seasonal demand, safety stock should be optimized accordingly. At the planning (tactical) level, safety stock can be controlled according to each planning horizon to satisfy customer demand at lower cost instead of being fixed by a decision taken at the strategic level. On the other hand, most studies that consider safety stock optimization are tied to a specific system structure such as serial, assembly, or distribution structure. This research focuses on formulating two different models. First, a multiechelon safety stock optimization (MESSO) model for general supply chain topology is formulated. Then, it is converted into a robust form (RMESSO) which considers all possible fluctuation in demand and gives a solution that is valid under any circumstances. Second, the safety stock optimization model is integrated with tactical supply chain planning (SCP) for manufacturing systems. The integrated model is a multi-objective mixed integer non-linear programming (MINLP) model. This model aims to minimize the total cost and total time. A case study for each model is provided and the numerical results are analyzed.

1-2-057	
Title	**Evaluating the Dynamics of Knowledge Based Network Through Simulation: The Case of Canadian Nanotechnology Industry**
Author	Nuha E. Zamzami
Program	Master of Applied Science in Quality Systems Engineering
University	Concordia University
Year	2014

Abstract

Collaboration is a major factor in the knowledge and innovation creation in emerging science-driven industries, where the technology is rapidly changing and constantly evolving, such as nanotechnology. The scientific collaborations among individuals and organizations form knowledge co-creation network within which information is

shared, innovative ideas are exchanged and new knowledge is generated. Although various simulation attempts have been carried out recently to analyze the performance of such networks at the firm level, the individual level has not been much explored in the literature yet. The objective of this thesis is to investigate the role of individual scientists and their collaborations in enhancing the knowledge flows, and consequently the scientific production within the Canadian nanotechnology scientists. The methodology involves two main phases. First, in order to understand the collaborative behavior of scientists in the real world, the data on all the nanotechnology journal publications in Canada was extracted from the SCOPUS database and the scientists' research performance and partnership history was analyzed using social network analysis. Moreover, the predominant properties that make a scientist sufficiently attractive to be selected as a research partner were determined using data mining and through a questionnaire sent directly to the researchers selected from our database. In the second phase, an agent- based model using Netlogo has been developed to simulate the knowledge-based network where several factors regarding the ratio, existence and absence of various categories of scientists could be controlled. It was found that scientists in centralized positions in such network have a considerable positive impact on the knowledge flows, while loyalty and cliquishness negatively affected the knowledge transmission. Star scientists appear to play a substitutive role in the network as most famous and trustable partners to be selected when usual collaborators are scarce or missing. Besides, the changes in the performance of some categories in case of the absence of others have been also observed. The major contribution of this work stems from the fact that the developed simulation model is the first one, which is fully based on the real data and on the observed behavior of the scientists in knowledge-based network.

1-2-058	
Title	**Molecular and Cellular Analysis of Disease Resistance Mechanisms in Wheat**
Author	Ashwaq Omar Albaraky
Program	Master of Science in Biology
University	Carleton University
Year	2014

Abstract

Many abiotic stresses such as drought, high salinity, high or low temperatures, and biotic stresses such as insect attacks or pathogen infection affect plant growth and development. Plants have developed specific mechanisms to detect external signals with proper physiological responses in order to survive under these challenges. In order to respond to these effects, many pathways are activated and protein phosphorylation is required for this activation. One of the phosphorylation pathways is mitogen activated protein kinase (MAPK) pathway. The MAPK pathway consists of at least three enzymes including MAPK, MAPK kinase (MAPKK), and MAPK kinase kinase (MAPKKK). MAPK is activated by MAPKK, which is in turn activated by a MAPKKK. In response to abiotic and biotic stresses, programmed cell death (PCD) may also be triggered. In this study, we have examined PCD in wheat (Triticum aestivum) leaves from a susceptible and a resistant cultivar to Fusarium head blight. The results have shown that there was cell death in wheat, which appeared to be necrosis and associated with concurrent accumulation of reactive oxygen species (ROS). Furthermore, a set of DNA repairing genes has been studied by RT-PCR including RAD50, RAD51, and MSH2. Our results have indicated that RAD50 and RAD51 could be involved in DNA damage repairing in wheat leaves when treated with fungal toxin Fumonisin Bl (FBI) or plant defense signaling molecule salicylic acid (SA). However, there was no change at transcriptional level for MSH2, indicating that some DNA repairing genes may work at protein level with other components in the DNA repairing system. β-1, 3-glucanase (a defense enzyme) and glutamine synthetase (a vegetative growth related enzyme) have been studied. There was no change in the enzyme activities after FB1 or SA treatment. We have also examined FLR (a MAPKKK) gene expression by RT-PCR. Its transcript level was not changed by either SA or FB1 treatment. Our work may contribute to the development of a strategy to manipulate wheat disease resistance.

1-2-059	
Title	**A Biofeedback-Based Physical Activity Advisory System**
Author	Hawazin Faiz Badawi
Program	Master in Electrical and Computer Engineering
University	University of Ottawa
Year	2014

Abstract

Physical inactivity, a phenomenon on the rise in numerous countries, has gained global attention because of its negative effects on humans' physical wellness. It represents a stumbling block in the way of living a healthy lifestyle. Recent statistics of World Health Organization (WHO) ranked physical inactivity as the fourth leading risk factors for adults' mortality all over the world [1]. Also, physical inactivity is considered as one of the most prominent contributing factors in several severe diseases such as breast and colon cancer, diabetes and many heart- related diseases . Therefore, improving daily physical activity levels is an urgent societal goal in order to tackle the physical inactivity problem. Achieving such challenging goal requires addressing the factors that affect adults' physical activity. In fact, there are many factors that lead to physical inactivity such as the busy lifestyle, lack of awareness regarding required physical activity levels and other environmental factors. Physical activity advisory systems can be seen as a promising solution for the inactivity problem. In order to enhance their effectiveness, these systems must take into account most of the factors previously mentioned. In this thesis, we aim to provide a method to promote the increase of daily physical activity levels by leveraging biofeedback and context awareness features. In order to achieve this purpose, we design and develop an algorithm that provides a user with personalized physical activity advice. This advice increases the user's awareness through the use of calories expenditure. To add a context awareness component to our algorithm, we propose an extension of the Ubiquitous Biofeedback (UB) Model . We believe that combining the biofeedback feature with context awareness component would make the system sensitive to the user's status and thus increase the chances of her or him following it. This advice represents the daily-recommended amount of physical activity for maintaining healthy lifestyle according to and other international organizations' recommendations. In order to prove the concept of the proposed algorithm and extended UB Model, we design and develop a system called «CAB». It is a context aware biofeedback system that tracks user's physical movement and estimates the amount of calories burnt to provide the user with a personalized physical activity advice that considers user's current status, preferences and surrounding environmental context. The system utilizes a biofeedback sensor and a smart phone in order to provide the personalized advice that is delivered to the user in a form of multiple-mode feedback/notification (text, audio and haptic). In this thesis, we provide detailed information about the design requirements, the design model, the proposed system and its related hardware components and software modules. The qualitative and quantitative evaluation of the developed system CAB shows a positive impact on the experiment sample group by motivating the participants to reach or exceed the recommended number of calories to be burned daily for most of the evaluation days.

1-2-060	
Title	**Deposition and Characterization of Mesoporous Silica Coatings On Magnesium Alloys**
Author	Afrah Al Hegy
Program	Master of Science in Chemical Sciences
University	Laurentian University
Year	2014

Abstract

In recent years, magnesium and magnesium alloys have received much attention as a new biomaterial in orthopaedic applications due to their biodegradability, biocompatibility, and their mechanical properties that are similar to natural bone tissue. The most common problem associated with magnesium as a biomaterial is low corrosion resistance in physiological solutions. This decreases the mechanical integrity of the implants in the early stages of healing and has a negative impact on the overall biocompatibility. The main goal of this study was to create a multi-layered coating consisting of a silica sol-gel under-layer to protect the substrate from corrosion in body fluids and a mesoporous silica top-layer to enhance the bioactivity of the coated implant material. The results indicate that the deposited multi-layered coating enhances both the bioactivity and the corrosion resistance of the material

1-2-061	
Title	**Structure/Function Analysis of The HIFI Histone Chaperone in Saccharomyces Cerevisiae**
Author	Nora Saud Dannah
Program	Master of Science in Molecular Science
University	Ryerson University
Year	2014

Abstract

Understanding the regulation of chromatin structure is a vital aspect of molecular biology regarding its influences on biological processes such as DNA replication, transcription (gene expression), DNA repair, chromosome segregation and recombination. In the budding yeast Saccharomyces cerevisiae, a histone chaperone called Hifl has been found in the nuclei as having a functional role in chromatin assembly. Hifl is a homolog of the human protein NASP that is involved in the maintenance of genome stability. Previously, Hifl has been shown to physically interact with Hatl, Hat2 and H3/H4 to form the NuB4 complex directly involved in chromatin assembly. A molecular genetic approach was conducted to determine which domain of Hifl is involved in the interaction with the HATl complex.

1-2-062	
Title	**Equilibrium Conditions of Carbon Dioxide and Ethane Gas Hydrate in the Presence of Binary Mixtures of Methanol and Sodium Chloride**
Author	Fahd Mohamad Alqahtani
Program	Master of Science in Chemical and Petroleum Engineering
University	University of Calgary
Year	2014

Abstract

For oil and gas production operations, in which the possibility of gas hydrate formation exists, methanol is used extensively to thermodynamically inhibit gas hydrate formation. In cases where sea water, or brine, are also

produced along with the natural gas the dissolved salt will also thermodynamically inhibit gas hydrate formation. Thus, having quantitative information on the inhibiting effect of the mixed solution of methanol and NaCl can allow operators to fine tune the amount of methanol that needs to be added to a given stream. In the current study, the three-phase equilibrium conditions of carbon dioxide and ethane gas hydrate formation, in the presence of mixtures of sodium chloride and aqueous methanol solutions, were experimentally determined. The experimental data were obtained in a sapphire variable volume cell by using the isothermal pressure search method. With each gas, the hydrates were formed in three different aqueous solutions of methanol and sodium chloride. The three solutions that were used were 5% methanol/10% NaCl, 10% methanol/10% NaCl and 10% methanol/5% NaCl. The experimental temperature ranged from 267.57 to 273.01 K and the experimental pressure ranged from 0.7 to 3.0 MPa. As expected, it was found that the pressure required to form the hydrates in the mixed inhibitor solution was greater than the pressure required to form the hydrates in pure water. However, it was also noted that the solutions had a greater inhibiting effect on the formation of carbon dioxide hydrates than on the formation of ethane hydrates. Finally, the experimental data was used to test the correlating capability of the equation of state of Clarke and Bishnoi (2004). It was seen that the equation of state was able to successfully correlate the experimental data.

1-2-063	
Title	**Re-Ranking Real-Time Web Tweets To Find Reliable And Influential Twitterers**
Author	Ahmed Husain Al-Sinan
Program	Master of Arts-Information Systems & Technology
University	York University
Year	2014

Abstract

Twitter is a powerful social media tool to share information on different topics around the world. Following different users/accounts is the most effective way to get information propagated in Twitter. Due to Twitter's limited searching and lack of navigation support, searching Twitter is not easy and requires effort to find reliable information. This thesis proposed a new methodology to rank tweets based on their authority with the goal of aiding users identifying influential Twitterers. This methodology, HIRKM rank, is influenced by PageRank, Alexa Rank, original tweet or a retweet and the use of hash tags to determine the authorisation of each tweet. This method is applied to rank TREC 2011 microblogging dataset which contains over 16 million tweets based on 50 predefined topics. The results are a list of tweets presented in a descending order based on their authorities which are relevant to the users search queries and will be evaluated using TREC's official golden standard for the microblogging dataset.

1-2-064	
Title	Silicon Nanoparticle Synthesis and Modeling for Thin Film Solar Cells
Author	Zahra Albu
Program	Master of Applied Science
University	University of Victoria
Year	2014

Abstract

Nanometer-scale silicon shows extraordinary electronic and optical properties that are not available for bulk silicon, and many investigations toward applications in optoelectronic devices are being pursued. Silicon nanoparticle films made from solution are a promising candidate for low-cost solar cells. However, controlling the properties of silicon nanoparticles is quite a challenge, in particular shape and size distribution, which effect device performance. At present, none of the solar cells made from silicon nanoparticle films have an efficiency exceeding the efficiency of those based on crystalline silicon. To address the challenge of controlling silicon nanoparticle properties, both theoretical and experimental investigations are needed. In this thesis, we investigate silicon nanoparticle properties via quantum mechanical modeling of silicon nanoparticles and synthesis of silicon nanoparticle films via colloidal grinding. Silicon nanoparticles with shapes including cubic, rectangular, ellipsoidal and flat disk are modeled using semi-empirical methods and configuration interaction. Their electronic properties with different surface passivation were also studied. The results showed that silicon nanoparticles with hydrogen passivation have higher HOMO LUMO gaps, and also the HOMO-LUMO gap depends on the size and the shape of the particle. In contrast, silicon nanoparticles with oxygen passivation have a lower HOMO-LUMO gap. Raman spectroscopy calculation of silicon nanoparticles show peak shift and asymmetric broadening similar to what has been observed in experiment.

1-2-065	
Title	**Potential of Cave Bacteria in Drug Discovery: Investigation of Sphingopyxis terrae and other Bacteria from a BC Cave**
Author	Raniyah Alnahdi
Program	Master of Science in Biological Sciences
University	Thomson River University
Year	2014

Abstract

The discovery of new and more effective antibiotics continues to be a priority given the frequency of the emerging multi-drug resistant pathogenic microorganisms. Thus, scientists are searching for new antibiotics from microorganisms selected from extreme habitats such as very old caves. Various cave bacteria species were isolated and could be sources of new antibiotics. The objective of our work is to isolate cave bacteria from a volcanic cave in Wells Gray Provincial Park in BC and to test if they produce metabolites with antimicrobial activity against some microorganisms including multidrug resistant pathogens. This study used 16 cave strains previously isolated and screened against a panel of microorganisms including drug resistant pathogens. Upon retesting, 4 out of 16 cave bacterial isolates, RA001, RA003, RA004, and PM58B-RA, demonstrated antimicrobial activity against Mycobacterium smegmatis, Micrococcus luteus, Acinetobacter baumannii and MDR-Staphylococcus aureus. To study the conditions for best growth and antimicrobial production, these four bacteria were cultured in different fermentation media (namely Hickey-Tresner, R2A, V-8 juice and ISP-2) and incubated at 12 and 25°C for 14 days. During the course of fermentation, the percentage of packed cell volume (%PCV), antimicrobial activity and pH were observed and recorded daily.
It was found that each of the bacteria demonstrated antimicrobial activity against different microorganisms at various times of fermentation and temperature. Overall, R2A broth medium and the lower temperature of 12°C appear to be best for antimicrobial production by the cave bacteria used in this study. Isolation and purification of the antimicrobial compounds produced by these isolates is under investigation using the best growth conditions determined in this study. We identified these bacteria using chemotaxonomic studies; 16S rRNA sequencing and Matrix-assisted laser desorption/ionization-time of flight (MALDI-TOF), all isolates were identified to the species level. PM58B was found to be Bacillus licheniformis, RA001, and RA004 were identified as Arthrobacter agilis that may be of different variants. While RA003 was identified as Sphingopyxis terrae. Active compounds from RA003 fermentation broth were further studied by extraction and purification. In conclusion, cave bacteria are promising sources of potential novel antimicrobial compounds. Isolation, optimization of screening, growth media and conditions of cave bacteria may be useful in the discovery of new antimicrobial drugs. Additionally, the knowledge obtained from this study with respect to cave bacteria and their roles in cave formation and degradation will add to existing information on cave conservation.

1-2-066	
Title	**High Precision Measurements of 32S, 33S, and 34S Isotopic Composition by Multiple Collector Inductively Coupled Plasma Mass Spectrometry**
Author	Yahya Ahmad Alfayfi
Program	Master of Science in Physics
University	University of Calgary
Year	2014

Abstract

A reliable method was developed for sulfur isotopic composition measurements of sulfur solutions (10 ppm) using a 20 mL cyclonic quartz spray chamber and 50 µL/min (Glass Expansion Inc.) quartz nebulizer coupled to a high mass resolution Multiple Collector Inductively Coupled Plasma Mass Spectrometry (MC-ICP-MS). The repeatability of the method was tested which three reference materials (IAEA S-1, IAEA S-2, and IAEA S-3) and the ability to measure sulfur isotopic variations in hair sample was evaluated. The n(2sd) for δ(2sd) for δδ3433. Cleanliness of the spray chamber was found to be extremely important to achieve reliable data. A microwave digestion method was developed to analyze sulfur in hair samples. The reproducibility of hair samples was typically ± 0.45 ‰ and ± 0.75 ‰ (2sd) for δ34S)/n(32S) and n(33S)/n(32S) isotope amount ratios were measured free from isobaric interferences (e.g. 16O2+ on 32S+ and 32S1H+ on 33S+) and corrected for instrumental mass bias adopting the standard-sample bracketing approach. The reproducibility of IAEA S-2 and IAEA S-3 is typically ± 0.19 ‰ and ±0.52 (34S and δ33S, respectively and ± 0.30 ‰ and ± 0.53 ‰ 34S and δ33S, respectively. Freedom from isobaric interferences was verified by plotting S vs. δS34S and δ33S values, respectively. Achieving a reliable method for δ34S and δ33S measurements will enable now a high precision measurement of sulfur isotopic composition.

1-2-067	
Title	**The Criteria For The Number Of Bound States With l = 0 For A Non-Relativistic Single-Particle Potential**
Author	Anas Othman
Program	Master of Science- in Physics
University	University of Alberta
Year	2014

Abstract

We have studied some criteria for bound state energies in the non-relativistic regime by using the 3D Schrodinger equation. With these criteria, we have examined: the number of bound states, the critical conditions, eigenvalues, and in_nite versus _nite number of eigenvalues, and the _xed number expression, which determines the number of bound states. We have studied

these criteria by solving the Schrodinger equation in 3D for l = 0 for many central potentials: the _nite spherical potential, the spherical potential shell, the Yukawa potential, the cuto_ and regular triangular potential, the Woods-Saxon potential, the regular and cuto_ Coulomb potential, and the cuto_ inverse square and cubic potentials. By a cuto_ potential we mean just a potential cuto_ near the origin by connecting a potential with the _nite spherical potential. Then, we have used some estimating methods to compare these results with the exact results. The estimating methods are expressions that give the lower and upper limits of the number of bound state energies for a given potential. We have considered these accurate and recent expressions and we have compared them with the exact results.

1-2-068	
Title	**Black Virus DisinfectionIll Chordal Rings**
Author	Modhawi Alotaibi
Program	Master of Science in Computer Science
University	University of Ottawa
Year	2014

Abstract

The topic of this thesis is black virus disinfection using mobile agents. The black virus is a faulty node that destroys any visiting agent without leaving a trace; moreover, once the black virus is triggered by an agent, it clones itself and spreads to neighbouring nodes. These viruses can only be destroyed if they move to nodes that have been occupied by agents. In this thesis, we consider the black virus disinfection problem in chordal rings. Initially, the system contains a single black virus that resides at an unknown location. We propose a solution that involves deploying a team of mobile agents to locate the original black virus and to prevent further damage once it has been triggered. Our protocol is divided into two phases: 1) searching the graph until the black virus is found and triggered and 2) sending agents to occupy the neighbouring nodes of the black virus in order to trigger and destroy all the black viruses at once. Our solutions are monotone, meaning that once a node has been explored it is protected from re-infection. In order to measure the efficiency of our protocol we consider the total number of agents required for disinfection, the overall number of black viruses and the number of moves required by the agents. We then analyze the cost of all our solutions, providing optimal bounds for some classes of chordal rings.

1-2-069	
Title	**Server Recovery in a Virtual Environment**
Author	Ahmed M. Alayyoubi
Program	Master of Engineering in Computer Networks
University	Ryerson University
Year	2014

Abstract

Virtualization has been a widely discussed topic in system design and implementation for the last decade due to the flexibility and reliability virtualization can offer; thus, protecting such an environment is an essential part of planning and implementation. Hypervisors which run VMs (Virtual Machines) are threatened by numerous factors which can cause them to fail, and knowing the nature of a hypervisor's hardware and the failures which can affect it an extra precaution has to be in place in order to protect the data and services that resides on these hypervisors. SLAs (Service-Level Agreements) are getting tighter for data centers and IT teams when it comes to down time, a number of solutions have been created to meet the high SLAs by enabling HA (High Availability), failover and live migration. All of the mentioned services are typically implemented to recover or prevent down time within the same physical location, sometimes in remote locations, depending on the WAN link an enterprise can afford. Although cost might not be an issue for the enterprise, having a backup for these systems is vital as deleting data or misconfiguration can occur at any given time. However, many SMBs (Small Medium Businesses) can not afford the cost associated with having an HA or failover system, and a different approach must be put in place to protect data, which is crucial to most businesses these days. Various applications have been developed to serve the purpose of backing up VMs and application-specific folders & files. In this case study, two VM backup tools are being tested to find the most efficient and effective tool for the purpose. Our two applications are ©Acronis vmProtect 9 and ©Veeam Backup & Replication v7. During the several testes we ran we came to know that Acronis is a faster solution to perform a restore while on the other had Veeam was the most efficient when backing up.

1-2-070	
Title	**Development of New Nanostructurally Engineered Polymer Semiconductors for Organic Electronics**
Author	Amani Alsam
Program	Master of Applied Science in Chemical Engineering and Nanotechnology
University	University of Waterloo
Year	2014

Abstract

The research presented in this thesis was focused on organic semiconductors and has resulted in the development of novel printable polymer semiconductors that can be used in organic thin film transistors (OTFTs) and organic photovoltaics (OPVs), or solar cells. Polymers used in OTFT applications must have particular characteristics, such as a highly ordered or crystalline structure, favoured molecular orientation, and appropriate energy levels for either hole transport (p-type semiconductors) or electron transport (n-type semiconductors). Achieving these properties requires control of the design and synthesis of the polymers through the choice of appropriate building blocks and side chain substituents. In contrast, for OPV applications, the band gap, thin film morphology, and balance of the donor's hole mobility and the acceptor's electron mobility must be finely tuned for optimal photovoltaic performance. The specific focus of the research was on a new type of donor-acceptor copolymers that have alternating electron- accepting azo units and common electron donor units (e.g., thiophene). These polymers are expected to have strong intermolecular interactions due to the donor-acceptor effect, which could lead to improved molecular organization for efficient charge carrier transport in OTFT devices. The donor-acceptor effect also creates narrow band gap polymers, which are preferred for optimum light harvesting. The polymer materials developed in this research are evaluated as channel semiconductors in OTFTs and can also be used as donors in polymer solar cells. Zs discovery of which complemented previous work conducted by the same research group. These innovative building blocks would be valuable in numerous applications, including OTFTs and OPVs. Five polymers have been created, three of which show the most promising potential for OTFT and OPV applications: P1-DTA-BTV, P5-DTAE-BT, and P6-DTAE-TT. All of these copolymers have been synthesized via Stille coupling reaction. The first copolymer, P1-DTA-BTV, which exhibits a small band gap of 1.13 eV, with HOMO and LUMO energy levels of -5.21 eV and - 4.08 eV, respectively, is suitable for both OTFT devices and OPV applications. P5-DTAE-BT and P6-DTAE-TT, on the other hand, are characterized by broader band gaps of 1.29 eV and 1.32 eV, respectively, and their average HOMO and LUMO energy levels are -5.43 eV, -4.20 eV, and -5.40 eV, -4.00 eV, respectively. It has been experimentally demonstrated that the presence of an ester group in the (E)-1,2-di(thiazol-2-yl)diazene DTA monomer helps lower the LUMO energy level, creating the broad band gap revealed in the (E)-bis(2-octyldodecyl) 2,2'-(diazene-1,2-diyl)bis(thiazole-4-carboxylate) DTAE copolymer results, and making the P5-DTAE-BT D-A copolymer an n-type semiconductor, which is very useful for the applications mentioned above. The polymers were characterized by Differential Scanning Calorimetry DSC, Thermal Gravimetric Analysis TGA, Ultraviolet-Visible Spectrometry UV- Vis, Cyclic Voltammetry CV, Atomic Force Microscopy AFM, X-Ray Diffraction XRD.

1-2-071	
Title	**Effect of previous angular deformation on flexural fatigue resistance of controlled memory nickel-titanium endodontic instruments**
Author	Bassim Aljazaeri
Program	Master of Science in Craniofacial Science
University	University of British Colombia
Year	June 2014

Abstract

Objective: To evaluate the effect of torsional stress preloading angle on fatigue resistance of Typhoon (TYP) CM instruments. Methodology: TYP NiTi 25/.04, TYP NiTi 40/.04, TYP CM 25/.04 and TYP CM 40/.04 were rotated until fracture to obtain the mean angular deflection according to the +-ISO 3630-1 standard. Files were pre-torqued to 25, 50, and 75% of their elastic limit and then subjected to cyclic loading in a three-point binding device until fracture. The fatigue life was recorded for each file. The fracture surface of each fragment was examined with a scanning electron microscope. Results: The angle of rotation at fracture of TYP CM was significantly higher than that of TYP instruments ($P < 0.05$). However, there was no significant difference between size 40 and size 25 in all types of files. The fatigue resistance of TYP CM was significantly higher than that of TYP instruments ($P < 0.05$). Size 25/.04, TYP and TYP CM files in all three preloading groups had a significantly lower fatigue life than files with no preloading ($P < 0.05$). Size 40/.04 TYP CM files in the 50% and 75% preloading groups had a significantly lower fatigue life than files in the groups with no preloading ($P < 0.05$). The fractured files in the preloading groups showed the typical pattern of fatigue failure. Conclusions: TYP CM files have a higher fatigue resistance than conventional TYP NiTi files, irrespective of the amount of previous torsional stress. Fatigue resistance of TYP CM and TYP instruments was reduced after torsional stress preloading. Size 25/.04 file fatigue life was affected by preloading at lower distortion angles than was size 40/.04 fatigue life.

1-2-072	
Title	**Molecular Phylogeny and Origins of Hordeum Polyploid Species**
Author	Shaza Alkhilafi
Program	Master of Science in Applied Science
University	Saint Mary's University
Year	June 18, 2014

Abstract

The genus Hordeum in the tribe Triticeae comprises about thirty two species including diploids and polyploids. Although the phylogeny of diploid Hordeum species has been studied intensively, there have been incongruences between the datasets obtained from chloroplast and nuclear genes. Additionally, the origins of the polyploid species in the genus Hordeum have not been completely understood until now. In the present study, three chloroplast gene loci, trnT-trnF intergenic spacer, rps16 gene, and trnH-psbA intergenic spacer in addition to a single-copy nuclear gene, β-amylase gene, were used to explore the phylogeny and origins of Hordeum polyploid species. Eighty accessions from thirty two Hordeum species were used in this study. The present study supports previous suggestions on that H. brachyantherum ssp. californicum was one parent to the

tetraploid species H. brachyantherum ssp. brachyantherum, H. jubatum, H. guatemalense, and H. depressum. Our nuclear DNA results suggest the diploid H. roshevitzii as one parent to tetraploid species H. brachyantherum ssp. brachyantherum, H. jubatum, and H. fuegianum. In addition, our results suggest H. cordobense, H. brahcyantherum ssp. californicum, and H. roshevitzii as the diploid genome donors to the hexaploid species H. procerum, the diploid species H. pusillum and H. brachyantherum ssp. californicum as genome donors to the hexaploid H. lechleri. Moreover, our study further confirms H. pusillum as a diploid parent to H. arizonicum and suggests H. brachyantherum ssp. californicum as another diploid genome donor to the hexaploid H. arizonicum.

1-2-073	
Title	**Characterizing The Role of CFL OXR and SDR In The Biosynthesis**
Author	Mead Saad Altowairish
Program	Master of Science in Biology
University	Memorial University
Year	January, 2014

Abstract

Streptomyces is the largest genus of actinobacteria and consists of Gram-positive filamentous organisms that mainly inhabit soil environments. Some members of this genus have the ability to cause economically important crop diseases such as potato common scab (CS), which is characterized by the formation of superficial, raised or pitted corkey-like lesions on the surface of potato tubers. Among the virulence factors produced by the best characterized CS-causing pathogen, S. scabies, are the phytotoxic secondary metabolites called the COR-like metabolites, which resemble the coronatine (COR) phytotoxin produced by the plant pathogenic bacterium Pseudomonas syringae. The objective of this study was to characterize the role of three S. scabies genes (cfl, oxr and sdr) in the biosynthesis of the COR-like metabolites by constructing gene deletion mutants and examining the effect of each mutation on metabolite biosynthesis and bioactivity. The results of this study indicate that all three genes are necessary for normal production of the COR-like metabolites in S. scabies, and possible roles for each gene in the biosynthetic pathway are discussed.

1-2-074	
Title	**Virtual Eyez: Developing NFC Technology To Enable The Visually Impaired To Shop Independently**
Author	Mrim Alnfiai
Program	Master of Computer Science
University	Dalhousie University
Year	July 2014

Abstract

A large number of people throughout the world have visual impairments that make everyday tasks difficult, ultimately reducing independence and quality of life. Virtual Eyez is a low cost system that uses a mobile phone app and NFC tags to allow visually impaired people to shop independently within grocery stores. Although this system is primarily designed for visually impaired people, anyone can interact with it to obtain indoor navigation services and product information from the tags. The overall objective of the Virtual Eyez system is to improve the quality of life for visually impaired people by using NFC and smartphone technologies to support navigation and product identification. The prototype tested here was designed to check product availability, generate optimal directions to that product, and provide information about it upon arrival. The Virtual Eyez system was developed using a Google Nexus 7 tablet with an Android 4.3 platform, NFC tags (NTAG 203 tags), and a small database containing two tables, one containing general product information and the other containing product location information. This thesis describes a study conducted in a mock grocery store, in which sighted, blind and visually impaired participants used the Virtual Eyez system to navigate through the store and locate specific products. By measuring their performance in this task and interviewing them afterwards about their experience with the system, we illustrated the effectiveness and usability of Virtual Eyez and established what improvements are needed in order to develop it in to a commonly used aid for visually impaired shoppers.

1-2-075	
Title	**Biosensing Performance Of Surface Plasmon Polariton Bragg Grating**
Author	Kholoud Khalid Gazzaz
Program	Master of Science in Physics
University	University of Ottawa
Year	2014

Abstract

Surface plasmon biosensors have raised much interest over the past few decades for their potential in biosensing applications. This thesis investigates the plasmon- polariton Bragg grating, which is a novel structure that supports surface plasmon modes. Plasmon-polariton Bragg gratings PPBGs consist of metal stripes embedded in Cytop. A number of designs were investigated to evaluate the biosensing capabilities of the device. The biosensing performance was studied for both bulk and surface sensitivities via wavelength interrogation. The biosensing study was conducted by observing changes in the effective refractive indices of the supported modes by changing the index of the sensing solution for bulk sensitivity, and by changing the thickness of the adlayer that represents the binding of the target analyte to the sensing surface for surface sensitivity. A theoretical assessment of the achievable sensitivity and detection limit for PPBGs is conducted via two approaches, wavelength and output power interrogation

1-2-076	
Title	**Production of 3-Methoxy,1,1,Propanediol And Hydroxyacetone byThe Subcritical Hydrothermal Liquefaction of Glycerol**
Author	Bander Ebraheem Jaffary
Program	Master of Applied Science in Process Systems Engineering
University	University of Regina
Year	June 2014

Abstract

Research on the use of crude glycerol, a byproduct of bio-diesel production has received strong interest within the last several years. The objective has been to add value to or utilize this byproduct, as a measure to remove one of the major obstacles encountered in the production and widespread application of bio-diesel. The present study was focused on the hydrothermal liquefaction of glycerol in subcritical water conditions for the production of 3-methoxy,1,2,propanediol and hydroxyacetone. The production of 3-methoxy, 1,2,propanediol was selected to be the major objective of this study because of its value as well as its importance in the medical sector. In the study, the molar ratio of water to glycerol in the feed to the process was in the range of 3 – 12 mol/mol. These experiments were performed at temperatures in the range of 200 – 325 oC, initial gauge pressure ranging from autogenous to 60 bar. The reaction retention time was recorded after the process had reached the desired temperature, which was typically in the range of 0 – 120 min. The liquid product was analyzed using GC-MS while an online GC was used to quantify the gas products. The results showed that as the temperature increased, the yield of 3-methoxy,1,2, propanediol increased until 225 oC before decreasing. Therefore, the optimum temperature for producing 3-methoxy,1,2, propanediol is 225 oC. Similarly, the yield of hydroxyacetone increased as the operating temperature increased until 250 oC and then decreased after this temperature. An increase in the retention time resulted in a decrease of the yield of 3-methoxy,1,2,propanediol while that of hydroxyacetone increased until 60 min then decreased. The optimum retention time for producing 3-methoxy,1,2, propanediol was 0 min. It was observed that the gas products started to appear at between 275 and 325 oC. The trend of the gas yield was: CO2>CO>H2 and zero yield for CH4 and C2H6. Furthermore, the optimum initial gauge pressure for producing 3-methoxy,1,2,propanediol and hydroxyacetone was 40 bar. On the other hand, the optimum molar feed ratio (water to glycerol) for 3-methoxy,1,2,propanediol and hydroxyacetone were 6 and 9, respectively. Two types of solid acid catalysts (H-ZSM-5 and γ–alumina) were investigated for the production of 3-methoxy,1,2, propanediol. It was observed that H-ZSM-5 inhibited the production of 3-methoxy,1,2, propanediol while γ–alumina increased the yield compared with the non-catalytic experiments. On the other hand, the yield of hydroxyacetone increased using the two acid catalysts with the trend: H-ZSM-5> γ–alumina> non-catalytic experiment. Compared with the non-catalytic experiments, the yields of the two target liquid products increased with γ–alumina within the range of catalyst weight used in the study (0.5 – 1 g). A non-catalytic kinetic study was performed using an empirical power-law rate model to interpret the kinetic data. Three temperatures (225, 275, 325 oC) at four different retention times (0, 60, 90, 120 min) were used to get the maximum glycerol conversion in the subcritical water condition. The feed molar ratio (water to glycerol) was fixed as 6 and the initial gauge pressure was kept autogenous in all of the kinetic experiments. The kinetic parameters (A, E, n) were regressed using NLREG software. The highest glycerol conversion in this study was observed at 325 oC as 65%. The values of the pre exponential factor, activation energy, and the overall reaction order were 1.61 min-1, 21.922 KJ/mol, and 3, respectively. The kinetic data were in a good fitness with the kinetic model with R2 of 90 %. The experimental and predicted rates were also in good agreement giving an AAD% of 10.9. The final form of the rate model with the substitution of the kinetic parameters is: $-rA = dXA/dt = 1.61\ e^{-21922/RT}\ (-XA)^3$

1-2-077	
Title	**Accuracy Assessment Of Terrestrial Laser Scanning and Digital Close Range Photogrammetry For 3D Cultural Heritage**
Author	Abdullah Taha Ahmed Albourae
Program	Doctor of Philosophy in Electrical and Computer Engineering
University	Ryerson University
Year	2014

Abstract

There are various surveying techniques used in the field of cultural heritage documentation. Close Range Photogrammetry (CRP) and Terrestrial Laser Scanning (TLS) techniques have been widely used in 3D modeling applications. Various research studies integrate these techniques to enhance the quality of the data acquired. The main objective of this research is to assess the accuracy of TLS and CRP. The two methods are applied to two culture heritage case studies, which are located in the historic district in Jeddah, Saudi Arabia. The data obtained from both techniques is compared with data captured using traditional

surveying techniques as reference data. The results show that TLS tends to be more accurate than CRP. In the first case study (Bab Makkah), CRP and TLS produced 0.044 m and 0.008 m overall RMS error, respectively; while CRP produced 0.025 m and TLS produced 0.021 m in the second case study (Bab Sharif).

1-2-078	
Title	**Quantitative Assessment of Nonfunctional Requirements in Product Families**
Author	Reham Fadul
Program	Master of Applied Science in Computing and Software
University	McMaster University
Year	August 2014

Abstract
Modeling nonfunctional requirements, along with many other NFR-related concerns, have not been addressed properly in the literature. Although nonfunctional requirements (or quality attributes) are important, they are the most expensive and dicult to deal with since they are (mostly) specied qualitatively not quantitatively, and also due to the fact that nonfunctional requirements may have interdependencies among each other leading to inconsistency in requirements specifcation. Moreover, the adoption of the concept of product families into the software industry led to the ability today to build families that share features. This indicates the signicance of software families. Accordingly, in this research, not only do we study nonfunctional requirements in a systematic way, we also attempt to examine them from the perspective of software families. We highlight the need for developing a better quantitative assessment technique for non-functional requirements. Then, we propose a formal approach to the assessment of non-functional requirements in software product families.

1-2-079	
Title	**Generalizing mutual clusters: A measure of cluster Compactness**
Author	Khatoon Alobaidan
Program	Master of Science in Mathematics and Statistics
University	Acadia University
Year	2014

Abstract
Previous work (Chipman & Tibshirani, 2006) introduced the idea of a mutual cluster (MC) as a group of points that are closer to each other than to any other outside points. An MC can be characterized in terms of its diameter (the maximum distance within a group) and the nearest outside distance (distance to points outside the group). In this thesis, we study the properties of a mutual cluster and generalize the original definition of an MC. New computational methods are developed. We start by relaxing the definition of an MC, using the "decision ratio" (λ), the ratio of the nearest outside distance to the diameter. The decision ratio will give information about the separation between clusters. A simplification of the mutual cluster algorithm, classic.MC, is developed to work with a particular group of points, rather than as part of a bottom-up hierarchical clustering. We then propose a new technique to define a mutual cluster. This technique is based on quantiles and data depth. It checks whether a given group of points is an MC, and calculates a modified decision ratio (δ). This method was introduced to be less sensitive to sample size and outliers. Illustrative examples are used to compare both methods. Lastly, we conduct a designed experiment to study the effects of: sample size (n), dimension (p) and the separation between cluster means (μ), and to evaluate the performance of the decision ratios λ & δ.

1-2-080	
Title	**Cooperative Power Sharing control in Multi-terminal VSC-HVDC**
Author	Hasan Alrajhi Alsiraji
Program	Master of Applied Science in Electrical and Computer Engineering
University	University of Waterloo
Year	2014

Abstract
The Multi-terminal high voltage DC (MTDC) system is a viable solution for increasing an electrical power generation to interconnect renewable resources into an AC grid. Using a voltage source converter (VSC) allows independent control of a reactive and an active power flow. Based on the literature, there is a trend to implement MTDC into a distribution grid system in the future. Power sharing control among MTDCs is an important and critical consideration from the point of view of stability and operation. MTDC systems consist of multi-input converters (rectifiers) and single or multi-output converters (inverters), thus controlling and operating MTDC systems pose many challenges due to their complexity. Since the DC link in MTDC systems might have several connection nodes all having a common DC voltage value, using the DC voltage value as a common reference for all terminal control loops makes it possible to get a cooperative control performance. An economical autonomous control to share active power among MTDC systems based on the availability of active power or power management policy is proposed in this thesis. Power sharing among MTDC systems has a priority or sequential procedural problem because of the use of the conventional droop strategy. On the other hand, using predefined or constant power sharing does not provide the available power that can be shared when it is not being consumed by another inverter. The proposed strategy solves these issues using different options. In this thesis, the test system consists of four simulated VSC terminals based on a detailed switching VSC model with two AC voltage levels. The MTDC system is simulated in a PSCAD/EMTDC environment. The simulation results show a significant decrease in operational costs and protection from overloading which had been an issue.

1-2-081	
Title	**Computerized and Non-Computerized Colour Vision Tests**
Author	Ali Almustanyir
Program	Master of Science in Vision Science
University	University of Waterloo
Year	2014

Abstract
Introduction: Measuring colour discrimination of people who carry out tasks where colour is used to convey information and accurate colour judgments are essential for safe and efficient performance of the task is important in order to ensure that they can carry out the tasks. Individuals with congenital colour vision deficiencies are at a greater risk of making an error in colour judgment and this is the primary reason for colour vision testing in industry. Today, there is a large number of colour vision tests to detect colour vision deficiencies and/or estimate one's ability to discriminate colours. Purpose: The purpose of this study is to determine the validity and repeatability of a new colour vision test "Colour Vision Reaction Time" (CVRT) for screening for colour vision defect. The study will also determine the repeatability of a selection of clinical colour vision tests, which are currently in use. Material and methods: The test series was administered to 75 colour normal subjects and 47 participants with red-green defects. Colour vision was classified based on the Nagel anomaloscope. In the pseudoisochromatic tests (the Hardy, Rand, Rittler 4th edition (HRR), Ishihara 38 plate edition and Pseudoisochromatic Plates Ishihara Compatible (PIPC) tests) subjects are required to identify the colored figure within a background of a different colour. For the Colour Vision Reaction Time (CVRT) test, subjects need to locate a colored Square on a computer screen using a mouse. The Cone Contrast Sensitivity Test (CCST) requires individuals to identify colored letters that may appear in a gray background on the computer screen. A prototype of the ColorDx (pColorDx) test is similar to the printed pseudoisochromatic plates except that the plates are displayed on a computer screen. The Farnsworth-Munsell D15 (D15) test requires subjects to arrange coloured caps in order according to colour starting from a fixed cap. Results: The agreement of the printed pseudoisochromatic tests with the anomaloscope in terms of screening for red-green defects was good with kappa (κ) coefficient of agreement value of 0.96 or more on all three tests. The repeatability of the three tests was good with κ coefficient of 0.96 or more on the three tests. Both HRR and PIPC tests can screen for blue- yellow defects. There were 2 deuteranomalous subjects at the first visit and a different deuteranomalous individual at the second visit who made a single blue-yellow error in the HRR test. In the PIPC test, only one deuteranomalous subject failed the blue-yellow screening plates at the first visit with two errors. In terms of the classification as either protan or deutan, the agreement with the Nagel anomaloscope was perfect with the HRR test and acceptable with the Ishihara, but only fair for the PIPC test. The agreement of the repeatability of the classification was perfect with the HRR test and good with the Ishihara test whereas it was reasonable with the PIPC test. The HRR test was designed to classify the severity of the defect and there was a reasonable correlation between the HRR severity and the Nagel anomaloscope matching ranges. The agreement of the three computerized colour vision tests with the anomaloscope was good with κ coefficients ≥0.91. The repeatability of these three tests was good with κ coefficients ≥0.98. All the three tests can screen for blue-yellow defects. In the CVRT test, the response times of most subjects to the blue-yellow test figures were within 1.0 standard deviation of the white control value. The single exception was a deuteranomalous subject who did not fail any other blue-yellow screening test. Ten subjects failed the pColorDx blue-yellow test, whereas 3 subjects failed the CCST S-cone portion. The CCST and pColorDx computer test can classify the defect as protan or deutan. Both tests showed a good-to-perfect agreement with the anomaloscope. The pColorDx test can grade the severity of the defect in terms of mild, moderate to severe. The Spearman rank correlation coefficient with the Nagel matching ranges was only moderate. The Farnsworth D15 test was included to determine whether there was a difference in the pass rate using the results from the first trial or requiring the subjects to pass on 2 of 3 trials. There was a marginal improvement in the pass rate using the 2 out of 3 rule. The repeatability of the 2 out of 3 trials in the D 15 test showed that there was a good agreement between sessions with κ coefficient of 0.87. In terms of classifying the defect as protan or deutan, based on the visual inspection, there was a good agreement with κ coefficient = 0.83. However, based on the Colour Difference Vector (CDV) angle parameter, all the colour defective subjects were correctly classified. The repeatability of classifying the type of the defect based on the CDV showed perfect agreement between the first and second visit. The D15 can classify the defect as mild versus moderate-to-severe. As expected, the majority of individuals who failed the D15 were classified as having moderate to severe classification on the HRR and pColorDx tests. Discussion and Conclusion: The current study confirms that the three pseudoisochromatic tests are effective in screening for red-green colour vision defect.

The HRR test may be preferred over the Ishihara and PIPC because the sensitivity was marginally higher than the other two tests. Agreement of the diagnostic plates with the Nagel anomaloscope as to whether the colour vision defect was protan or deutan varied across tests. The results from this study agreed with Birch's (1997) results for the Ishihara in that approximately 85% of the colour defectives were classified correctly as either protan or deutan. However, HRR classification results were slightly better than Cole, et al's. In terms of the severity, our results were similar to Cole et al in that there were a reasonable correlation between the HRRseverity and the Nagel anomaloscope matching ranges. The three computerized colour vision tests are effective in terms of screening for red- green defects. The CCST had the highest agreement with the anomaloscope, but it was not significantly different from the other two tests. However, the pColorDx's ability to grade the severity was moderate, but it was slightly lower than the HRR plates. All three tests are capable of screening tritan defects. Our results suggest that a small number of deutans are likely to fail this portion of these tests. The D 15 test showed a reasonable repeatability in terms of pass/fail when we used the 2 out of 3 rule and marginally better than performing only one trial on separate days. In terms of the repeatability of classification, the study showed that there was a good agreement between sessions based on the visual inspection and perfect agreement between sessions based on Colour Difference Vector parameters.

1-2-082	
Title	**Performace Evaluation Of Mixed SCTP And TCP Traffic Over Last HOP WIFI**
Author	Qamar Naith
Program	Master of Science in Computer Science
University	Ryerson University
Year	2014

Abstract
The use of the internet has increased significantly with the continued increase in wireless communication devices. Recently, there is a large number of research contribution focused on Stream Control Transmission Protocol (SCTP). Multi-homing is an important feature of SCTP which improves the communication performance by usage of multiple paths during association establishment, and it can bring significant improvements of throughput. In this thesis we evaluate the performance of SCTP and TCP traffic in the WLANs and we investigate the SCTP multi-homing to improve the communication performance in WLANs. We conducted some experiments to evaluate the performance of SCTP multi-homed host under various channel bit rates and mobility speeds. The results indicate that when the intensity of background traffic increases the SCTP multi-homed host with higher channel bit rate has better performance. In addition, the SCTP multi-homed host with using lower mobility speed has higher performance (throughput, delay and packet loss).

1-2-083	
Title	**Image Quality and Dose of an Accelerator-Integrated kV CBCT Systems**
Author	Amani Shaaer
Program	Master of Science in Physics
University	Laurentian University
Year	2014

Abstract
The ability of an imaging modality to precisely determine patient anatomy and pro- vide reliable information about tumor position is critical in the radiotherapy process. As image-guided radiotherapy (IGRT) becomes more popular in radiation treatment, its overall quality and performance, such as the image quality and amount of dose delivered, need to be assessed. The research described in this dissertation was focused on investigation of the image quality of the planar and cone-beam computed tomography (CBCT) images of two imaging systems commonly used in radiotherapy: Varian On-Board Imager (OBI) and Elekta X-ray Volumetric Imager (XVI). Several imaging quality tests were performed using current clinical imaging protocols provided with both systems and various types of image quality phantoms. CBCT imaging dose of each system was also estimated using standard CT dose index (CTDI) phantoms and several imaging protocols. Overall, the image quality between the OBI and XVI was fairly consistent with each other with the exception of high contrast resolution and Hounsfield Unit (HU) accuracy. CTDI of OBI was higher than that of XVI which was related to the different designs and imaging protocols between the two systems.

1-2-084	
Title	**A Comparative Study of Ensemble Active Learning**
Author	Rabaa Alabdulrahman
Program	Master of Science in System Science
University	University of Ottawa
Year	2014

Abstract
Data Stream mining is an important emerging topic in the data mining and machine learning domain. In a Data Stream setting, the data arrive continuously and often at a fast pace. Examples include credit cards transaction records, surveillances video streams, network event logs, and telecommunication records. Such types of data bring new challenges to the data mining research community. Specifically, a number of researchers have developed techniques in order to build accurate classification models against such Data Streams. Ensemble Learning, where a number of so-called base classifiers are combined in order to build a model, has shown some promise. However, a number of challenges remain. Often, the class labels of the arriving data are incorrect or missing. Furthermore, Data Stream algorithms may benefit from an online learning paradigm, where a small amount of newly arriving data is used to learn incrementally. To this end, the use of Active Learning, where the user is in the loop, has been proposed as a way to extend Ensemble Learning. Here, the hypothesis is that Active Learning would increase the performance, in terms of accuracy, ensemble size, and the time it takes to build the model. This thesis tests the validity of this hypothesis. Namely, we explore whether augmenting Ensemble Learning with an Active Learning component benefits the Data Stream Learning process. Our analysis indicates that this hypothesis does not necessarily hold for the datasets under consideration. That is, the accuracies of Active Ensemble Learning are not statistically significantly higher than when using normal Ensemble Learning. Rather, Active Learning may even cause an increase in error rate. Further, Active Ensemble Learning actually results in an increase in the time taken to build the model. However, our results indicate that Active Ensemble Learning builds accurate models against much smaller ensemble sizes, when compared to the traditional Ensemble Learning algorithms. Further, the models we build are constructed against small and incrementally growing training sets, which may be very beneficial in a real time Data Stream setting.

1-2-085	
Title	**On Optical Self-Phase Modulation Via Collective Atomic Excitation in a Bose-Einstein Condensate**
Author	Khulud Almutairi
Program	Master of Science in Physics and Astronomy
University	University of Calgary
Year	September, 2014

Abstract
This thesis presents a method for generating nonlinear phase shifts on superpositions of photon number states. Light is stored in a Bose{Einstein condensate (BEC) via electromagnetically induced transparency (EIT) memory techniques. Atomic collisions are exploited to generate a nonlinear phase shift of the stored state. The stored light is then revived with the nonlinear phase shift imprinted upon it. We show that this method can be used to develop a nonlinear-sign gate in the regime where the Thomas{Fermi and mean-_eld approximations are valid. We test these approximations using realistic parameters to _end that these approximations pass the standard tests for validity in a single-component condensate. However, for the two-component condensates considered here, we _nd that these conditions are not sufficiently strict. Therefore, we find a stronger set of conditions and show for the same set of parameters that the approximations are invalid.

2-2-086	
Title	**The Role of Staphylococcal Protein A (SPA) in the Virulence of Staphylococcus aureus Infections**
Author	Aiah M. Khateb
Program	Master of Science
University	University of Calgary
Year	2014

Abstract
Staphylococcus aureus infections have spread globally and caused significant morbidity and mortality. Previous studies have indicated several functions that Staphylococcal Protein A (SPA) plays to enhance S. aureus virulence. To evaluate the role of SPA in S. aureus with respect to virulence and other biological functions, the chimeric clones were constructed by replacing the spa gene of a high-virulence S. aureus strain with the spa from a non/low-virulence strain, and vice versa. Three representative MRSA strains, a high-virulence CA-MRSA strain USA300 (spa t008), a typically low-virulence hospital-associated MRSA strain CMRSA6 (spa t037) and an avirulent colonization strain M92 (non-typeable spa) with different genetic backgrounds (ST8, ST239 and ST239, respectively) were selected. Expression of the spa gene was confirmed by western blot. The chimeric clone was evaluated by its growth curve, immunoglobulin (IgG) binding capacity, biofilm formation, and virulence using the Caenorhabditis elegans nematode infection model, and compared with the wild type (WT) donor strains. The chimeric clone USA300spa CMRSA6 spa, which had the background of a high virulence strain USA300 with the native spa gene being replaced by the spa gene of a low virulence strain CMRSA6, showed a slower growth rate, and a significantly decreased SPA expression with a 24-fold dramatic reduction in SPA IgG-Fc binding capacity. There was a 3.4-fold increase in the biofilm formation and a 62% reduction in the nematocidal activity, when compared to the parent strain WT-USA300. IV The other two opposite chimeric clones (M92 spa::USA300 spa and M92spa::CMRSA6spa) were constructed from an avirulent colonization strain M92, with the native spa gene being replaced with the spa genes of a high virulence strain USA300 and a low virulence strain CMRSA6, respectively. Both chimeric clones (M92 spa::USA300 spa and M92spa :CMRSA6spa) showed slight changes in growth rates, significantly increased SPA expression with 1.6- and 0.7-fold increase in SPA IgG-Fc binding capacity, respectively. No significant change was observed in the biofilm formation

and the nematocidal activity of both chimeric clones when compared to the parent strain WT-M92. In conclusion, replacing the spa gene of S. aureus strain altered its biological characteristics, behavior and virulence. This study resultssuggests that spa plays an important role in the virulence and pathogenicity of S. aureus infections.

2-2-087	
Title	**A histological Observation of Inflammatory Cells in The Rabbit Achilles Tendon Due to Overuse Injury**
Author	Bandar Suliman Almohimeed
Program	Master of Science in Experimental Medicine
University	University of British Colombia
Year	2014

Abstract

The presence or absence of inflammatory cells in chronic Achilles tendinopathy has been a controversial subject in previous studies. Macrophages, T lymphocytes, and neutrophils have previously been detected in injured human Achilles tendons, whereas other authors have reported that there is no evidence for their occurrence. This controversy may stem from the fact that human Achilles tendon overuse injuries usually develop gradually over time, and the time course of inflammation in response to overuse has been difficult to establish in clinical populations. The aim of my study was to examine the presence of inflammatory cells in the Achilles tendon of rabbits that were subjected to repetitive mechanical loading of defined durations. Twenty-Four New Zealand male rabbits were subjected to repetitive mechanical loading of the Achilles tendon and grouped into four groups in this study, according to the exercise time period for each group: 0, 1, 3, and 6 weeks. Achilles tendons were harvested at the end of each time period. Achilles tendons sections were stained with Hematoxylin and Eosin to examine the histological changes. Both Neutrophils and T-lymphocytes were detected by Immunohistochemistry. Macrophages were detected using the Prussian blue staining. A very small number of inflammatory cells were detected in some tissue sections in the control group. Tissue sections from exercised groups 1, 3, and 6 weeks respectively, showed some qualitative changes in tendon morphology. Collagen bundles were disorganized, and hyalinized patches and spaces between collagen fibers were observed. Tenocyte nuclei were rounder and basophilic, and there was an increase in their numbers with loss of parallel alignment. Macrophages, T-lymphocytes, and neutrophils were detected in tendon sections, specifically in the paratenon. Statistically both lymphocytes and macrophages were significantly higher than control at 6 weeks.While the number of macrophages in the control was lower than the 6 weeks group, there was no iii significant difference between 1 week and 3 weeks. However, no lymphocytes were found at week 3. Neutrophils in all groups showed no significant difference. The evidence of inflammation was not evenly distributed, as some tissue sections from the same groups showed no evidence of inflammatory cells.

2-2-088	
Title	**Differentiation of human atrial myocytes from endothelial progenitor cell-derived induced pluripotent stem cells**
Author	Majed Jambi
Program	Master of Science in Cellular and Molecular in Medicine
University	University of Ottawa
Year	2014

Abstract

Recent advances in cellular reprogramming have enabled the generation of embryoniclike cells from virtually any cell of the body. These inducible pluripotent stem cells (iPSCs) are capable of indefinite self-renewal while maintaining the ability to differentiate into all cell types. Nowhere will this technology have a greater impact than in the ability to generate disease and patient-specific cell lines. Here we explore the capacity of human iPSCs reprogrammed from peripheral blood endothelial progenitor cells lines to differentiate into atrial myocytes for the study of patient specific atrial physiology. Methods and Results: Late outgrowth endothelial progenitor cells (EPCs) cultured from clinical blood samples provided a robust cell source for genetic reprogramming. Transcriptome analysis hinted that EPCs would be comparatively more amenable to pluripotent reprogramming than the traditional dermal fibroblast. After 6 passages, EPCs were transduced with a doxycycline inducible lentivirus system encoding human transcription factors OCT4, SOX2, KLF4 and Nanog to permit differentiation after removal of doxycycline. The high endogenous expression of key pluripotency transcripts enhanced the ease of iPSC generation as demonstrated by the rapid emergence of typical iPSC colonies. Following removal of doxycycline, genetically reprogrammed EPC-iPSC colonies displayed phenotypic characteristics identical to human embryonic stem cells and expressed high levels of the pluripotent markers SSEA-4, TRA1-60 and TRA1-81. After exposure to conditions known to favor atrial identity, EPC-iPSC differentiating into sheets of beating cardiomyocytes that expressed high levels of several atrial-specific expressed genes (CACNA1H, KCNA5, and MYL4). Conclusions: EPCs provide a stable platform for genetic reprogramming into a pluripotent state using a doxycycline conditional expression system that avoids reexpression of oncogenic/pluripotent factors. Human EPC-derived iPSC can be differentiated into functional cardiomyocytes that express characteristic markers of atrialn identity.

2-2-089	
Title	**Differentiation of human embryonic stem cells into hepatocytes and their in vivo application for hepatitis C viral production**
Author	Ali Ibrahim Alsagheir
Program	Master of Science in Experimental Surgery
University	University of Alberta
Year	2014

Abstract

Introduction: Chronic hepatitis C virus (HCV) infection is a global problem. The World Health Organization estimates that about 170 million individuals around the world are infected with HCV. Chronic HCV has a high rate of morbidity and mortality due to cirrhosis and hepatocellular carcinoma. It is a major indication for liver transplantation. The current treatment is interferon α and ribavirin of which only 50% of cases show sustained virological responses and clinical signs of improvement, indicating the need for further exploration of novel anti HCV drugs. Several small animal models capable of supporting HCV infection in vivo have been achieved by the transplantation and expansion of primary human hepatocytes into the livers of mice2. The major limitations of these models are the generation of a supply of hepatocytes, which must come from human donors, and the technical difficulties associated with their isolation. Human embryonic stem cells (hESC) are pluripotent cells derived from the inner cell mass of blastocytes during early embryonic life 3. These cells are capable of self-regeneration and differentiation into any adult cell type in the human body. In the last few years, multiple centers around the world have successfully generated mature hepatocytes from human embryonic stem cells. Therefore, it is possible that hESCs can be used as a substitute for primary human hepatocytes in a small animal mouse model. Our primary objective was to explore the possibility of differentiating hESCs into hepatocyte-like cells that could be used as substitutes for primary human hepatocytes in an SCID/UPA mouse model. As such, these studies are expected to increase the accessibility and utility of the SCID/UPA mouse model for a variety of applications, including the testing of the efficacy of antiviral strategies targeting the HCV lifecycle.

2-2-090	
Title	**Influence of Previous Angular Deformation on Cyclic Fatigue Resistance of K3XF Instruments**
Author	Abdullah Riyahi
Program	Master of Science in Craniofacial Science
University	University of British Colombia
Year	2014

Abstract

Objective To evaluate the effect of preloading various degrees of the maximum distortion angle on the cyclic fatigue resistance of post-machining heat-treated nickel-titanium (NiTi) instruments. Methodology New K3XF and K3 NiTi instruments (size 25/.04 taper)(n = 15) were tested to obtain the mean number of cycles to failure (Nf) using a 3-point bending apparatus. Torque and distortion angles at failure were determined according to the ISO 3630-1 standard. New files were then pre-cycled to four conditions (0%, 25%, 50%, and 75% of the angular deflection) and fatigue resistance tests were performed. After torsional preloading, the total number of revolutions to failure (Nf) was measured for each file. The fracture surface of each fragment was examined with a scanning electron microscope. The crack-initiation sites and the percentage of dimple area of the whole fracture cross-sectional area were recorded. Results The fatigue resistance of K3XF instruments was two times higher than that of K3 instruments ($P < 0.05$). The angles of rotation at fracture of unused K3XF instruments were similar to those of K3 instruments. With both the K3 and K3XF instruments, the 25%, 50% and 75% torsional preloading groups had significantly lower Nf than the no preloading group ($P < 0.05$). The K3XF instruments had significantly higher Nf than the K3 in all corresponding preloading groups ($P < 0.05$). The fracture surface of the K3XF and K3 instruments in which the fatigue test was applied after an incomplete torsional test was characterized as the fatigue fracture pattern.

2-2-091	
Title	**Programing Of Hepatic Gene Expression By Material Folic Acid and Vitamin B12 Imbalance**
Author	Abeer Mohammad Aljaadi
Program	Master of Science in Human Nutrition
University	University of British Colombia
Year	2014

Abstract

Folate is a B-vitamin required for cell growth and division, and its metabolism is linked to vitamin B12 (B12). Food fortification with folic acid (FA) has improved folate status but approximately 5% of Canadian adults, including pregnant women, are B12 deficient. This is concerning because an association between gestational exposure to high maternal folate and low B12 status and greater adiposity and insulin resistance in children has been reported. My thesis examined the effect of developmental exposure to maternal FA/B12 imbalance on programming of liver gene expression in adult offspring using an animal model. Female C57BL/6 mice were fed a high FA/adequate B12 (HFA+B12), high FA/no B12 (HFA-B12),

or control diet 6 weeks prior to mating and through pregnancy and lactation. At weaning, offspring mice from each maternal diet group were randomly assigned to receive the control diet or a Western diet (45% fat, 35% carbohydrate) for 20 weeks (n=6 male mice/group) or for 40 weeks (n=6 female mice/group). Serum folate and B12 concentrations were quantified by microbiological assays. Relative mRNA expression of key enzymes in methyl metabolism in liver from adult offspring was quantified by real-time PCR. Male offspring mice from dams fed the HFA-B12 diet had lower Cbs and Mthfr mRNA expression and this was unaffected by post weaning diet. Male offspring mice fed the Western diet had higher Mtr mRNA expression compared to control-fed offspring mice, regardless of maternal diet. Female offspring from dams fed the HFA-B12 diet had lower Mtr mRNA expression and this was not affected by post weaning diet. Moreover, female offspring from dams fed the HFA-B12 diet had higher Mthfr mRNA expression when they were fed the Western diet. No effect of maternal and post weaning diets was observed for serum folate and B12 concentrations. In summary, developmental exposure to maternal FA/B12 imbalance was found to program expression of genes involved in folate and methionine metabolism in the liver of adult offspring mice. The functional consequences of this effect requires further investigation in order to consider B12 screening of pregnant women and to inform the debate on whether B12 fortification should be considered.

2-2-092	
Title	**Isolation and Characterization of Bacteriophages against E. coli O104:H4 and Pseudomonas spp. for Food Biocontrol Applications**
Author	Mohammed Jamal J. Hakeem
Program	Master of Science in Food Science
University	University of Guelph
Year	2014

Abstract
The aim of this study was to determine the effect of isolated and characterized bacteriophages against E. coli O104:H4 and Pseudomonas spp. in food matrices. Ten strongly lytic bacteriophages have been isolated against each target microorganism. Only three phages from each group have been selected for characterization and biocontrol studies. Electron microscopy showed that some phages had similar shapes. However, their restriction endonuclease patterns revealed that each phage is unique. The phages were stable at different temperatures and most pH levels. No evidence of the development of resistance in host bacteria was observed when phages were mixed in phage cocktails. The potential of the phage cocktails to control their host in artificial media and real food systems was examined. The phage cocktails of E. coli and Pseudomonas successfully reduced more than 96% of their host population in alfalfa sprouts during germination and fresh salmon, respectively. In contrast, Pseudomonas phage cocktail was unable to control the growth of Pseudomonas spp. in skim milk at 8 °C.

2-2-093	
Title	**The Yield of External Loop Recorder Compared to Pulse Palpation and ECG Rhythm to Detect Asymptomatic Atrial Fibrillation in a Community-Based Population**
Author	Abdulrazaq Sulaiman Albilali
Program	Master of Science in Experimental Medicine
University	University of Alberta
Year	2014

Abstract
Background and Purpose: Atrial fibrillation (AF) is one of the most common cardiac arrhythmia in the general population, and the most frequent source of cardiac emboli in patients with ischemic stroke. The majority of AF events is underdiagnosed, as they are often asymptomatic or intermittent, and may not be detected by standard 12-lead electrocardiogram (ECG) or Holter monitor. We have evaluated the diagnostic yield of a 21-day External-Loop Recorder (ELR) to detect AF events compared to pulse palpation and baseline ECG rhythm. Methods: We enrolled 48 participants, 65 years of age or older with no history of atrial fibrillation, stroke or transient ischemic attack from three retirement/assisted facilities and one community clinic in Edmonton. The primary outcome was to detect any AF event (≥ 3 seconds) during the monitoring period. Results: The median ELR monitoring duration was 19 days (range 1-22 days) resulting in an AF detection rate of 27% (13/48), of which 77% (10/13) were < 30 seconds. Paroxysmal atrial tachycardia (PAT) was detected in 50% (24/48) of the participants. Pulse palpation was irregular in 3 participants and only 15% (2/13) of the participants with positive ELR results had irregular pulse palpation (p = 0.01). ECG baseline rhythm detected non-sinus rhythm in 6 participants, of which only 3 (50%) had AF events detected by the ELR. Conclusion: There is a significantly high rate of asymptomatic AF (mostly < 30 seconds) detected by the ELR compared to pulse palpation in the community Population. The use of external loop recorders to evaluate for AF or PAF may be considered in patients at high risk for stroke.

2-2-094	
Title	**Reinforcement of Flow Able Dental Composites with Titanium Dioxide Nanotubes**
Author	Manal Dafar
Program	Master of Science in Medical Biophysics
University	University of Western Ontario
Year	2014

Abstract
Flowable composites are widely used in dentistry. However, they suffer from poor mechanical properties. The aim of this study was to reinforce a flowable composite with TiO2 nanotubes (n-TiO2), which were synthesized using an alkaline hydrothermal technique then functionalized with silane or methacrylic acid (MA). The synthesized n- TiO2 was characterized using X-ray diffraction, energy-dispersive X-ray spectroscopy and Fourier transform infrared spectroscopy. Electron microscopy revealed a tubular morphology of n-TiO2. Commercially available flowable composite was reinforced with varying amounts of nanotubes (0-5%). Dynamic Young's moduli (E) and fracture toughness (KIC) of composites reinforced with 3% n-TiO2 functionalized with MA exhibited the highest values. Cytotoxicity assays, performed on NIH/3T3 fibroblasts revealed excellent biocompatibility. We conclude that flowable composites reinforced with 3% n-TiO2 exhibited superior mechanical properties to those of control, with a minimum effect on flowability and radiopacity. Thus, these reinforced composites represent promising materials for use in dental restorations.

2-2-095	
Title	**A new Toolkit For Measuring Spasticity: A Pilot Study Investigating The Validity And Reliability OF The Biotone System For Patients Post-stroke**
Author	Saleh M. Aloraini
Program	Master of Science
University	Dalhousie University
Year	2014

Abstract
Purpose: This pilot study assessed the concurrent and construct validity and test-retest reliability of the BioTone system as a tool to quantify spasticity in patients following stroke. Methods: 15 adults post-stroke (65±11 years, 11 males) with spasticity in upper and/or lower limb muscles participated. The BioTone system was used to measure spasticity elicited during fast (120-140 deg/sec) passive stretching of bilateral elbow flexors, elbow extensors and knee extensors. Spastic reaction onset time, angular velocity at onset (ΔV) and acceleration at onset (ΔA) were determined by analyzing, using MATLAB, departures of electrogoniometric data from a theoretical kinematic model based on a constant jerk profile. In addition, the root mean square departure for angular velocity (εV) and acceleration (εA) were calculated. EMG recordings were also analyzed to identify spastic reaction onset time, discrete change in EMG intensity and EMG amplitude density of the stretched muscle (ΔStr, εStr) and its antagonist (ΔNStr, εNStr). Other variables from the theoretical curve, which were the maximum velocity and absolute maximum acceleration of the theoretical model (MAX-V and MAX-A) and the root mean square of the theoretical model angular velocity and acceleration (V and A), were derived to determine the construct validity by comparing them to the corresponding variables obtained from the movement curve of the non-hemiparetic side. For knee extensor muscles, the relaxation index (RI) was calculated using the pendulum test. Relationships between the biometric results and the Modified Ashworth Scale (MAS) and Tardieu scale (TS) were explored. Test-retest reliability of all measurements was conducted with six participants, using an inter-test interval of <1 week. Results: Most participants displayed mild spasticity. Significant correlations were found in MAX-A and V of elbow flexors calculated using the theoretical profile and the non-hemiparetic side as references (rho=0.66, p=0.003; rho=0.56, p=0.015). No significant differences were revealed between spastic onset time predicted from kinematic data and EMG data. Significant correlations were found between Elbow flexor MAS and ΔV and εV (rho=0.49, p=0.03; rho=0.47, p=0.04), and between TS of elbow extensors and ΔNStr (rho=0.46, p=0.04). For the knee extensor muscles, the RI index was significantly correlated with the MAS (rho=–0.54, p=0.023) and with TS (rho=–0.65, p=0.006). Significant correlations of certain variables were demonstrated on repeat testing — ΔA and εA during stretch of elbow flexors (p=0.012, p=0.017) and εStr during stretch of elbow extensors (p=0.018) and RI during pendulum test (p=0.002). Conclusion: These findings provide preliminary information of aspects of validity and reliability of the BioTone system. The results showed that the BioTone measures have low to moderate concurrent validity, and low construct validity, whereas test-retest reliability was moderate for some of the variables. Further investigation of this device as a clinical tool to objectively measure spasticity in patients post-stroke is warranted. Impact of the study: To reduce functional, emotional, and financial burdens of a common aftermath of stroke — spasticity— a valid, reliable and user-friendly tool of objectively measuring its clinical presentation is needed. This study provides preliminary evidence to support further development of the BioTone system as a potential device to fill this void.

2-2-096	
Title	**The Effect Of Uncaria Tomentosa ON The Murine Melanoma Cell Line, , B16-BL6**
Author	Hajer Alfarteesh
Program	Master of Science in Biology
University	Laurentian University
Year	2014

Abstract
Uncaria tomentosa, commonly known as Cat's claw, is a medicinal plant native to Peru. It has been used for decades in the treatment of various inflammatory disorders. Treatment with Uncaria tomentosa has been shown to have effective anti-inflammatory activities. Recent studies show that treatment of cells with extracts of Uncaria tomentosa can inhibit the MAP kinase, Akt, and Wnt signaling pathways, suggesting it has specific anticancer therapeutic properties. Previous work from our laboratory has shown that the effect of Uncaria tomentosa on the monocyte-like THP-1 cell line can block activation of these immune cells. We are now investigating the effect of the Uncaria tomentosa as an anti-cancer therapy. We have shown that Uncaria tomentosa can inhibit the growth of cell cultures and can induce apoptosis in the murine melanoma cell line B16- BL6. Extracts of Uncaria tomentosa with 70% ethanol were more efficient at inducing apoptosis than aqueous extracts. Apoptosis induction was evident as early as 24 h after treatment and almost all cells treated with the ethanolic extract of Uncaria tomentosa were apoptotic by 72h. Treatment with Uncaria tomentosa caused an increase in DNA fragmentation (TUNEL assay), caspase-3 cleavage, sub G1 peaks in flow cytometry, and apoptotic morphology. Our experimental results indicate that Uncaria tomentosa can effectively kill melanoma cancer cells in vitro, in a dose-dependent manner, by enhancing apoptosis.

2-2-097	
Title	**Cost-effectiveness of combining MRI with mammography for breast cancer screening among high-risk population in Ottawa**
Author	Hadeel Alyacoob
Program	Master of Science in Health Systems program
University	University of Ottawa
Year	2014

Abstract
Background: Based on previous research, conventional mammography screening has been found to be ineffective for women at high risk, mainly because high-risk women have high breast density and a fast progression rate of breast cancer. Recently, MRI screening was proposed as an additional complementary screening for high-risk women in Ottawa. The addition of MRI to mammography to screen the high-risk population is worth exploring as it may well address the limitations of mammography, especially since MRI has higher sensitivity. Purpose: The goal of this study is to assess the cost-effectiveness off adding MRI to mammography screening for early detection among women of the high-risk population in Ottawa by using conventional values for the society's/government's willingness to pay for one life year gained (US$ 50,000). Methods: A discrete-event simulation model was developed to evaluate the cost-effectiveness of adding MRI screening to mammography for high risk women breast screening in Ottawa. Three risk groups were considered; BRCA1, BRCA2 and other high risk. Based on breast annual incidence, screening features, breast cancer progression among high-risk women, treatment and breast cancer survival rates, the model simulates a hypothetical cohort consisting of 5000 women progressing from age 30 to 100 (or to natural death) and calculates the accumulated life years and costs in order to predict the cost of one life year gained by each screening strategy. Univariate sensitivity analysis was performed on the key parameters to determine the robustness of the simulation outcomes. Paired t-tests were used to determine whether the parameters' variations are statistically significant or not.
Results: In the base-case scenario, the incremental cost-effectiveness ratio (ICER) of mammography compared to both screening was CAN$30,043.48 /life year gained (95%CI ±2524.40) which means the addition of MRI to mammography is a cost-effective intervention according to the commonly used willingness-to-pay threshold of US$50,000 per life-year gained. The findings of the sensitivity analysis indicate that the cost-effectiveness of adding MRI screening is statistically significant for most of the parameter variations, however, the degree of change in the ICER is not hugely impactful as in all cases the ICER remained well below the commonly used willingness-to-pay threshold per life year gained.
Conclusion: Study results suggested that the addition of MRI has an important role in improving high risk women screening in terms of increasing life years gained compared to receiving mammography screening only. The results of this study support the recommendations of Cancer Care Ontario and the Ontario Health Technology Advisory Committee guidelines of expanding the Ontario Screening Program to integrate MRI with mammography screening for high risk women aged 30 to 69 years.

2-2-098	
Title	**On the acoustic response of ultrasound and microbubble induced cell death**
Author	Fatimah Alsaiari
Program	Master of Science in Biomedical Physics
University	Ryerson University
Year	2014

Abstract
Ultrasonically-stimulated microbubbles can enhance cell membrane permeability and decrease cell viability where the underlying acoustic mechanism has been associated with both non-inertial and inertial cavitation. In this study, breast cancer cells (MDA-MB 231) were exposed to 0.5MHz ultrasound pulses of 16μs duration at varying peak negative pressures (PNP: 218kPa, 335kPa and 908kPa) and pulse repetition period (PRP 10ms and 100ms) in the presence of Definity microbubbles (3.3% v/v). The acoustic response of microbubbles was measured using passive cavitation detection with 2.25MHz transducer, and characterized by their frequency a cavitation dose (CD). Results show that the number of non-viable cells and integrated cavitation dose (ICD) significantly increases with PNP, whereas no significant differences were found between 10ms and 100ms PRPs. In this study, no correlation was found between (ICD) and cell non-viability.

2-2-099	
Title	**Experiences of Arab Immigrant Women in Emergency Departments in Halifax Regional Municipality**
Author	Amel A. AlGallaf
Program	Master of Science in Nursing
University	Dalhousie University
Year	2014

Abstract
This feminist phenomenological study explored the gendered experiences of Arab immigrant women when visiting Emergency Departments (EDs) in Halifax Regional Municipality (HRM), Nova Scotia, and Canada. Six Arab immigrant women who visited EDs in HRM were recruited from the community. The purpose of the research was to provide a deeper understanding of this population while engaging with health care providers in EDs. Four themes emerged: Engagement in Cultural Care with Health Care Providers, Disengagement and Cultural Care, Suffering in Pain While Waiting, and I am lost! Help Me Please! Bringing these women's experiences to the attention of health care providers may assist in providing safe, ethical, culturally congruent, and equitable care. It also provides a basis for future studies which together may contribute to institutional policy development, best practice guidelines, and educational curricula. This may potentiate an improvement in this population of women's health outcomes and a better quality of life.

2-2-100	
Title	**Differential Expression of TWSG1, BMP4 and Shh Morphogens Signaling Proteins in Hepatocellular Carcinoma and CholangiocellularCarcinoma**
Author	Redha Mohammed Albahrani
Program	Master of Science
University	University of Alberta
Year	2014

Abstract
Hepatocellular carcinoma (HCC) and cholangiocellular carcinoma (CCA) constitute two of the most common liver malignancies in adults. The molecular mechanisms underlying their development remain poorly understood. Morphogen proteins, including the hedgehog and the bone morphogenetic proteins pathway fulfill a major role in embryonic development. Consequently, alterations in these proteins may cause embryonic defects. Furthermore, abnormal expression of morphogen proteins is found to correlate with cancer development and progression. This thesis has demonstrated the differential expression and co-localization of the morphogen proteins, including sonic hedgehog (Shh), hone morphogenetic protein (BMP)-4 and twisted gastrulation protein (TWSG)-1 in human HCC and CCA tumors and cell lines. These proteins are strongly expressed in CCA more than in HCC. Overall, these findings suggest that morphogen proteins may play a crucial role during liver carcinogenesis and progression, specifically in CCA. Moreover, these proteins can serve as diagnostic biomarkers for HCC and CCA.

2-2-101	
Title	**Pluronic-Based Nanoparticles for Gene Therapy Applications**
Author	Osama Madkhali
Program	Master of Science in Biology
University	University of Waterloo
Year	2013

Abstract
Non-viral delivery vectors have potential advantages over the viral systems that currently are used extensively for delivering therapeutic genes of interest. However, non-viral gene therapy has low efficiencies in vivo, in part due to the aggregation of the particles in the delivery system associated with serum proteins and other components of the blood. An effective technique for overcoming this problem to use PluronicTM block copolymers to cover the surfaces of the particles in the delivery system with polyethylene oxide, which decreases their charge density and reduces their interactions with the serum proteins.

The objectives of this project were to characterize a Pluronic-gemini surfactant system to be used as non-viral vectors for gene therapy. Five Pluronics (L44, F68, F87, F108, and F127) were evaluated by studying their physiochemical properties, including particle size and zeta potential. Also, these systems were evaluated in OVCAR-3 cell culture for gene expression and cell viability. The in vitro systems showed small particle sizes (approximately 200 nm) for all Pluronics. The particle sizes in the systems were increased dramatically (up to 2000 nm) by adding di-oleylphosphatidylethanolamine (DOPE) to the systems. The zeta potential of these systems shifted the negative zeta potential of DNA (-43 mV) to a positive value (+35 mV). The addition of DOPE had very little effect on zeta potential. The in vitro transfection efficiency in OVCAR-3 showed that all of the Pluronics were able to transfect OVCAR-3 at various DNA/gemini surfactant ratios. The highest transfection efficiency was obtained with Pluronics L44, F87 and F108. PluronicF127 demonstrated the lowest transfection effi-ciency among the five Pluronics. Adding DOPE did not improve the transfection efficiency in any of the pluronic-gemini surfactant systems. The viabilities of the cells in these systems were high, and there were greater than the positive control (Lipofectamine 2000). The greatest cell viability (about 60%) was observed when the DNA to gemini surfactant ratio was 1:2. After adding DOPE, the cell viability decreased in all of the Pluronics except for Pluronic F68. The results of this investigation indicated that Pluronic block copolymers can transfect OVCAR-3 cell cultures in vitro and that they had a low level of cytotoxicity.

2-2-102	
Title	**MKH-Haase Charts of Binocular Vision Measurements: Repeatability and Validity of Associated Phoria and Stereotests**
Author	Mosaad Alhassan
Program	Master of Science inVision Science
University	University of Waterloo
Year	2013

Abstract

Introduction: H.J.-Haase developed a systematic set of tests for evaluating binocular vision called the Pola Test. The Pola Test measures associated phoria and stereoacuity at distance and near using a variety of different targets for each. This testing method and interpretation is referred to as MKH- Haase (Measuring and Correcting Methodology after H.J.Haase -the MKH) method. The MKH method is more commonly used in Germany and other European countries than English speaking countries. The MKH-Haase method has been considered a reliable method for prescribing prisms to symptomatic binocular vision patients. Puroose: To investigate the test-retest reliability of binocular vision measurements using the MKH- Haase series of tests that comprise the Pola Test. In addition, I will compare the Pola results with other associated phoria and stereoacuity tests used in North America. Methods: Thirty-four symptomatic and 40 asymptomatic subjects (based on a symptoms questionnaire) participated in this study. Associated phoria and stereoacuity with different tests, including the Pola Test at distance and near, were measured for those subjects on two different sessions. Not all of subjects were tested with all tests. Only 30 subjects in each group completed all of tests. The Pola Test protocol requires the associated phoria and stereoacuity to be measured twice within a session; once with the Polariods oriented with their axes at 45° and 135° and again with the axes switched. Results: Within and between-sessions repeatability ofMKH-Haase associated phoria and stereoacuity tests results revealed that most of MKH-Haase associated phoria and stereoacuity tests showed good repeatability within and between-sessions at both distance and near. However, there were a few exceptions to this general finding. Distance horizontal associated phoria values for the Cross Test and Pointer Test at the first session, and the distance Double Pointer Test values at then second session showed some differences between the two views. Between-sessions repeatability of the associated phoria tests did not show any significant differences. For the stereoacuity tests, the differences between the two disparities were statistically significant at the first session for the symptomatic group Line Test and asymptomatic group Step Test. For the second session at distance, the differences were significant with Step Test for both groups. The differences between sessions for both disparities were not significant for most of tests. The symptomatic group's Step Test for crossed disparity and asymptomatic group's Step Test for uncrossed disparity were exceptions.
A repeated measures ANOVA test was conducted to compare different associated phoria tests. Horizontal associated phoria tests without central fusion lock were significantly different from those with central fusion lock at distance and near. Comparison of different stereoacuity tests was conducted by comparing the number of subjects who could identify specific stereothreshold values.
Results showed that at both distance and near, there were no significant differences between contour and global stereoacuity tests based on number of subjects who could attain 60 sec of arc or better. Discussion and Conclusion: Most of MKH-Haase associated phoria and stereoacuity charts have reasonable within and between-sessions repeatability. However, some associated phoria tests showed some differences especially with subjects who had higher values. Although there was a significant difference between various horizontal associated phoria tests at distance and near, most of the values differed by around 0.50 A. The exception was the difference between the Wesson Card and Disparometer. The Wesson card was more exo by 1.50 A than the Disparometer. Vertical associated phoria tests did not show any significant differences. Although MKH-Haase chart can measure local stereothreshold down to 10 sec of arc at distance, the AO Slide is easier to perceive. Random dot stereoacuity can be measured with MKH-Haase charts at distance down to 30 sec of arc. All of the contour stereoacuity tests are comparable at near. However, the MKH-Haase chart was easier to perceive. The Random Dot Randot test would be more useful for fast screeuing purposes. Random dot MKH-Haase test would be easier than TNO Test to measure random dot stereothreshold at near.

2-2-0103	
Title	**Genetic Suppression of Stress Sensitivity Folowing Loss OFSSP1 (CAMKK) in Schizosaccharomyces Pombe**
Author	Hussain A. AL Dandan
Program	Master of Science
University	University of Waterloo
Year	2014

Abstract

Loss of the ssp1 protein kinase (CAMKK) gene results in stress sensitivity, cell elongation, slow growth and in some cases cell cycle arrest. In order to identify new components of the ssp1 stress response pathway, a transposon mediated suppressor screen was used to identify loss of function suppressors of a Schizosaccharomyces pombe ssp1 gene disruption. The Musca domestica Hermes transposon was used to randomly insert the KanMx6 selectable marker in the genome. The selection was for Hermes insertions which rescued the G2 cell cycle arrest phenotype of ssp1- when grown at pH 3.5 and 36 C. Second site mutations that rescued the cell cycle arrest and allowed forcolony formation were identified. In total 121 mutant strains with elongated morphology but capable of colony formation at pH 3.5 and 36 C were isolated and 22 insertion sites were identified by inverse PCR and sequencing. Genes for a transcriptional suppressor, scr1 (SPBC1D7.02c), a spermidine transporter (SPCC569.05c), cyp9 cyclophilin 9 (SPCC553.04), complexed with cdc5 (cwf4) (SPBC31F10.11c), ptr8 (SPAC17A5.06), (SPBC1921.07c), and set7 (SPCC297.04c) were identified as second site loss of function suppressors of the ssp1 deletion. Identifying these genes and their phenotype in conjunction with loss of ssp1, substantially improves our understanding of the Ssp1molecular pathway in cell cycle control and cell stress response.

2-2-104	
Title	**A Study of Th17 Axis Cytokines in a Mouse Model of Cutaneous Autoimmunity and of the Association of the Human T-Cell Leukemia Virus Type I and Mycosis Fungoides**
Author	Mariam Jamal Alkhawaja
Program	Master of Science
University	University of Manitoba
Year	2014

Abstract

Psoriasiform diseases are a group of cutaneous disorders that are characterized by impaired keratinocyte maturation leading to epidermal hyperplasia and thickening of skin. This group of disorders includes psoriasis, seborrheic dermatitis (SD) and mycosis fungoides (MF). Psoriasis has been recently shown to be mediated by the pro-inflammatory T helper cell subset, namely Th17 cells, whereas the pathogenesis of SD and MF are still poorly understood. SD is characterized by inflamed skin that primarily manifests on areas populated with sebaceous glands. Interestingly, SD is very common amongst immunosuppressed patients such as those with HIV-AIDS, suggesting the importance of an immune response in the development of SD. Because SD shares common clinical and histopathological features with psoriasis, a disease in which Th17 axis cytokines is known to be involved, and given that Th17 cells and their related cytokines have been implicated in the pathogenesis of a wide range of autoimmune and inflammatory disorders, it is possible that Th17 axis cytokines play a role in the pathogenesis of SD.
We explored the involvement of Th17 axis cytokines in a D2C mouse model of psoriasiform disease that shows a high degree homology to the clinicopathological characteristics of human seborrheic dermatitis. IL-6 and IL-23, which are important for the differentiation of Th17 cells, and IL-17 and IL-22, which are the Th17 effector molecules, were measured at both protein and mRNA levels in sera and lesional skin from D2C mice. An immunohistochemical analysis was also performed to detect the presence of IL-17 in D2C lesional skin relative to normal skin from DBA/2 controls. Our data demonstrated significantly elevated levels of IL-6, IL-17 and IL-22 in sera from diseased D2C mice compared to controls and/or convalescent mice. There were no significant differences in IL-23 protein levels in sera from D2C mice compared to those from wild type mice or convalescent D2C mice. RT-PCR revealed a significant increase in IL-23 and IL-17 gene expression in D2C lesional skin relative to normal skin. Gene expression levels of IL-22, but not IL-6, were statistically significant elevated in D2C skin lesions compared to controls, by real time PCR. Our IHC study of IL-17 expression showed an abundance of positively stained mononuclear cells in D2C lesional skin relative to DBA/2 normal skin. Altogether, our data demonstrate that Th17 axis cytokines are elevated locally at

mRNA levels for IL-23, IL-17,and IL-22 and systematically at protein levels for IL-6, IL-17, and IL-22. This data lay the foundation for further studies investigating a role for Th17 axis ytokines in the cutaneous inflammatory disease seen in our mouse model of SD and, ultimately, in the development of human SD. Mycosis fungoides (MF) is the most common type of cutaneous T cell lymphoma (CTCL). The etiology of MF is unknown, but there is substantial evidence suggesting a potential role for a yet unidentified infectious agent in the pathogenesis of MF. Many studies have claimed that there is an association between MF and the Human T cell Lymphotorpic Virus Type 1 (HTLV-I); however, the involvement of this virus in the etiology of MF is a controversial topic. In our study, we used nested PCR to explore the association between HTLV-I infection and MF by screening genomic DNA from 114 skin biopsies for the presence of HTLV-I provirus. We also utilized a ViroChip and high-throughput sequencing (HTS), as a case study, to attempt to detect novel virus-specific oligonucleotides that may be associated with CTCL. Our data showed no evidence for HTLV-I proviral integration in the 114 MF samples that were screened using nested-PCR. The ViroChip and HTS results also did not reveal any signature sequence for known or unknown infectious agent in the CTCL case study. Collectively, this data argue against the involvement of HTLV-I provirus in the pathogenesis of MF.

2-2-105	
Title	**Understanding Perceptions of Adherence to Dietary Advice among Women with Type 2 Diabetes**
Author	Rzaz Kheir
Program	Master of Science in Human Nutrition
University	University of Manitoba
Year	2014

Abstract

Background: The foods people choose to eat can determine their health status because inadequate or excessive amounts of certain food components are associated with risk of disease. A number of factors influence the foods people choose and the amounts of these foods, such as social situations, habits, advertising and the cost of food (Delormier, et al., 2009). The aim of this study is to identify the perceptions and environmental factors that are associated with food choices and the extent of perceptions to adherence to dietary advice among women with type 2 diabetes. Objectives: 1) To describe food behaviours of women who have diabetes, within their own daily food patterns; 2) To describe the perceptions of women who have diabetes about their social, economic and environmental situations that influence their food choice;, and 3) To identify the perceptions that are associated with the intent or ability to adhere to recommended health and nutrition behaviours. Methodology: Semi-structural individual interviews were used to collect data from 20 women with type 2 diabetes. The Food Choice Map was used to generate the food patterns and food perceptions, Interviews were recorded and transcripts were analyzed by using principles of the Theory of Planned Behavior, constant comparison method to extract themes, and coded by Nvivo software. In addition, the women completed a demographic questionnaire. Results: Of the major factors that the women perceived as influencing their food behaviors, four major factors enabled women to follow nutritional advice, while three factors acted as barriers to following the advice. Groups of women were identified: those who wanted to follow advice and did, those who did not want to follow advice and did not, those who wanted to follow advice but could not, and those who wanted to follow advice but experienced psychological conflict in doing so. Conclusion: Results showed that food behaviors could be better understood through multi dimensional factors. The four groups of women with diabetes according to perceived intent or ability to adhere to health and nutrition advice was possible in this study, but further studies are needed to justify the use of these groupings in interventions that enhance adherence to dietary advice in the context of type 2 diabetes.

2-2-106	
Title	**Preliminary Analysis of Dietary Sugar Consumption During Pregnancy Using a Potential Biomarker of Urinary Fructose Excretion**
Author	Doaa Dahlawi
Program	Master of Science in Nutrition & Metabolism
University	University of Alberta
Year	2014

Abstract

A 24 hour urinary fructose excretion correlates with total sugar intakes. However, whether or not a random («spot») urinary fructose measurement is a reliable biomarker of fructose intake is not known. This study was done to determine the extent to which it is possible to estimate fructose intake in women using a biomarker of urinary fructose. Pregnant women were recruited from the Sweet Moms project (n=135) and provided a spot urine sample. Urinary fructose was enzymatically measured using a kit for measuring glucose and fructose. No correlation between fructose concentrations in urine sample and the fructose consumption in pregnant women. A validation study was performed on non pregnant women (n=9) after four hours to examine the validity of a urinary biomarker. Fructose excretion by non-pregnant women was positively associated with fructose ingestion. Fructose intake in pregnant women continues to be difficult to measure with currently available biomarkers.

2-2-107	
Title	**ING3 Expression in Prostate Cancer and Its Association with ERG Gene Rearrangements and Patient Outcome**
Author	Amal Ahmed Almami
Program	Master of Science
University	University of Calgary
Year	2014

Abstract

ETS Related Gene (ERG) rearrangement is one of the most common genetic changes seen in roughly about 50% of prostate cancer (PCA) cases. The inhibitor of growth family member 3 (ING3) is a member of the ING tumor suppressor family. The deregulation of ING3 expression has been reported in various types of cancers. However, to date the role and function of ING3 in PCA as well as its relationship to ERG gene rearrangement has not been studied. Our initial observation from microarray expression profiling showed that ING3 was down-regulated in ERG positive prostate cancer samples in comparison to ERG negative tumors. In this work, we examined the expression and localization of ING3 in prostate cancer cell lines and tissue samples and its association to clinical outcome. We documented a significant association between ERG and ING3 and showed a significant association to the patients' clinical outcome, thus highlighting a potential role for ING3 in prostate cancer progression.

2-2-108	
Title	**Osseointegration-Pharmacology**
Author	Ahmed E. Al Subaie
Program	Master of Dental Science
University	McGill University
Year	2014

Abstract

Several orthopedic and craniofacial surgical interventions require implant insertion to fix or restore bone functions. The success of these implants relies mainly on osseointegration, a direct functional and structural interlocking between implants and bone. The osseointegration processes around implants are similar to the biological events occurring during bone repair and fracture healing. Dysregulation of any of these biological events is known to have a negative impact on bone healing and implant osseointegration. Some medications are known to interfere with biological processes involved in bone biology. Proton Pump Inhibitors (PPIs) and anti-Vascular Endothelial Growth Factors (Anti-VEGFs) are among these medications. Proton Pump Inhibitors are over counter drugs taken by millions of patients worldwide for treatment of gastroesophageal diseases. Recent studies have shown that PPIs have a negative impact on bone accrual. Anti-VEGFs are antibodies developed to inhibit angiogenesis in cancer and neo-vascular age related macular degeneration of the eye. Anti-VEGFs inhibit angiogenesis which is an essential process during bone formation, bone healing and osseointegration of implants. We hypothesized that PPIs and anti-VEGF could have negative effects on bone healing and implant osseointegration. Accordingly, this study was designed to assess the effect of PPIs and anti-VEGFs therapies on bone healing and implant osseointegration in a rat model. We conducted two in vivo experiments to investigate the effects of PPIs (omeprazole) and anti-VEGF therapies on bone healing and implant osseointegration. In both studies, we followed the same surgical intervention in a rat animal model. Two unicortical bone defects were created in the tibial metaphysis of each rat, in left defect; a custom made titanium implant was placed whereas the right one was left empty. In the first study, rats were randomly assigned into two groups: omeprazole (n=12) and control (n=12). In the second study, rats were randomly assigned into three groups and received either anti-VEGF neutralizing antibody (n=12), Ranibizumab (n=12), or saline as control (n=12). Findings of the first study revealed that the defect volume was significantly higher (P=0.009) in omeprazole treated rats (2.92 + 0.62 mm3) compared to saline treated rats (2.13 + 0.32 mm3). Moreover, the average percentage of osseointegration in omeprazole group (23.3 + 10.8 %) were significantly lower ($p<0.0001$) than in the control group (40.2 + 13.3 %). Findings of the second study revealed that the mean volumes of the bone defect in the Anti-VEGF (2.48 + 0.33 mm3) and Ranibizumab (2.35 + 0.23 mm3) groups were significantly higher than the controls (2.11+0.63 mm3). Furthermore, the average percentages of osseointegration in Anti-VEGF (21.1 + 10.2%) and Ranibizumab (18.4 + 9.5%) groups were significantly lower than in controls (40.2 + 13.3 %). In conclusion, post-operative administration of omeprazole and anti-VEGFs impaired bone healing and implant osseointegration. Therefore, omeprazole and anti-VEGFs might be potential risk factors for several orthopedic and craniofacial surgical interventions that require implant insertion to fix or replace missing anatomical structures.

2-2-109	
Title	**Bonding Between Metals and Polymers for Dental Devices**
Author	Omar Saleh Alageel
Program	Master of Science in Dental Sciences
University	McGill University
Year	December, 2013

Abstract

Many dental devices combine acrylic (i.e. poly-methyl methacrylate or bisphenol A-glycidyl methacrylate) and metallic parts (i.e. titanium or stainless steel) that are

bonded together. These devices often present catastrophic mechanical failures due to weak bonding between their acrylic and metallic components. These devices include dental prostheses, combining metallic frameworks (i.e. titanium) and wrought wires with acrylic resin; and orthodontic appliances, combining acrylic resin with stainless steel wrought wires or composite with stainless steel brackets. The bonding between metals and polymers in dental devices is usually performed by the mechanical interlocking, but its bond strength is still too low for dental applications. The bond strength between them would be high if the chemical bonding, which does not occur spontaneously, uses in addition to the mechanical interlock. The objective of this study was to develop a new method of creating a strong chemical bond between alloys and polymers for dental devices based on diazonium chemistry. The chemical bond between metals (i.e. titanium or stainless steel) and polymers (i.e. poly- methyl methacrylate, PMMA or Bisphenol A-glycidyl methacrylate, Bis-GMA) was achieved in two steps. In the first reaction step (primer), the aryldiazonium salts were chemically reduced to form aryl radicals which spontaneously got grafted onto the metallic surfaces. The second step of the reaction (adhesive) was optimized to achieve covalent binding between the grafted layer and PMMA or Bis-GMA. The chemical composition of the treated surfaces was analyzed with X-ray photoelectron spectroscopy (XPS), and the bonding strengths between alloys and PMMA or Bis- GMA were measured. XPS characterization and contact angle measurement confirmed the presence of a polymer coat on the treated metallic surfaces. Whereas, the mechanical test results showed a significant increase of the tensile bond strength between PMMA and treated titanium or stainless steel wire by 5.2 and 2.5 folds, respectively, compared to the untreated control group ($P<0.05$). Moreover, the bonding strength between metallic brackets and Bis-GMA composite was increased after the treatment depending on the bracket design by 2 to 3.9 folds compared to untreated brackets. Diazonium chemistry provides an effective way of achieving a strong chemical bond between alloys and PMMA or Bis-GMA. The resulting bonding method can be utilized to further improve the properties of dental devices, reduce debonding of dental prostheses and brackets, provide more leverage in orthodontic cases with complex mechanics, and allow the use of brackets with smaller bases.

2-2-110	
Title	**The HIV-1 Nef Accessory Protein Induces B Cell Abnormalities and Autoimmunity**
Author	Nirmin Alsahafi
Program	Master of Science in Cellular and Molecular
University	McGill University
Year	July 2014

Abstract

The HIV-1 Nef protein is known to be the major determinant of HIV-1 pathogenesis. It causes multiple abnormalities not only in the virus main target CD4+ T cells, but also other lymphocytes and myeloid cells. Studies of patients living with HIV-1 suggest that it impairs B cell functions. Poudrier J. (2001) examined the impact of the HIV-1 Nef accessory protein on B cells based on the expression of Nef in CD4+ cells of the CD4C/HIV-1Nef Tg mouse model, and established that it induced Ig switch defects and impairment in germinal centres(GC), as well as increased secretion of immunoglobulin M (IgM). This study aimed to determine the effect of Nef on B cell populations and functions in a mouse model. First, we examined changes in B cell subsets beginning in the bone marrow and continuing to the periphery. The presence of B cells in the bone marrow of Tg mice was normal in comparison to WT mice, which can be explained by the low expression of Nef in CD4+ cells. In the periphery, abnormalities of B cell subsets reflected the effect of the Nef protein expression on CD4+ cells, which led to the decline in the percentage of early immature transitional B cells and enrichment of mature cells that seemed to be correlated with down-modulation of surface expression CD21 and CD23. Second, in the presence of the Nef protein we observed the dysregulation in B cell activity, namely an increase in their proliferation and activation and may correlate with the increase in their percentage. Third, we explored a possible involvement of the HIV-1 Nef protein in HIV-related B cell lymphoma by using an Ig gene-translocation mouse model with Burkitt lymphoma. Finally, we investigated the presence of autoimmunity in the serum of the CD4C/HIV-1Nef Tg mouse model, which showed that expression of Nef alone in CD4+ T cells can trigger anti-DNA antibodies with IgM specificity and the deposition of IgM in the kidney glomeruli. These results suggest an active involvement of the HIV-1 Nef protein in B cell abnormalities and autoimmunity.

2-2-111	
Title	**The Effect of Naphthoquinones on Gap Junctional Intercellular Communication**
Author	Omar Abdulrahman AL Omair
Program	Master of Science in Pharmaceutical Sciences
University	University of Alberta
Year	2014

Abstract

Gap junctions are groups of channels that connect two neighboring cells, allowing for the passage of small molecules, such as nutrients and signalling factors, between cytosols. Gap functional channels consist of building blocks called connexins. Cancer cells exhibit a low basal level of gap junctional intercellular communication (GJIC), and experimental animals that lack certain connexins were shown to develop cancer at faster rates than their healthy counterparts. Here, we investigate the effect of synthetic and natural naphthoquiones on connexin43 and on GJIC in order to identify potential modes of interference of quinoid compounds with cellular pathways that control GJIC. WB-F344 rat liver epithelial cells were exposed to synthetic and natural naphthoquinones. Phosphorylation of connexin-43, the epidermal growth factor receptor (EGFR) and extracellular signal-regulated kinases (ERK- 1,-2), were analysed by Western blotting. Naphthoquinone toxicity profiles were established using neutral red uptake for assessment of cell viability. Assessment of GJIC was performed by microinjection of a channel-permeant fluorescent dye, Lucifer yellow, into single cells and microscopic analysis of its spreading to cells adjacent to injected cells. Of the naphthoquinones tested, menadione (2-methyl-1,4-naphthoquinone, MQ), 2-methoxy-1,4-naphthoquinone (MNQ) and 2,3-dimethoxy-1,4-naphthoquinone (DMNQ) caused a significant phosphorylation of connexin-43 at different concentrations. In line with this, GJIC was significantly downregulated after 20 min of exposure to MQ, MNQ or DMNQ. In conclusion, Redox-cycling naphthoquinones (with exclusive redox-cyclers, such as DMNQ, and alkylating/redox-cycling naphthoquinones, such as MQ and MNQ) stimulate connexion phosphorylation and a loss of GJIC.

2-2-112	
Title	**Evaluation of Physical and Chemical Techniques for Decontaminating Food and Food Contact Surfaces**
Author	Abdulhakeem Abdullah Alzahrani
Program	Master of Science in Food Science
University	University of Guelph
Year	July, 2014

Abstract

A range of novel surface decontamination methods for treating food and food contact surfaces have been evaluated. A unit based “cold steam” that was generated by heating water under high pressure and temperature was shown to support reduction >4 log cfu of E. coli and Listeria on a range of surfaces (stainless steel, cutting boards and agar plates). However, bacterial inactivation was more associated with thermal effects as opposed to generation of free radicals. Hydroxyl radical generators supported reduction of bacteria on surfaces including lettuce. However, it was unclear if the antimicrobial effect was due to drying effects or via radical formation. Coatings based on titanium dioxide and cocamidoropyl betaine could inactivate vegetative cell inoculated on food contact surfaces although Bacillus endospores were resistant. The most effective treatment evaluated was acidic electrolyzed water that could decontaminate a range of food and contact surfaces without detrimental effects.

2-2-113	
Title	**Relationship between active contact location and clinical outcome in the treatment of Parkinson’s disease with high frequency deep brain stimulation of the subthalamic nucleus**
Author	Fahd AlSubaie
Program	Master in Neuroscience
University	McGill University
Year	March 2014

Abstract

Parkinson’s disease (PD) is a common neurodegenerative pathology that leads to significant impairment of motor function. Medical as well as surgical treatments are available for PD. However, surgical treatment is offered after exhaustion of medical approaches or intolerance to medical treatment. Deep brain stimulation of the subthalamic nucleus (STN-DBS) is one method of surgical treatment that was introduced in the 1990s. STN-DBS results in marked alleviation of selected symptoms and signs associated with the motor disorder. Despite its increasing use as a target, the best area of stimulation as well as the mechanism of action of STN-DBS remains largely unexplored. We conducted a retrospective cohort analysis to correlate patient’s motor outcome and contact location in postoperative imaging. Images were fused to a standard MRI brain template (Colin 27) using the automated non-linear image matching and anatomical labeling (ANIMAL) protocol. Both the fusion techniques and the localization methods were analyzed for validity in a Parkinson’s patient population. Stimulation parameters were incorporated in this analysis using a recently published model. Motor outcome associated with 180 leads was analyzed 6 months following surgery and compared with motor function prior to surgery. There was a statistically significant positive correlation between stimulation location in the lateral and dorsal subthalamic area and motor outcome. Contact localization for optimal motor outcome was shown in the region of the lateral dorsal subthalamic nucleus and zona incerta using a voxel-labeled cytoarchitectonic brain atlas.

2-2-114	
Title	**Influence of Material and Technique on Occlusal Chipping of All-Ceramic Molar Crowns**
Author	Majed Alsarani
Program	Master of Science in Restorative Dentistry
University	University of Toronto
Year	March 2014

Abstract

Objective: To evaluate the effect of material and fabrication technique on chipping behavior of all-ceramic molar

crowns. Materials & methods: A molar tooth with crown preparation was used to make fifty identical replicas from epoxy resin (n=10). Porcelain-fusedto-metal crowns (PFM) constituted the control group. There were four experimental groups: monolithic CAD/CAM lithium disilicate glass-ceramic crowns (LDG); Zirconia core 0.5 mm thick veneered with feldspathic porcelain added by hand-layering (ZVL), by heat-pressing (ZVP) and CAD/CAM milled lithium disilicate glass-ceramic veneer (CAD-on). All crowns were subjected to compressive cyclic loading at mesio-buccal cusp at 30° angle in universal testing machine. Results: All LDG and CAD-on crowns survived fatigue test; while all specimens of PFM, ZVP and ZVL groups failed at different stages of the 500,000 cycles fatigue test (P<.001). Conclusion: Use of lithium disilicate glass-ceramic as a monolithic crown and as a veneering material significantly improved chipping resistance of all-ceramic crowns

2-2-115	
Title	**RNA-Binding Protein Nudt21, A Novel PRL Down-Regulated Gene, Reveals the Anti Invasive Role of PRL in Breast Tumoriogenesis**
Author	Anwar Mustafa Shams
Program	Master of Science in Experimental Medicine
University	McGill University
Year	April, 2014

Abstract

Various clinical studies have explored the protective role of pregnancy, breast-feeding, and lactation in reducing the risk of breast cancer. The Prolactin (PRL): PRL /Jak2/Stat5 pathway is the major pathway involved in mammary duct differentiation, alveologenesis, mammpoesis, and milk production. Apart from its role in these processes, the role of PRL in human breast tumoriogenesis remains to be fully described. Identifying the role of PRL in this complex disease will help clarify the mechanisms by which breast-feeding and lactation protect the mammary gland from malignancy. In this study, we aimed to examine the expression of PRL and its downstream signaling components prolactin receptors (PRLR), JAK2 and B-casein in human breast cancer by immunohistochemistry. To this end, we analyzed a tissue microarray (TMA) consisting of 100 clinical cases of invasive ductal breast carcinomas with various histological grades. Our results indicate a down-regulation of PRL and its downstream signalling components in breast cancer patients and an inverse correlation between PRL expression and cancer grade. In addition, using a breast cancer gene-profiling database KM-plotter, we suggest the expression of PRL and its signaling components as markers for favorable prognosis in breast cancer patients. Using microarray data of two sets of HC11 cells (normal mouse mammary epithelium cell line) treated with PRL for 24hrs/ untreated cells, we identified Nudt21 as a novel PRL target gene down regulated by 2.6 fold. We observed NUDT21 to be highly expressed in aggressive human breast cancer and its expression to be negatively correlated with good clinical prognosis. We also demonstrate the association between NUDT21 overexpression and aggressive phenotype and suppression of the pro-differentiation effects of PRL. Collectively, our data suggests that PRL suppresses the progression of breast cancer through its pro-differentiation and anti-invasive effects. It also identifies PRL and its downstream signalling components as markers for favourable prognosis. Together, our study shows the significant value of PRL as a suppressor player in human breast cancer.

3-2-116	
Title	**How High-technology Female Entrepreneurs Perceive and Overcome Startup Challenges**
Author	Afaf Alzahrani
Program	Masters of Applied Science in Technology Innovation Management
University	Carleton University
Year	2014

Abstract

This research investigates the problems and challenges facing high-technology female entrepreneurs in Canada. After an extensive literature review on entrepreneurial challenges and means to overcome them, five Ottawa-based women technology entrepreneurs were interviewed to find out how they perceive these challenges. The findings show that they considered the most important challenges as the lack of technologically innovative business ideas, the lack of sufficient business network, and the lack of business and management skills. The study contributes to the entrepreneurship literature by suggesting that these external challenges to female technology entrepreneurship are more essential than internal factors including family obligations, the lack of motivation, or the difficulty of overcoming previous bad experiences. The findings suggest that aspiring female technology entrepreneurs should partner with entrepreneurial support organizations such as 'Lead to Win for Women' and academic educational programs such as Carleton University's TIM program to get better technological ideas and business advice.

3-2-117	
Title	**Title Improving the Management of Controllers' Interruptions through the Working Awareness Interruption Tool: WAIT**
Author	Meshael Alqahtani
Program	Master of Applied Science In Systems Design Engineering
University	University of Waterloo
Year	2014

Abstract

Interruptions in time-critical, dynamic, and collaborative environments, such as air traffic control (ATC), can provide valuable, task-relevant information. However, they also negatively impact task performance by distracting the operator from on-going tasks and consuming attention resources. This thesis develops and assesses a tool to assist radar air traffic controllers in managing interruptions. Field observations and interviews with air traffic controllers were utilized to develop an understanding of how interruptions occur in real ATC environments, and to identify where opportunities exist to use technology to support the interruption management process. It was identified that operators in these environments could better manage the effects of interruptions if there were indications to one operator of the availability of a collaborator and the urgency of an interruption from a collaborator. Present communication systems do not facilitate the awareness of these functionalities. An initial prototype for providing these functionalities in operational ATC displays was designed. Feedback on the prototypes was solicited through Participatory Design (PD) sessions with air traffic controllers. Based on the refinement of these prototypes, the Working Awareness Interruption Tool (WAIT) was developed to support more efficient and appropriate interruption timing in the context of complex, real-time, distributed, human operator interactions. Variations of the tool demonstrated several ways of showing the availability of the controller to be interrupted (either through manual settings or automatic detection) as well as incorporating a means of conveying the urgency level of the interruption. V In order to examine the utility of the tool and to assess the importance and validity of its features, an experiment was conducted in a laboratory-based setting. The results of the experiment show the potential of this tool in an environment representative of air traffic control tasks and communication. Although the sample size was limited, the WAIT facilitated improved performance on both objective measures and self-reported measures, and reduced the distraction effects of interruptions from other operators. These improvements occurred without affecting perceptions of the effectiveness of communications. Questionnaire and interview results showed that participants appear to prefer an automated setting of availability to be shown to other collaborators. Identifying two examples of key features supporting interruption management (communicating availability and urgency) in air traffic control is one of the key contributions of this work. The work also makes a contribution by demonstrating that providing a tool incorporating these features can improve performance in an environment representative of ATC, albeit with naïve participants. Finally, the research makes a contribution by presenting the challenges associated with evaluating interruption management tools that require collaboration between operators in a system.

3-2-118	
Title	**Knowledge Management in Collaborative Environment and Service Oriented Organizations**
Author	Fahad Alaieri
Program	Master of Science in Electronic Business Technologies
University	University of Ottawa
Year	2014

Abstract

In this research, we propose a knowledge management architecture in a collaborative environment and service oriented organization. The architecture contains five components, including partners, knowledge bases, portals, pipes, and cloud. Each segment of knowledge which is created in partners' portals will be displayed in the cloud. The cloud contains knowledge from portals. Portals and the cloud will be linked by a specific type of connections (pipes), which presents the knowledge to the cloud without copying them. We implement the proposed architecture online to prove its validity. The prototype that we examine has three partners including finance, insurance, and transportation. Each partner creates knowledge by using its portal and saving it in its own knowledge base (KB). Likewise, each partner has an access to other partners' portals to ask questions or perform inquiries. The answered questions are saved in the KBs and displayed in the cloud. For implementation, we use Joomla as CMS portals, K2 as KB in each portal, Yahoo Pipes as connections between the portals and the cloud. Finally, the cloud is a webpage that displays knowledge from different portals. We demonstrate that the proposed architecture facilitates sharing knowledge among the partners in the VO, and prevents knowledge duplications in different KBs. Moreover, we could move the stored knowledge from KB to another by using backup feature the CMS portal if any partner want to leave or the VO decides to terminate.

3-2-119	
Title	**A Saudi Arabian Study of the Relationship between the Socio-Psychological Profile and Consumers' Behavior toward Online Shopping**
Author	Shahad Bakerman
Program	Master of Science in Electronic Business Technologies
University	University of Ottawa
Year	2014

Abstract

This study assesses consumer behavior toward online shopping in Saudi Arabia by studying the factors that affect

whether or not they shop online. The sample consisted of 206 Saudis approached using the "snowball" technique. Participants were all above eighteen and Internet users. Participants were asked to give the frequency of their online shopping transactions using a four-point Likert scale. They used a seven-point Likert scale to rate their opinions about trends affecting electronic commerce, companies' marketing approaches, and other aspects of online shopping. Participants also were asked about their feelings regarding traditional and online shopping using a nine-point bipolar scale. Using the Six Dimensional Achievement Motivations Scale, they were asked to describe themselves, and finally, they were asked to rank the Rokeach Terminal Values based on their importance. The version of the Rokeach Value System used in this study is the one shortened to nine terminal values, by Munson & McQuarrie, 1988, since it reflects better relevance to consumption. Results show that, when compared to traditional shopping, participants have relatively negative perceptions of online shopping. In addition, participants' demographics and values related to their online shopping frequency, while their achievement motivations were less related. The major limitation of this research is that it was conducted in only one city, Jeddah. Therefore, additional research should be carried out in other cities with larger samples. The research results suggest that businesses in Saudi Arabia should use online shopping as a second channel to distribute their products in addition to their physical stores. This thesis makes a distinctive contribution to the literature, as it is the first to examine the correlation between the Rokeach Value System (1973); the Six Dimensional Achievement Motivation Scale (Jackson, Ahmed, and Heapy, 1976); and online shopping behavior in the world, let alone Saudi Arabia.

4-1-120	
Title	**Representations of Identity and the Other Selves in Byron's Major Works of 1812-1815**
Author	Mariam Mohammad Radhwi
Program	Doctor of Philosophy in English
University	University of Calgary
Year	2014

Abstract

In his visual and verbal works of 1812-1815, Byron's conception about personal and political identity progresses steadily. When observing the identities he had encountered during his travels, he realizes the flaws in existing binary definitions of self and other and represents identity in what I describe as the other selves. Manipulating the nineteenth-century metaphor of the separation between the outside and the inside, stereotypes about appearance, and prevalent literary conventions, Byron challenges his audience to read these works. His complex construction of both his protagonists and his tales about the lands which were under Ottoman rule generate multiple, and perhaps contrary, readings. The writings accompanying these texts and their numerous revised editions further enhance the multiple readings these works propose. I have interpreted Byron's representations by using a historical approach, which correlates both his visual and verbal works with his personal writings and with the occurrences in the political and national spheres, especially the French revolution, the fall of Napoleon, and the Ottoman occupation of Greece. Identity in Byron's major works of this period is an elusive construct which changes according to the changes in temporal and personal perspectives, and according to context.

4-2-121	
Title	**Challenges Experienced by Saudi Female Students Transitioning Through Canadian Pre-academic ESL**
Author	Arwa Mohammed Altamimi
Program	Master of Arts
University	Mount Saint Vincent University
Year	2014

Abstract

This study explored the issues for female Saudi students studying English in Halifax, Nova Scotia, Canada that might have a negative impact on the development of proficiency in spoken English. A mixed methods approach was used. A 38 item questionnaire was completed by 61 participants. It asked about experiences within the classroom, opportunities to talk to others, level of comfort speaking, and the relative importance of speaking, reading, and writing. Structured interviews were conducted with four students, two teachers, and two support staff (receptionists) to enrich the knowledge gained from the questionnaire. Results indicated that Saudi female students had issues with self-confidence, shyness, and a fear of making mistakes. While it can be argued that all ESL students have similar issues, the sense was that the issues were more profound for Saudi females than for other females or for Saudi males. As well, Saudi female had additional cultural differences that had a major impact on performance. Firstly, Saudi women – even those with university education -- are unaccustomed to co-educational classes and male teachers. Secondly, Saudi women are expected to defer to males. As such, the presence of males in the classroom causes Saudi women to remain silent. Thirdly, Saudi women are not expected to interact outside the home, or with males. As such, Saudi women socialize only with Saudi women and do not have the opportunity to practice speaking. Finally, Saudi women are expected to have all business transactions conducted by a male relative (husband, father, brother) and as such, have little opportunity to practice speaking even for official reasons. Recommendations for Saudi women, the Saudi and Canadian governments, and ESL instructors are provided.

4-2-122	
Title	**Professional Intervention and Practice for the Development and Analysis of Social Interaction Skills of Children with Different Abilities in both Inclusive and Non-Inclusive Environments**
Author	Shuaa Mutawally
Program	Master of Science in Applied Disability Studies
University	Brock University
Year	2014

Abstract

The focus of this project is on Professional Intervention and Practice for the Development and Analysis of Social Interaction Skills of Children with Differing Abilities in both Inclusive and Non-Inclusive Environments. The following research questions were addressed in order to better understand the importance of social skills in young children particularly, children with different abilities and to answer the question can recreational and leisure activities increase social interaction skills? The sub questions were a) to explore what are the effective strategies used by professional intervention and practice to help improve the social interaction skills of children with different abilities in a recreational and leisure setting b) to examine if participating in inclusive recreational environments from a young age promote social interaction between typically developing peers and children with different abilities c) to explore typically developing children's perspective towards their peers with different abilities. These research questions were answered using a qualitative approach to inquiry, more specifically ethnographic case studies. I collected four data sets to answer my research questions: children's drawings, inclusive community parks, community website photos, and an archival journal. I analyzed my data sets both inductively and deductively. My findings showed that social interaction skills are an important aspect for both typically developing children and children with differing abilities. Usable recreation settings allow children to practice these skills from an early age through physical and mental activity that promote social interaction. These social interaction skills can be later translated into life skills in adulthood. These results complement previous literature, which found the development and use of social skills in early childhood is important to a successful social life in adulthood (Liebkind et al., 2012).

4-2-123	
Title	**Visual Verses: From the Form of Spirit to the Spirit of Form**
Author	Rawaa Bakhsh
Program	Master of Science in Art, Media and Design
University	OCAD University
Year	2014

Abstract

Visual Verses: From the Form of Spirit to the Spirit of Form, is a personal spiritual journey that re-envisioned the studio as a sacred space, and art making as a spiritual practice, during a process of cultural adaptation from a religious context (Saudi Arabia) to a secular one (Canada). The project used a number of methodologies that integrate elements of Ta'wil, sound visualization, and art making as worship within the theoretical framework of Sufism and Sufi practice. The investigation culminated in the visual representation of Islamic holy scripts in new ways, beyond the traditional methods of calligraphy; the work is thus situated between a strongly religious background and contemporary art practice. This visual exploration was an attempt to combine the spiritual path and studio practice of a Sufi artist, and thereby highlight the author's spiritual journey as a form of self-exploration and cultural adaptation

4-2-124	
Title	**The Acquisition of Gender Agreement in Adult Learners of Arabic**
Author	Ali Alamry
Program	Master of Arts in Applied Linguistics and Discourse Studies
University	Carleton University
Year	2014

Abstract

The grammatical gender system is considered one of the most challenging structures that L2 learners must acquire. Part of this difficulty lies in the complexity of the system itself, and also from the fact that this system is one of the significant areas in which languages differ. Arabic is a language that has a rich grammatical gender system. It is comprised of two gender classes - masculine and feminine - that can be applied to nouns, verbs, adjectives and pronouns. The present study investigates the acquisition of subject-verb gender agreement in Arabic. The participants were adult L2 learners of Arabic with different native language backgrounds at two different levels of proficiency, as well as native speakers of Arabic. The participants were divided into three groups: the first group consisted of learners who have a grammatical gender system in their L1; the second group consisted of learners who do not have a grammatical gender system in their L1; and the third group consisted of native speakers of Arabic serving as a control group. One comprehension and three production tasks were used to elicit the data. The results from all tasks showed that none of the L2 learner groups performed as well as the native control group. Most importantly, there was no significant difference between the learners who have a grammatical gender system in L1 and learners who do not, suggesting no effect of L1. There was a significant effect of proficiency level; the advanced learners significantly outperformed the intermediate learners. The

findings of this study are discussed in light of two different hypotheses regarding the availability of parameter resetting in L2 acquisition. These hypotheses are the Full Transfer/ Full Access Hypothesis and the Failed Functional Feature Hypothesis. To some extent, the results lend support to the former hypothesis.

4-2-125	
Title	**Marriage Contracts in Saudi Arabia: the Public and Private Dimensions**
Author	Loujayn Alhokail
Program	Master of Laws
University	Dalhousie University
Year	2014

Abstract
The Saudi Arabian state has recently demonstrated its readiness to enhance Saudi women's rights. It has done this by making some changes that are intended to create more opportunities for women in the public sphere. Most of the changes, however, have faced social resistance from some members of the Saudi community, with the result that their progress has slowed. This thesis examines the use of marriage contracts as a tool to hasten the pace of that progress. This is done by giving women, who are interested, a tool that enables them to take advantage of the new opportunities provided to them by the state. This thesis aims toward using marriage contracts to give women the right to decide their access to the public sphere despite the existence of the guardianship rule that requires all women to get the consent of the their male guardians to have access to that sphere.

4-2-126	
Title	**Male Students' Experiences in Urban High School Physical Education in Makkah, Saudi Arabia**
Author	Majed Alharbi
Program	Master of Arts in Human Kinetics
University	University of Ottawa
Year	2014

Abstract
This study explores male students' experiences in physical education in an urban secondary high school in Makkah, Saudi Arabia. Drawing on Pierre Bourdieu's concepts of body habitus, social, and physical capital, the purpose of this qualitative case study is to develop a better understanding of Saudi youth body dispositions that influence their experiences in physical education. The paper reports upon data generated by semi-structured interviews with 27 male students between the ages of 15 and 20, all of whom attended one public secondary school in Makkah during the fall of 2012. The PE teacher and the school director were also interviewed. The study emphasizes that the early childhood experiences in particular the socialization process within the family and among neighbourhood friends is important in shaping their body habitus. The study reveals that students coming to the PE class embodied different social practices and attitudes that reflect their family's social and material conditions. In addition, family and peers influences on students' PE participation intersected with other conditions such as institutional barriers (i.e. lack of funding, PE equipment, changing and showering rooms) and the PE teacher's pedagogical approach. The study indicates that the more initial support students receive from their social networks in physical activity, the more they actively participate in the PE class. Students with high physical body skills have a high level of participation in PE while those with low physical body skills have a low level of participation, some then being marginalized. Hygiene is another issue that concerns some students in ways that prevents them from participation in PE. Surprisingly, the Saudi adult masculine identity associated with traditional clothing (thawb) is also a condition that influences student PE participation.

CHAPTER 3
Published Papers

1-3-127	
Title	**Approximate dynamic programming modeling for a typical blood platelet bank**
Authors	**U. Abdulwahab**, M.I.M. Wahab
Program	Doctor of Philosophy in Mechanical and Industrial Engineering
University	Ryerson University
Journal	Computers & Industrial Engineering 78 (2014) 259–270
Year	2014

Abstract
This paper introduces a workable model for the establishment of an inventory bank holding perishable blood platelets with a short shelf life. The model considers a blood platelet bank with eight blood types, stochastic demand, stochastic supply, and deterministic lead time. The model is formulated using approximate dynamic programming. The model is evaluated in terms of four measures of effectiveness: blood platelet shortage, outdating, inventory level, and reward gained. Moreover, several alternative inventory control policies are analyzed. The order quantity decision is taken using a news-vendor model. In addition, the variation of the O_ percentage is studied. This study confirms that the blood platelet bank reward can be maximized by operating at the optimal inventory level, thereby minimizing the number of outdated units as well as shortages. In addition, the suitable O_ percentage within the blood platelet bank inventory was studied. As the O_ blood type inventory levels increase to 40%, shortages drop from 3.9% to 1.5%. Outdated units drop from 4.6% to 1.8%. Furthermore, when the order quantity is received twice a day, shortages drop to 1.8% and outdated units drop to 2.1%.

1-3-128	
Title	**Synthesis of a cone-conformer bimodal calix[4]arene-crown-5 which forms a sensitive cesium ion sensing layer on gold-coated microcantilevers**
Authors	Gopikishore Valluru, Shofiur Rahman, Paris E. Georghiou, Louise N. Dawe, **Abdullah N. Alodhayb** and Luc Y. Beaulieuc
Program	Doctor Of Philosophy in Physical Science
University	Memorial University
Journal	New J. Chem. Received (in Porto Alegre, Brazil) 19th July 2014, Accepted 14th September 2014
Year	2014

Abstract
A “bimodal” or upper- and lower-rim functionalized “calix-crown-5” reported herein was unexpectedly formed preferentially in a cone conformation. This was confirmed both by NMR spectroscopy and by single-crystal X-ray crystallography. The thioacetate functionalities on the new calix-crown-5 enabled it to form stable SAMs on the Au surface of a microcantilever, and a sensitive cesium ion sensor.

1-3-129	
Title	**Decision assistance agent in real-time simulation**
Authors	**Mohammed Talat Khouj**, Sarbjit Sarkaria and José R. Marti
Program	Department of Electrical Engineering
University	University of British Columbia
Journal	Int. J. Critical Infrastructures, Vol. 10, No. 2, 2014
Year	2014

Abstract
Urban society relies heavily on critical infrastructure (CI) such as power and water systems. The anticipated prosperity and the national security of society depend on the ability to understand, measure and analyses the vulnerabilities and interdependencies of this system of infrastructures. Only then can emergency responders (ER) react quickly and effectively to any major disruption that the system might face. In this paper, we propose a model to train a reinforcement learning (RL) agent that is able to optimize resource usage following an infrastructure disruption. The novelty of our approach is the use of dynamic programming techniques to build an agent that is able to learn from experience, where the experience is generated by a simulator. The goal of the agent is to maximize an output, which in our case is the number of discharged patients (DP) from hospitals or on-site emergency units. We show that by exposing such an intelligent agent to a large sequence of simulated disaster scenarios, we can capture enough experience to enable the agent to make informed decisions.

1-3-130	
Title	**Antio xidant, anti-inflammatory and DNA scission inhibitory activities of phenolic compounds in selected onion and potato varieties**
Authors	**Tasahil Albishi**, Jenny A. John, Abdulrahman S. Al-Khalifa, Fereidoon Shahidi
Program	Biochemistry and Biotechnology
University	Memorial University
Journal	Journal of Functional Foods 5 (2 0 1 3) 9 3 0 –9 3 9
Year	2014

Abstract
Processing of onion and potato produces a large amount of discards, mainly skins. This study compared the antioxidant activity of skin and flesh phenolics of selected onion (Pearl, Red, Yellow and White) and potato (Purple, Innovator , Russet and Yellow) varieties. All tests were e carried out separately for the soluble and insoluble-bound phenolic constituents of onion and potato samples. The potency of the phenolic extracts in the inhibition of radical-induced DNA scission, human low-density lipoprotein (LDL) cholesterol ol oxidation and LPS-stimulated cyclooxyg enase-2 (COX-2) expression in J774A.1 mouse macrophage cells were monitored. Results showed that the soluble extracts had a higher phenolic content and antioxidant activity than the insoluble-bound extracts in most of the assays. Both onion and potato phenolics exhibited notable inhibition of LDL cholesterol oxidation, DNA scission and CO X-2 expression at concentrations as low as 5 lg/mL. Pearl onion skin and Purple potato peel phenolics exhibited the highest activities among the tested onion and potato varieties, respectively.

1-3-131	
Title	**Configuring the Webpage Content through Conditional Constraints and Preferences**
Authors	**Eisa Alanazi** and Malek Mouhoub
Program	Department of Computer Science
University	University of Regina
Journal	IEA/AIE 2014, Part II, LNAI 8482, pp. 436–445, 2014
Year	2014

Abstract
Configuring the webpage content to reflect the user desires is highly demanded in the era of personalization. The problem can be viewed as a preference-based constraint problem including a set of components forming the webpage along with the preferences. Our goal is then to locate each of these components such that the user preferences are maximized. Additionally, constraints might exist between different components of the given page. We investigate the problem of handling the web page content based on user preferences and constraints. Unlike previous attempts, we model the constraint part as an instance of the conditional CSP. This gives further expressive power to handle different relations among components. The preferences are expressed through the well-known CP-Nets graphical model.

1-3-132	
Title	**Evaluation of an Online Shopping System under Preferences and Constraints**
Authors	**Bandar Mohammed**, Malek Mouhoub
Program	Computer Science
University	University of Regina
Journal	IEEE May 04 to May 07 Toronto, Ontario (Canada) http://www.ieee.ca/ccece14
Year	2014

Abstract
Designing interactive systems with graphic user interfaces is an important step in the development of online devices and websites. Online shopping systems and recommender applications have improved in the last decade and they are now widely used all over the world. However, it is important to understand online shoppers needs and preferences and to take them into account. In this regard, several online shopping systems rely on customer preference elicitation while others suggest products based on other customers recommendations. The focus of this paper is the interaction design of a system for Managing Preferences and Constraints (MPC) and Preferences Learning (PL). An evaluation method is utilized to obtain user feedback on how effective the system is and how easy it is to use, compared to other systems.

1-3-133	
Title	**Analysis and Optimization of a Queuing Model in the Service Industry**
Authors	Ziad Hassoun, **Weam Munshi**, Amy Hsiao
Program	Mathematics and Statistics
University	Memorial University of Newfoundland
Journal	IEEE Newfoundland and Labrador Section, Thursday, Nov. 7, 2013
Year	2014

Abstract
In this paper, we develop, design, analyze and optimize a queuing model that may be applied in a costeffective way in any service industry. We consider the Queen Elizabeth II Library at Memorial University of Newfoundland and Labrador, who provides a variety of services to its students and faculty members as a case study in our project. We critically analyzed the existing system and used a queuing model to optimize its service quality. This paper suggests that an implementation of the M/M/K queuing model and simulation program to optimize the current queuing system by controlling its influential parameters to improve performance measurements.

1-3-134	
Title	**Utilization of inherent miRNAs in functional analyses of Toxoplasma gondii genes**
Authors	Anna K. Crater, **Emad Manni**, Sirinart Ananvoranich
Program	Master in Biochemistry
University	University of Windsor
Journal	Journal of Microbiological Methods 108 (2015) 92–102
Year	2014

Abstract
MicroRNAs (miRNAs) are crucial genetic effectors partaking in numerous mechanisms of gene regulation in eukaryotic organisms. Recent discoveries of miRNA in Toxoplasma gondii, an intracellular obligate parasite of the phylum Apicomplexa, suggested possible roles of T. gondii miRNAs (Tg-miRNAs) in the posttranscriptional gene regulation and in the cell biology of the parasite. To gain a better understanding of the involvement of Tg-miRNAs in regulating the parasite gene expression, a dual luciferase reporter system was used in the examination and evaluation of the effects of endogenous Tg-miRNAs, their mimics and inhibitors. A Renilla luciferase (Rnluc) transcript was engineered to carry independent binding sites of two abundant species, namely Tg-miR-60a and Tg-miR-4a, so that the expression of Rnluc was silenced in a sequence specific manner by Tg-miR-60a and Tg-miR-4a. Notably, Tg-miR-60a, but not Tg-miR-4a, caused the levels of Rnluc transcripts to decrease. These findings strongly suggested that T. gondii employs the Tg-miRNA species-specific mode of silencing actions: transcript degradation by Tg-miR-60a, and translational suppression by Tg-miR-4a. Herein we developed a genetic system that exploits and directs the most abundant TgmiR- 60a for loss-of-function analyses in T. gondii. As a proof of principle, we showed that when the binding sites for Tg-miR-60a were introduced into the parasite transcripts via homologous recombination at the locus of (i) DEAD-box RNA helicase (TgHoDI), or (ii) lactate dehydrogenase isoform 1 (TgLDH1), the expression levels of the selected genes can be altered. It was thus proven that inherit Tg-miR-60a could be directed and used to assist in the loss-of-function analyses.

1-3-135	
Title	**Energetic and exergetic studies of a multigenerational solaregeothermal system**
Authors	**M. Al-Ali**, I. Dincer
Program	Master in Mechanical Engineering
University	University of Ontario Institute of Technology
Journal	Applied Thermal Engineering 71 (2014) 16-23
Year	2014

Abstract
A new multigenerational integrated geothermalesolar system is presented in this paper to produce electrical power, cooling, space heating, hot water and heat for industrial use. Energy and exergy analyses are carried out to show the performance of the system and compare the results of single generation, cogeneration, trigeneration and multigeneration systems. A parametric study is conducted to investigate the effects of operating conditions and environment parameters on the system performance. The energy efficiencies for single-generation and multigeneration systems are found to be 16.4% and 78%, respectively, while the exergy efficiencies become 26.2% and 36.6%, respectively. The results show that 75% of the exergy destruction takes place in the solar collector system.

1-3-136	
Title	**Design and development of a user centric affective haptic jacket**
Authors	**Faisal Arafsha**, Kazi Masudul Alam, Abdulmotaleb El Saddik
Program	PhD-Electrical and Computer Engineering
University	University of Ottawa
Journal	Multimedia Tools and Applications November 2013
Year	2013

Abstract
Affective haptic research is a rapidly growing field. This article intends to improve the existing literature and contribute by involving consumers directly in the design of a smart haptic jacket by adding heat, vibration actuators, and by enhancing portability. The proposed system is designed for six basic emotions: love, joy, surprise, anger, sadness, and fear. Also, it can support several interacts such as a hug, poke, tickle or touch. An online survey was designed, based on literature, and conducted on 92 respondents, who gave their opinion about the physiological impact of emotions and interactions on the human body. The results of this survey assisted in the general design and implementation of the system. 86 % of the volunteers who participated in the final experiment expressed their interest in the system and said that the quality of their multimedia experience was improved through use of the jacket. Detailed design architecture is provided, along with the details of the hardware and software used for the implementation.

1-3-137	
Title	**Simultaneous confidence bands for low-dose risk estimation with quantal data**
Authors	Jianan Peng*, Megan Robichaud, and **Abdelaziz Q. Alsubie**
Program	Master in Mathematics
University	University of Acadia
Journal	Biometrical Journal 00 (2014) 00, 1–12
Year	

Abstract
Risk assessment studies where human, animal or ecological data are used to set safe low dose levels of a toxic agent are challenging as study information is limited to high dose levels of the agent. Simultaneous hyperbolic confidence bands for low-dose risk estimation with quantal data have been proposed in the literature. In this paper, a new method using three-segment confidence bands to construct simultaneous upper confidence limits on extra risks and simultaneous lower bounds on the benchmark dose for quantal data is proposed. The proposed method is illustrated with a real data application and simulation studies.

1-3-138	
Title	**Catalytic Pyrolysis of Straw Biomasses (Wheat, Flax, Oat and Barley Straw) and the Comparison of their Product Yields**
Authors	A. Aqsha, **M.M. Tijani** & N. Mahinpey
Program	Master of science in Chemical Engineering
University	University of Calgary
Journal	Energy Production and Management in the 21st Centuray, Vol 2 1007, WIT Press, Ashurst Lodge, Ashurst, Southampton SO40 7AA, UK, 2014
Year	2014

Abstract
Biomass can be converted through biochemical and also thermochemical conversion. Pyrolysis is considered one of the thermochemical processes that can be used to breakdown biomass into a liquid product called bio-oil. Pyrolysis of Canadian straw biomasses was studied using a thermogravimetric analyzer (TGA) and a bench-scale horizontal fixed bed reactor, to understand the devolatilization process and, to obtain information about their product yields. In this work, the results of experimental studies on the pyrolysis of several Canadian biomasses are described. The pyrolysis of straw biomass was performed in a fixed-bed reactor at temperatures of 500 °C, to study the influence of the feedstock on product distribution. The pyrolysis products were analyzed, and the effect of the catalyst on the product yield is also discussed. The yield of bio-oil and bio-char of the straw pyrolysis using zeolite catalysts was increased up to 46.44 % and 38.77 %, respectively; while the bio-gas yield was decreased to as low as 13.65 %. The use of catalyst 2 (Zeolite YH2.2) had the most significant effect in increasing the yield of bio-oil about 2 % and bio-char yield up to 8 %. The use of catalyst number 2 also showed the most significant effect during pyrolysis of flax straw by increasing the bio-oil yield up to 46.44 %. In the pyrolysis of oat straw, the use of catalyst consistently decreased the bio-gas yield; however, the bio-oil yield increased the most (43.32 %) with the use of catalyst 1 (Zeolite YS2.2). The use of catalyst 1 also increased the bio-oil yield during the pyrolysis of barley straw (43.03 %).

1-3-139	
Title	**High-efficiency passive full wave rectification for electromagnetic harvesters**
Authors	**Abdulhadi Alqarnia**, Maali Alabdulhafith, Srinivas Sampalli
Program	Doctorate in Computer Science in the area of RFID
University	Dalhousie University
Journal	Procedia Computer Science 37 (2014) 503 – 510
Year	2014

Abstract
Security and privacy vulnerabilities in RFID authentication protocols may affect RFID users by revealing their identification information especially in Healthcare systems. Previous researches in RFID authentication protocols have mainly focused on authenticating the real tag's secret key and identifier, which may help attackers directly obtain these important values. Therefore, in this paper, we present new initialization (IA) and termination (TA) stages of an RFID authentication protocol that improves the RFID security and privacy by authenticating the tag and the server without using the real tag's values (secret key and identifier). If the tag and the server pass the initial stage of authentication (IA), any authentication protocol can be applied to send and receive the real identification values between them.

1-3-140	
Title	**Numerical Simulation of Reversible Reactive Flow in Homogeneous Porous Media**
Authors	**H. Alhumade** & J. Azaiez
Program	Doctorate in Chemical Engineering
University	University of Waterloo
Journal	Journal of Porous Media, Volume 17, Number 4, 2014
Year	2014

Abstract
The effects of reversibility on the viscous fingering of miscible reactive flow displacements in homogeneous porous media are examined through numerical simulations. A model in which the viscosities mismatch between the reactants and the chemical product triggers the instability is adopted. The problem is governed by the continuity equation, Darcy's law, and the convection-diffusion-reaction equations, which are solved using a pseudo-spectral method. It was found that in general, chemical reversibility tends to attenuate the instability at the fronts, resulting in less complex fingers than in the nonreversible case. However, stronger chemical reversibility also leads to less diffuse and thinner finger structures. Furthermore, the chemical product was found to be homogeneously distributed in the porous medium in the case of the reversible reaction, while strong concentration gradients are observed in the nonreversible case. The study has also revealed that chemical reversibility is capable of enhancing the instability of a stable reactive front. It is also found that the rate of production can be the same for different cases of frontal instability for a period of time that increases with the increase in the magnitude of chemical reversibility.

1-3-141	
Title	**Numerical Simulation of Reversible Reactive Flow in Homogeneous Porous Media**
Authors	**Abdulaal Z. Al-Khazaal**, João B. P. Soares
Program	Doctorate in Chemical and Process Engineering
University	University of Waterloo
Journal	Journal of Macromolecular Chemistry and Physics, Chem. Phys. 2014, 215, 465–475
Year	2014

Abstract
Several crystallization-based techniques are used to measure the chemical-composition distribution of polyolefi ns, but they are limited to semicrystalline polyolefi ns. Recently, high-temperature thermal gradient interaction chromatography (HT-TGIC) has been developed to quantify the chemical-composition distribution of semicrystalline and amorphous polyolefi ns, thus broadening the range of techniques available for the analysis of polyolefi n chemical-composition distribution. In HT-TGIC, the fractionation mechanism relies on the interaction of polyolefi n chains with a graphite surface upon temperature change in an isocratic solvent. In the present investigation, a series of ethylene/1-octene copolymers having approximately the same molecular weight average and different comonomer fractions (up to 25% of 1-octene) is synthesized using a metallocene catalyst to investigate the fractionation mechanism of HT-TGIC. Three copolymer samples and their blends are also studied to determine which operation parameters influence the HT-TGIC peak shape and position. The cooling rate has no signifi cant effect on the desorption temperature and the broadness of the HT-TGIC chromatograms. On the other hand, the heating rate and the elution flow rate substantially influence the peak temperature and breadth.

1-3-142	
Title	**Polymer Coatings for Sensitive Analysis of Colloidal Silica Nanoparticles in Water**
Authors	**Samar Alsudir** and Edward P.C. Lai
Program	Doctorate in Chemistry
University	Carleton University
Journal	Journal of Colloid and Polymer Science, Springer, Journal no. 396, 17-02-2014
Year	2014

Abstract
A new analytical approach has been developed for the sensitive detection of trace nanomaterials in water using silica as model inorganic nanoparticles. Our novel approach is based on coating of the nanoparticles with a polymer to make them larger in size for better UV light absorption. These polymer-coated nanoparticles can be separated from the monomer and polymer by capillary electrophoresis (CE) due to differences in their ionic charge, size, and surface functionality. Controlled polymerization of 2-hydroxypropyl methacrylate (HPMA) on silica nanoparticles increased their UV detection sensitivity by 5-7 folds. A second coating with polydopamine produced an extra 2-fold increase of the UV detection sensitivity. With both polyhydroxypropyl methacrylate and polydopamine coatings, a significant total enhancement of 10-14 folds in detection sensitivity was attained. Alternatively, addition of bisphenol A or polyvinyl alcohol to the HPMA-polymerization mixture resulted in 9-10 fold increase of SiO2 detection sensitivity due to additional absorption of the UV detector light.

1-3-143	
Title	**Electromagnetic energy harvesting using complementary split-ring resonators**
Authors	Babak Alavikia, **Thamer S. Almoneef** and Omar M. Ramahi
Program	Doctorate in Electrical and Computer Engineering
University	University of Waterloo
Journal	Journal of APPLIED PHYSICS LETTERS 104, 163903 (2014)
Year	2014

Abstract
This work introduces a class of electrically small resonators composed of a complementary split-ring resonator backed by a ground plane. The proposed structure has low profile, efficient for wide range of illumination angles and can be placed on metallic surfaces. An example unit cell was designed, optimized, and fabricated to resonate at around 5.8 GHz. It is shown through numerical simulations and laboratory measurements that the complementary split-ring resonator can efficiently deliver the incident power carried by an electromagnetic wave to a resistive load.

1-3-144	
Title	**A 3-Dimensional Stacked Metamaterial Arrays for Electromagnetic Energy Harvesting**
Authors	**Thamer S. Almoneef** and Omar M. Ramahi
Program	Doctorate in Electrical and Computer Engineering
University	University of Waterloo
Journal	Progress In Electromagnetics Research (on-line journal PIER), Vol. 146, 109,115, 2014
Year	2014

Abstract
We present the design of 3-D metamaterial stacked arrays for e±cient conversion of electromagnetic waves energy into AC. The design consists of several vertically stacked arrays where each array is comprised of multiple Split-Ring Resonators. The achieved conversion e±ciency is validated by calculating the power dissipated in a resistive load connected across the gap of each resonator. Numerical simulations show that using stacked arrays can signi¯cantly improve the e±ciency of the harvesting system in comparison to a °at 2-D array. In fact, the per-unit-area e±ciency of the 3-D design can reach up to 4.8 times the case of the 2-D array. Without loss of generalization, the designs presented in this work considered an operating frequency of 5:8 GHz.

1-3-145	
Title	**High-efficiency passive full wave rectification for electromagnetic harvesters**
Authors	Mehmet Yilmaz, **Bassam A. Tunkar**, Sangtak Park, Karim Elrayes, Mohamed A. E. Mahmoud, Eihab Abdel-Rahman, and Mustafa Yavuz
Program	Master in Mechanical Engineering
University	University of Waterloo
Journal	Journal of Applied Physics 116, 134902 (2014)
Year	2014

Abstract
We compare the performance of four types of full-wave bridge rectifiers designed for electromagnetic energy harvesters based on silicon diodes, Schottky diodes, passive MOSFETs, and active MOSFETs. Simulation and experimental results show that MOSFET-type rectifiers are more efficient than diode-type rectifiers, reaching voltage and power efficiency of 99% for ideal voltage source with input amplitudes larger than 800 mV. Since active MOSFETs require extra components and an external DC power supply, we conclude that passive MOSFETs are superior for micro-power energy harvesting systems. We demonstrate passive MOSFET rectifiers implemented using discrete, off-shelf components and show that they outperform all electromagnetic harvester rectifiers hitherto reported obtaining a power efficiency of 95%. Furthermore, we show that passive MOSFET rectifiers do not affect the center frequency, harvesting bandwidth, or optimal resistance of electromagnetic harvesters. We demonstrate a complete power management module by adding a capacitor to the rectifier output terminal. We found that this configuration changed the optimal resistive load from 40 Ω to 55 Ω and decreased output power efficiency to 86%.

1-3-146	
Title	**Selective extraction of BPA in milk analysis by capillary electrophoresis using a chemically modified molecularly imprinted polymer**
Authors	**Noof A. Alenazi**, Jeffrey M. Manthorpe, Edward P.C. Lai
Program	Master in Chemistry
University	Carleton University
Journal	Elsevier Food Control Journal, Volume 50, April 2015, Pages 778–783
Year	2014

Abstract
Bisphenol A (BPA) is an endocrine disrupting compound commonly found in consumer plastic goods. For environmental and food analyses, however, selective extraction of BPA in the presence of other organic compounds will be challenging unless a molecularly imprinted polymer (MIP) is commercially available. An MIP was prepared in our lab using BPA as a template, ethylene glycol dimethacrylate as a cross-linking monomer and methacrylic acid as a functional co-monomer. Non-specific binding sites in the MIP were blocked by site-selective chemical modification with diazomethane to form a treated molecularly imprinted polymer (TMIP). Water and milk samples were spiked with BPA as well as zwitterionic, negatively and positively charged pharmaceutical and other compounds for binding tests. Unlike highperformance liquid chromatography, capillary electrophoresis (CE) demonstrated the ability to analyze milk samples after dilution with a background electrolyte. BPA was easily separated from all milk constituents on the basis of different electrophoretic mobility values. Repeatedly, CE binding test results demonstrated that the TMIP afforded superior selectivity than a commercial MIP.

1-3-147	
Title	**Enhanced selectivity of a molecularly imprinted polymer toward the target molecule via esterification of non-specific binding sites with diazomethane**
Authors	**Noof A. Alenazi**, Edward P. C. Lai and Jeffrey M. Manthorpe
Program	Master in Chemistry
University	Carleton University
Journal	Journal of Molecular Recognition, May 2014
Year	2014

Abstract
Diazomethane (CH2N2) was used to methylate the non-specific binding sites after molecularly imprinted polymer particles were prepared using methacrylic acid as the functional monomer, ethylene glycol dimethacrylate as the cross-linker and bisphenol A (BPA) as the template. After diazomethane treatment and subsequent removal of BPA by triethylamine, the treated molecularly imprinted polymer (TMIP) particles were tested for binding selectivity toward BPA and other organic compounds by capillary electrophoresis with ultraviolet detection. Even in the presence of compounds that were positively charged, neutral or negatively charged in the background electrolyte, BPA was selectively bound with the highest efficiency. A significant decrease in the affinity for metformin (MF, a positively charged compound), along with 13C nuclear magnetic resonance spectra and electrophoretic mobility data, provided strong evidence for the elimination of non-specific –COOH binding sites in the TMIP particles. Only 8% of MF and 16% of diclofenac sodium salt (a negatively charged compound) remained as non-specific bindings because of hydrophobic interactions. Further comparison with poly(methyl methacrylate) revealed the true merits of the TMIP, which exhibited minimal non-specific bindings while preserving a high level of specific binding owing to molecular recognition.

1-3-148	
Title	**Canadian Calibration on Mechanistic – Empirical Pavement Design Guide to Estimate International Roughness Index (IRI) using MTO Data**
Authors	**Amin S. Hamdi**, Susan L. Tighe, and Li Ningyuan
Program	Doctor of Philosophy in Civil Engineering
University	University of Waterloo
Journal	Int. J. Pavement Res. Technol. 7(2):101-108
Year	2014

Abstract
This paper presents flexible pavement performance models developed for the Ministry of Transportation of Ontario (MTO) by using data from the MTO's Pavement Management System (PMS2). The performance model coefficients have been developed for application in the Mechanistic – Empirical Pavement Design Guide (MEPDG) and were calibrated using statistical tools through a series of analyses on historical pavement condition data that was collected in the field. The statistical analysis involved collection of historical data and development of pavement model categories. It was then classified according to pavement type, equivalent total pavement thickness, traffic volume, soil type, and climatic zone. In the development of the performance curves, 75% of the data was used to calibrate the performance curves, which is described by the predicted Pavement Condition Index (PCI) as a function of pavement age in years. The remaining 25% of the data was used to validate the various performance models using various statistical tools. The procedure and analysis methodology used in the development of the performance models are presented in the paper. The paper provides a practical framework for comparing existing PMS2 flexible performance curves to performance predictions obtained from the MEPDG. Example case studies for typical Ontario roads are presented in the paper in terms of statistical analysis.

1-3-149	
Title	**Galilean Covariant Dirac Equation With A woods Saxon Potential**
Authors	**A. A. Othman**, M. De Montigny And F. C. Khanna
Program	Master of Science in Physics
University	University of Alberta
Journal	International Journal of Modern Physics E. Vol. 22, No. 12 (2013) 1350092 (18 pages)
Year	2014

Abstract
We derive and solve the Galilean covariant Dirac equation, also called "L´evy-Leblond equation", for spin- 12 particles in a Woods–Saxon potential. We obtain this wave equa- tion with a Galilean covariant approach, which is based on a (4 + 1)-dimensional man- ifold with light-cone coordinates followed by a reduction to the (3 + 1)-dimensional Galilean space-time. We apply the Pekeris approximation and exploit the Nikiforov– Uvarov method to find the energy eigenvalues and eigenfunctions.

1-3-150	
Title	**Tungsten solubility in evolved granitic melts: An evaluation of magmatic wolframite**
Authors	Xu Dong Chea, Robert L. Linnenb, Ru Cheng Wanga, **Abdullah Aseri**, Yves Thibaul
Program	PhD Geological Economical
University	The University of Western Ontario
Journal	Geochimica et Cosmochimica Acta Volume 106, 1 April 2013, Pages 84–98
Year	2014

Abstract
A variety of parameters that potentially control the solubilities of synthetic hubnerite (MnWO4) and ferberite (FeWO4) in haplogranitic melts rich in fluxing compounds have been determined at 200 MPa in order to test the hypothesis that wolframite can occur as a magmatic mineral. The melts, considered representative of highly evolved pegmatites, contain 1.1, 1.7 and 2.02 wt.% of Li2O, P2O5, and B2O3, respectively. Although the molar Al/(Na + K) ratio is one, if Li is considered to be an alkali element the molar Al/(Na + K + Li) (ASILi) of the melt is 0.88, and the melt is peralkaline. Hubnerite and ferberite solubilities at 800 °C are strongly controlled by melt composition. They are much lower in subaluminous melt, (ASILi = 1.05), than in peralkaline melt. By contrast, hubnerite and ferberite solubilities are nearly independent of the fluorine content of the melt, for up to 8 wt.% F. Hubnerite and ferberite solubilities at 800 °C are also nearly independent of oxygen fugacity over a View the MathML sourcelogfO2 range of approximately Ni–NiO − 3 to Ni–NiO + 2, which implies that the predominant oxidation state of tungsten in the melts is +6, even at moderately reduced conditions. A series of experiments on haplogranitic melt, rich in fluxing compounds, with 0 and 6 wt.% F at 850–650 °C shows that temperature strongly influences hubnerite solubility, e.g., the solubility product of hubnerite (View the MathML sourceKsphub) in the melts with 6 wt.% F decreases from 71.0 ± 7.9 × 10−4 mol2/kg2 at 850 °C to 4.4 ± 2.3 × 10−4 mol2/kg2 at 650 °C. Our experimental results show that ferberite solubilities are much higher than those of hubnerite with the same composition of melt, but the Mn, Fe and W concentrations in natural melt inclusions indicate that these melts were undersaturated with wolframite at 800 °C. However, flux-rich melts crystallize at lower temperatures in nature and the occurrence of natural, magmatic wolframite was evaluated by comparing experimental solubility product values extrapolated to 500 °C with wolframite activities at these temperatures. Magmatic wolframite is unlikely in flux-rich peralkaline melts but by contrast, flux-rich subaluminous to peraluminous melt inclusions appear to have been saturated with wolframite at approximately 500 °C. Because of the strong temperature dependence of wolframite solubility the dominant effect of fluxing compounds is to lower the solidus temperature of the melt.

1-3-151	
Title	**Effects of fluorine on the solubilities of Nb, Ta, Zr and Hf minerals in highly fluxed water-saturated haplogranitic melts**
Authors	**Abdullah A. Aseri**, Robert L. Linnen, Xu Dong Che , Yves Thibault, François Holtz
Program	PhD Geological Economical
University	The University of Western Ontario
Journal	Ore Geology Reviews, (OGR) on April 14, 2014
Year	2014

Abstract
The effect of fluorine on the solubilities of Mn-columbite (MnNb2O6), Mn-tantalite (MnTa2O6), zircon (ZrSiO4) and hafnon (HfSiO4) were determined in highly fluxed, water-saturated haplogranitic melts at 800 to 1000 °C and 2 kbar. The melt composition corresponds to the intersection of the granite minimum with the albite– orthoclase tieline (Ab72Or28) in the quartz–albite–orthoclase system (Q–Ab–Or), which is representative of a highly fluxed melt, from which high field strength element minerals may crystallize. The melt contains 1.7 wt.% P2O5, 1.05 wt.% Li2O and 1.83 wt.% B2O3. The main purpose of this study is to examine the effect of F on columbite, tantalite, and zircon and hafnon solubility for a melt with this composition. Up to 6 wt.% fluorine was added as AgF in order to keep the aluminum saturation index (ASI, molar Al/[Na + K]) of the melt constant. In an additional experiment F was added as AlF3 to make a glass peraluminous. The nominal ASI of the melts are close to 1 for the minimum composition and approximately 1.32 in peraluminous glasses, but if Li is considered as an alkali, the molar ratio Al/[Na + K + Li] of the melts are alkaline (0.87) and subaluminous (1.09), respectively. Themolar solubility products [MnO] ∗ [Nb2O5] and [MnO] ∗ [Ta2O5] are nearly independent of the F content of the melt, at approximately 18.19±1.2 and 43.65 ±2.5 × 10−4 (mol2/kg2), respectively for the minimum composition. By contrast, there is a positive dependence of zircon and hafnon solubilities on the fluorine content in the minimum composition, which increases from 2.03 ± 0.03 × 10−4 (mol/kg) ZrO2 and 4.04 ± 0.2 × 10−4 (mol/ kg) HfO2 for melts with 0 wt.% F to 3.81 ± 0.3 × 10−4 (mol/kg) ZrO2 and 6.18 ± 0.04 × 10−4 (mol/kg) HfO2 for melts with 8 wt.% F. Comparison of the data from this work and previous studies indicates that ASI of the melt seems to have a stronger effect than the contents of fluxing elements in the melt and the overall conclusion is that fluorine is less important (relative to melt compositions) than previously thought for the control on the behavior of high field strength elements in highly evolved granitic melts. Moreover, this study confirms that although Nb, Ta, Zr and Hf are all high field strength elements, Nb–Ta and Zr–Hf are complexed differently in the melt.

1-3-152	
Title	**Efficient Current Bleeding Mixer for WiMax Applications**
Authors	**A.M. Almohaimeed**, M.C.E. Yagoub
Program	PhD Electronics and Communication
University	University of Ottawa
Journal	Elsevier, AASRI Procedia 9 (2014) 92 – 98
Year	2014

Abstract
The Worldwide Interoperability for Microwave Access, or WiMax, is a wireless communication technique based on IEEE 802.16 standards. Its advantage of sending high-data rates over long distances, while using a single base station to cover a large area, has made this technique a flexible and reliable solution for public wireless networks. In this paper, a currentbleeding Gilbert Cell down-converter mixer is proposed for WiMax direct-conversion receivers. With 5.1 dB of conversion gain, 1.5 dBm of IIP3, 36 dBm of IIP2 as well as 11.6dB and 8.4dB of single sideband and double sideband noise figure, respectively, the proposed 0.15mm InGaAspHEMT mixer largely meets the WiMax standards as demonstrated though successful comparison with published designs.

1-3-153	
Title	**Discovery, Modification and Production of T4 Lysozyme for Industrial and Medical Uses**
Authors	**Alaa Alhazmi**, Johnathan Warren Stevenson, Samuel Amartey, Wensheng Qin1
Program	PhD Biochemistry & Molecular Biology
University	Lakehead University
Journal	International Journal of Biology; Vol. 6, No. 4; 2014
Year	2014

Abstract
Lysozyme has attracted immense attention as an antimicrobial agent because of its ability to lyse the bacterial cell wall. It is found in a wide variety of body fluids and in cells of the innate immune system. Lysozyme can act as muramidase or as a Cationic Antimicrobial Peptide (CAMP). Lysozyme has many applications in the medical and industrial fields. Based on enzyme nomenclature, lysozyme is classified as a glycosylase under the group hydrolases. This manuscript covers a fundamental review of lysozyme in terms of discovery, history, functions and various sources and types of lysozyme. The biological and molecular structure is discussed as well as notable bioengineering and protein modifications. Furthermore, the mechanisms of resistance to lysozyme in microorganisms have also been discussed. Lastly, different methods that have been developed for detecting and measuring the activity of lysozyme are outlined. Although, a recombinant lysozyme has not yet been produced, several studies have attempted to generate a modified lysozyme either for large-scale production or that which is more suitable for industrialization purposes.

1-3-154	
Title	**Detection of Surface and Subsurface Cracks in Metallic and Non-Metallic Materials Using a Complementary Split-Ring Resonator**
Authors	**Ali Albishi**, Omar M. Ramahi
Program	PhD Electrical Engineering
University	University of Waterloo
Journal	Sensors 2014, 14, 19354-19370
Year	2014

Abstract
Available microwave techniques for crack detection have some challenges, such as design complexity and working at a high frequency. These challenges make the sensing apparatus design complex and relatively very expensive. This paper presents a simple method for surface and subsurface crack detection in metallic and non-metallic materials based on complementary split-ring resonators (CSRRs). A CSRR sensor can be patterned on the ground plane of a microstrip line and fabricated using printed circuit board technology. Compared to available microwave techniques for sub-millimeter crack detection, the methods presented here show distinct advantages, such as high spatial resolution, high sensitivity and design simplicity. The response of the CSRR as a sensor for crack detection is studied and analysed numerically. Experimental validations are also presented.

1-3-155	
Title	**Detecting proton exchange membrane fuel cell hydrogen leak using electrochemical impedance spectroscopy method**
Authors	**Ghassan Mousa**, Farid Golnaraghi, Jake DeVaal, Alan Young
Program	PhD Mechanical Engineering
University	Simon Fraser University
Journal	Journal of Power Sources, 246 (2014) 110-116
Year	2014

Abstract
When a proton exchange membrane (PEM) fuel cell runs short of hydrogen, it suffers from a reverse potential fault that, when driven by neighboring cells, can lead to anode catalyst degradation and holes in the membrane due to local heat generation. As a result, hydrogen leaks through the electricallyshorted membrane-electrode assembly (MEA) without being reacted, and a reduction in fuel cell voltage is noticed. Such voltage reduction can be detected by using electrochemical impedance spectroscopy (EIS). To fully understand the reverse potential fault, the effect of hydrogen crossover leakage in a commercial MEA is measured by EIS at different differential pressures between the anode and cathode. Then the signatures of these leaky cells were compared with the signatures of no-leaky cells at different oxygen concentrations with the same current densities. The eventual intent of this early stage work is to develop an on-board diagnostics system that can be used to detect and possibly prevent cell reversal failures, and to permit understanding the status of crossover or transfer leaks versus time in operation.

1-3-156	
Title	**Trusted CCIPS: A Trust Security Model for Cloud Services Based on a Collaborative Intrusion Detection and Prevention Framework**
Authors	**Fahad F. AlRuwaili**, T. Aaron Gulliver
Program	PhD Computer Engineering
University	University of Victoria
Journal	Int. J Latest Trends Computing, Vol-5 No. 1, March 2014
Year	2014

Abstract
Recent advances in cloud computing services have resulted in a significant increase in the number of organizations adopting cloud service models. This raises Confidentiality, Integrity, and Availability (CIA) concerns as well as trust related issues, particularly when the cloud hosts sensitive infrastructure and applications. In addition, cloud service providers face many challenges in maintaining customer CIA. This paper considers the detection and prevention of threats by proposing a trust model based on a Cooperative Cloud Intrusion Prevention System (CCIPS) framework. This model is based on enhanced detection and prevention via signature and anomaly based data analysis. It is shown to provide high performance and high availability via a cooperative approach to security for infrastructure and application based cloud service models.

1-3-157	
Title	**Binary MEMS gas sensors**
Authors	M E Khater, **M Al-Ghamdi**, S Park, K M E Stewart, E M Abdel-Rahman, A Penlidis, A H Nayfeh, A K S Abdel-Aziz and M Basha
Program	Engineering Systems
University	University of Waterloo
Journal	Journal of Micromechanics and Microengineering issue 6, June 2014, volume 24
Year	2014

Abstract
A novel sensing mechanism for electrostatic MEMS that employs static bifurcation-based sensing and binary detection is demonstrated. It is implemented as an ethanol vapour sensor that exploits the static pull-in bifurcation. Sensor detection of 5 ppm of ethanol vapour in dry nitrogen, equivalent to a detectable mass of 165 pg, is experimentally demonstrated. Sensor robustness to external disturbances is also demonstrated. A closed-form expression for the sensitivity of statically detected electrostatic MEMS sensors is derived. It is shown that the sensitivity of static bifurcation-based binary electrostatic MEMS sensors represents an upper bound on the sensitivity of static detection for given sensor dimensions and material properties.

1-3-158	
Title	**Theoretical examination of the slot channel waveguide configured in a cylindrically symmetric dielectric ring profile**
Authors	Robert C. Gauthier, **Mohammed A. Alzahrani**, Seyed Hamed Jafari
Program	Electrical Engineering
University	Carleton University
Journal	Elsevier Volume 329, 15 October 2014, Pages 154–162
Year	2014

Abstract
It has recently been experimentally demonstrated that slot channel waveguides, configured in cylindrical space, can support high azimuthal order modes similar to whispering-gallery modes. This paper presents a mode solver based on Maxwell's vector wave equation for the electric field cast into an eigenvalue problem using a Fourier–Bessel basis function space. The modal frequencies and field profiles of the high azimuthal order slot-channel-whispering-gallery (SCWG) modes are computed for a set of nanometer spaced silicon rings supported by oxide. The computations show, that in addition to the traditionally observed, lowest order mode, the structure may support higher order SCWG modes. We complete the analysis by computing structures response as an ambient medium index of refraction sensor which achieves over 400 nm per RIU sensitivity.

1-3-159	
Title	**Electrically small particles combining even- and odd-mode currents for microwave energy harvesting**
Authors	**Mohammed R. AlShareef** and Omar M. Ramahi
Program	PhD-Engineering
University	University of Waterloo
Journal	Applied Physics Letters .Volume 104, 25, 27 June 2014
Year	2014

Abstract
We present a structure composed of an ensemble of electrically small resonators for harvesting microwave energy. A flower-like structure composed of four electrically small split-ring resonators (SRRs) arranged in a cruciate pattern, each with a maximum dimension of less than λ o /10, is shown to achieve more than 43% microwave-to-alternating current conversion efficiency at 5.67 GHz. Even- and odd-mode currents are realized in the proposed harvester to improve the efficiency and concurrently reduce the dielectric loss in the substrate. An experimental validation is conducted to prove the harvesting capability.

1-3-160	
Title	**Antiferromagnetism in EuPdGe3**
Authors	**Mohammed A. Albedaha**, Khalid Al-Qadia, b, Zbigniew M. Stadnika, Janusz Przewoźnik
Program	Master in Physics
University	Ottawa University
Journal	Journal of Alloys and Compounds Volume 613, 15 November 2014, Pages 44–350
Year	2014

Abstract
We show that EuPdGe 3 crystallizes in the BaNiSn 3 -type structure with the lattice constants a = 4.4457(1) Å and c = 10.1703(2).•We demonstrate that EuPdGe 3 is an antiferromagnet with the Néel temperature T N = 12.16(1) K.•The temperature dependence of the hyperfine magnetic field follows a S = 7/2 Brillouin function. We find that the Debye temperature of the studied compound is 199(2) K.

1-3-161	
Title	**Towards context-sensitive collaborative media recommender system**
Authors	**Mohammed F. Alhamid**, Majdi Rawashdeh, Hussein Al Osman, M. Shamim Hossain, Abdulmotaleb El Saddik
Program	PhD-Computer Science
University	University of Ottawa
Journal	Multimedia Tools and Applications September 2014
Year	2014

Abstract
With the rapid increase of social media resources and services, Internet users are overwhelmed by the vast quantity of social media available. Most recommender systems personalize multimedia content to the users by analyzing two main dimensions of input: content (item), and user (consumer). In this study, we address the issue of how to improve the recommendation and the quality of the user experience by analyzing the contextual aspect of the users, at the time when they wish to consume multimedia content. Mainly, we highlight the potential of including a user's biological signal and leveraging it within an adapted collaborative filtering algorithm. First, the proposed model utilizes existing online social networks by incorporating social tags and rating information in ways that personalize the search for content in a particular detected context. Second, we propose a recommendation algorithm to improve the user experience and satisfaction with the use of a biosignal in the recommendation process. Our experimental results show the feasibility of personalizing the recommendation according to the user's context, and demonstrate some improvement on cold start situations where relatively little information is known about a user or an item.

1-3-162	
Title	**The addition of terminal alkynes to dimesitylfluorenylidenegermane**
Authors	**Nada Y. Tashkandi**, Laura C. Pavelka, Margaret A. Hanson, Kim M. Baines
Program	PhD-Chemistry
University	University of Western Ontario
Journal	Canadian Journal of Chemistry, 2014
Year	2014

Abstract
A variety of terminal alkynes were added to dimesitylfluorenylidenegermane, Mes2Ge=CR2 (where CR2 = fluorenylidene). The addition of phenylacetylene and 1-hexyne to Mes2Ge=CR2 gave a germacyclohexene via a cycloaddition where the germene acts as the 4π component and the alkyne as the 2π component. Through the use of a mechanistic probe, trans-(2-phenylcyclopropyl)-acetylene, the reaction was postulated to proceed through a concerted [2+4] cycloaddition. The addition of ethoxyacetylene to the germene produced both a [2+2] cycloadduct, a germacyclobutene, and a [2+4] cycloadduct, a germacyclohexene. The results of this study are compared to the results of the addition of alkynes to Mes2Ge=CHCH2-t-Bu.

1-3-163	
Title	**Interaction between block caving and rock slope deformation kinematics as a function of cave position and orientation of discontinuities**
Authors	**H. M. Ahmed**; E. Eberhardt; W. S. Dunbar
Program	PhD- Mining Engineering
University	University of British Columbia
Journal	Mining Technology-Volume 123, Issue 3 (September 2014)
Year	2014

Abstract
Several operations are considering the transition from surface mining to underground block caving to access deeper resources. Depending on the geometry of the orebody, the undercut may be positioned beneath the foot of a large open pit slope, or behind its crest. The latter scenario also arises where a natural rock slope is present. Results are reported here from a numerical modelling study investigating the mechanics of deep-seated slope displacements in response to caving. Different failure models are investigated as a function of the orientation of the jointing pattern relative to the location and progressive development of the block cave. A 2-D discontinuum modelling approach is utilised based on the distinct-element method. The results show that the cave location and the resultant strain field, plays a significant role in the rock mass interactions that develop and the subsequent kinematic response of the slope with respect to translational, rotational and toppling behavior.

1-3-164	
Title	**A Fuzzy Logic Approach to Assess, Manage, and Communicate Carcinogenic Risk**
Authors	**Yasser T. Matbouliab**, Keith W. Hipela, D. Marc Kilgourc & Fakhri Karrayd
Program	PhD -Industrial Engineering
University	University of Waterloo
Journal	Human and Ecological Risk Assessment: Volume 20, Issue 6, 2014
Year	2014

Abstract
A prospective approach to addressing carcinogen risk assessment is presented. Fuzzy reasoning is used to assess carcinogenic risk, characterize it, and control it. The approach is inspired by fuzzy control inference that deploys linguistic intelligence as input to a system described numerically through membership functions. Fuzzy-based reasoning to estimate carcinogenic risk provides several advantages as discussed here. The fuzzy reasoning approach has more capabilities than traditional models in dealing with risk agents that are probably carcinogens, possibly carcinogens, not classifiable as carcinogens, and probably not carcinogens. Input–output surfaces are presented for each hazard group to enable fast inferencing. Then, a hypothetical example is given to compare the results of traditional methods and the fuzzy-based approach to estimating the risk of a carcinogen to a human population. Results show similarity in risk characterization with less input information to the fuzzy-based approach. Fuzzy reasoning characterizes risk in more explicit and easy to grasp terms. Two outputs of the inferencing system are risk characterization and risk control or remediation.

1-3-165	
Title	**Performance of micropiled raft in sand subjected to vertical concentrated load: centrifuge modeling**
Authors	**A.M. Alnuaim**, H. El Naggar, M.H. El Naggar
Program	PhD-Engineering
University	The University of Western Ontario
Journal	Canadian Geotechnical Journal- June 23, 2014
Year	2014

Abstract
Initial applications of micropiles have involved retrofitting foundations of existing buildings. In these applications, the overall performance of the micropiles–raft (MPR) foundation system is similar to a piled raft foundation where the load is transmitted through both the raft and micropiles. However, there is no guidance available regarding the performance of MPR foundations. In this study, geotechnical centrifuge testing was conducted to investigate the behavior of MPR foundations in sand and evaluate their performance characteristics. The study investigated the effect of raft flexibility on a number of important design parameters, including raft total and differential settlements, raft contact pressure, raft bending moment, and load sharing between the raft and micropiles. In addition, the use of micropiles as settlement reducers was investigated. The results showed that the micropiles carried 42%–59% of the applied load for the MPR configuration considered, which resulted in redistribution of the raft contact pressure. It was found that the Poulos–Davis–Randolph (PDR) method can be used to evaluate the performance of MPR systems with relatively stiff rafts; however, it is not applicable for MPR with flexible raft. A correction factor was proposed to account for the raft flexibility in the PDR method.

1-3-166	
Title	**Performance of Foundations in Sabkha Soil: Numerical Investigation**
Authors	**Ahmed M. Alnuaim**, M. H. El Naggar
Program	PhD-Engineering
University	The University of Western Ontario
Journal	Geotechnical and Geological Engineering Journal -June 2014, Volume 32, Issue 3, pp 637-656
Year	2014

Abstract
Sabkha or salt flat soil is one of the most unpredictable and potentially dangerous soils in the Middle East. This soil covers a large and strategically important area of the Arabian Gulf coast, as it contains the world biggest oil reserve and a number of petrochemical plants are either have been built or are scheduled to be built in this area. The performance of shallow and deep foundations in the Eastern Province of Saudi Arabia's sabkha soil is investigated numerically using the finite element method. The parameters used to simulate this soil in the numerical models were based on a large number of laboratory tests to determine the shear strength and stiffness parameters of the sabkha soil. In addition, the characteristics of the interface between the foundation and soil used in the numerical model were established from shear box tests that were conducted to evaluate the concrete-sabkha soil interface properties. The developed numerical model was calibrated/verified using the results of full-scale pile load testing program from an ongoing project to further enhance the accuracy of the results. A parametric study was then conducted using the verified model to establish the performance characteristics of foundations constructed in sabkha soil and provide guidelines for their design.

1-3-167	
Title	**Approximate dynamic programming modeling for a typical blood platelet bank**
Authors	**U. Abdulwahab**, M.I.M. Wahab
Program	Doctor of Philosophy in Mechanical and Industrial Engineering
University	Ryerson University
Journal	Orient. J. Comp. Sci. & Technol., Vol. 6(1), 41-48 (2013)
Year	2014

Abstract
In this paper, we have devised a real-time, workable model for solving the practical problems associated with responsible blood platelet inventory. These problems include how to eciently dispense, organize, store, and order platelets that become unusable after 6 days. Stochastic demand and supply, as well as deterministic lead times, are congured into their model. Any shortages or outdates of the 8 major blood types are penalized in this proposal, with revenuw in conjunction with a further emphasis on the age of platelets will maximize ecency as well. A combined model of linear programing and approximate dynamic programming (ADP) was deployed while constructing their practical model. In an environment which emphasizes the need for realtime judgements, this new policy, as advanced here, will lead to substantial shortage, outdate, and cost reductions of these time-stamped platelets. The experimental application of this model produced shortages in the range of apporximately 4.7% with outdates at 5.5%, a vast improvement over existing methods. An ADP approach was found to be practical during this research, and additionally the model showed much promise with respect to enhancing a reward system that simultaneously decreases shortages and the number of expired platelets.

2-3-168	
Title	**Mitochondriome and Cholangiocellular Carcinoma**
Authors	**Wesam Bahitham**, Xiaoping Liao, Fred Peng, Fiona Bamforth, Alicia Chan, Andrew Mason,Bradley Stone, Paul Stothard, Consolato Sergi
Program	Medical Sciences
University	University of Alberta
Journal	PLOS ONE, August 2014, Volume 9, Issue 8
Year	2014

Abstract
Cholangiocellular carcinoma (CCA) of the liver was the target of more interest, recently, due mainly to its increased incidence and possible association to new environmental factors. Somatic mitochondrial DNA (mtDNA) mutations have been found in several cancers. Some of these malignancies contain changes of mtDNA, which are not or, very rarely, found in the mtDNA databases. In terms of evolutionary genetics and oncology, these data are extremely interesting and may be considered a sign of poor fitness, which may conduct in some way to different cellular processes, including carcinogenesis. MitoChip analysis is a strong tool for investigations in experimental oncology and was carried out on three CCA cell lines (HuCCT1, Huh-28 and OZ) with different outcome in human and a Papova-immortalized normal hepatocyte cell line (THLE-3). Real time quantitative PCR, western blot analysis, transmission electron microscopy, confocal laser microscopy, and metabolic assays including L-Lactate and NAD+/NADH assays were meticulously used to identify mtDNA copy number, oxidative phosphorylation (OXPHOS) content, ultrastructural morphology, mitochondrial membrane potential (DYm), and differential composition of metabolites, respectively. Among 102 mtDNA changes observed in the CCA cell lines, 28 were non-synonymous coding region alterations resulting in an amino acid change. Thirty-eight were synonymous and 30 involved ribosomal RNA (rRNA) and transfer RNA (tRNA) regions. We found three new heteroplasmic mutations in two CCA cell lines (HuCCT1 and Huh-28). Interestingly, mtDNA copy number was decreased in all three CCA cell lines, while complexes I and III were decreased with depolarization of mitochondria. L-Lactate and NAD+/NADH assays were increased in all three CCA cell lines. MtDNA alterations seem to be a common event in CCA. This is the first study using MitoChip analysis with comprehensive metabolic studies in CCA cell lines potentially creating a platform for future studies on the interactions between normal and neoplastic cells.

2-3-169	
Title	**Role of n-3 fatty acids in muscle loss and myosteatosis**
Authors	Julia B. Ewaschuk, **Alaa Almasud**, and Vera C. Mazurak
Program	PhD-Nutrition
University	University of Alberta
Journal	Published by NRC Research Press - 24 January 2014
Year	2014

Abstract
Image-based methods such as computed tomography for assessing body composition enables quantification of muscle mass and muscle density and reveals that low muscle mass and myosteatosis (fat infiltration into muscle) are common in people with cancer. Myosteatosis and low muscle mass have emerged as independent risk factors for mortality in cancer; however, the characteristics and pathogenesis of these features have not been resolved. Muscle depletion is associated with low plasma eicosapentaenoic (20:5n-3) and docosahexaenoic (22:6n-3) in cancer and supplementation with n-3 fatty acids has been shown to ameliorate muscle loss and myosteatosis in clinical studies, suggesting a relationship between n-3 fatty acids and muscle health. Since the mechanisms by which n-3 fatty acids alter body composition in cancer remain unknown, related literature from other conditions associated with myosteatosis, such as insulin resistance and obesity is considered. In these noncancer conditions, it has been reported that n-3 fatty acids act by increasing insulin sensitivity, reducing inflammatory mediators, and altering adipokine profiles and transcription factors; therefore, the plausibility of these mechanisms of action in the neoplastic state are considered. The aim of this review is to summarize what is known about the effects of n-3 fatty acids with regards to muscle condition and to discuss potential mechanisms for effects of n-3 fatty acids on muscle health.

2-3-170	
Title	**Characterizing severe obesity in children and youth referred for weight management**
Authors	**Hebah A Salawi**, Kathryn A Ambler, Rajdeep S Padwal, Diana R Mager Catherine B Chan, and Geoff D C Ball
Program	PhD-Medical Sciences
University	University of Alberta
Journal	BMC Pediatrics 2014
Year	2014

Abstract
Background: Severe obesity (SO) in pediatrics has become increasing prevalent in recent decades. The objective of our study was to examine differences in demographic, anthropometric, cardiometabolic, and lifestyle variables in children and youth with SO versus their less overweight/obese (OW/OB) peers. Methods: A retrospective medical record review of 6-19 year old participants enrolled in an outpatient pediatric weight management clinic was conducted. SO (body mass index [BMI] ≥99th percentile) and OW/OB (BMI ≥85th and <99th percentile) groups were created according to Centers for Disease Control and Prevention definitions. Demographic, anthropometric, cardiometabolic and lifestyle data reported at baseline (pre-intervention) were retrieved. Results: Of the 345 participants, most were girls (56.2%), Caucasian (78.7%), and had family incomes > $50,000/year (65.7%). The SO group (n = 161) had lower HDL-cholesterol and higher liver enzymes, insulin resistance and blood pressure than the OW/OB group (n = 184; all $p < 0.01$). They also reported higher total energy intakes, fewer steps/ day, less moderate-to-vigorous physical activity, and more leisure time screen time (all $p < 0.02$) than their leaner peers. Compared to the OW/OB group, a higher proportion of individuals in the SO group possessed cardiometabolic risk factors, including high triglycerides (45.8% vs 58.5%), alanine aminotransferase (55.4% vs 81.4%), insulin resistance (55.6% vs 82.1%), systolic blood pressure (11.5% vs 27.3%), diastolic blood pressure (17.8% vs 30.0%), and low HDL-cholesterol (44.6% vs 64.6%; all $p < 0.02$). Aside from the ~75% of participants (groups combined) who met the daily recommended intakes of grain and meat products, <50% of boys and girls met any of the remaining nutrition and physical activity-related recommendations. Compared to the OW/OB group, greater proportions of children and youth in the SO group failed to meet moderate-to-vigorous physical activity (48.4% vs 31.9%) and leisure-time-screen-time recommendations (43.4% vs 28.3%; both $p < 0.05$). Conclusion: Children and youth with SO have a worse cardiometabolic profile and less favorable lifestyle habits than their OW/OB peers. These differences emphasize the heightened obesity-related health risks associated with SO in the pediatric years.

2-3-171	
Title	**Nutritional constituents and health benefits of wild rice (Zizania spp.)**
Authors	Gangadaran Surendiran, **Maha Alsaif**, Fatemeh Ramezani Kapourchal, Mohammed H Moghadasian
Program	Master of science in Food Science and Human Nutrition
University	University of Manitoba
Journal	Journal Nutrition Reviews, Vol. 72(4):227–236
Year	2014

Abstract
Wild rice (Zizania spp.) seems to have originated in North America and then dispersed into Eastern Asia and other parts of the world. Nutritional analysis shows that wild rice is rich in minerals, vitamins, protein, starch, dietary fiber, and various antioxidant phytochemicals, while it is low in fat. Wild rice has been recognized as a whole grain by the US Food and Drug Administration; in the North American marketplace it is currently sold as and considered to be a health-promoting food. Recent scientific studies have revealed antioxidant and lipid-lowering properties of wild rice, while others have documented cardiovascular benefits associated with the long-term consumption of wild rice in experimental settings. The present review article summarizes various features of wild rice and its cultivation, including its plantation, harvest, nutritional composition, and biological properties. While evidence for the cardiovascular benefits of wild rice consumption is accumulating, additional studies are warranted to determine the clinical benefits of regular consumption of wild rice.

2-3-172	
Title	**A Mouse Tumor Model of Surgical Stress to Explore the Mechanisms of Postoperative Immunosuppression and Evaluate Novel Perioperative Immunotherapies**
Authors	Lee-Hwa Tai1, Christiano Tanese de Souza, Shalini Sahi, Jiqing Zhang, **Almohanad A Alkayyal1**, Abhirami Anu Ananth
Program	Molecular Medicine
University	University of Ottawa
Journal	J. Vis. Exp. (), e51253, 10.3791/51253 (2014)
Year	2014

Abstract
Surgical resection is an essential treatment for most cancer patients, but surgery induces dysfunction in the immune system and this has been linked to the development of metastatic disease in animal models and in cancer patients. Preclinical work from our group and others has demonstrated a profound suppression ofinnate immune function, specifically NK cells in the postoperative period and this plays a major role in the enhanced development of metastases following surgery. Relatively few animal studies and clinical trials have focused on characterizing and reversing the detrimental effects of cancer surgery. Using a rigorous animal model of spontaneously metastasizing tumors and surgical stress, the enhancement of cancer surgery on the development of lung metastases was demonstrated. In this model, 4T1 breast cancer cells are implanted in the mouse mammary fat pad. At day 14 post tumor implantation, a complete resection of the primary mammary tumor is performed in all animals. A subset of animals receives additional surgical stress in the form of an abdominal nephrectomy. At day 28, lung tumor nodules are quantified. When immunotherapy was given immediately preoperatively, a profound activation of immune cells which prevented the development of metastases following surgery was detected. While the 4T1 breast tumor surgery model allows for the simulation of the effects of abdominal surgical stress on tumor metastases, its applicability to other tumor types needs to be tested. The current challenge is to identify safe and promising immunotherapies in preclinical mouse models and to translate them into viable perioperative therapies to be given to cancer surgery patients to prevent the recurrence of metastatic disease.

2-3-173	
Title	**Cannabinoid and lipid-mediated vasorelaxation in retinal microvasculature**
Authors	Jessica Macintyre, Alex Dong, Alex Straiker, Jiequan Zhu, Susan E. Howlett, **Amina Bagherla**, Eileen Denovan Wrighta, Dao-Yi Yu, Melanie EM. Kelly
Program	Doctor of Philosophy in Pharmacology
University	Dalhousie University
Journal	European Journal of Pharmacology 735 (2014) 105-114
Year	2014

Abstract

The endocannabinoid system plays a role in regulation of vasoactivity in the peripheral vasculature; however, little is known about its role in regulation of the CNS miciovasculature. This study investigated the pharmacology of cannabinpids and cannabimimetic lipids in the retinal microvasculature, a CNS vascular bed that is autoregulted. Vessel diameter (edge detector) and calcium transients (fura-2) were recorded from segments of retinal microvasculature isolated from adult, male Fischer 344 rats. Results showed that abnormal cannabidiol,(Abn-CBD), an agonist at the putative endothelial canriabinoid receptor, CBe, inhibited endothelin 1 (ET-1) induced vasoconstriction in retinal arterioles. These actions of Abn-CBD were independent of CB1/CB2 receptors and were not mediated by agonists for GPR55 or affected by nitric oxide synthase (NOS) inhibition. However, the vasorelaxant effects of Abn-CBD were abolished when the endothelium was removed and were inhibited by the small Ca2 4-sensitive K channel (SKQ) blockeapamin. The effects of the endogenous endocannabinoid merabolite, N arachidonyl glycine (NAG1y), a putative agonist for GPR18, were virtually identical to those of Abn CBD. GPR18 mRNA and protein were present in the retina, and immunohistochemisrry demonstrated that GPR18 was localized to the endothelium of retinal vessels. These findings demonstrate that Abn CBD and NAG1y inhibit ET-i induced vasoconstriction in retinal arterioles by an endothelium-dependent signaling mechanism that involves SKca channels. The endothelial localization of GPR18 suggests that GPR18 could contribute to cannabinoid and lipid-mediated retinal vasoactivity.

2-3-174	
Title	**Type 1 Cannabinoid Receptor Ligands Display Functional Selectivity in a Cell Culture Model of Striatal Medium Spiny Projection Neurons**
Authors	Robert B Laprairie, **Amina M Bagher**, Melanie E M Kelly, Denis J Dupré, Eileen M Denovan-Wright
Program	Doctor of Philosophy in Pharmacology
University	Dalhousie University
Journal	The Journal of biological chemistry 07/2014
Year	2014

Abstract

Modulation of type 1 cannabinoid receptor (CB1) activity has been touted as a potential means of treating addiction, anxiety, depression, and neurodegeneration. Different agonists of CB1 are known to evoke varied responses in vivo. Functional selectivity is the ligand-specific activation of certain signal transduction pathways at a receptor that can signal through multiple pathways. To understand cannabinoid-specific functional selectivity, different groups have examined the effect of individual cannabinoids on various signaling pathways in heterologous expression systems. In the current study, we compared the functional selectivity of six cannabinoids including: two endocannabinoids [2-arachidonyl glycerol (2-AG), anandamide (AEA)], two synthetic cannabinoids (WIN55,212-2, CP55,940), and two phytocannabinoids [cannabidiol (CBD), and Δ(9)-tetrahydrocannabinol (THC)] on arrestin2-, Gαi/o-, Gβγ-, Gαs-, and Gαq-mediated intracellular signaling in the mouse STHdh(Q7/Q7) cell culture model of striatal medium spiny projection neurons that endogenously express CB1. In this system, 2-AG, THC, and CP55,940 were more potent mediators of arrestin2 recruitment than other cannabinoids tested. 2-AG, AEA, and WIN55,212-2, enhanced Gαi/o and Gβγ signaling, with 2-AG and AEA treatment leading to increased total CB1 levels. 2-AG, AEA, THC, and WIN55,212-2 also activated Gαq-dependent pathways. CP55,940 and CBD both signaled through Gαs. CP, but not CBD, activated downstream Gαs pathways via CB1 targets. THC and CP55,940 promoted CB1 internalization and decreased CB1 protein levels over 18 h. These data demonstrate that individual cannabinoids display functional selectivity at CB1 leading to activation of distinct signaling pathways. In order to effectively match cannabinoids with therapeutic goals, these compounds must be screened for their signaling bias.

2-3-175	
Title	**A New Spontaneously Transformed Syngeneic Model of High-Grade Serous Ovarian Cancer with a Tumor-Initiating Cell Population**
Authors	McCloskey CW, Goldberg RL, Carter LE, Gamwell LF, **Al-Hujaily EM**, Collins O, Macdonald EA, Garson K, Daneshmand M, Carmona E,Vanderhyden BC.
Program	Cellular and Molecular Pathology
University	University of Ottawa
Journal	Oncol. 2014; 4: 53.Published online Mar 18, 2014
Year	2014

Abstract

Improving screening and treatment options for patients with epithelial ovarian cancer has been a major challenge in cancer research. Development of novel diagnostic and therapeutic approaches, particularly for the most common subtype, high-grade serous ovarian cancer (HGSC), has been hampered by controversies over the origin of the disease and a lack of spontaneous HGSC models to resolve this controversy. Over long-term culture in our laboratory, an ovarian surface epithelial (OSE) cell line spontaneously transformed OSE (STOSE). The objective of this study was to determine if the STOSE cell line is a good model of HGSC. STOSE cells grow faster than early passage parental M0505 cells with a doubling time of 13 and 48 h, respectively. STOSE cells form colonies in soft agar, an activity for which M0505 cells have negligible capacity. Microarray analysis identified 1755 down-regulated genes and 1203 up-regulated genes in STOSE compared to M0505 cells, many associated with aberrant Wnt/β-catenin and Nf-κB signaling. Upregulation of Ccnd1 and loss of Cdkn2a in STOSE tumors is consistent with changes identified in human ovarian cancers by The Cancer Genome Atlas. Intraperitoneal injection of STOSE cells into severe combined immunodeficient and syngeneic FVB/N mice produced cytokeratin+, WT1+, inhibin-, and PAX8+ tumors, a histotype resembling human HGSC. Based on evidence that a SCA1+ stem cell-like population exists in M0505 cells, we examined a subpopulation of SCA1+ cells that is present in STOSE cells. Compared to SCA1- cells, SCA1+ STOSE cells have increased colony-forming capacity and form palpable tumors 8 days faster after intrabursal injection into FVB/N mice. This study has identified the STOSE cells as the first spontaneous murine model of HGSC and provides evidence for the OSE as a possible origin of HGSC. Furthermore, this model provides a novel opportunity to study how normal stem-like OSE cells may transform into tumor-initiating cells.

2-3-176	
Title	**Constraint -Induced Movement Therapy to improve Paretic Upper-Extremity Motor Skills and Function of a Patient in the Subacute Stage of Stroke**
Authors	**Saleh M. Aloraini**, Marilyn MacKay-Lyons, Shaun Boe and Alison McDonald
Program	MSc Rehabilitation Health Science
University	Dalhousie University
Journal	Physiotherapy Canada, volume 66 (No. 1) of 2014 Winter
Year	2014

Abstract

Upper-extremity (UE) dysfunction is common after stroke. Four out of five people with stroke initially present with hemiparesis of the affected UE.1 Of those with significant impairment at onset (~30%), over 80% will demonstrate persistent functional deficits at 6 months post-stroke. These findings strongly support the notion that more effective therapeutic interventions for the paretic UE are needed. This article examines the potential role of constraint-induced movement therapy (CIMT) as a strategy to improve motor skills and function of the paretic UE of a patient undergoing stroke rehabilitation.

2-3-177	
Title	**Exposure to rufinamide and risks of CNS adverse events in drug-resistant epilepsy: a meta-analysis of randomized, placebocontrolled trials**
Authors	**Abdulaziz M. S. Alsaad**, Gideon Koren
Program	PhD Pharmacology and Toxicology
University	University of Toronto
Journal	British Journal of Clinical Pharmacology, 2014 Dec;78(6)
Year	2014

Abstract

AIM: Epilepsy is a complex disease necessitating continuous development of new therapeutic strategies to encounter drug-resistant cases. Among new adjuvant antiepileptic drugs, rufinamide is structurally distinct from other antiepileptic drugs. It is used to treat partial-onset seizures and seizures associated with Lennox-Gastaut syndrome (LGS) in adult and children. To date, there has been no attempt to evaluate systematically the risks of adverse events with rufinamide. METHODS: We performed a quantitative risk analysis of central nervous system (CNS) adverse events of rufinamide from all randomized, double-blind, add-on, placebo-controlled trials. The meta-analysis was undertaken with fixed effects models. RESULTS: Of the 886 publications

reviewed, 99 papers were retrieved and five articles met the inclusion criteria. One thousand two hundred and fifty-two patients were included. Our study showed that exposure to rufinamide was associated with a significant increase in risk of somnolence [relative ratio (RR) 1.87; 95% confidence interval (CI) 1.33, 2.62; P = 0.0003], dizziness (RR 2.66; 95% CI 2.00, 3.55; P = 0.00001), fatigue (RR 2.14; 95% CI 1.57, 2.91; P = 0.01) and headache (RR 1.28; 95% CI 1.02, 1.59, P = 0.03). In addition, exposure to rufinamide was associated with higher treatment discontinuation rates as compared with placebo (RR 2.65; 95% CI 1.74, 4.03; P = 0.00001). CONCLUSIONS: The risk of CNS adverse events appears to be increased in patients exposed to rufinamide as well as the treatment discontinuation rates. However, although statistical associations were significant, additional long term safety studies are required to confirm the clinical significance of these findings, as most reports described only mild and moderate adverse events.

2-3-178	
Title	**Measuring the Effectiveness of Mentoring as a Knowledge Translation Intervention for Implementing Empirical Evidence: A Systematic Review**
Authors	**Abdullah G**, Rossy D, Ploeg J, Davies B, Higuchi K, Sikora L, Stacey D.
Program	PhD Nursing
University	University of Ottawa
Journal	Worldviews on Evidence-Based Nursing, 2014 Oct;11(5):284-300
Year	2014

Abstract

BACKGROUND: Mentoring as a knowledge translation (KT) intervention uses social influence among healthcare professionals to increase use of evidence in clinical practice. AIM: To determine the effectiveness of mentoring as a KT intervention designed to increase healthcare professionals' use of evidence in clinical practice. METHODS: A systematic review was conducted using electronic databases (i.e., MEDLINE, CINAHL), grey literature, and hand searching. Eligible studies evaluated mentoring of healthcare professionals responsible for patient care to enhance the uptake of evidence into practice. Mentoring is defined as (a) a mentor more experienced than mentee; (b) individualized support based on mentee's needs; and (c) involved in an interpersonal relationship as indicated by mutual benefit, engagement, and commitment. Two reviewers independently screened citations for eligibility, extracted data, and appraised quality of studies. Data were analyzed descriptively. RESULTS: Of 10,669 citations from 1988 to 2012, 10 studies were eligible. Mentoring as a KT intervention was evaluated in Canada, USA, and Australia. Exposure to mentoring compared to no mentoring improved some behavioral outcomes (one study). Compared to controls or other multifaceted interventions, multifaceted interventions with mentoring improved practitioners' knowledge (four of five studies), beliefs (four of six studies), and impact on organizational outcomes (three of four studies). There were mixed findings for changes in professionals' behaviors and impact on practitioners' and patients' outcomes: some outcomes improved, while others showed no difference.
LINKING EVIDENCE TO ACTION: Only one study evaluated the effectiveness of mentoring alone as a KT intervention and showed improvement in some behavioral outcomes. The other nine studies that evaluated the effectiveness of mentoring as part of a multifaceted intervention showed mixed findings, making it difficult to determine the added effect of mentoring. Further research is needed to identify effective mentoring as a KT intervention.

2-3-179	
Title	**Reference Values for the SF-36 in Canadian Injured Workers Undergoing Rehabilitation**
Authors	Douglas P. Gross, **Fahad S. Algarni**, Riikka Niemelainen
Program	PhD Physiotherapist
University	University of Alberta
Journal	J Occup Rehabil, no. 10926-2014-9531-8
Year	2014

Abstract

Purpose The Medical Outcomes Study 36-item Short Form Survey (SF-36) is a widely used measure of health-related quality of life and normative reference values have been published for the general population of several countries. Since injured workers often experience pain, disability and other health challenges, we evaluated SF-36 reference values for Canadian workers' compensation claimants undergoing rehabilitation. Methods Descriptive cross-sectional design. Data were gathered as part of a study aimed at developing a tool for selecting rehabilitation programs. Data were available on a wide variety of measures, including the SF- 36. We calculated age- and sex-adjusted reference values, and stratified analyses based on type of rehabilitation, employment status and diagnostic group. Results Data were available on 5,622 claimants undergoing rehabilitation. Claimants reported significant limitations on all SF- 36 scales, but were especially limited on the Role Emotional and Bodily Pain scales (*3 standard deviations below typical Canadian norms). Unemployed, middleaged claimants undergoing chronic pain programs reported the lowest health status, but SF-36 scores variedminimally across diagnoses. Conclusions Claimant scores on the SF-36 were below population norms across all health scales and differed depending on age, employment status and type of rehabilitation. These data will be useful for assessing the health status of injured workers andevaluating the effect of rehabilitation interventions.

2-3-180	
Title	**Linkage between bacterial and fungal rhizosphere communities in hydrocarbon-contaminated soils is related to plant phylogeny**
Authors	Terrence H Bell, Saad El-Din Hassan, Aurelien Lauron-Moreau, **Fahad Al-Otaibi**, Mohamed Hijri, Etienne Yergeau, Marc St-Arnaud
Program	PhD Mkrologia
University	University of Montreal
Journal	The ISME Journal (2014) 8, 331–343
Year	2014

Abstract

Phytoremediation is an attractive alternative to excavating and chemically treating contaminated soils. Certain plants can directly bioremediate by sequestering and/or transforming pollutants, but plants may also enhance bioremediation by promoting contaminant-degrading microorganisms in soils. In this study, we used high-throughput sequencing of bacterial 16S rRNA genes and the fungal internal transcribed spacer (ITS) region to compare the community composition of 66 soil samples from the rhizosphere of planted willows (Salix spp.) and six unplanted control samples at the site of a former petrochemical plant. The Bray–Curtis distance between bacterial communities across willow cultivars was significantly correlated with the distance between fungal communities in uncontaminated and moderately contaminated soils but not in highly contaminated (HC) soils (42000mgkg 1 hydrocarbons). The mean dissimilarity between fungal, but not bacterial, communities from the rhizosphere of different cultivars increased substantially in the HC blocks. This divergence was partly related to high fungal sensitivity to hydrocarbon contaminants, as demonstrated by reduced Shannon diversity, but also to a stronger influence of willows on fungal communities. Abundance of the fungal class Pezizomycetes in HC soils was directly related to willow phylogeny, with Pezizomycetes dominating the rhizosphere of a monophyletic cluster of cultivars, while remaining in low relative abundance in other soils. This has implications for plant selection in phytoremediation, as fungal associations may affect the health of introduced plants and the success of co-inoculated microbial strains. An integrated understanding of the relationships between fungi, bacteria and plants will enable the design of treatments that specifically promote effective bioremediating communities.

2-3-181	
Title	**Cigarette smoke-exposed Candida albicans increased chitin production and modulated human fibroblast cell responses**
Authors	**Humidah Alanazi**, Abdelhabib Semlali, Laura Perraud, Witold Chmielewski, Andrew Zakrzewski and Mahmoud Rouabhia
Program	MSc Biochemistry
University	University of Laval
Journal	BioMed Research International, Volume 2014, Article ID 963156, 11 pages
Year	2014

Abstract

The predisposition of cigarette smokers for development of respiratory and oral bacterial infections is well documented. Cigarette smoke can also contribute to yeast infection. The aim of this study was to investigate the effect of cigarette smoke condensate (CSC) on C. albicans transition, chitin content, and response to environmental stress and to examine the interaction between CSC-pretreated C. albicans and normal human gingival fibroblasts. Following exposure to CSC, C. albicans transition from blastospore to hyphal form increased. CSC-pretreated yeast cells became significantly ($P < 0.01$) sensitive to oxidation but significantly ($P < 0.01$) resistant to both osmotic and heat stress. CSC-pretreated C. albicans expressed high levels of chitin, with 2- to 8-fold recorded under hyphal conditions. CSC-pretreated C. albicans adhered better to the gingival fibroblasts, proliferated almost three times more and adapted into hyphae, while the gingival fibroblasts recorded a significantly ($P < 0.01$) slow growth rate but a significantly higher level of IL-1β when in contact with CSC-pretreated C. albicans. CSC was thus able to modulate both C. albicans transition through the cell wall chitin content and the interaction between C. albicans and normal human gingival fibroblasts. These findings may be relevant to fungal infections in the oral cavity in smokers.

2-3-182	
Title	**Cigarette smoke condensate increases C. albicans adhesion, growth, biofilm formation, and EAP1, HWP1 and SAP2 gene expression**
Authors	Semlali A, Killer K, **Alanazi H**, Chmielewski W, Rouabhia M
Program	MSc Biochemistry
University	University of Laval
Journal	BMC Microbiol. 2014 Mar 12;14(1):61
Year	2014

Abstract

BACKGROUND: Smokers are more prone to oral infections than are non-smokers. Cigarette smoke reaches the host cells but also microorganisms present in the oral cavity. The contact between cigarette smoke and oral bacteria promotes such oral diseases as periodontitis. Cigarette smoke can also modulate C. albicans activities that promote oral candidiasis. The goal of this study was to investigate the effect of cigarette smoke condensate on C. albicans adhesion, growth, and biofilm formation as well as the activation of EAP1, HWP1 and secreted aspartic protease 2.
RESULTS: Cigarette smoke condensate (CSC) increased C. albicans adhesion and growth, as well as biofilm formation. These features may be supported by the activation of certain important genes. Using quantitative RT-PCR, we demonstrated that CSC-exposed C. albicans expressed high levels of EAP1, HWP1 and SAP2 mRNA and that this gene expression increased with increasing concentrations of CSC.
CONCLUSION: CSC induction of C. albicans adhesion, growth, and biofilm formation may explain the increased persistence of this pathogen in smokers. These findings may also be relevant to other biofilm-induced oral diseases.

2-3-183	
Title	**Comparison of amendment with distillers' grain versus urea on crop yield and nutrient uptake in a canola-wheat rotation in southern Saskatchewan**
Authors	**Khaled D. Alotaibi**, Jeff J. Schoenau
Program	Phd Biology - Botany
University	University of Saskatchewan
Journal	Canadian Journal of Plant Science, 2014, 94(8)
Year	2014

Abstract

A surplus of distillers' grain resulting from rapid expansion in biofuel production has led to interest in finding alternative uses for this co-product, apart from its traditional use as an animal feed. Land application to agricultural soil in order to recycle the nutrients is one potential use. In this study we evaluated the effect of a single application of wet wheat distillers' grain (WDG) on crop yield and nitrogen and phosphorus uptake in a 3-yr canola–wheat–canola rotation in southern Saskatchewan. The experimental treatments included a single application of WDG at a rate of 100 kg N ha−1 in comparison to urea applied at the same rate of N along with an unfertilized control. In the first year, WDG produced a canola yield of 1266 kg ha−1, which was significantly greater than the urea treatment. The WDG treatment resulted in increased plant N uptake that was 59% greater than the control, but was 20% less than that observed in the urea treatment, indicating that only a portion of the applied N in the WDG was available for recovery. Greater yield of WDG may be due to factors other than N. Both WDG and urea treatments had a significant effect on plant P uptake in the first year. The residual effect of WDG addition on crop parameters in the second and third years was mainly limited to enhancement of plant P uptake in second year. Overall, the WDG applied at the same rate of N was at least as effective as urea for increasing crop yield.

2-3-184	
Title	**Fertilizer potential of thin stillage from wheat-based ethanol production**
Authors	**Khaled D. Alotaibi**, Jeff. J. Schoenau, Xiying Hao
Program	Phd Botany
University	University of Saskatchewan
Journal	BioEnergy Research, 7(4), pp. 1421-1429
Year	2014

Abstract

Accumulation of thin stillage (TS), a byproduct resulting from ethanol production, has led to a need to explore all possible means of its utilization. The objective of this research was to evaluate the effectiveness of TS derived from wheat (Triticum aestivum L.)-based ethanol production plant as a fertilizer. The experiment was conducted over a 2-year period in east-central Saskatchewan, Canada. Treatments included three rates of TS: 50, 100, and 200 kg N ha−1 using two methods of application: broadcast, and incorporation and injection. For comparison, conventional fertilizer urea (46-0-0) was applied at the same rates of N as the TS. Responses of crop yield (wheat and canola (Brassica napus L.), N and P uptake, and apparent N recovery were measured over two growing seasons on a Black Chernozemic soil. For both seasons, at equivalent N rate, the TS produced similar or greater crop yield and nutrient recovery compared to urea fertilizer, especially when injected. This is caused by the presence of other plant nutrients, such as P and S in TS, and its relatively high plant-available NH4 +-N content. The injection of TS appears to be a more effective application method compared to broadcasting, likely through reducing volatile N loss and placing nutrients closer to the growing crop roots when injected in bands in soil. The TS did not show any adverse effect on measured crop parameters even at the high rate of application. The results of this study suggest that land application of TS can be an effective solution for TS management that recycles nutrients in the feedstock grain for the ethanol production.

2-3-185	
Title	**Simulation of In Vitro Dissolution Behavior Using DDDPlus**
Authors	**May Almukainzi**, Arthur Okumu, Hai Wei, Raimar Löbenberg
Program	PhD-Pharmaceutical Sciences
University	University of Alberta
Journal	AAPS PharmSciTech, November 2014
Year	2014

Abstract

Dissolution testing is a performance test for many dosage forms including tablets and capsules. The objective of this study was to evaluate if computer simulations can predict the in vitro dissolution of two model drugs for which different dissolution data were available. Published montelukast sodium and glyburide dissolution data was used for the simulations. Different pharmacopeial and biorelevant buffers, volumes, and rotations speeds were evaluated. Additionally, a pH change protocol was evaluated using these buffers. DDDPlus™ 3, Beta version (Simulation Plus, Inc.), was used to simulate the in vitro dissolution data. The simulated data were compared with the in vitro data. A regression coefficient between predicted and observed data was used to assess the simulations. The statistical analysis of Montelukast sodium showed that there was a significant correlation between the in vitro release data and the predicted data for all cases except for one buffer. For glyburide, there was also a significant correlation between the experimental data and the predicted data using single pH conditions. Using the dynamic pH protocol, a correlation was significant for one biorelevant media. The simulations showed that both in vitro drug releases were sensitive to solubility effects which confirmed their BCS class II category. Computer simulations of the in vitro release using DDDPlus™ have the potential to estimate the in vivo dissolution at an early stage in the drug development process. This might be used to choose the most appropriate dissolution condition to establish IVIVC and to develop biorelevant in vitro performance tests to capture critical product attributes for quality control procedures in quality by design environments.

2-3-186	
Title	**SPG7 Variant Escapes Phosphorylation-Regulated Processing by AFG3L2, Elevates Mitochondrial ROS, and Is Associated with Multiple Clinical Phenotypes**
Authors	**Naif A.M. Almontashiri1**, Hsiao -Huei Chen, Ryan J. Mailloux, Takashi Tatsuta, Allen C.T. Teng, Ahmad B. Mahmoud, Tiffany Ho, Nicolas A.S. Stewart, Peter Rippstein, Mary Ellen Harper, Robert Roberts, Christina Willenborg, Jeanette Erdmann, Annalisa Pastore, Heidi M. McBride, Thomas Langer, Alexandre F.R. Stewart
Program	PhD –Genetics
University	University of Ottawa
Journal	Cell Report -Volume 7, Issue 3, 8 May 2014, Pages 834–847
Year	2014

Abstract

Summary: Mitochondrial production of reactive oxygen species (ROS) affects many processes in health and disease. SPG7 assembles with AFG3L2 into the mAAA protease at the inner membrane of mitochondria, degrades damaged proteins, and regulates the synthesis of mitochondrial ribosomes. SPG7 is cleaved and activated by AFG3L2 upon assembly. A variant in SPG7 that replaces arginine 688 with glutamine (Q688) is associated with several phenotypes, including toxicity of chemotherapeutic agents, type 2 diabetes mellitus, and (as reported here) coronary artery disease. We demonstrate that SPG7 processing is regulated by tyrosine phosphorylation of AFG3L2. Carriers of Q688 bypass this regulation and constitutively process and activate SPG7 mAAA protease. Cells expressing Q688 produce higher ATP levels and ROS, promoting cell proliferation. Our results thus reveal an unexpected link between the phosphorylation-dependent regulation of the mitochondria mAAA protease affecting ROS production and several clinical phenotypes.

2-3-187	
Title	**Breast milk concentrations of amiodarone, desethylamiodarone, and bisoprolol following short-term drug exposure: Two case reports**
Authors	Rshmi Khurana, **Yousef A. Bin Jardan**, Jodi Wilkie, Dion R. Brocks
Program	PhD-Pharmaceutical Sciences
University	University of Alberta
Journal	The Journal of Clinical Pharmacology –5 FEB 2014
Year	2014

Abstract

Two cases of mothers given postpartum short-term administration of amiodarone, with and without bisoprolol, are described along with determinations of amiodarone and (±)-bisoprolol in the breast milk. In one mother given a cumulative total of amiodarone of 8 g over 1 week, concentrations 11 days after the drug had been stopped were initially deemed sufficient to pose a risk to an infant. Over the next 5 days the concentrations steadily dropped with amiodarone and desethylamiodarone concentrations being found to be at a level comprising minimal risk to the infant. Bisoprolol was not found in the expressed breast milk. In the second case the mother was given a single 150 mg dose of amiodarone and breast milk concentrations were measured on postpartum days 4 and 5. Breast milk amiodarone concentrations were very low and of little concern clinically had the mother breast fed her baby. The risk to the baby of ingesting breast milk after amiodarone administration postpartum depends on the duration of amiodarone exposure, with a single dose posing minimal risk. Bisoprolol does not appear to accumulate to any great extent in breast milk.

2-3-188	
Title	**Nitrifying moving bed biofilm reactor (MBBR) biofilm and biomass response to long term exposure to 1°C**
Authors	V. Hoanga, R. Delatollaa, , **T. Abujamelb**, W. Mottaweab, A. Gadboisc, E. Laflammec, A. Stintzib
Program	PhD- Medical microbiology
University	University of Alberta
Journal	Water Research Volume 49, 1 February 2014, Pages 215–224
Year	2014

Abstract

This study aims to investigate moving bed biofilm reactor (MBBR) nitrification rates, nitrifying biofilm morphology, biomass viability as well as bacterial community shifts during long-term exposure to 1 °C. Long-term exposure to 1 °C is the key operational condition for potential ammonia removal upgrade units to numerous northern region treatment systems. The average laboratory MBBR ammonia removal rate after long-term exposure to 1 °C was measured to be 18 ± 5.1% as compared to the average removal rate at 20 °C. Biofilm morphology and specifically the thickness along with biomass viability at various depths in the biofilm were investigated using variable pressure electron scanning microscope (VPSEM) imaging and confocal laser scanning microscope (CLSM) imaging in combination with viability live/dead staining. The biofilm thickness along with the number of viable cells showed significant increases after long-term exposure to 1 °C. Hence, this study observed nitrifying bacteria with higher activities at warm temperatures and a slightly greater quantity of nitrifying bacteria with lower activities at cold temperatures in nitrifying MBBR biofilms. Using DNA sequencing analysis, Nitrosomonas and Nitrosospira (ammonia oxidizers) as well as Nitrospira (nitrite oxidizer) were identified and no population shift was observed between 20 °C and after long-term exposure to 1 °C.

2-3-189	
Title	**Fenofibrate Modulates Cytochrome P450 and Arachidonic Acid Metabolism in the Heart and Protects Against Isoproterenol-induced Cardiac Hypertrophy**
Authors	**Althurwi, Hassan**, Elshenawy, Osama El-Kadi, Ayman O.S.
Program	PhD-Pharmacy
University	University of Alberta
Journal	J. of Cardiovascular Pharmacology
Year	2014

Abstract

It has been previously shown that the cytochrome P450 (P450) modulator, fenofibrate, protects against cardiovascular diseases. P450 and their metabolites, epoxyeicosatrienoic acids (EETs) and 20-hydroxyeicosatetraenoic acid (20-HETE) were found to play an important role in cardiovascular diseases. Therefore, it is important to examine whether fenofibrate would modulate the cardiac P450 and its associated arachidonic acid metabolites and whether this modulation protects against isoproterenol-induced cardiac hypertrophy. For this purpose, male Sprague-Dawley rats were treated with fenofibrate (30 mg·kg−1·d−1), isoproterenol (4.2 mg·kg−1·d−1), or the combination of both. The expression of hypertrophic markers and different P450s along with their metabolites was determined. Our results showed that fenofibrate significantly induced the cardiac P450 epoxygenases, such as CYP2B1, CYP2B2, CYP2C11, and CYP2C23, whereas it decreased the cardiac ω-hydroxylase, CYP4A3. Moreover, fenofibrate significantly increased the formation of 14,15-EET, 11,12-EET, and 8,9-EET, whereas it decreased the formation of 20-HETE in the heart. Furthermore, fenofibrate significantly decreased the hypertrophic markers and the increase in heart-to-body weight ratio induced by isoproterenol. This study demonstrates that fenofibrate alters the expression of cardiac P450s and their metabolites and partially protects against isoproterenol-induced cardiac hypertrophy, which further confirms the role of P450s, EETs, and 20-HETE in the development of cardiac hypertrophy.

2-3-190	
Title	**The effects of rejuvenation during hypothermic storage on red blood cell membrane remodeling**
Authors	Jayme D.R. Kurach, **Ruqayyah Almizraq**, Beatriz Bicalho, Jason P. Acker, and Jelena L. Holovati
Program	Doctor of Philosophy in Medical Laboratory
University	University of Alberta
Journal	Transfusion Vol. to be assigned
Year	2014

Abstract

BACKGROUND: Our previous studies showed that hypothermic storage (HS) induces red blood cell (RBC) microparticle (RMP) generation and changes in phosphatidylserine (PS) and CD47 expression on RBCs and RMPs. The aim of this study was to evaluate the effect of cold rejuvenation treatment at multiple time points during storage on these prehemolytic indicators of RBC membrane storage lesion. STUDY DESIGN AND METHODS: Leukoreduced RBC units in saline-adenine-glucose-mannitol were used to generate three groups: untreated controls, sham-treated units, and units treated with a cold (1-6°C) rejuvenation solution on Day 28, 35, or 42 of HS. Units were assessed for hemolysis, adenosine triphosphate (ATP) concentration, lipid composition, and RMP generation, as well as PS and CD47 expression throughout 49 days of HS. RESULTS: Rejuvenation treatment led to a significant increase in ATP concentration in all units, irrespective of treatment day. There were no significant differences between sham- and rejuvenation-treated RBC samples in the levels of PS externalization, CD47 expression, or the rate of RMP formation. RBCs rejuvenated on Day 28 were enriched in glycerophosphocholine (+23.5%), depleted in sphingomyelin (−14%), and slightly depleted in cholesterol (−3.5%). CONCLUSION: Cold rejuvenation in hypothermically stored RBCs affects the lipid composition of RBCs and respective RMPs in a time-dependent fashion.

2-3-191	
Title	**Perinatal Immunization With Vaccine-Grade Listeria monocytogenes Provides Protection Against Murine Th2 Airway Inflammation**
Authors	**Aloyouni SY**, Segeritz CP, Sherrid AM, Gold MJ, Loeffler DI , Blanchet MR, Cai B, Hirota J, McNagny KM, Kollmann TR
Program	Doctor Of Philosophy in Medical Technology
University	University of British Columbia
Journal	Allergy Asthma Immunol Res. 2014 Jul; 6 (4): 341-9
Year	2014

Abstract

Asthma is a chronic respiratory disorder that leads to inflammation and narrowing of the airways. Its global prevalence has attained epidemic levels and treatment options that reach beyond temporary relief of symptoms are urgently needed. Since the processes leading to clinically symptomatic asthma start early in life, we set out to systematically evaluate a neonatal immunotherapeutic based on Listeria monocytogenes (Lm) for the control of allergic sensitization. We modified Lm to express the model allergen, ovalbumin (OVA), and tested the ability of neonatal immunization with this strain to control allergic sensitization in a mouse model of OVAinduced asthma. Mice were immunized as newborns with live or heat killed LmOVA or live Lm, followed 6 weeks later by allergic sensitization with OVA. In order to determine whether the TH1- polarizing effect of this vaccine vector inadvertently may exacerbate development of certain TH1- driven allergic diseases, mice immunized as newborns were assessed in a model of adult hypersensitivity pneumonitis (HP). Both LmOVA and Lm-control vaccines were highly effective in providing long-lasting protection from airway inflammation after only one immunization given perinatally. Serum antibody levels and lung cytokine production suggest that this prophylactic strategy is associated with an allergen specific TH1-dominated response. Specifically, LmOVA vaccinated mice displayed significantly elevated OVA-specific serum IgG2a, but no difference in anti-OVA IgE antibodies and only slightly decreased anti-OVA IgG1 antibodies. Importantly, Lm-based neonatal vaccination did not exacerbate Th1/Th17 driven HP, arguing against broad spectrum immune skewing. Our findings highlight the promise of early life Lm-based immunomodulatory interventions as a prophylactic strategy for allergic asthma.

2-3-192	
Title	**Dynamic Characterization of the CT Angiographic 'Spot Sign'**
Authors	Santanu Chakraborty, **Mohammed Alhazzaa**, Jason K. Wasserman, Yang Yang Sun, Grant Stotts, Mathew J. Hogan, Andrew Demchuk, Richard I. Aviv, Dar Dowlatshahi
Program	Fellowship/Stroke
University	University of Ottawa
Journal	PLOS ONE | www.plosone.org 1 March 2014, Volume 9, Issue e90431
Year	2014

Abstract

Background and purpose: Standard (static) CT angiography is used to identify the intracerebral hemorrhage (ICH) spot sign. We used dynamic CT-angiography to describe spot sign characteristics and measurement parameters over 60-seconds of image acquisition. Methods: We

prospectively identified consecutive patients presenting with acute ICH within 4.5 hours of symptom onset, and collected whole brain dynamic CT-angiography (dCTA). Spot parameters (earliest appearance, duration, maximum Hounsfield unit (HU), time to maximum HU, time to spot diagnostic definition, spot volume and hematoma volumes) were measured using volumetric analysis software. Result: We enrolled 34 patients: three were excluded due to secondary causes of ICH. Of the remaining 31 patients there were 18 females (58%) with median age 70 (range 47–86) and baseline hematoma volume 33 ml (range 0.7–103 ml). Positive dCTA spot sign was present in 13 patients (42%) visualized as an expanding 3-dimensional structure temporally evolving its morphology over the scan period. Median time to spot appearance was 21 s (range 15–35 seconds). This method allowed tracking of spots evolution until the end of venous phase (active extravasation) with median duration of 39 s (range 25–45 seconds). The average density and time to maximum density was 204HU and 30.8 s (range 23–31 s) respectively. Median time to spot diagnosis was 20.8 s using either 100 or 120HU definitions. Conclusion: Dynamic CTA allows a 3-dimensional assessment of spot sign formation during acute ICH, and captured higher spot sign prevalence than previously reported. This is the first study to describe and quantify spot sign characteristics using dCTA; these can be used in ongoing and upcoming ICH studies.

2-3-193	
Title	**Anaplastic Thyroid Cancer: A Retrospective analysis of 120 cases**
Authors	**M. Aldehaim**, R. Mahmood, F. Hussain, A. Memon, A. Al-Hebshi, N. Al-rajhi, M. El-sebaie, E. Khalil, M. Ahmad
Program	Radiation Oncology
University	University of Toronto
Journal	Gulf Journal of Oncology January 2014: issue 15 pages 32–37
Year	2014

Abstract

Introduction: Anaplastic Thyroid Cancer (ATC) is one of the most lethal malignancies with very short survival and extremely poor treatment outcome. ATC accounts for 2-5% of all thyroid cancers worldwide with an annual incidence of about 2/million. Objective: To review the natural history and treatment outcome of ATC patients treated at King Faisal Specialist Hospital and Research Centre (KFSH and RC) located at Riyadh, Saudi Arabia. Material and Methods: Retrospective review of 120 Saudi cancer patients collected from registry data at KFSH & RC from 1976-2008. Search key words included: thyroid cancer, anaplastic, undifferentiated and not otherwise specified. Search was not restricted to particular age, gender, treatment or tumor size. Demographic information, baseline patient characteristics including date of diagnosis, type of treatment and date of death were obtained from KFSH & RC registry data and Saudi death registry. Results: A total of 120 cases were identified at our cancer centre from 1976 to 2008. Of these total, 73 were females (60.8%) and 47 were males (39.2%). The average age at diagnosis was 63.34 +/- 12.8 years. Thirty-four patients underwent surgery (28.3%), 52 had a palliative radiation treatment (43.3%) and only 5 had chemotherapy (4.2%). The median survival was 53 days (0-457).

2-3-194	
Title	**Giant Petroclival Primary Intradural Chordoma: Case Report and Systematic Review of the Literature**
Authors	**Fahad AlOtaibi** Marie-Christine Guiot, Thierry Muanza, Salvatore Di Maio1
Program	Neurosurgery
University	McGill University
Journal	Journal of Neurological Surgery reports April 9th, 2014
Year	2014

Abstract

Background Chordomas are rare, locally aggressive neoplasms thought to arise from notochordal remnants in the axial skeleton. Primary intradural chordomas are considered to be extremely rare. In this article a giant intradural petroclival chordoma is presented, and a synthesis of the available literature is performed to measure overall survival (OS) and recurrence-free survival (RFS) and to identify prognostic factors. Methods A systematic Medline review yielded 47 patients with purely intradural tumors from 38 publications including 39 chordomas, 8 cases of ecchordosis physaliphora, and 1 case with features of both. The 5-year OS and RFS were calculated based on the Kaplan-Meier method. Risk factors for progression or mortality were analyzed using binomial logistic regression. Results Maximal tumor diameter varied from 1.5 to 6.0 cm (mean: 3.2 cm). Tumors were located predominantly in the prepontine area (66.7%). Combined 5-year Kaplan- Meier OS and RFS were 77% 11% and 74% 11%, respectively. Incomplete surgical resection, larger tumor diameter, and an elevated Ki-67 index were statistically more frequent in cases of recurrence and mortality. Conclusions: Based on a systematic literature review, the behavior of primary intradural chordomas may be closer to typical chordomas than was previously thought.

2-3-195	
Title	**Extracranial Extension of Anaplastic Ependymoma: Case Report And Literature Review**
Authors	**Fahad Alotaibi**, Mousa Alabbadi, Abdulrahman Sabbagh, Maqsood Ahmad
Program	Neurosurgery
University	McGill University
Journal	International Journal of Neurology and Neurosurgery23, Volume 6 Number 1, January - June 2014
Year	2014

Abstract

16-years old male diagnosed six years ago as grade 2 ependymoma presented to our hospital with extracranial extension to the left side of face involving the left eye and left cheek.

2-3-196	
Title	**Evaluating the Safety of Labour in Women with a Placental Edge 11 to 20 mm From the Internal Cervical Os**
Authors	**Khalid Al Wadi**, Carol Schneider, Jennifer Hunt, Savas Menticoglou
Program	Gynoncology
University	University of Calgary
Journal	Journal of Obstetrics and Gynaecology Canada 36(8) August 2014
Year	2014

Abstract

Objective: The purpose of this study was to evaluate pregnancy outcomes in a cohort of women with a placental edge between 11 and 20 mm from the internal cervical os, and to determine the likelihood of a successful vaginal delivery when trial of labour is attempted in these women. Methods: We carried out a prospective observational study of women with singleton pregnancies and a placental edge between 11 and 20 mm from the internal cervical os (identified by transvaginal sonography) who underwent a trial of labour. Results: Fourteen women with the above characteristics underwent a trial of labour during the study period. The mean interval (± SD) from ultrasound to delivery was 17.2 ± 9.6 days. Thirteen women (92.9%) delivered vaginally with no complications, and only one woman (7.1%) required an emergency Caesarean section for intrapartum bleeding. The risks of antepartum and postpartum hemorrhage were 21.4% and 14.3%, respectively. Conclusion: Having a placental edge more than 10 mm from the internal os, measured by transvaginal sonography near term, justifies allowing a trial of labour and carries a low risk of subsequent obstetrical hemorrhage.

2-3-197	
Title	**Clinical outcomes of minimally invasive endoscopic and conventional sternotomy approaches for atrial septal defect repair**
Authors	Michael W.A. Chu, Katie L. Losenno, MSc Stephanie A. Fox, Corey Adams, **Hamad Al-Habib**, Ray Guo, Alan H. Menkis, Bob Kiaii
Program	Cardiac Surgery
University	University of Western Ontario
Journal	Canadian Journal of Surgery 2014 June; 57(3): E75-81
Year	2014

Abstract

BACKGROUND: Concerns remain that minimally invasive atrial septal defect (ASD) repair may compromise patient outcomes. We compared clinical outcomes of adult patients undergoing ASD repair via a minimally invasive endoscopic approach versus a “gold standard” sternotomy. METHODS: We retrospectively reviewed the clinical outcomes of consecutive patients who underwent ASD patch repair at our institution between 2002 and 2012. We compared in-hospital/30-day mortality, postoperative complications, length of stay in hospital and in the intensive care unit and blood product requirements between patients who underwent right mini-thoracotomy (MT) and those who underwent conventional sternotomy. RESULTS: During the study period, 73 consecutive patients underwent ASD patch repair at our institution: 51 (age 47 ± 16 yr, 66.7% women) in the MT group and 22 (age 46 ± 21 yr, 59.1% women) in the sternotomy group. In-hospital mortality was similar between the 2 groups (MT 0% v. sternotomy 4.5%, p = 0.30). There were no significant differences in any postoperative complications or blood product requirements. No patients in the MT group suffered stroke, retrograde aortic dissection or leg ischemia. Mean intensive care unit (MT 1.2 ± 1.2 d v. sternotomy 1.7 ± 2.2 d, p = 0.26) and hospital length of stays (MT 5.1 ± 2.2 d v. sternotomy 6.3 ± 3.6 d, p = 0.17) were similar between the groups; however, there was a trend toward fewer patients requiring prolonged hospital stays (> 10 d) in the MT group (3.9% v. 18.2%, p = 0.06). CONCLUSION: Repair of ostium secundum and sinus venosus ASD can be performed safely via MT endoscopic approach with similar outcomes as sternotomy. Patient preference for a more cosmetically appealing incision may be considered without concern of compromised outcomes.

2-3-198	
Title	**Naproxen affects osteogenesis of human mesenchymal stem cells via regulation of Indian hedgehog signaling molecules**
Authors	**Omar Salem**, Hong Tian Wang, Abdulrahman M Alaseem, Ovidiu Ciobanu, Insaf Hadjab, Rahul Gawri, John Antoniou and Fackson Mwale
Program	Experimental Surgery
University	McGill University
Journal	Arthritis Research and Therapy Journal Volume 16 Issue 4 July 17th, 2014
Year	2014

Abstract

Introduction: We previously showed that type X collagen, a marker of late stage chondrocyte hypertrophy (associated with endochondral ossification), is constitutively expressed by mesenchymal stem cells (MSCs) from osteoarthritis patients and this may be related to Naproxen (Npx), a nonsteroidal anti-inflammatory drug used for therapy. Hedgehog (HH) signaling plays an important role during the development of bone. We tested the hypothesis that Npx affected osteogenic differentiation of human MSCs through the expression of Indian hedgehog (IHH), Patched-1 (PTC1) and GLI family members GLI1, GLI2, GLI3 in vitro. Methods: MSCs were cultured in osteogenic differentiation medium without (control) or with 0.5 μM Npx. The expression of collagen type X, alpha 1 (COL10A1), alkaline phosphatase (ALP), osteopontin (OPN), osteocalcin (OC), collagen type I, alpha 1 (COL1A1) was analyzed with real-time reverse transcription (RT) PCR, and the ALP activity was measured. The osteogenesis of MSCs was monitored by mineral staining and quantification with alizarin red S. To examine whether Npx affects osteogenic differentiation through HH signaling, the effect of Npx on the expression of IHH, GLI1, GLI2, GLI3 and PTC1 was analyzed with real-time RT PCR. The effect of cyclopamine (Cpn), a HH signaling inhibitor, on the expression of COL10A1, ALP, OC and COL1A1 was also determined. Results: When MSCs were cultured in osteogenic differentiation medium, Npx supplementation led to a significant decrease in ALP gene expression as well as its activity, and had a tendency to decrease mineral deposition. It also decreased the expression of COL1A1 significantly. In contrast, the gene expression of COL10A1 and OPN were upregulated significantly by Npx. No significant effect was found on OC expression. The expression of IHH, PTC1, GLI1, and GLI2 was increased by Npx, while no significant difference was observed on GLI3 expression. Cpn reversed the effect of Npx on the expression of COL10A1, ALP, OPN and COL1A1. Conclusions: These results indicate that Npx can affect gene expression during osteogenic differentiation of MSCs, and downregulate mineral deposition in the extracellular matrix through IHH signaling. Therefore, Npx could affect MSC-mediated repair of subchondral bone in OA patients.

2-3-199	
Title	**Chondrosarcoma of the Skull Base in Ollier's Disease**
Authors	**Naif M. Alotaibi**, A. ireza Mansouri, Felipe G. Carvalho, James A. Balogun, Fred Gentili
Program	Neurosurgery
University	University of Toronto
Journal	Can J Neurol Sci. 2014; 41: 86-87
Year	2014

Abstract

A 22-year-old female with Ollier's disease (OD) presented with a four-week history of diplopia on left gaze, attributable to a left sixth cranial nerve palsy. The remainder of the exam was normal. Her past surgical history was significant for many orthopedic procedures due to OD.

2-3-200	
Title	**Spontaneous subdural fluid collection following aneurysmal subarachnoid hemorrhage: subdural hygroma or external hydrocephalus?**
Authors	**Naif M. Alotaibi**, Christopher D. Witiw, Menno R Germans, R. Loch Macdonald
Program	Neurosurgery
University	University of Toronto
Journal	Neurocritical care 2014. 21:312-315
Year	2014

Abstract

Background Subdural fluid collections (hygromas and effusions) in adults are usually seen following head trauma or overdrainage of cerebrospinal fluid (CSF) after CSF diversion procedures. We report an unusual case of subdural fluid collection that developed spontaneously 5 days after an aneurysmal subarachnoid hemorrhage (SAIT) this patient neither had pennanent CSF diversion procedure nor history of significant head trauma during her clinical course. Methods This study is a Case report of the patient suffering from an SAIL Results A 71 -year-old woman suffered an SM-I from a ruptured right-sided posterior communicating artery aneurysm, Computed tomography (CT) demonstrated diffuse SAH and signs of early hydrocephalus that did not require treatment. The aneurysm was treated with endovascular coil occlusion without any complications. Throughout her hospital course, she remained alert without neurological deficits. A large subdural fluid collection was discovered incidentally during a mutine CT scan of the brain 5 days after & SAH. The patient remained asymptornatic; therefore, the collection was treated conservatively. It resolved spontaneously at five days after the initial diagnosis. Conclusion Subdural fluid collections following SAH can occur as a result of head trauma, external hydrocephalus, or as a treatment complication of (1SF shunting and craniotamies. It is critical to differentiate simple hygromas from external hydrocephalus since their response to CSF diversion is entirely different.

2-3-201	
Title	**Inducible Transient Expression of Smpd3 Prevents Early Lethality in fro/fro Mice**
Authors	**Sharifa Alebrahim**, Zohreh Khavandgar, Juliana Marulanda, and Monzur Murshed
Program	Craniofacial Health Science
University	McGill University
Journal	GENESIS, 2014 May;52(5):408-16
Year	2014

Abstract

Summary: Sphingomyelin phosphodiesterase 3 (SMPD3) is a pleiotropic lipid metabolizing enzyme involved in multiple physiological processes. A deletion mutation in the murine Smpd3 gene called fragilitas ossium (fro) leads to severe skeletal abnormalities in the developing fro/fro embryos. Although fro/fro mice can be useful to study many different aspects of SMPD3 functions, their perinatal lethality makes it difficult to generate a sufficient number of mice for controlled studies. In fact, on the C57BL/6 genetic background, none of the fro/fro mice survive beyond the perinatal stage. In this study, we used the "Tet-On" inducible gene expression system to express Smpd3 transiently in fro/fro;ROSA-rtTA;TRE-Smpd3 embryos on the C57BL/6 background. This induced Smpd3 expression corrected all the skeletal abnormalities in these embryos and prevented their early death. However, induction of Smpd3 expression in the adolescent fro/fro;ROSA-rtTA;TRE-Smpd3 mice was not sufficient to correct the defects in trabecular bone mineralization and the impaired growth of the long bones. This novel mouse model will be a useful tool to study SMPD3 biology in vivo. genesis 00:1–9.

2-3-202	
Title	**Olmsted Syndrome with oral involvement including premature teeth loss**
Authors	**Ahmed K. Alotaibi**, Mazen K. Alotaibi Suliman Alsaeed, Ahmad Alyahya, Charles F. Shuler
Program	Periodontics
University	British Columbia
Journal	Odontology, January 2014
Year	2014

Abstract

Introduction Olmsted syndrome is a rare palmoplantar keratodermal disease that has not previously been reported to have an association with periodontal disease. The aim of this study is to report and document a case of Olmsted syndrome with evidence of severe periodontal disease. Case report A 38-year old Saudi male patient presented to the dental clinic diagnosed previously with Olmsted syndrome. Clinical and radiographic examinations were done and provided evidence of the typical clinical findings in Olmsted syndrome and evidence of severe periodontal disease. The patient had severe generalized hyperkeratotic lesions on the palms, soles, and perioral skin as well as hyperkeratosis of oral mucosa at multiple sites. Conclusion This case report documents the first reported case of Olmsted syndrome to be associated with severe periodontal disease. The altered differentiation of oral mucosa linked to Olmsted syndrome may contribute to the periodontal disease. Patients diagnosed with this syndrome should receive a comprehensive oral examination to determine whether periodontal destruction is a significant component of their disease or not.

2-3-203	
Title	An Inquiry into Female Dentists' professional Lives and Concerns
Authors	Mona Rajeh, Richard Hovey, Shahrokh Esfandiari
Program	Craniofacial Health Science
University	McGill University
Journal	Open Journal of Social Science, August 2014
Year	2014

Abstract

Over the past 40 years, the number of female dentists has consistently increased. In this study, we intend to gain insight into the issues and concerns that influence the work characteristics of female dentists. Many studies have shown that gender differences exist in choice of specialization, practice patterns, and professional attitudes. We used a qualitative description methodology to guide this study, for which we recruited a purposive sample of six female dentists from the dental clinics of Montreal General Hospital, in the greater region of Montreal in Quebec, Canada. These dentists were general practitioners or specialists. Our findings suggest that female dentists consider the balance between work and childcare responsibilities challenging. For female dentists the relationship between work status and family happiness is an important matter to consider.

2-3-204	
Title	**Smad2 Overexpression Reduces the Proliferation of the Junctional Epithelium**
Authors	**M.K. Alotaibi1**, Y. Kitase, and C.F. Shuler
Program	Periodontics
University	British Columbia
Journal	The Journal of Dental Research, Volume 93, Isssue 9, pages 898-903, June 2014
Year	2014

Abstract
The overexpression of the intracellular signaling molecule of the transforming growth factor–beta family (TGF-β) Smad2 was found to induce apoptosis and inhibit the proliferation rate of oral epithelial cells. Therefore, the aim of this study was to investigate in vivo the effect of Smad2 overexpression on the proliferation rate of the junctional epithelium (JE). Smad2 overexpression was driven by the cytokeratin 14 promoter (K14-Smad2) in transgenic mice. The K14-Smad2 mice were compared with wild-type (WT) mice selected as the control group. Samples were stained with hematoxylin and eosin stains and analyzed by image analysis. Immunohistochemistry was conducted for proliferating cell nuclear antigen (PCNA) and c-Myc as markers of cell proliferation. The expression of cyclin-dependent kinase inhibitors (P15, P21, and P27) was determined by real-time polymerase chain-reaction (RT-PCR). The quantity of phosphorylated retinoblastoma (pRB) was determined with Western blots. The overexpression of Smad2 altered the area of the junctional epithelial cells in one-yearold K14-Smad2 mice. The area was 32,768 (± 3,473) μm2 for the WT and 24,937.25 (± 1,965) μm2 for the K14-Smad2 mice. There was a significant difference in the proliferation rates of the JE (PCNA-positive cells) between the WT and K14-Smad2 mice, 20.7% (± 1.1) and 2.1% (± 0.5), respectively. A significant difference in c-Myc expression occurred between experimental and control samples. The K14-Smad2 mice had a mean of 2.3% (± 0.6), and the WT mice had a mean of 20.1% (± 3.6). Smad2 overexpression up-regulated the mRNA expression of P15 by 2.3-fold and that of P27 by 5.5-fold in the K14-Smad2 mice. Finally, the pRB protein showed a 2.3 (± 0.5)-fold increase in K14-Smad2 mice when compared with WT mice. Smad2 overexpression inhibits the proliferation of JE cells by down-regulating c-Myc and up-regulating P15 and P27, which resulted in an increase in pRB, leading to cell-cycle arrest.

2-3-205	
Title	**Acute Type A Dissection Repair in an Achondroplastic Dwarf: Anesthetic, Perfusion, and Surgical Concerns**
Authors	**Mohammed AI-Jughiman**, Bobby Yanagawa, Kevin Rondi, Constantine Dalamagas, Mark D. Peterson, Daniel Bonneau
Program	Heart Surgery
University	University of Toronto
Journal	Aorta Journal. Volume 2, Issue 4, Pages 143-146
Year	2014

Abstract
In this report we present a 43-year-old male with adondro plastic dwarfism who presented with acute Type A aortic dissection with aortic insufficiency. The Patient underwent successful Bentall and hemiarch repair. Anesthetic. perfusion-related, and surgical planning and execution are presented.

2-3-206	
Title	**Detection and Severity Classification of Extracardiac Interference in 82Rb PET Myocardial Perfusion Imaging**
Authors	Elizabeth J. Orton, **Ibraheem Al Harbi**, Ran Klein, Rob S. B. Beanlands, Robert A. deKemp and R. Glenn Wells
Program	Heart
University	University of Ottawa
Journal	American Association of Physicists in Medicine. Volume 41, Issue 10, Pages 102501-1 - 102501-11
Year	2014

Abstract
Purpose: Myocardial perfusion imaging (MPl) IS used for: diagnosis and prognosis of coronary artery disease. When MPI studies are performed with pottron emission tomography (PET) and the radioactive tracer rubidium-82 chloride (82Rb), a small but non-negligible fraction of studies (- 10%) suffer from extracardiac interference: high levels ot tracer uptake in structures adjacent to the heart which mask the true cardiac tracer uptake. At pte ent, there are no clinically available options for automated detection or correction of this problem. This work presents an algorithm that detects and classifies the severity of extracardiac interference in 82Rb PET MPI images and reports the accuracy and failure rate of the method. Methods: A set of 200 82Rb PET MPI Images were reviewed by a trained nuclear cardiologist and interference severity reported on a four-class scale, from absent to severe. An automated algorithm was developed that compares uptake at the external border of the myocardium to three thresholds, separating the four interference severity classes. A minimum area of interference was required, and the search region was limited to that facing the stomach wall and spleen. Maximizing concordance (Cohen's Kappa) and minimizing failure rate for the set of200 clinician-read images were used to find the optimal population-based constants defining search limit and minimum area parameters and the thresholds for the algorithm. Tenfold stratified cross-validation was used to find optimal thresholds and report accuracy measures (sensitivity, specificity, and Kappa). Results: The algorithm was capable of detecting interference with a mean [95% confidence in terval] sensitivity/specificity/Kappa of 0.97 [0.94, 1.00]/0.82 [0.66, 0.98]/0.79 (0.65, 0.92], and a failure rate of 1.0% ± 0.2%. The four-class overall Kappa was 0.72 [0.64, 0.81]. Separation of mild versus moderate-or-greater interference was performed with good accuracy (sensitivity/specificity/Kappa ::: 0.92 [0.86, 0.99]/0.86 [0.71, 1.00]/0.78 [0.64, 0.92]), while separation of moderate versus severe interference severity classes showed reduced sensitivity/Kappa but little change in specificity (sensitivity/specificity/Kappa 0.83 [0.77, 0.88]/0.82 [0.77, 0.88]/0.65 [0.60, 0.70]). Specificity was greater than sensitivity for all interference classes. Algorithm execution time was <1 min. Conclusions: The algorithm produced here has a low failure rate and high accuracy for detection of extracardiac interference in 82Rb PET MPI scans. It provides a fast, reliable, automated method for assessing severity of extracardiac interference. © 2014 American Association of Physicists in Medicine.

2-3-207	
Title	**Diagnostoc Yield and cost effectiveness of investigations in patients pesenting with isolated lower motor neuron signs**
Authors	**Mohammed H. Alanazy**, Chris White & Lawrence Korngut
Program	Heart
University	University of Calgary
Journal	Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration, 2014; Early Online: 1-6
Year	2014

Abstract
Our objective was to investigate the yield and cost-effectiveness of investigations and therapeutic trials of intravenous immunoglobulin (IVIg) in patients presenting with isolated lower motor neuron (LMN) signs. We performed a retrospective chart review of cases diagnosed between January 2007 and September 2013. Investigation results and their impact on outcome, and outcome of IVIg treatment trials were abstracted. Cost was calculated in Canadian dollars (C$). Fifty-nine of 333 patients presented with isolated LMN signs. The majority of patients (61%) evolved to amyotrophic lateral sclerosis (ALS) within 36 months of presentation, while 37.3% remained with progressive muscular atrophy (PMA) with mean follow-up 29.6 months. Of the 1210 tests performed, 4.9% were abnormal. The diagnosis was changed in only one patient where a muscle biopsy revealed a distal myopathy. Fourteen patients received therapeutic trials of IVIg to rule out an IVIg-responsive inflammatory motor neuropathy with no objective clinical benefit. Total group cost was C$630,484.72 (C$10,686.18/patient). IVIg represented 58.7% of total costs. In conclusion, extensive investigations and treatment trials of IVIg have low yield in the work-up of patients with isolated LMN signs and are not cost-effective when clinical features do not suggest an alternative diagnosis to PMA.

2-3-208	
Title	**Latewonset Myasthenia Gravis: A review When Incidence in Older Adults Keeps Increasing**
Authors	**Nuha M.alkhawajah**, and Joel Oger
Program	Nerves of muscle disease
University	University of Toronto
Journal	Muscle & Nerve November 2013 705
Year	2014

Abstract
We define late-onset myasthenia gravis (LOMG) when symptoms appear at 65 years of age. There has been a continuous increase in the incidence of LOMG with a clear male predominance. Commonly, patients present with focal (ocular or bulbar) weakness. A high index of suspicion required to achieve early diagnosis and to improve prognosis. Management options include acetylcholinesterase inhibitors, steroids, and immunosuppressants. The most controversial issue in treatment is thymectomy, because not enough data are avail able. Successful treatment is associated with Improved survival, and death is often secondary to comorbidities.

2-3-209	
Title	**First case of invasive squamous cell carcinoma in a stoma of a Monti ileovesicostomy**
Authors	Stephen Reid, **Abdulaziz Althunayan**, John-Paul Capolicchio, Fadi Brimo, Wassim Kassouf
Program	Endoscopy and Surgery minute Altosieih Urological
University	University of Toronto
Journal	Canadian Urological Association Journal. Vol 8, No 9-10. Published online September 9, 2014
Year	2014

Abstract

We report a very rare case of invasive squamous cell carcinoma (SCC) in the abdominal stoma of a Monti ileovesicostomy. Our patient underwent an uncomplicated Monti ileovesicostomy at age 16 for a neurogenic bladder. She presented 10 years later with difficulty catheterizing the stoma. A biopsy of peristomal tissue showed moderately differentiated SCC. A cystoscopy did not reveal any bladder tumours or suspicious lesions. A computed tomography (CT) scan of the abdomen and pelvis did not demonstrate metastasis. The patient underwent a complete en bloc resection of the stomal site, the Monti, a partial cuff of bladder, and 2 loops of bowel that were adherent to the Monti. Final pathology revealed pure invasive SCC arising around the stoma and negative surgical margins. Six months later, a follow-up CT scan showed no evidence of malignancy, while a cystoscopy revealed a small erythematous area in the posterior bladder wall. Urinary cytology was positive for SCC. Transurethral resection of the erythematous lesion with random bladder biopsies showed SCC in situ in the erythematous lesion and right lateral bladder wall. Staging workup was negative. The patient subsequently underwent a radical cystectomy and ideal conduit diversion with bilateral pelvic lymph node dissection. Final pathology on cystectomy specimen was SCC in situ without evidence of invasive carcinoma. The patient has remained in remission at the 3-year follow-up.

2-3-210	
Title	**Pediatric brainstem tumors, Classifications, investigations, and growth patterns**
Authors	**Ahmed M Alaqee**, Abdulrahman J Sabbagh
Program	Neurosurgery
University	University of Calgary
Journal	Neurosciences (Riyadh) April 2014, Vol. 19 (2) Pages: 93-99
Year	2014

Abstract

Brainstem gliomas occur in 10-20% of brain tumors in pediatrics. Over the past 3 decades, the treatment of brainstem gliomas has significantly progressed as a result of the gradual advancements in microsurgical techniques, sophisticated imaging technology and, most importantly, the availability of MRI. In this article, we review the current literature on brainstem gliomas and cover diagnosis, imaging, classification, and management. Surgical approaches and intraoperative modalities to tackle operable cases of brainstem gliomas will be discussed in a follow up article.

2-3-211	
Title	**Causes and patterns of spine trauma in children and adolescents in Saudi Arabia: implications for injury prevention**
Authors	Amro AI-Habib, **Ahmed Alaqeel**, Ibrahim Marwa, Mohammad Almohammadi, HIsham AIShalaanb, Sami AIEissa, Mohammad Zamakhshary,d Khallid Al-bedahe, Saleem Al-enazi, Fareeda Mukhtar
Program	Neurosurgery
University	University of Calgary
Journal	The Annal of Saudi Medicine.Volume 34, Issue1. Jan-Feb 2014
Year	2014

Abstract

BACKGROUND AND OBJECTIVES: Knowledge regarding traumatic spine injuries (TSIs) is essential for effective prevention strategies, particularly in the developing world, where majority of the population is younger and organized prevention programs are scarce. Therefore, our objective was to describe TSI mechanisms, demographics, patterns, and outcomes in children and adolescents. DESIGN AND SETTINGS: Retrospective chart review in a major trauma center from May 2001 to May 2009 in Riyadh, Saudi Arabia. PATIENTS AND METHODS: Detailed chart reviews were done for all consecutive TSI patients ≤18 years old.Cases were identified through the trauma database registry that included admitted patients. RESULTS: Of the 3796 cases identified, 120 cases (3.2%) sustained 141 TSIs (mean age: 13.5 years; males:83.8%). TSI was most common among children from 16 to 18 years old. Overall, motor vehicle collision (MVC)was the most common injury mechanism (60.8%). However, younger patients (<12 years) sustained more pedestrian injuries (40.6%). Among MVC cases with known seat belt statuses (43.8%), 90.6% were not wearing seat belts. The cervical spine level was the most commonly affected (55.8%) region, especially in children <12 years old (88%). More than 1 affected spinal level was found in 23.3% cases. Spinal cord injuries were found in 19.2% cases. Overall, mortality was 8.3%, and half of these mortalities were secondary to pedestrian injuries. A total of 22.7% of cases were discharged with neurological deficits. CONCLUSION: The high frequency and severity of MVC and pedestrian injuries observed in the present study raise significant concerns regarding the safety of children on the roads. Spine involvement was age specific; younger patients tended to have more cervical injuries, and older patients exhibited more thoracic spine involvement.

2-3-212	
Title	**Stroke Awareness in the Saudi Community Living in Riyadh: Prompt Public Health Measures Must Be Implemented**
Authors	**Ahmed Alaqeel**, AlBatool AlAmmari, Nourah AlSyefi, Fawaz Al-Hussain, FRCPC, MPH, and Yousef Mohammad
Program	Neurosurgery
University	University of Calgary
Journal	Journal of Stroke & Cerebrovascular Diseases Volume 23, Issue 3, Pages 500-504, March 2014
Year	2014

Abstract

BACKGROUND: Stroke is very prevalent in the Kingdom of Saudi Arabia, approaching 43.8 per 100,000 people. Stroke outcome is known to be affected by the level of stroke awareness in the community. We conducted this study to assess the level of stroke awareness in the Saudi population. METHODS: A validated survey of 11 questions was used to assess the level of stroke awareness among the Saudi population. The survey was distributed in a 1-month period to every adult Saudi citizen visiting 10 shopping centers, 10 large supermarkets, 4 hospitals, and 2 universities. RESULTS: Two thousand eight hundred sixty-two people completed the questionnaire (a 78% response rate). One thousand eight hundred forty-four people (64%) were able to define stroke correctly. One thousand four hundred twenty-eight people (49.9%) named mass media as the source of their knowledge. One thousand three hundred one (45.9%) believe stroke and brain death share the same pathologic mechanism and outcome, particularly those <40 years of age ($P < .05$). Six hundred twenty-two (21.7%) of the respondents correctly chose ≥5 risk factors and made ≤1 error. Five hundred twenty-seven (18.4%) of the participants in this study were able to correctly identify ≥3 symptoms of the list and make ≤1 error. CONCLUSIONS: There is an alarming deficit in the level of stroke awareness in the Saudi population. Urgent public health measures to correct this deficiency are promptly needed.

2-3-213	
Title	**Superior mesenteric artery syndrome and intra-abdominal compartment syndrome in systemic lupus erythematosus**
Authors	**M Bedaiwi**, MA Alkubeyyer and AS Al Arfaj
Program	Rheumatology
University	University of Toronto
Journal	Lupus, Volume 23, Number 2, 2014, Pages 194-196
Year	2014

Abstract

Gastrointestinal manifestations of systemic lupus erythematosus (SLE) are common, occurring in about 50% of cases. They are usually mild, in the form of mouth ulcers, nausea, heartburn and mild abdominal pain, but they can be severe in cases of gastrointestinal vasculitis. In this report we describe an unusual combination of SLE complications, namely superior mesenteric artery syndrome (SMAS) and reversible acute obstructive renal failure. This was attributed to raised intra-abdominal pressure and hence intra-abdominal compartment syndrome (IACS) following weight loss secondary to an acute presentation of SLE with gastrointestinal vasculitis.

2-3-214	
Title	**Microbiome and probiotics: link to arthritis**
Authors	**Mohamed K. Bedaiwi** and Robert D. Inman
Program	Rheumatology
University	University of Toronto
Journal	Current Opinion in Rheumatology: July 2014 - Volume 26 - Issue 4 - p 410-415
Year	2014

Abstract

PURPOSE OF REVIEW: The gut microbiome plays an integral role in the development and maintenance of the host immune system. Expanding knowledge about this microbial microenvironment has raised the possibility of new treatments based on this knowledge. In this review, we describe the recent evidence of the impact of the gut microbiome on arthritis and possible novel therapeutic approaches to alter the gut flora. RECENT FINDINGS: Recent studies support the growing evidence of microbiome as a causative agent underlying certain rheumatic diseases like ankylosing spondylitis and rheumatoid arthritis. There is intriguing yet still inconclusive evidence to support the use of probiotics as a treatment for these diseases. SUMMARY: There is recently a new level of understanding how the microbiome interacts with the immune system. Gene-environment interaction is another important element that sets the stage for initiation of autoimmune disease, which calls for further investigation. Probiotics could be an appealing therapeutic strategy, but further interventional studies exploring the dynamic interaction of microbiome and probiotics are still needed.

2-3-215	
Title	**Prognostic Implications of Prominent R Wave in Electrocardiographic Leads Vl or V2 in Patients With Acute Coronary Syndrome**
Authors	**Wael A. Alqarawi**, Shaun . Goodman, Raymond T. Yan, Olri.stian Coostan, Anthony Y. Fung, .James Y. Cha, Gilbert Gosselin. Mlr, David Brieger, MBBS, PhD\ Keith A.A. Fox, MB, ChBi, Frans Van de Werf, Pilot, and Andrew T.Yan
Program	Medicine heart
University	University of Ottawa
Journal	The American Journal of Cardiology. Vol 113, No.2. June 15, 2014
Year	2014

Abstract

Although the adverse prognosis of Q-waves on electrocardiogram (ECG) has been demonstrated, the prognostic significance of prominent R wave (PRW) in V1 or V2 across a broad spectrum of acute coronary syndrome (ACS) has not been specifically studied. In the Global Registry of Acute Coronary Events (GRACE) and the Canadian ACS Registry I ECG substudies, admission ECGs were analyzed in an independent core ECG laboratory. PRW was defined as R wave >40 to 50 ms in V1 or V2, R/S ≥1 in V1, or R/S ≥1.5 in V2. Among 11,895 patients with ACS, 495 (4.2%) had PRW; they were less likely to have a history of hypertension or heart failure and had lower GRACE risk scores, but a higher incidence of ST-segment depression (all p ≤0.001). Patients with PRW had similar rates of in-hospital death (2.8% vs 4.1%, respectively, p = 0.15) but lower rates of in-hospital heart failure (8.5% vs 15.2%, respectively, p = 0.02) and 6-month mortality (4.6% vs 8.4%, respectively, p = 0.004). In multivariable analyses, PRW was not a significant independent predictor of in-hospital mortality (adjusted odds ratio = 0.99, 95% confidence interval 0.55 to 1.8) or 6-month mortality (adjusted odds ratio = 0.70, 95% confidence interval 0.43 to 1.15). Among 4,418 patients who underwent coronary angiography, those with PRW had a higher prevalence of left circumflex artery disease (62.5% vs 49.5%, respectively, p = 0.01). In conclusion, across the broad spectrum of patients with ACS, PRW provides no significant additional prognostic utility beyond comprehensive risk assessment using the GRACE risk score. PRW is more frequently associated with left circumflex artery disease.

2-3-216	
Title	**High pitch, low voltage dual source CT pulmonary angiography: assessment of image quality and diagnostic acceptability with hybrid iterative reconstruction**
Authors	Patrick D. McLaughlin , T.Liang, **M. Homiedan**, L.J. Louis, T.W.O'Connell, Karl Krzymyk, S.Nicolaou, J. R. Mayo
Program	Diagnostic radiation
University	University of British Columbia
Journal	Emergency Radiology Journal. Published online July 4, 2014
Year	2014

Abstract

Increased use of CT Pulmonary angiography in suspected pulmonary embolism (PE) has driven research to minimize radiation dose while maintaining image quality and diagnostic accuracy. Following institutional review board approval, we performed a retrospective comparison study in patients with suspected PE. Patients were scanned using an ultra-high pitch dual source technique (pitch = 2.6) using 120 kV (SVCTPA) (n = 54) or 100 kV (RV-CTPA) (n = 52). SV-CTPA images were reconstructed using filtered back projection (SV-wFBP) and RV-CTPA images were reconstructed using both FBP (RV-wFBP) and Iterative Reconstruction (RV-IR). Comparison of radiation dose, diagnostic ability, subjective image noise, quality, and sharpness, diagnostic agreement, signal to noise (SNR) and contrast to noise ratios (CNR) were performed. Mean effective dose was 2.56 ± 0.19 mSv for the RV protocol compared to 5.36 ± 0.60 mSv for the SV. The RV-CTPA protocol resulted in a mean DLP reduction of 52 % and mean CTDI reduction of 51 %. Pulmonary artery SNR and CNR were significantly higher on RV-IR images than SV-wFBP (p = 0.007, p = 0.003). Mean subjective image noise, quality and sharpness scores did not differ significantly between the SV-wFBP and RVIR images (p > 0.05). Subjective quality scores were significantly better for the RV-IR group compared to the RV-wFBP group (p < 0.001). Agreement between readers for presence or absence of pulmonary emboli on RV-IR images was almost perfect (κ = 0.891, p < 0.001). Iterative reconstruction complements ultra high pitch dual source CTPA examinations acquired using a reduced voltage resulting in higher mean pulmonary artery SNR and CNR when compared to both RV-wFBP and SV-CTPA.

2-3-217	
Title	**Patterns of Meniscal Damage Associated with Acute ACL Rupture**
Authors	Al Saran Y, Al Luhaidan A, **Al Garni N**, Al Aqeel M , Alomar A, Bin Nasser A, Fawzi Aljassir, Mohammed Zamzam
Program	Experimental Surgery
University	Mcgill University
Journal	Journal of Orthopedic & Rheumatology. Vol: 2, Issue: 1. Published 24 feb, 2014
Year	2014

Abstract

Background / Aim: Meniscal injuries commonly occur in conjunction with ACL tears. This study was conducted to determine the patterns of meniscus damage associated with ACL rupture and identify the commonest type of meniscus damage in our population that is associated with ACL tear. Methods: a retrospective chart review of patients with ACL rupture seen at the Orthopedics Department, King Khalid University Hospital, Riyadh, Saudi Arabia. Data collection included the presence or absence of meniscal tear, the type of meniscal tear diagnosed by MRI or arthroscopy, the time of the initial ACL injury and the time of meniscal tear, the duration between ACL rupture and reconstruction surgery, age, gender and level of sports activity performed. ACL tears associated with meniscal tears were diagnosed by MRI. Results: Of 294 patients, 175 (59.7%) had medial meniscal tear, 91 (30.9%) had lateral meniscal tear and 28 patients (9.5%) with both medial and lateral tear. Mean age of patients was 27.98 ± 6.8 years. Patients who had medial tears were significantly older (29.10 ± 7.0 years) compared to lateral (26.24 ± 5.9 years) and both (26.61 ± 6.7 years), p=0.002. There were no significant differences in the height, weight and BMI, level of sport and mode of injury in between the three groups. Conclusion: Tears to the medial meniscus appeared to be the more common in ACL cases in our setting. The preponderance of the injury to the medial meniscus is associated to the older age of the patients at presentation.

2-3-218	
Title	**Evaluation of the Orthopedic Residency Training Program in Saudi Arabia and Comparison with a Selected Canadian Residency Program**
Authors	Abdulaziz AI-Ahaideb, Hamza M Alrabai, Osama A Alrehaili, Abdulaziz N Aljurayyan, Ranyah M Alsaif, **Nizar Algarni**, Hazem M AI-Khawashki, Abdulrahman D Algarni
Program	Experimental Surgery
University	Mcgill University
Journal	Advances in Medical Education and Practice. Vol: 5, September 19, 2014
Year	2014

Abstract

OBJECTIVE: The primary aim of the present study was to assess the quality of the Saudi Orthopedic Residency Program. METHODOLOGY: As a comparator, a cross-sectional survey involving 76 Saudi residents from different training centers in Saudi Arabia namely; Riyadh, Jeddah, Medina, Abha, and Dammam and 15 Canadian. RESULTS: The results showed that Canadian residents read more peer-reviewed, scholarly articles compared with Saudi residents (P=0.002). The primary surgical role for residents was to hold retractors during surgery. The survey respondents strongly supported the ability to recommend removal of incompetent trainers. Saudi trainees were more apprehensive of examinations than Canadian trainees (P<0.0001). Most residents preferred studying multiple-choice questions before examinations. Saudi and Canadian participants considered their programs to be overcrowded. Unlike Canadian participants, Saudi trainees reported an inadequate level of training (P<0.0001). CONCLUSION: Educational resources should be readily accessible and a mentorship system monitoring residents' progress should be developed. The role of the resident must be clearly defined and resident feedback should not be ignored. Given the importance of mastering basic orthopedic operative skills for residents, meaningful remedial action should be taken with incompetent trainers.

2-3-219	
Title	**Utility and Cost-Effectiveness of Uroflowmetry in a Busy Pediatric Urology Practice**
Authors	**Fahad Alyami**, Walid Farhat. Victor H. Figueroa, Rodrigo LP. Romao
Program	Urinary Tract
University	University of Toronto
Journal	Journal Canadian Urological Association Journal. Vol: 8, September 9, 2014
Year	2014

Abstract
INTRODUCTION: Uroflowmetry (UF) is frequently employed in daily pediatric urology practice for diagnostic and follow-up purposes. We assess the utility and cost-effectiveness of UF in the management of patients seen at a tertiary care centre. METHODS: We retrospectively reviewed the charts of consecutive patients who had a UF between January 1, 2010 and March 31, 2010. We collected data on demographics, diagnosis, UF parameters and the impact of the UF on management. The impact on management was defined as indication for surgery, introduction of new medications and bladder retraining based on clinical and UF findings. RESULTS: In total, 524 patients were included in the study. In 63 (12%) patients, UF was performed as part of the evaluation at the first clinic appointment. The most common diagnoses were voiding dysfunction (VD) 41%, hypospadias 26%, vesicoureteric reflux (VUR) 16%, monosymptomatic nocturnal enuresis (NE) 8%, posterior urethral valves 5% and meatal stenosis (MS) 4%. In the VD group, UF contributed to a management decision in 25.2% of patients. In the MS group, surgical intervention was based on symptoms and supported by the UF in 41% of patients; in the PUV group, 50% of patients demonstrated high (>20 cc) post-void residual, which aided in management decisions. In contrast, there were virtually no changes in management supported by the UF in the NE, VUR and hypospadias groups. Overall, UF parameters had a direct influence in the management decisions in only 67 (12.8%) patients. Nonetheless, a repeat test was ordered for 44.5% of patients. CONCLUSIONS: In an era of financial restraints and in a busy tertiary pediatric urology practice, judicious use of UF for specific indications may translate into a more cost-effective use of time and resources. As expected, patients with VD were the ones that benefited most from the test, as did patients with symptomatic MS and PUV.

2-3-220	
Title	**Human immunodeficiency virus-associated multicentric Castleman disease refractory to antiretroviral therapy: clinical features, treatment and outcome**
Authors	**Musa Alzahrani**, Mark C. Hull, Christopher Sherlock, Deborah Griswold, Chantal S.Leger, Heather A. Leitch
Program	Aware of leukemia
University	University of British Columbia
Journal	Leukemia & Lymphoma . August 20, 2014 (Online)
Year	2014

Abstract
Human immunodeficiency virus (HIV)-associated multicentric Castleman disease (MCD) is a lymphoproliferation associated with human herpes virus-8 (HHV-8). Optimal treatment in patients not responding to antiretroviral therapy (ART) is undefined. We report 12 patients with ART refractory HIV-MCD. Patients with HIV-MCD were identified and baseline characteristics, treatment and outcome considered. Median CD4 count at HIV-MCD diagnosis was 295 (60-950) cells/mL. All patients had waxing and waning systemic symptoms, lymphadenopathy and/or splenomegaly, with non-Hodgkin lymphoma (NHL) in three. Treatment included: anti-HHV-8 therapy, n = 8; alone, n = 4; with systemic chemotherapy (CT) ± immunotherapy (IT), n = 4; CT ± IT only, n = 2. Initial median HHV-8 viral load (VL) was 7 × 104 copies/mL and at follow-up < 40 in 6/7 survivors; and 403-7.2 × 106 in 4/5 who died. One patient developed NHL despite an HHV-8 VL < 40. HIV-MCD is challenging to treat. Suppression of plasma HHV-8 VL did not prevent development of NHL. Anti-HHV-8 therapy should probably be considered adjunctive to cytotoxic therapies.

2-3-221	
Title	**Three-Dimensional Transesophageal Echocardiography With Agitated Saline Injection to Differentiate Between Atrial Septal Defects and Echo Drop-Out Artifacts**
Authors	**Aws Alherbish**, Miriam Shanks, Jonathan Choy
Program	ICU
University	The University of Western Ontario
Journal	Canadian Journal of Cardiology. Volume 30. October 11, 2014
Year	2014

Abstract
The diagnosis of multiple atrial septal defects is less challenging with 3-D transesophageal echocardiography. However, the common occurrence of echo drop-out (acoustic shadow) artifacts with 3-D echocardiography can make the differentiation between a second defect and an artifact challenging. Agitated saline injection with direct visualization using 3-D echocardiography can help resolve this by allowing visualization of the bubbles crossing from true defects.

2-3-222	
Title	**Transplantation for Hepatocellular Carcinoma**
Authors	**Ahmad Madkhali**, Murad Aljiffry and Mazen Hassanain
Program	Liver and pancreas surgery
University	Mcgill University
Journal	"Hepatic Surgery", book edited by Hesham Abdeldayem, ISBN 978-953-51-0965-5, Published: February 13, 2013 under CC BY
Year	2014

Abstract
Hepatocellular carcinoma (HCC) is the third leading cause of cancer mortality worldwide, accounting for more than 500,000 deaths annually. Major risk factors include chronic liver disease and liver cirrhosis due to hepatitis B and C viral infections, alcoholic liver disease and non-alcoholic steatohepatitis (NASH). Surgical resection and liver transplantation are the only potentially curable options for patients with HCC. While surgical resection is the treatment of choice in patients with good hepatic function, it is contraindicated in those with moderate to severe cirrhosis (Child class B or C), leaving these patients with liver transplantation as the only option. Moreover, transplantation is the optimal treatment even for small, otherwise resectable disease. This is a reflection of a number of factors. Liver transplantation will most likely result in a microscopically negative resection, which is the most effective oncologic treatment. Most HCCs are multifocal especially in the background of cirrhosis, though pre-neoplastic lesions may not be visible on perioperative evaluation; they are likely to continue to evolve into new primary HCCs. Furthermore, transplantation eliminates cirrhosis and restores normal hepatic function. However, limited organ availability mandates the restriction of liver transplantation to patients with early stage tumors who are not candidates for resection.

2-3-223	
Title	**(18)F-Fluorodeoxyglucose positron-emission tomography could have a prognostic role in patients with advanced hepatocellular carcinoma**
Authors	E. Simoneau, M Hassanain, **A. Madkhali**, A. Salman, C.G. Nudo, P. Choudhury, P. Metrakos
Program	Liver and pancreas surgery
University	Mcgill University
Journal	Current Oncology, Volume 21, Number 4, August 2014
Year	2014

Abstract
INTRODUCTION: We set out to evaluate the prognostic value of (18)F-fluorodeoxyglucose positron emission tomography (pet) in patients with advanced (non-transplant-eligible) hepatocellular carcinoma (hcc) and to evaluate the correlation between standardized uptake values (suvs) and survival outcomes. METHODS: We identified patients with hcc who, from 2005 to 2013, underwent pet imaging before any treatment. This retrospective study from our hcc database obtained complete follow-up data for the 63 identified patients. RESULTS: Of the 63 patients, 10 underwent surgical resection, and 59 underwent locoregional therapy. In this cohort, 28 patients were pet-positive (defined as any lesion with a suv ≥ 4.0) before any therapy was given, and 35 patients were pet negative (all lesions with a suv < 4.0). On survival analysis, median survival was greater for the pet-negative than for the pet-positive patients: 29 months (range: 16.3-41.1 months) versus 12 months (range: 4.0-22.1 months) respectively, p = 0.0241. The pet-positive patients more often had large tumours (≥5 cm), poor differentiation, and extrahepatic disease, reflecting more aggressive tumours. On multivariate analysis, only pet positivity was associated with poor survival (p = 0.049). CONCLUSIONS: Compared with pet-positive patients, pet-negative patients with hcc experienced longer survival. Imaging by pet can be of value in early prognostication for patients with hcc, especially patients receiving locoregional therapy for whom pathologic tumour differentiation is rarely available. This potential role for pet requires further validation in a prospective study.

2-3-224	
Title	**Dabigatran, rivaroxaban and apixaban for extended venous thromboembolism treatment: network meta-analysis**
Authors	**Alotaibi G.**, Alsaleh K., Wu C., Mcmurtry M.S.
Program	Medicine
University	University of Alberta
Journal	International Angiology 2014 August; 33(4)
Year	2014

Abstract
AIM: Many new oral anticoagulants (NOACs; dabigatran, rivaroxaban, and apixaban) are currently available to treat thromboembolic disease. There are no head-to-head trials comparing these agents. To assess the efficacy and safety of NOACs for prevention of recurrent venous thromboembolism (VTE), we performed a network meta-analysis. METHODS: Medline, Embase, and the Cochrane-controlled trial register were searched, without language restriction, to identify trials. Studies were evaluated according to a priori inclusion criteria and appraised using established internal validity criteria. Adjusted indirect comparisons between agents were performed using well-established methods. RESULTS: Three trials meeting inclusion criteria were identified. Direct comparison between apixaban 2.5 mg twice daily (BID) versus apixaban 5 mg BID showed no difference for any outcome. Clinically relevant non-major bleeding occurred less with both apixaban 2.5 mg BID (OR 0.23, 95% CI 0.08-0.62, P=0.004) and apixaban 5 mg BID [OR 0.31, 95% CI 0.11-0.82, P=0.019] compared to rivaroxaban 20 mg daily. Apixaban 2.5 mg BID showed less clinically relevant non-major bleeding than dabigatran 150 mg BID [OR 0.4, 95% CI 0.16-0.9, P=0.04], but not apixaban 5 mg BID. There were no differences between rivaroxaban 20 mg daily and dabigatran 150 mg BID. No differences in risk for recurrent

VTE, major bleeding, or mortality were observed for any comparison between any pair of NOACs. CONCLUSION: There were no significant differences in risk for recurrent VTE, major bleeding, or all-cause mortality between the NOACs. However, apixaban 2.5 mg BID was associated with less clinically significant non-major bleeding than either rivaroxaban 20 mg daily or dabigatran 150 mg BID

2-3-225	
Title	**Case fatality of bleeding and recurrent venous thromboembolism during, initial therapy with direct oral anticoagulants: a systematic review**
Authors	Wu C., **Ghazi S. Alotaibi**, Khalid Alsaleh, M. Sean Mcmurtry
Program	Medicine
University	University of Alberta
Journal	Thrombosis Research, Volume 134, Issue 3, pages 627-632, July 2014
Year	2014

Abstract

INTRODUCTION: The frequency and case fatality of venous thromboembolism (VTE) and major bleeding during the initial 3 months of therapy in those treated for symptomatic VTE with either direct oral anticoagulants (DOACs) or vitamin K antagonists (VKA) are important clinically relevant outcomes. We sought to measure it during the initial months of anticoagulation for symptomatic VTE. MATERIAL AND METHODS: We searched MEDLINE, EMBASE, and CENTRAL to identify studies that enrolled patients with acute symptomatic VTE treated with DOACs or VKA and reported data on bleeding, VTE recurrence and death. Studies were evaluated according to a priori inclusion criteria and critically appraised using established internal validity criteria. Single-proportion random-effects models were used to pool estimates. RESULTS: Of the 2453 citations retrieved, 5 RCTs that enrolled 24,507 patients were included. The rate of major bleeding was 1.8 (95% CI: 1.3-2.5) and 3.1 (95% CI: 2.4-3.9) per 100 patient-years in DOAC and VKA arms, respectively. The rate of VTE recurrence was 3.7 (95% CI: 2.7-4.7) and 4.1 (95% CI: 3.0-5.4) per 100 patient-years of DOAC and VKA, respectively. The case fatality rate of bleeding was significantly higher in the VKA arms 10.4% (95% CI: 6.6-15.4) compared to DOACs 6.1% (95% CI: 2.7-11.7; p value for difference=0.029) with no statistical difference between the case fatalities for recurrent VTE. The rate of death from either definite major bleeding or definite recurrent VTE was 0.27 (95% CI: 0.16-0.40) and 0.46 (95% CI: 0.32-0.63) per 100 patient-years for DOACs and VKAs respectively, resulting in a number needed to treat of 875 for DOACs to prevent one death. CONCLUSION: DOACs are attractive alternatives to VKAs for initial treatment of symptomatic VTE, with lower frequency and case fatality for major bleeding. However, the incremental safety benefit of DOACs over VKAs is small, with large numbers needed to treat.

2-3-226	
Title	**Case fatality of bleeding and recurrent venous thromboembolism during, initial therapy with direct oral anticoagulants: a systematic review**
Authors	Wu C., **Ghazi S. Alotaibi**, Khalid Alsaleh, M. Sean Mcmurtry
Program	Medicine
University	University of Alberta
Journal	Thrombosis Research, Volume 134, Issue 3, pages 627-632, July 2014
Year	2014

Abstract

INTRODUCTION: The frequency and case fatality of venous thromboembolism (VTE) and major bleeding during the initial 3 months of therapy in those treated for symptomatic VTE with either direct oral anticoagulants (DOACs) or vitamin K antagonists (VKA) are important clinically relevant outcomes. We sought to measure it during the initial months of anticoagulation for symptomatic VTE. MATERIAL AND METHODS: We searched MEDLINE, EMBASE, and CENTRAL to identify studies that enrolled patients with acute symptomatic VTE treated with DOACs or VKA and reported data on bleeding, VTE recurrence and death. Studies were evaluated according to a priori inclusion criteria and critically appraised using established internal validity criteria. Single-proportion random-effects models were used to pool estimates. RESULTS: Of the 2453 citations retrieved, 5 RCTs that enrolled 24,507 patients were included. The rate of major bleeding was 1.8 (95% CI: 1.3-2.5) and 3.1 (95% CI: 2.4-3.9) per 100 patient-years in DOAC and VKA arms, respectively. The rate of VTE recurrence was 3.7 (95% CI: 2.7-4.7) and 4.1 (95% CI: 3.0-5.4) per 100 patient-years of DOAC and VKA, respectively. The case fatality rate of bleeding was significantly higher in the VKA arms 10.4% (95% CI: 6.6-15.4) compared to DOACs 6.1% (95% CI: 2.7-11.7; p value for difference=0.029) with no statistical difference between the case fatalities for recurrent VTE. The rate of death from either definite major bleeding or definite recurrent VTE was 0.27 (95% CI: 0.16-0.40) and 0.46 (95% CI: 0.32-0.63) per 100 patient-years for DOACs and VKAs respectively, resulting in a number needed to treat of 875 for DOACs to prevent one death. CONCLUSION: DOACs are attractive alternatives to VKAs for initial treatment of symptomatic VTE, with lower frequency and case fatality for major bleeding. However, the incremental safety benefit of DOACs over VKAs is small, with large numbers needed to treat.

2-3-227	
Title	**Slipped Capital Femoral Epiphysis in a Healthy 5- year-old child: A Case Report and literature Review**
Authors	**Saad M. Al Qahtani**, Anthony Bozzo, Reggie Hamdy, Chantal Janelle
Program	Orthopedic Surgery
University	McGill University
Journal	Saudi Journal of Medicine & Medical Sciences I Vol. 2 I Issue 2 I May-Aug 2014 I 117-119
Year	2014

Abstract

Slipped capital femoral epiphysis (SCFE) is an adolescent hip disorder of increasing prevalence, particularly within patients aged younger than 10 years. When present in these younger patients, SCFE is usually associated with metabolic abnormality or endocrinopathy. We present a case of a 5-year-old boy with idiopathic SCFE who underwent staged bilateral pinning in situ using a uniquely modified smooth wire for fixation across the physis. He eventually required bilateral screw revision after outgrowing the initial screws. At follow-up 3 years later, the patient was pain free with satisfactory hardware placement. He will be closely monitored, as he will likely need further surgical revision once he outgrows the second set of fixation screws.

2-3-228	
Title	**Bilirubin and its oxidation products damage brain white matter**
Authors	Katarina Lakovic, Jinglu Ai, Josephine D'Abbondanza, Asma Tariq, Mohammed Sabri, **Abdullah K Alarfaj**, Punarjot Vasdev and Robert Loch Macdonald
Program	Neurosurgery
University	University of Toronto
Journal	Journal of Cerbral Blood Flow & Metabolism, Volume 34, Issue 8
Year	2014

Abstract

Brain injury after intracerebral hemorrhage (ICH) occurs in cortex and white matter and may be mediated by blood breakdown products, including hemoglobin and heme. Effects of blood breakdown products, bilirubin and bilirubin oxidation products, have not been widely investigated in adult brain. Here, we first determined the effect of bilirubin and its oxidation products on the structure and function of white matter in vitro using brain slices. Subsequently, we determined whether these compounds have an effect on the structure and function of white matter in vivo. In all, 0.5 mmol/L bilirubin treatment significantly damaged both the function and the structure of myelinated axons but not the unmyelinated axons in brain slices. Toxicity of bilirubin in vitro was prevented by dimethyl sulfoxide. Bilirubin oxidation products (BOXes) may be responsible for the toxicity of bilirubin. In in vivo experiments, unmyelinated axons were found more susceptible to damage from bilirubin injection. These results suggest that unmyelinated axons may have a major role in white-matter damage in vivo. Since bilirubin and BOXes appear in a delayed manner after ICH, preventing their toxic effects may be worth investigating therapeutically. Dimethyl sulfoxide or its structurally related derivatives may have a potential therapeutic value at antagonizing axonal damage after hemorrhagic stroke.

2-3-229	
Title	**Radiographic prevalence of CAM-type femoroacetabular impingement after open reduction and internal fixation of femoral neck fractures**
Authors	G. Mathew, M. Kowalczuk, **B. Hetaimish**, A. Bedi, M. J. Philippon, M. Bhandari, N. Simunovic, S. Crouch, 0. R. Ayeni (on behalf of the FAITH Investigators)
Program	Orthopedic Surgery
University	McMaster University
Journal	Knee Surgery Sports Traumatology Arthroscopy Journal: Volume 22, Issue 2, pages 793-800 February 2014 (ePub)
Year	2014

Abstract

PURPOSE: The purpose of this study was to estimate the radiographic prevalence of CAM-type femoroacetabular impingement (FAI) in elderly patients (≥ 50 years) who have undergone internal fixation for femoral neck fracture. METHODS: A total of 187 frog-leg lateral radiographs of elderly patients who underwent internal fixation for a femoral neck fracture were reviewed by two independent reviewers. The alpha angle, beta angle, and femoral head-neck offset ratio were calculated. The presence of two abnormal radiographic parameters was deemed to be diagnostic of radiographic CAM-type impingement. RESULTS: Radiographic CAM-type FAI was identified in 157 out of 187 (84 %) patients who underwent internal fixation for fractures of the femoral neck. Moderate-to-good inter-observer reliability was achieved in the measurement of radiographic parameters. With reference to fracture subtypes and prevalence of radiographic features of CAM-type morphology, 97 (72 %) out of 134 patients were positive for CAM in Garden subtypes I and II, whereas 49 (85.9 %) out of 57 patients had radiographic CAM in Garden III and IV subtypes. CONCLUSION: There was a high prevalence of

CAM-type FAI in patients that underwent surgical fixation of femoral neck fractures. This is significantly higher than the reported prevalence in non-fracture patient populations. The high prevalence of CAM morphology could be related to several factors, including age, fracture morphology, quality of reduction, type of fixation, and fracture healing.

2-3-230	
Title	**Spontaneous fracture of a covered self-expandable biliary metal stent and endoscopic technique for removal**
Authors	**Resheed Alkhiari**, Vishal Patel, Lawrence Cohen
Program	Internal Medicine
University	McMaster University
Journal	Canadian Journal of Gastroenterology & Hepatology September 2014 Vol 28 Issue 8
Year	2014

Abstract

A 67-year-old woman was brought to the endoscopy unit in May 2014 for removal of a covered self-expanding metal stent (SEMS) from the common bile duct (CBD), initially placed in May 2013 to manage recurrent cholangitis. The patient developed idiopathic pancreatico-biliary dysmotility following cholecystectomy in 2001. She experienced recurrent episodes of pancreatitis and cholangitis for which she required numerous endoscopic retrograde cholangiopancreatograms, including the insertion of biliary plastic stents to facilitate drainage, extraction of CBD stones and/or clearing debris from the biliary tree. Her most recent intervention had been the insertion of a SEMS, which was effective in preventing recurrent cholangitis over the year. On physical examination, she appeared to be fit, well-nourished and in no distress, with no pallor, jaundice or lymphadenopathy. An abdominal examination was unremarkable. Laboratory investigations were within normal limits, without any contraindications to endoscopy.

2-3-231	
Title	**Conflicting Diagnosis of Dermal Sinus Tract and Tethered Cord**
Authors	Chris J. Hong, **Saleh A. Almenawer**, Boleslaw Lach, Nina Stein, Benedicta Baronia, Sheila K. Singh
Program	Neurosurgery
University	McMaster University
Journal	The Canadian Journal of Neurological Sciences: Volume 40, Number 6, November 2013
Year	2013

Abstract

Dermal sinus tracts (DSTs) are an uncommon form of occult spinal dysraphism that is attributed to incomplete neural tubeclosure during fetal development. Dermal sinus tracts are found along the midline neuroaxis from the nasion to the coccyx, but they most commonly appear in the lumbar region.1 Dermal sinus tracts are more commonly associated with other developmental abnormalities such as skin tags, naevi, spinal dermoid cysts, meningocoele, lipomas and spinal cord tethering, and can be complicated by cerebrospinal fluid drainage, shedding of keratin from the epithelialized tract, and infection such as meningitis. We report a case of a radiologically diagnosed DSTassociated with multifocal dermal and subcutaneous hemangiomas. Surgical intervention demonstrated that despite high-resolution magnetic resonance imaging (MRI) showing intradural extension of the tract to the conus, intradural exploration revealed no such tethering tract. This unusual condition was successfully managed by surgical excision of pathological tissues.

2-3-232	
Title	**Spontaneous fracture of a covered self-expandable biliary metal stent and endoscopic technique for removal**
Authors	**M. M. Alzahrani**, E. A. Anam, A. M. Makhdom, I. Villemure, R. C. Hamdi
Program	Orthopedic Surgery
University	McGill University
Journal	Frontiers of Endocrinology (an on-line Journal) Published 10 December 2014
Year	2014

Abstract

Distraction osteogenesis (DO) is a surgical technique where gradual and controlled separation of two bony fragments following an osteotomy leads to the induction of new bone formation in the distracted gap. DO is used for limb lengthening, correction of bony deformities, and the replacement of bone loss secondary to infection, trauma, and tumors. Although DO gives satisfactory results in most cases, one major drawback of this technique is the prolonged period of time the external fixator has to be kept on until the newly formed bone consolidates thus leading to numerous complications. Numerous attempts at accelerating bone formation during DO have been reported. One specific approach is manipulation of the mechanical environment during DO by applying changes in the standard protocol of distraction. Attempts at changing this mechanical environment led to mixed results. Increasing the rate or applying acute distraction, led to poor bone formation in the distracted zone. On the other hand, the addition of compressive forces (such as weight bearing, alternating distraction with compression or by over-lengthening, and then shortening) has been reported to increase bone formation. It still remains unclear why these alterations may lead to changes in bone formation. While the cellular and molecular changes occurring during the standard DO protocol, specifically increased expression of transforming growth factor-□1, platelet-derived growth factor, insulin-like growth factor, basic fibroblast growth factor, vascular endothelial growth factor, and bone morphogenic proteins have been extensively investigated, the literature is sparse on the changes occurring when this protocol is altered. It is the purpose of this article to review the pertinent literature on the changes in the expression of various proteins and molecules as a result of changes in the mechanical loading technique in DO and try to define potential future research directions.

2-3-233	
Title	**Extended Adjuvant Tamoxifen for Early Breast Cancer: A Meta Analysis**
Authors	**Mustafa Al-Mubarak**, Ariadna Tibau, Arnoud J. Templeton, David W. Cescon, Alberto Ocana, Bostjan Seruga, Eitan Amir
Program	Oncology
University	University of Toronto
Journal	PLOS ONE: February 2014, Volume 9, Issue 2
Year	2014

Abstract

Background: Hormone receptor positive breast cancer is characterized by the potential for disease recurrence many years after initial diagnosis. Endocrine therapy has been shown to reduce the risk of such recurrence, but the optimal duration of endocrine therapy remains unclear. Methods: We conducted a systematic review and meta-analysis to quantify the benefits and harms of extended adjuvant tamoxifen (>5 years of therapy) compared with adjuvant tamoxifen (5 years of therapy). Odds ratios (ORs) and 95% confidence intervals (CIs) were computed for disease recurrence, death and adverse events. Subgroup analyses by timing of recurrence and baseline lymph node and menopause status were carried. Results: Five trials comprising 21,554 patients were included. Extended adjuvant tamoxifen was not associated with a significant reduction in the risk of recurrence (OR:0.89, 95% CI 0.76–1.05, p = 0.17). There was no association between extended adjuvant tamoxifen and all-cause death (OR:0.99, 95% CI 0.84–1.16, p = 0.88). There was an apparent reduction in risk of recurrence occurring after completion of extended adjuvant tamoxifen with little evidence of effect during therapy, however, this difference was not significant (p for difference 0.10). Subgroup analysis suggested that a greater effect size among lymph node positive patients compared with those who are lymph node negative (NNT: 25 vs. 49). There was no apparent difference in the effect between pre- and post-menopausal patients. Endometrial carcinoma was substantially more frequent with extended adjuvant tamoxifen (OR:2.06, 95% CI 1.65–2.58, p<0.001, number needed to harm:89). Conclusion: In unselected patients, extended adjuvant tamoxifen is not associated with a significant reduction in recurrence, or a reduction in all-cause death. Patients with lymph node positive breast cancer may derive some benefit. Reduction in the risk of recurrence appears to occur only after completion of extended adjuvant therapy.

2-3-234	
Title	**The hip labrum reconstruction: indications and outcomes-a systematic review**
Authors	Olufemi R. Ayeni, **Hussain Alradwan**, Darren de Sa, Marc J. Philippon
Program	Sports Medicine
University	Mcmaster University
Journal	Knee Surgery, Sports Traumatology, Arthroscopy Journal, Volume 22, Issue 4, April 2014, P: 737-743
Year	2014

Abstract

PURPOSE: With further understanding of the function and the importance of the hip labrum, greater attention has been paid to preserve and repair the damaged labrum. Hip labrum reconstruction has been described to optimize hip preservation when the labrum is deficient. This systematic review aimed to explore and identify the reported indications and outcomes in patients who undergo labral reconstruction of the hip joint. METHODS: The electronic databases EMBASE, MEDLINE, and PubMed were searched for all available dates up to July 2013. Further hand search of the reference sections of the included studies was done. Two reviewers searched, screened, and evaluated the included studies for data quality using the Methodological Index for Non-Randomized Studies (MINORS) Scale. Data were also abstracted in duplicate, and agreement and descriptive statistics are presented. RESULTS: There were 5 eligible studies (3 case series, 1 prospective cohort, and 1 retrospective chart review) with a total of 128 patients, and an average 11/16 quality on the MINORS score included in this review. All patients were diagnosed with femoroacetabular impingement and underwent labral reconstruction. Ninety-four patients were assessed at follow-up (73.4 % survivorship) between a reported mean range of 10 and 49 months. There was variability between the studies with regard to the graft types utilized (ilio-tibial band, Gracilis tendon, Ligamentum teres), surgical approaches [open (18.7 %) vs. arthroscopic (81.3 %)], and the reported outcome measures. Overall, improvement was observed in the patient-reported outcomes and functional scores (mHHS, HOS, UCLA, NASH, and SF-12). The failure rate or conversion to THA rate in all available patients was 20

%. The most common indication for labrum reconstruction was a young, active patient with minimal arthritis and non-salvageable or deficient labrum. Other indications included instability, pain, and hypotrophic dysfunctional labrum. CONCLUSION: Based on the current available evidence, hip labrum reconstruction is a new technique that shows short-term improvement in patient-reported outcomes and functional scores post-operatively. The main indication for reconstruction was a deficient labrum due to previous surgical excision or irreparable tears in young patients with no significant arthritis. Long-term follow-up results with higher quality studies are still lacking based on this review.

2-3-235	
Title	**Acquired factor V inhibitor in a patient with mantle cell lymphoma presenting with hematuria followed by thrombosis: a case report**
Authors	**Naif I. Aljohani**, John H. Matthews
Program	Blood Diseases
University	Queen's University
Journal	International Medical Case Reports Journal 2014, Volume7, Pages:27-30, 24 February 2014
Year	2014

Abstract

Acquired factor V inhibitor is a rare hemostatic disorder that presents with hemorrhagic manifestations in the vast majority of patients. Factor V inhibitor may develop through a variety of mechanisms involving development of alloantibodies or autoantibodies specific to Factor V. Autoantibodies, in particular, have been reported in a number of conditions. In this report, we describe a case of acquired factor V inhibitor in a patient with mantle cell lymphoma who presented with hematuria. Seven weeks after diagnosis and successful management, the patient developed deep vein thrombosis in the right lower extremity. The patient's factor V levels were normalized, and the inhibitor was successfully eradicated using corticosteroids. Here, we discuss this rare disorder, its unusual manifestation, and provide a mini-review of the current literature regarding factor V inhibitors.

2-3-236	
Title	**Impact of Age and Baseline NIHSS Scores on Clinical Outcomes in the Mechanical Thrombectomy Using Solitaire FR in Acute Ischemic Stroke Study**
Authors	**M.A. Almekhlafi,** A. Davalos, A. Bonafe, R. Chapot, J. Gralla, V.M. Pereira, and M. Goyal, on behalf of the STAR Registry Investigators
Program	Neurology
University	University of Calgary
Journal	AJNR Am J Neuroradiol -February 20, 2014, American Journal of Neuroradiology
Year	2014

Abstract

BACKGROUND AND PURPOSE: Age and stroke severity are inversely correlated with the odds of favorable outcome after ischemic stroke. A previously proposed score for Stroke Prognostication Using Age and NIHSS Stroke Scale (SPAN) indicated that SPAN-100-positive patients (ie, age _ NIHSS score _ 100 or more) do not benefit from IV-tPA. If this finding holds true for endovascular therapy, this score can impact patient selection for such interventions. This study investigated whether a score combining age and NIHSS score can improve patients' selection for endovascular stroke therapy. MATERIALS AND METHODS: The SPAN index was calculated patients the prospective Solitaire FR Thrombectomy for Acute Revascularization study: an international single-arm multicenter cohort anterior circulation stroke treatment by using the Solitaire FR. The proportion with favorable outcome (90-day mRS 2) was compared between SPAN-100-positive versus-negative patients. RESULTS: Of the 202 patients enrolled, 196 had baseline NIHSS scores. Fifteen (7.7%) patients were SPAN-100-positive. There was no difference in the rate of successful reperfusion (Thrombolysis Cerebral Infarction 2b or 3) between SPAN-100-positive versus –negative groups (93.3% versus 82.8%, respectively; P _ .3). Stroke SPAN-100-positive patients had a significantly lower proportion of favorable clinical outcomes (26.7% versus 60.8% in SPAN-100-negative, P _ .01). In a multivariable analysis, SPAN-100-positive status was associated with lower odds of favorable outcome (OR, 0.3; CI, 0.1– 0.9; P _ .04). A higher baseline Alberta Stroke Program Early CT Score and a short onset to revascularization time also predicted favorable outcome in the multivariable analysis. CONCLUSIONS: A significantly lower proportion of patients with a positive SPAN-100 achieved favorable outcome in this cohort. SPAN-100 was an independent predictor of favorable outcome after adjusting for time to treatment and the extent of pre-intervention tissue damage according to the Alberta Stroke Program Early CT Score.

2-3-237	
Title	**Do Multiple Attempts at Embryo Transfer Affect Clinical Pregnancy Rates?**
Authors	**Ayman Oraif**, Jackie Hollet-Caines, Valter Feyles, Maggie Rebel, Hanin Abduljabar
Program	Infertility and Endoscopic Surgery
University	The University of Western Ontario
Journal	Journal of Obstetrics and Gynaecology Canada-May 2014
Year	2014

Abstract

Objective: During an in vitro fertilization treatment cycle, having embryos retained in the catheter after embryo transfer is a relatively uncommon and frustrating event. The reported incidence of retained embryos varies between 1% and 8%. It can be difficult to explain this unwanted event to patients. We wished to determine the incidence and the effect on pregnancy rates of having embryos retained in the transfer catheter, followed by immediate completion of transfer. Methods: We performed a retrospective chart review of all IVF cycles with embryos retained in the transfer catheter, followed by repeat transfer, between October 2009 and March 2012. We reviewed IVF cycles with or without ICSI, and included fresh and frozen embryo transfer cycles. All embryos were transferred on the third day after oocyte retrieval. Transabdominal ultrasound was used for guidance during the embryo transfer. Results: A total of 49 IVF treatment cycles with retained embryos that required re-transfer were identified. This represented 7.5% (49/652) of all IVF cycles with embryo transfer during that period. The clinical pregnancy rate in the repeat transfer group was 30.6% (15/49). The clinical pregnancy rate in all cycles in the same time period was 34.8% (227/652). These rates were not significantly different (P = 0.521). Conclusion: Having to re-transfer embryos retained in the transfer catheter does not have any significant effect on clinical pregnancy rates during IVF treatment cycles.

2-3-238	
Title	**Return to work and morbidity in conservative immobilization vs. percutaneous scaphoid fixation: a systematic review and meta analysis**
Authors	S. Aldekhayel, **H. Alnaeem**, O. Fouda Neel
Program	Fellowship-Plastic Surgery
University	Mcgill University
Journal	68th annual meeting of the Canadian Society of Plastic Surgeons-2014
Year	2014

Abstract

Purpose: Management of minimally displaced scaphoid fractures remains controversial. Multiple studies summarized the outcomes of different management options including immobilization and percutaneous fixation. The current study aims at assessing the impact of different management options on patient's return to work. Methods: PubMed MEDLINE, Ovid MEDLINE, EMBASE and SCOPUS electronic databases were searched over the period 1974 to 2014. Medical subject headings and key words were "Scaphoid fracture" OR "Carpal fracture" AND (percutaneous OR screw fixation OR immobilization OR conservative OR cast). A two-step review process was done by two independent reviewers against a set inclusion criteria. Patients' demographics, time since injury, classification of fracture, duration of immobilization, time to return to work, time to union and complications were extracted. Meta analysis was done of comparative studies looking at return to work and complication rate. Results: Twelve studies met the inclusion criteria and divided in 2 groups; immobilization (group 1) and percutaneous fixation (group 2). A total of 619 patients were included; 257 in group 1 and 362 in group 2. Patients' demographics and time lag from injury to treatment were similar in both groups. Average duration of immobilization was 9.95 weeks in group 1 vs. 1.3 weeks in group 2. There was a statistically significant difference in the return to work in favor of group 2 (mean difference 42.2 [30.04-54.50], P< 0.00001). However, no difference was found in the complication rate between both groups (RR 0.74 [0.42-1.32], P=0.3). Conclusion: Percutaneous fixation of acute minimally or undisplaced scaphoid fractures is shown to be superior to cast immobilization in terms of faster return to work with no increased morbidity.

2-3-239	
Title	**Link-N as a Therapeutic Agent for Pain Associated with Intervertebral Disc Degeneration**
Authors	**Hussain Noorwali**, Padma.Madiraju, John. Antoniou, Fackson.Mwale
Program	Master-Experimental Surgery
University	Mcgill University
Journal	Canadian Orthopaedic Research Society (CORS) Program June 19, 2014
Year	2014

Abstract

INTRODUCTION:Low back pain associated with intervertebral disc (IVD) degeneration is an insidious disorder that by age 70 affects about 60% of the population. Previous studies have shown that disco genic back pain was due to the invasion of nociceptive nerve fibers into the aneural inner annulus fibrosus (AF) and nucleus pulposus (NP) of the IVD during degeneration [1]. The neurotrophins nerve growth factor (NGF) and brain-derived neurotrophic factor (BDNF) have been identified in the human intervertebral disc (IVD) and have been implicated

in the mechanisms associated with nerve in growth and nociception in degeneration of the IVD. Pro-inflammatory cytokines IL1β and TNFα have been proved to stimulate gene expression of NGF, BDNF and TAC1 in human NP and AF cells. We previously showed that Link N can stimulate extracellular matrix biosynthesis and is a potential stimulator of IVD repair in vivo and in vitro. We also showed that Link N could regenerate damaged AF and NP cells. The aim of the current study is to determine the effect of Link N on NGF, BNDF and TAC1 and their receptors TRK1, TRK2 and TAC1R gene expression in human AF and NP cells from normal and degenerated discs and to determine the Link N effect on phosphorylation/activation of these receptors and also to measure the release of pain neurotransmitter, substance P in human AF and NP cells as well as in injured bovine IVDs. METHODS: Human AF and NP cells isolated from normal IVDs have been cultured in monolayers and are stimulated with TNFα (100ng\mL) and IL1β (10ng\mL) in presence or absence of Link N (1μg/mL) for 48 hours. Human AF and NP cells isolated from IVDs of different degenerative grades were cultured with or without Link N (1μg/mL). Total RNA was isolated and gene expression was measured using RT PCR. Release of substance P in to the culture media was measured after cells were stimulated by TNFα (100ng\ml) and IL1β (10ng\ml) in presence or absence of Link N (1μg/mL) at different time points (1h, 2h, 4h,and 24h). Coccygeal IVDs from the tails of adult bovine steers (20 to 25 months) were used for disc isolation. Four discs with cartilage end plates were isolated and were treated (control, capsaicin (1.5 μg\ml), Punctured by 16 G needle, link N (10μg\ml) treated) after preconditioning for 24 hours in complete DMEM. Disc culture media was collected at different time points for analysis. Substance P in the media was concentrated by Solid Phase extraction and was assayed by Elisa. RESULTS: Results showed that Link N could suppress substance P release from punctured bovine discs after 4h of treatment (76pg/mL) as compared to the untreated punctured disc (92pg/mL) (Figure 1). Link N also significantly suppressed the TNFα induced gene expression of NGF in human Annulus fibrosus cells (Figure 2) after 48h of treatment. Results also showed that Link N could affect the TNFα and IL1β induced mRNA levels of BDNF and TAC1 in both AF and NP cells. DISCUSSION: Link N appears to decrease Substance P release from punctured bovine coccygeal disc. Similarly Link N significantly suppressed the TNFα induced NGF gene expression in human Annulus fibrosus cells. Our studies showed that Link N acts via BMP Smad signaling pathway. Earlier it was reported that BMP signaling suppresses peripheral innervation [2].This suggests that Link N has the potential to inhibit pain induced by neuronal innervation caused by disc degeneration. SIGNIFICANCE: Disc degeneration is often associated with low back pain, Link N represents a potential economical growth factor with beneficial effects on disc repair. It would be of clinical significance to see if Link N has any potential in reducing the pain caused by neuronal invasion during disc degeneration.

2-3-240	
Title	**Effect of Stress on Psychomotor Bimanual Performance During and Immediately Following A Stressful Neurosurgical Virtual Reality Tumor Resection Task**
Authors	**Bajunaid K**, Fares J, Winkler Schwartz A, Baggiani M, Christie S, Alotaibi F, Al Zharni G, Sabbagh A, Azarnoush H, Werthner P, Del Maestro RF.
Program	Fellowship – Neurosurgery
University	Mcgill University
Journal	Association de NeuroChirurgie du Québec 2014 meeting (7-8 November 2014)
Year	2014

Abstract

Objective: Virtual Reality (VR) simulator such as the NeuroTouch platform allows the testing of the effect of high levels of simulated stress on psychomotor bimanual performance during operative procedures in a patient risk free environment. In a multi-component study, we explored the impact of a simulated stressful neurosurgical virtual reality tumor resection scenario, utilizing NeuroTouch, to answer two questions:1)What is the impact of stress on bimanual psychomotor performance during a simulated stressful tumor resection? 2) Does significant stress influence bimanual psychomotor performance immediately following the stressful episode? Methods: Following the resection of three simulated tumors with easily controlled bleeding, sudden uncontrollable simulated intra-operative bleeding during the resection of a 4th tumor resulting in cardiac arrest provided the stressful episode in which 6 staff neurosurgeons, 6 senior neurosurgical residents (PGY4-6), 6 junior neurosurgical residents (PGY1-3), and 6 senior medical students participated. Immediately following this episode subjects were asked to resect further tumors. Psychomotor bimanual performance utilizing the simulated ultrasonic aspirator in the dominant hand and bimanual utilization of the simulated ultrasonic aspirator and the simulated sucker to control bleeding in the nondominant hand during the resection of simulated brain tumor were assessed. Tier 1 metrics studied included blood loss, tumor percentage resected and total simulated 'normal' brain volume removed. Tier 2 metrics involved total tip path lengths, maximum and sum of forces utilized by instruments, pedal activation frequency and advanced Tier 2 metrics assessed were efficiency index, ultrasonic aspirator path length index, coordination index and ultrasonic aspirator bimanual forces ratio. Results: Advance Tier 2 metrics which have been shown to differentiate between these groups provided the most insight into the influence of stress on bimanual psychomotor performance. Stress did not influence the coordination index metric in the neurosurgeon and senior resident group while a marked decrease in this metric was seen in the junior resident and medical student group. Ultrasonic aspirator bimanual forces ratio increased in the neurosurgeon and senior resident group while it was not influenced in the other two groups. The efficiency index and ultrasonic aspirator path length index were decreased in all groups by the stressful episode. Performance in all advanced Tier 2 metrics showed returned to prestress levels but some improvement in performance by junior residents in the subsequent tumors was seen. Conclusions: Although stress decreases some metrics of staff and senior resident bimanual psychomotor performance it has more marked impact on junior resident and medical student skills. In the VR scenarios used in this study significant stress does not influence bimanual psychomotor performance immediately following in the neurosurgeon and the senior resident group and may improve performance in the junior resident group.

2-3-241	
Title	**Pregnancy outcomes in renal transplant patients in a cohort of 7 million births**
Authors	**Kholoud Arab**, Valerie Patenaude, Lisa Oddy, Haim Abenhaim
Program	Fellowship-Gynecology and Obstetrics
University	Mcgill University
Journal	Society of Maternal-Fetal Medicine Conference New Orleans, USA February 3–8, 2014
Year	2014

Abstract

OBJECTIVE: The aim of our study was to measure the incidence and outcomes of pregnancies among renal transplant (RT) patients and to identify risk factors of adverse events during these pregnancies. STUDY DESIGN: We conducted a population-based retrospective cohort study using the United States Nationwide Inpatient Sample from 2003-2010. We created a cohort comparing pregnant women with and without a renal transplant. The incidence of pregnancies complicated by RT was measured and logistic regression analysis was used to estimate the adjusted effect of RT on maternal and fetal outcomes. RESULTS: We identified 375 deliveries in patients with renal transplant among 7,094,300 births for an overall incidence of 5.3 cases per 100,000 births over 8 years. Women with a renal transplant were more likely to be older than 35 years old and to have pre-existing diabetes or hypertension. Maternal complications were more common in women with transplant including: preeclampsia OR¼9.87 (7.76, 12.55) and preterm birth OR¼4.65 (3.72, 5.81). They were more likely to deliver by a caesarean delivery OR¼1.80 (1.47, 2.22), develop postpartum haemorrhage OR¼1.9 (1.2, 2.99) and receive blood transfusion OR¼ 2.29 (1.69, 3.12). Pregnancies were also complicated by an increased risk of intrauterine fetal death OR¼3.67 (1.89, 7.15)), fetal congenital anomalies OR¼ 5.28 (2.81, 9.90), and intrauterine growth restriction OR¼3.25 (2.21, 4.76). CONCLUSION: Pregnancy in patients with renal transplant continues to be associated with maternal and fetal morbidities. No maternal mortalities were recorded but the fetal mortalities are significantly higher in patients with transplant.

2-3-242	
Title	**Effect of Stress on Psychomotor Bimanual Performance During and Immediately Following a Stressful Neurosurgical Virtual Reality Tumor Resection Task**
Authors	**Bajunaid K**, Fares J, Winkler-Schwartz A, Baggiani M, Christie S, Alotaibi F, Al Zharni G, Sabbagh A, Azarnoush H, Werthner P, Del Maestro RF.
Program	Fellowship -Neurosurgery
University	Mcgill University
Journal	The Association de Neuro Chirurgie Du Québec 2014 meeting, 7-8 November 2014
Year	2014

Abstract

Objective: Virtual Reality (VR) simulator such as the Neuro Touch platform allows the testing of the effect of high levels of simulated stress on psychomotor bimanual performance during operative procedures in a patient risk free environment. In a multi-component study, we explored the impact of a simulated stressful neurosurgical virtual reality tumor resection scenario, utilizing NeuroTouch, to answer two questions:1) What is the impact of stress on bimanual psychomotor performance during a simulated stressful tumor resection? 2) Does significant stress influence bimanual psychomotor performance immediately following the stressful episode? Methods: Following the resection of three simulated tumors with easily controlled bleeding, sudden uncontrollable simulated intra-operative bleeding during the resection of a 4th tumor resulting in cardiac arrest provided the stressful episode in which 6 staff neurosurgeons, 6 senior neurosurgical residents (PGY4-6), 6 junior neurosurgical residents (PGY1-3), and 6 senior medical students participated. Immediately following this episode subjects were asked to resect further tumors. Psychomotor bimanual performance utilizing the simulated ultrasonic aspirator in the dominant hand and bimanual utilization of the simulated ultrasonic aspirator and the simulated sucker to control bleeding in the nondominant hand during the resection of simulated brain tumor were assessed. Tier 1 metrics studied included blood loss, tumor percentage resected and total simulated 'normal' brain volume removed. Tier 2 metrics involved total tip path lengths, maximum and sum of forces utilized by instruments, pedal activation frequency and advanced Tier 2 metrics assessed were efficiency index, ultrasonic aspirator path length index,

coordination index and ultrasonic aspirator bimanual forces ratio. Results: Advance Tier 2 metrics which have been shown to differentiate between these groups provided the most insight into the influence of stress on bimanual psychomotor performance. Stress did not influence the coordination index metric in the neurosurgeon and senior resident group while a marked decrease in this metric was seen in the junior resident and medical student group. Ultrasonic aspirator bimanual forces ratio increased in the neurosurgeon and senior resident group while it was not influenced in the other two groups. The efficiency index and ultrasonic aspirator path length index were decreased in all groups by the stressful episode. Performance in all advanced Tier 2 metrics showed returned to prestress levels but some improvement in performance by junior residents in the subsequent tumors was seen. Conclusions: Although stress decreases some metrics of staff and senior resident bimanual psychomotor performance it has more marked impact on junior resident and medical student skills. In the VR scenarios used in this study significant stress does not influence bimanual psychomotor performance immediately following in the neurosurgeon and the senior resident group and may improve performance in the junior resident group.

2-3-243	
Title	**Vancomycin-Resistant Enterococcus (VRE) Transmission and Risk Factors in Contacts of VRE Carriers**
Authors	**Reham Kaki**, Yang Yu, Cindy O'Neill, Christine Lee, Dominik Mertz
Program	Epidemiology
University	Mcmaster University
Journal	The journal Infection Control and Hospital Epidemiology, July 2014, vol. 35, no. 7
Year	2014

Abstract

Vancomycin-resistant enterococci (VRE) have emerged worldwide as significant healthcare-associated (HA) pathogens. Patients colonized with VRE may develop subsequent infection due to VRE, which is associated with a higher risk of death as compared with vancomycin-susceptible enterococci.1 Therefore, VRE is regarded as an epidemiologically important pathogen, and current guidelines recommend contact precautions for VRE carriers to prevent spread.2 Individual risk factors for VRE acquisition include prolonged hospitalization; comorbidities; surgery; and use of antibiotics, antacids, or steroids.3-5 However, exposure to a patient colonized with VRE in the hospital setting likely is the most important risk factor,6-8 with acquisition rates in the range of 21%–33%.8,9We aimed to estimate transmission rates in the endemic situation and to identify risk factors for VRE acquisition for roommates of newly identified HA-VRE carriers.

2-3-244	
Title	**The potential roles of nanobiomaterials in distraction osteogenesis**
Authors	**Asim M. Makhdom**, Lamees Nayef, Maryam Tabrizian, Reggie C. Hamdy
Program	Fellowship –Orthopedics
University	Mcgill University
Journal	Nanomedicine 2014 Jun 3. Epub 2014 Jun 3
Year	2014

Abstract

Distraction osteogenesis (DO) technique is used worldwide to treat many orthopedic conditions. Although successful, one limitation of this technique is the extended period of fixators until the bone is consolidated. The application of growth factors (GFs) is one promising approach to accelerate bone regeneration during DO. Despite promising in vivo results, its use is still limited in the clinic. This is secondary to inherent limitations of these GFs. Therefore, a development of delivery systems that allow sustained sequential release is necessary. Nanoparticles and nanocomposites have prevailing properties that can overcome the limitations of the current delivery systems. In addition, their use can overcome the current challenges associated with the insufficient mechanical properties of scaffolds and suboptimal osteogenic differentiation of transplanted cells in the distraction gap. We discuss the clinical implications, and potential early applications of the nanoparticles and nanocomposites for developing new treatments to accelerate bone regeneration in DO.

2-3-245	
Title	**Atrial Fibrillation as an Unexpected Complication After Peroral Endoscopic Myotomy (POEM): A Case Report"**
Authors	**Abdulaziz M. Saleem**, Hooman Hennessey, Daniel von Renteln, and Melina C. Vassiliou
Program	Fellowship –General surgery
University	Mcgill University
Journal	The Journal of Surgical Laparoscopy Endoscopy and Percutaneous Techniques.- October 2014 issue
Year	2014

Abstract

Peroral endoscopic myotomy (POEM) is an entirely endoscopic approach for the treatment of achalasia. This new procedure has been shown to be safe, effective, and associated with only minor complications in the postoperative period. This case report describes the development of atrial fibrillation after POEM secondary to direct compression from a hematoma in the submucosal tunnel. To our knowledge, this is the first report of a delayed hematoma after POEM. This procedure is still novel, and it is important to continue to share information about potential complications and long-term results. This report also includes several interesting radiographic images to illustrate what occurred. Finally, we provide a brief review of the literature on complications that have been described after POEM.

2-3-246	
Title	**Acute Mastoiditis in Children with Cochlear Implants: Is Explantation Required?**
Authors	**Faisal Zawawi**, Isabel Cardona, Olubunmi V. Akinpelu, and Sam J. Daniel
Program	Fellowship –ENT
University	Mcgill University
Journal	American Academy of Otolaryngology-Head and Neck Surgery Foundation 2014
Year	2014

Abstract

Objective. Acute mastoiditis is an uncommon but challenging condition when it occurs in children with cochlear implant. The literature is scarce as to the management of this condition with regards to explantation. The objective of the study is to determine the need for explantation in patients with cochlear implants who suffer from acute mastoiditis. Data Sources. Online medical databases—PubMed, Ovid Medline, Ovid Medline in process, Embase, Cochrane Library, CINAHL, Biosis, Google Scholar, and Scopus. Review Methods. A systematic review of all publications addressing the treatment of mastoiditis in cochlear implant children prior to November 2013 was conducted. Data were collected from online medical databases—PubMed, Ovid Medline, Ovid Medline in process, Embase, Cochrane Library, CINAHL, Biosis, Google Scholar, and Scopus. The review was performed in 3 phases; an initial screening review of abstracts was performed, followed by a detailed review of full articles based on inclusion and exclusion criteria, and lastly a final review to extract data from selected articles. Results. Twelve articles were found eligible for this systematic review including a total of 43 patients. Subperiosteal abscess was present in 14.3%. All patients received intravenous antibiotics as an initial treatment, and if needed, surgical intervention was performed. Only 1 patient required explantation (2.3%). Conclusion. Prompt, aggressive medical and if needed surgical therapy can help in saving the implant and result in a favorable outcome.

2-3-247	
Title	**CT Perfusion Imaging as an Early Biomarker of Differential Response to Stereotactic Radiosurgery in C6 Rat Gliomas**
Authors	Timothy Pok Chi Yeung, **Maher Kurdi**, Yong Wang, Baraa Al-Khazraji, Laura Morrison, Lisa Hoffman, Dwayne Jackson1, Cathie Crukley, Ting-Yim Lee, Glenn Bauman, Slav Yartsev
Program	Fellowship-Neurology
University	The University of Western Ontario
Journal	PLOS ONE, www.plosone.org , 1 October 2014, Volume 9, Issue 10, e109781
Year	2014

Abstract

Background: The therapeutic efficacy of stereotactic radiosurgery for glioblastoma is not well understood, and there needs to be an effective biomarker to identify patients who might benefit from this treatment. This study investigated the efficacy of computed tomography (CT) perfusion imaging as an early imaging biomarker of response to stereotactic radiosurgery in a malignant rat glioma model. Methods: Rats with orthotopic C6 glioma tumors received either mock irradiation (controls, N = 8) or stereotactic radiosurgery (N = 25, 12 Gy in one fraction) delivered by Helical Tomotherapy. Twelve irradiated animals were sacrificed four days after stereotactic radiosurgery to assess acute CT perfusion and histological changes, and 13 irradiated animals were used to study survival. Irradiated animals with survival .15 days were designated as responders while those with survival # 15 days were non-responders. Longitudinal CT perfusion imaging was performed at baseline and regularly for eight weeks post-baseline. Results: Early signs of radiation-induced injury were observed on histology. There was an overall survival benefit following stereotactic radiosurgery when compared to the controls (log-rank P,0.04). Responders to stereotactic radiosurgery showed lower relative blood volume (rBV), and permeability-surface area (PS) product on day 7 post-stereotactic radiosurgery when compared to controls and non-responders (P,0.05). rBV and PS on day 7 showed correlations with overall survival (P,0.05), and were predictive of survival with 92% accuracy. Conclusions: Response to stereotactic radiosurgery was heterogeneous, and early selection of responders and non-responders was possible using CT perfusion imaging. Validation of CT perfusion indices for response assessment is necessary before clinical implementation.

2-3-248	
Title	**Malignant Trigeminal Nerve Sheath Tumor and Anaplastic Astrocytoma Collision Tumor with High Proliferative Activity and Tumor Suppressor P53 Expression**
Authors	**Maher Kurdi**, Hosam Al-Ardati, and Saleh S. Baeesa
Program	Fellowship-Neurology
University	The University of Western Ontario
Journal	Hindawi Publishing Corporation Case Reports in Pathology, Volume 2014, Article ID 153197, 6 pages
Year	2014

Abstract
Background. The synchronous development of two primary brain tumors of distinct cell of origin in close proximity or in contact with each other is extremely rare. We present the first case of collision tumor with two histological distinct tumors. Case Presentation. A 54-year-old woman presented with progressive atypical left facial pain and numbness for 8 months. MRI of the brain showed left middle cranial fossa heterogeneous mass extending into the infratemporal fossa. At surgery, a distinct but intermingled intra- and extradural tumor was demonstratedwhichwas completely removed through left orbitozygomatic-temporal craniotomy. Histopathological examination showed that the tumor had two distinct components: malignant nerve sheath tumor of the trigeminal nerve and temporal lobe anaplastic astrocytoma. Proliferative activity and expressed tumor protein 53 (TP53) gene mutations were demonstrated in both tumors. Conclusions. We describe the first case of malignant trigeminal nerve sheath tumor (MTNST) and anaplastic astrocytoma in collision and discuss the possible hypothesis of this rare occurrence. We propose that MTNST, with TP53 mutation, have participated in the formation of anaplastic astrocytoma, or vice versa.

2-3-249	
Title	**Management of Spindle Cell Carcinoma of the Maxillary Sinus: A Case Report and Literature Review**
Authors	Hisham B. Alem, **Mohammed K. AlNoury**
Program	Master -ENT
University	Mcgill University
Journal	Am J Case Rep 2014; 15:454-458
Year	2014

Abstract
Background: Carcinosarcomas, also known as spindle cell carcinomas, are rare and highly aggressive tumors characterized by dual histologic differentiation of squamous cell and mesenchymal cell tumors. Occurrence of carcinosarcoma in maxillary sinus is very rare, with only 11 cases reported since 1957. The small number of reported cases creates an obstacle to the increased understanding of the behavior, prognosis, and therapeutic management of this tumor. Case Report: A 52-year-old man presented with a 2-month history of right nasal obstruction. Computed tomography (CT) and magnetic resonance imaging (MRI) showed opacified right frontal, sphenoid, ethmoid, and maxillary sinuses with soft tissue density and expansion of the mass with erosion of the right lateral maxillary wall. Functional endoscopic sinus surgery (FESS) was done and histopathology revealed multiple fragments of nasal mucosa lined by stratified hyperplastic squamous epithelium with an increased degree of dysplasia and pleomorphism and a second spindle cell high-grade neoplastic growth with bizarre giant cells and abnormal mitotic figures. Consistent with carcinosarcoma, immunohistochemistry showed strong positive staining for vimentin in the spindle cell component and strong positive staining for cytokeratin markers in the epithelial cell component. The patient underwent right total maxillectomy with postoperative chemoradiation therapy and survived for 1 year.
Conclusions: Carcinosarcoma of the maxillary sinus is a rare disease with non-specific symptoms; it usually presents in the advance stage and is associated with poor patient prognosis. This case indicates that surgical intervention with postoperative chemoradiotherapy improves patient prognosis and should be considered as the standard therapeutic modality.

2-3-250	
Title	**Lessons learnt from recent endovascular stroke trials: finding a way to move forward**
Authors	**Mohammed A, Almekhlafi**, Bijoy K Menon and Mayank Goyal
Program	Neurology
University	University of Calgary
Journal	Expert Reviews. Cardiovasc. Ther. 12(4), 429–436 (2014)
Year	2014

Abstract
The advent of stentrievers provided momentum for endovascular stroke therapy. Hopes were dampened after three randomized trials showed no clear benefit of endovascular therapy. This review discusses the results of these trials results and shortcomings. A detailed discussion will follow on the design, conduct and analysis of current and future endovascular stroke trials. Steps to improve the workflow of acute stroke cases from the time they enter the emergency department until endovascular reperfusion is achieved can significantly shorten the time from onset to successful reperfusion. These factors in addition to using novel approaches to analyze data and minimize delays caused by the consent process are perceived to be sufficient to demonstrate the efficacy of endovascular stroke therapy.

2-3-251	
Title	**Impact of Age and Baseline NIHSS Scores on Clinical Outcomes in the Mechanical Thrombectomy Using Solitaire FR in Acute Ischemic Stroke Study**
Authors	**M.A. Almekhlafi,** A. Davalos, A. Bonafe, R. Chapot, J. Gralla, V.M. Pereira, and M. Goyal
Program	Neurology
University	University of Calgary
Journal	Original Research Interventional- February 20, 2014
Year	2014

Abstract
Background and Purpose: Age and stroke severity are inversely correlated with the odds of favorable outcome after ischemic stroke. A previously proposed score for Stroke Prognostication Using Age and NIHSS Stroke Scale (SPAN) indicated that SPAN-100-positive patients (ie, age _ NIHSS score _ 100 or more) do not benefit from IV-tPA. If this finding holds true for endovascular therapy, this score can impact patient selection for such interventions. This study investigated whether a score combining age and NIHSS score can improve patients' selection for endovascular stroke therapy. MATERIALS AND METHODS: The SPAN index was calculated for patients in the prospective Solitaire FR Thrombectomy for Acute Revascularization study: an international single-arm multicenter cohort for anterior circulation stroke treatment by using the Solitaire FR. The proportion with favorable outcome (90-day mRS score _2) was compared between SPAN-100-positive versus-negative patients. RESULTS: Of the 202 patients enrolled, 196 had baseline NIHSS scores. Fifteen (7.7%) patients were SPAN-100-positive. There was no difference in the rate of successful reperfusion (Thrombolysis In Cerebral Infarction 2b or 3) between SPAN-100-positive versus –negative groups (93.3% versus 82.8%, respectively; P _ .3). Stroke SPAN-100-positive patients had a significantly lower proportion of favorable clinical outcomes (26.7% versus 60.8% in SPAN-100-negative, P _ .01). In a multivariable analysis, SPAN-100-positive status was associated with lower odds of favorable outcome (OR, 0.3; 95% CI, 0.1– 0.9; P _ .04). A higher baseline Alberta Stroke Program Early CT Score and a short onset to revascularization time also predicted favorable outcome in the multivariable analysis. CONCLUSIONS: A significantly lower proportion of patients with a positive SPAN-100 achieved favorable outcome in this cohort. SPAN-100 was an independent predictor of favorable outcome after adjusting for time to treatment and the extent of preintervention tissue damage according to the Alberta Stroke Program Early CT Score.

2-3-252	
Title	**Toward a Personalized Medicine Approach to the Management of Inflammatory Bowel Disease**
Authors	**Mahmoud H. Mosli**, William J. Sandborn, Richard B. Kim, Reena Khanna, Bandar Al-Judaibi, and Brian G. Feagan
Program	Gastroenterology
University	University of Western Ontario
Journal	American Journal of Gastroenterology on March 30th, 2014 (Am J Gastroenterol, 2014)
Year	2014

Abstract
The medical management of inflammatory bowel disease (IBD) is evolving toward a personalized medicine-based model. Modern therapeutic algorithms that feature use of tumor necrosis factor (TNF) antagonists in combination with immunosuppressive are highly effective when initiated in high-risk patients early in the course of disease. Defined targets that guide intensification of therapy are critical interventions. In this model, therapy is optimized through appropriate pretreatment testing, therapeutic drug monitoring, and patient-based monitoring strategies. This review discusses the current application of personalized medicine to the management of IBD.

2-3-253	
Title	**T-Cell Trafficking and Anti Adhesion Strategies in Inftammatory Bowel Disease: Current and Future Prospects**
Authors	**Malunoud H. Mosli**, Jesus Rivera-Nieves , Brian G.Feagan
Program	Gastroenterology
University	University of Western Ontario
Journal	Drugs – March 2014, Volume 74, Issue 3, pp 297-311
Year	2014

Abstract
The medical management of idiopathic inflammatory bowel disease (IBD) has historically been based upon the use of broad-spectrum anti-inflammatory drugs such as corticosteroids and thiopurines. Recently, the identification of novel mechanisms central to the pathophysiology of IBD

has provided more specific targets, including inhibition of leukocyte trafficking to the gut. In this article, we discuss the molecular biology of intestinal leukocyte trafficking and review the emerging therapies that target this process, including vedolizumab, natalizumab, etrolizumab, PF-547659, alicaforsen, efalizumab, and emerging members of this class.

2-3-254	
Title	**Advances in the Diagnosis and Management of Inflammatory Bowel Disease: Challenges and Uncertainties**
Authors	**Mahmoud Mosli**, Mohammad Al Beshir, Bandar Al-Judaibi, Turki Al-Ameel, Abdulaziz Saleem, Talat Bessissow, Subrata Ghosh, and Majid Almadi
Program	Gastroenterology
University	University of Western Ontario
Journal	Saudi J Gastroenterol. 2014 Mar-Apr; 20(2): 81–101. doi: 10.4103/1319-3767.129473
Year	2014

Abstract

Over the past two decades, several advances have been made in the management of patients with inflammatory bowel disease (IBD) from both evaluative and therapeutic perspectives. This review discusses the medical advancements that have recently been made as the standard of care for managing patients with ulcerative colitis (UC) and Crohn's Disease (CD) and to identify the challenges associated with implementing their use in clinical practice. A comprehensive literature search of the major databases (PubMed and Embase) was conducted for all recent scientific papers (1990–2013) giving the recent updates on the management of IBD and the data were extracted. The reported advancements in managing IBD range from diagnostic and evaluative tools, such as genetic tests, biochemical surrogate markers of activity, endoscopic techniques, and radiological modalities, to therapeutic advances, which encompass medical, endoscopic, and surgical interventions. There are limited studies addressing the cost-effectiveness and the impact that these advances have had on medical practice. The majority of the advances developed for managing IBD, while considered instrumental by some IBD experts in improving patient care, have questionable applications due to constraints of cost, lack of availability, and most importantly, insufficient evidence that supports their role in improving important long-term health-related outcomes.

2-3-255	
Title	**Use of hormonal therapy in senior breast cancer patients treated with or without radiotherapy**
Authors	S.P. Krotneva, A. Ramjaun, K.E. Reidel, T. Eguale, **N. Trabulsi**, N. Mayo, R. Tamblyn, A.N. Meguerditchian
Program	Oncology
University	McGill University
Journal	Oncology -Vol 21, No 1 (2014)
Year	2014

Abstract

Breast cancer treatment guidelines state that radiotherapy (rt) can reasonably be omitted in selected women 70 years of age and older if they take adjuvant endocrine therapy (aet) for 5 years. We aimed to assess persistence and adherence to aet in women 70 years of age and older, and to examine differences between rt receivers and non-receivers. Methods: Quebec's medical service and pharmacy claims databases were used to identify seniors undergoing breast-conserving surgery (1998–2005) and initiating aet. Cox proportional hazards models were used to identify predictors of aet non-persistence. Results:Of 3180 women who initiated aet (mean age: 77.5 years), 28% did not receive rt. During the subsequent 5 years, 32% of patients who initiated aet did not persist, 2% filled only a single prescription, and 22% switched medications. Compared with rt receivers, non-receivers discontinued more often (35.5% vs. 30.1%) and earlier (1.4 years vs. 1.6 years). They also became nonadherent earlier (medication possession ratio < 80% at year 3 vs. at year 5). Predictors of nonpersistence included rt omission [hazard ratio (hr): 1.26; 95% confidence interval (ci): 1.09 to 1.46]; age (hr per decade increase: 1.15; 95% ci: 1.01 to 1.31); new medications (hr per medication: 1.01; 95% ci: 1.00 to 1.02); and hospitalizations during aet, (hr per hospitalization: 1.08; 95% ci: 1.05 to 1.11). In a subanalysis of rt non-receivers, significant predictors included hospitalizations (hr: 1.07; 95% ci: 1.02 to 1.12) and medications at aet start (hr: 0.94; 95% ci: 0.91 to 0.97). Conclusions Suboptimal use of aet was observed in at least one third of women. In rt non-receivers, aet use was worse than it was in rt receivers. Initiation of new medications and hospitalizations increased the risk of non-persistence.

2-3-256	
Title	**Inflammation modulation and cardiovascular disease prevention**
Authors	**Zuhier Awan**, Jacques Genest
Program	PhD –Natural Chemistry
University	University of Montreal
Journal	European Journal of Preventive Cardiology April 7, 2014
Year	2014

Abstract

Heart disease and stroke represent the major burden of health worldwide and account for a staggering 17 million deaths yearly. This pandemic is, in great part preventable through simple and modifiable preventive measures such as smoking cessation, healthy eating, regular activity and weight loss. In patients with established atherosclerotic vascular disease, lipid lowering agent have had a major impact on reducing risk, along with pharmacological treatment of elevated blood pressure and the use of anti-thrombotic medication. Despite these advances, there remains a significant residual risk and newer approaches are required to decrease atherosclerosis. Innate and acquired immunity play a pivotal role in the initiation, progression and instability of the atherosclerotic plaque. The remarkable complexity of the immune system makes it difficult to target a single pathway for the prevention of cardiovascular disease. Nevertheless, recent data points to possible therapeutic targets that may decrease atherosclerosis, without increasing the risk of infection, decreasing immune surveillance for cancers and without undue toxicity. Here we discuss the clinical trials and registry data associated with the use of inflammation modulation and cardiovascular disease and the ongoing major clinical trial that may change the clinical medicine and preventive cardiology. The selective inhibition of interleukin 1β and the use of low-dose methotrexate are now undergoing large outcome-driven clinical trials to answer these questions.

2-3-257	
Title	**The effect of altering the mechanical loading environment on the expression of bone regenerating molecules in cases of distraction osteogenesis**
Authors	Mohammad M. Alzahrani , **Emad A. Anam**, Asim M. Makhdom, Isabelle Villemure and Reggie Charles Hamdy
Program	Fellowship –Orthopedics
University	Queen's University
Journal	Frontiers in Endocrinology -10 Dec 2014
Year	2014

Abstract

Distraction osteogenesis (DO) is a surgical technique where gradual and controlled separation of two bony fragments following an osteotomy leads to the induction of new bone formation in the distracted gap. DO is used for limb lengthening, correction of bony deformities, and the replacement of bone loss secondary to infection, trauma, and tumors. Although DO gives satisfactory results in most cases, one major drawback of this technique is the prolonged period time the external fixator has to be kept on until the newly formed bone consolidates leading numerous complications. Numerous attempts at accelerating bone formation during have been reported. One specific approach is manipulation of the mechanical environment during DO by applying changes in the standard protocol of distraction. Attempts at changing this mechanical environment led to mixed results. Increasing the rate or applying acute distraction, led to poor bone formation in the distracted zone. On the other hand, the addition of compressive forces (such as weight bearing, alternating distraction with compression or by over-lengthening, and then shortening) has been reported to increase bone formation. It still remains unclear why these alterations may lead to changes in bone formation. While the cellular and molecular changes occurring during the standard DO protocol, specifically increased expression of transforming growth factor-β1, platelet-derived growth factor, insulin-like growth factor, basic ibroblast growth factor, vascular endothelial growth factor, and bone morphogenic proteins have been extensively investigated, the literature is sparse on the changes occurring when this protocol is altered. It is the purpose of this article to review the pertinent literature on the changes in the expression of various proteins and molecules as a result of changes in the mechanical loading technique in DO and try to define potential future research directions.

2-3-258	
Title	**Not all "successful" angiographic reperfusion patients are an equal validation of a modified TICI scoring system**
Authors	**Almekhlafi MA**,Mishra S,Desai JA, Nambiar V,Volny O,Goel A,Eesa M, Demchuk AM,Menon BK, Goyal M
Program	Neurology
University	University of Calgary
Journal	Interventional Neuroradiology Vol 20-No.1-January/February 2014-21-27
Year	2014

Abstract

Rapid reperfusion of the entire territory distal to vascular occlusions is the aim of stroke interventions. Recent studies defined successful reperfusion as establishing some perfusion with distal branch filling of <50% of territory visualized (Thrombolysis In Cerebral Infarction "TICI" 2a) or more. We investigate the importance of the quality of final reperfusion and whether a revision of the successful reperfusion definition is warranted. We retrospectively evaluated a prospective database of anterior circulation strokes treated using stentrievers to assess the quality of final reperfusion using two scores: the traditional TICI score and a modified TICI score. The modified TICI score includes an additional category (TICI 2c): near complete perfusion except for slow flow or distal emboli in a few distal cortical vessels. We compared different cut-off definitions of reperfusion (TICI

2a - 3 vs. TICI-2b-3 vs. TICI 2c-3) using the area under the curve to identify their correlation with a favorable 90-day outcome (mRS≤2). In our cohort of 110 patients, 90% achieved TICI 2a-3 reperfusion with 80% achieving TICI 2b-3 and 55.5% achieving TICI 2c-3. The proportion of patients with a favorable 90-day outcome was higher in the TICI 2c (62.5%) compared to TICI 2b (44.4%) or TICI 2a (45.5%) but similar to the TICI 3 group (75.9%). A TICI 2c-3 reperfusion had a better predictive value than TICI 2b-3 for 90-day mRS 0-1. Defining successful reperfusion as TICI 2c/3 has merits. In this cohort, there was evidence toward faster recovery and better outcomes in patients with the TICI 2c vs. the traditional TICI 2b grade.

2-3-259	
Title	**The Spectrum of FBN1, TGFR1 and ACTA2 variants in 594 individuals with suspected Marfan Syndrome, Loeys-Dietz syndrome or Thoracic Aortic Aneurysms and Dissections (TAAD)**
Authors	Jordan P. Lemer-Ellis, **Saud H. Aldubayan**, Amy Lovelette Hernandez, Melissa Allard Kelly, Aaron J. Stuenkel, Jennifer Walsh, Victoria A Joshi
Program	Internal Medicine
University	Toronto University
Journal	Molecular Genetics and Metabolism, Volume 112, Issue, Jun-2014
Year	2014

Abstract
INTRODUCTION: In this study, patients suspected of having a clinical diagnosis of Marfan Syndrome (MFS), Loeys-Dietz Syndrome (LDS) and Thoracic Aortic Aneurysms and Dissections (TAAD) were referred for genetic testing and examined for mutations in the FBN1, TGFβR1, TGFβR2 and ACTA2 genes. METHODS: We examined 594 samples from unrelated individuals and different combinations of genes were sequenced, including one or more of the following: FBN1, TGFβR1, TGFβR2, ACTA2, and, in some cases, FBN1 was analyzed by MLPA to detect large deletions. RESULTS: A total of 112 patients had a positive result. Of those, 61 had a clinical diagnosis of MFS, eight had LDS, three had TAAD and 40 patients had clinical features with no specific diagnosis provided. A total of 44 patients had an inconclusive result; of these, 12 patients were referred with a clinical diagnosis of MFS, 4 with LDS and 9 with TAAD and 19 had no clinical diagnosis. A total of 89 mutations were novel. CONCLUSION: This study reveals the rate of detection of variants in several genes associated with MFS, LDS and TAAD. The evaluation of patients by individuals with expertise in the field may decrease the likelihood of ordering unnecessary molecular testing. Nevertheless, genetic testing supports the diagnosis of MFS, LDS and TAAD.

2-3-260	
Title	**Extraneural Metastasis of an Ependymoma: A Rare Occurrence**
Authors	**Alzahrani Ahmed**, Alassiri A. , Kashgari A., Alrehaili J., Alshaalan H., Zakzouk R.
Program	Pediatric Radiology
University	Ottawa University
Journal	The Neuroradiology Journal - Vol 27: Feb-2014
Year	2014

Abstract
Extraneural metastases of ependymoma are very rare, and have been reported in the lungs, lymph nodes, pleura, mediastinum, liver, diaphragmatic muscle, and bone. We describe the radiological findings of pathologically proven lung metastases from an anaplastic ependymoma. The tumor which arose in the posterior fossa was first diagnosed in 2007 when first surgical resection was performed outside our institute. Multiple operations were performed after that due to tumor relapse. Multiple lung nodules were discovered incidentally during a VP shunt survey. Biopsy from the lung nodules displayed identical histomorphology to the primary brain tumor.

2-3-261	
Title	**Atypical Neuroleptic Malignant Syndrome with Risperidone, Quetiapine, and Clozapine in an Atypical Alzheimer's Disease**
Authors	**Bandar AlAqeel**, René Desautels
Program	Psychiatry
University	Toronto University
Journal	Case Study Case Rep. 2014; 4(1): 26-27
Year	2014

Abstract
This case report discusses a case of atypical neurolpetic malignant syndrome (NMS) in a patient with Alzheimer's disease and presenting some dilemmas facing clinicians when faced when symptoms suggestive of NMS without the full-blown criteria.

2-3-262	
Title	**The meaningfulness of short interpretation in brief clinical encounter**
Authors	**Bandar AlAqeel**, Pierre Assalian
Program	Psychiatry
University	Toronto University
Journal	Official Journal of Crossing Dialogues; 7(1), Jun-2014
Year	2014

Abstract
This case study deals with failure to ejaculate intravaginally during sexual intercourse. The causative factors were thought to be unconscious in nature. The patient showed significant improvement after only one session, when these unconscious factors were interpreted to and accepted by the patient. We discuss briefly the application of psychodynamic theory in sex therapy and possible implementations in training settings.

2-3-263	
Title	**Dermatofibroma Mimicking Melanoma Dermoscopically**
Authors	**M. I. AlJasser**, M. Martinka, S. Kalia
Program	Dermatology
University	British Columbia University
Journal	Clinical and Experimental Dermatology, Vol.39, Issue 1, Jan-2014
Year	2014

Abstract
Dermoscopy is a noninvasive tool that can help to either confirm a clinical diagnosis or show features that disprove a diagnosis made based on clinical grounds. Dermatofibroma (DF) is a very common nonmelanocytic skin tumour that can have dermoscopic features of melanocytic neoplasms. Zalaudek et al.1 reported a case of a melanoma with the classic clinical features of DF; it was correctly diagnosed based on the atypical dermoscopic features, and excised. We report a case that seemed to be similar, with the clinical diagnosis being DF but the atypical dermoscopic features being suggestive of a melanoma; however, in this case the lesion was in fact a DF. A 57-year-old man presented with a 5-year history of a lesion on his back. On physical examination, there was a tender firm purple-brown nodule, 30 9 20 mm in size, with an isolated area of irregular pigmentation (Fig. 1a) was seen. The 'dimple sign' was positive. Based on these clinical findings, the initial clinical impression was of a DF.

2-3-264	
Title	**Bullous Pemphigoid Associated with Acquired Hemophilia A: A Rare Association of Autoimmune Disease**
Authors	**Mohammed I. AlJasser**, Chris Sladden, Richard I. Crawford, Sheila Au
Program	Dermatology
University	British Columbia University
Journal	Journal of Cutaneous Medicine and Surgery,Vol. 18, Issue 2, Mar-2014
Year	2014

Abstract
BACKGROUND: Acquired hemophilia (AH) is a rare autoimmune disease with an annual incidence of one per million and has a mortality rate of up to 22%. It is caused by the development of autoantibodies against factor VIII. Approximately half of the reported cases are associated with autoimmune disorders, pregnancy, malignancies, and adverse drug reactions. Autoimmune diseases are the most frequently associated disorders and include rheumatoid arthritis, systemic lupus erythematosus, cryoglobulinemia, pemphigus vulgaris, and bullous pemphigoid. There are a few reports of acquired hemophilia and bullous pemphigoid in the literature. METHOD: We report a 73-year-old male who presented with cutaneous blistering, upper gastrointestinal bleeding, and hemoptysis. He later developed right flank pain secondary to a retroperitoneal hematoma. He had a prolonged partial thromboplastin time, a low factor VIII level, and a high factor VIII inhibitor level, all consistent with acquired hemophilia. Skin biopsies were diagnostic for bullous pemphigoid. RESULTS: He was treated successfully with prednisone, cyclophosphamide, rituximab, and intravenous immunoglobulin.

2-3-265	
Title	**A Cadaveric Analysis of Tunnel Position Created Using Flexible Versus Rigid Instrumentation in a Single- Incision Distal Biceps Tendon Repair**
Authors	**Khalid Alsheikh**, Dominique Behrends, Adam Cota, Paul A. Martineau
Program	Orthopedic Surgery
University	McGill University
Journal	The Journal of Arthroscopic and Related Surgery, Vol. 30, No.5, May-2014
Year	2014

Abstract
PURPOSE: This study was designed to determine whether the use of a flexible guide pin and reamer through an anterior single-incision approach would

allow for a more anatomic insertion point on the radial tuberosity when compared with the traditional rigid instrumentation used for cortical button fixation. METHODS: Seven matched pairs of fresh-frozen cadaveric upper extremity specimens were used in this study. One specimen from each matched pair was randomly assigned to undergo a simulated repair using the standard instrumentation required for a cortical button fixation device, and the other specimens were assigned to undergo the same repair using a 42° anterior cruciate ligament femoral guide with a flexible guide pin and reamer. Each specimen from both groups was positioned with the elbow in 90° of flexion and the forearm maximally supinated during guide pin insertion. The proximal portion of the radius was then harvested from the specimen and scanned using micro-computed tomography (micro-CT). Tunnel position between the 2 techniques was compared with the center of the native tendon footprint. RESULTS: The mean percentage of the reamed entry hole within the tendon footprint was significantly less using rigid instrumentation (36.35%) compared with flexible instrumentation (67.29%) (P = .043). Furthermore, when flexible reamers were used (mean offset ratio, 0.17), the resultant tunnel was positioned in a significantly more central position within the radial shaft (i.e., the offset ratio was lower) compared with rigid reamers (mean offset ratio, 0.35) (P = .043). The entry hole was found to be significantly more posterior relative to the center of the anatomic footprint for the flexible reamer group (mean, 0.21 mm anterior) compared with the rigid reamer group (mean, 3.22 mm anterior) (P = .028). There was no difference in tunnel length between the 2 groups. CONCLUSIONS: The use of a flexible guide pin and reamer allows for a more anatomically positioned repair than does rigid instrumentation through a single-incision approach. CLINICAL RELEVANCE: This surgical technique allows for a more anatomic re-creation of the distal biceps tendon insertion while maintaining the benefits of a single limited anterior exposure.

2-3-266	
Title	**Point-of-care Ultrasonography for the Diagnosis of Acute Cardiogenic Pulmonary Edema in Patients Presenting with Acute Dyspnea: A Systematic Review and Meta-Analysis**
Authors	**Mohammad Al Deeb**, Skye Barbie, Robin Featherstone, Jerrald Dankoff, David Barbie
Program	Emergency Medicine
University	McGill University
Journal	Academic Emergency Medicine, Vol. 21, No.8, Aug-2014
Year	2014

Abstract

OBJECTIVES: Acute dyspnea is a common presenting complaint to the emergency department (ED), and point-of-care (POC) lung ultrasound (US) has shown promise as a diagnostic tool in this setting. The primary objective of this systematic review was to determine the sensitivity and specificity of US using B-lines in diagnosing acute cardiogenic pulmonary edema (ACPE) in patients presenting to the ED with acute dyspnea. METHODS: A systematic review protocol adhering to Cochrane Handbook guidelines was created to guide the search and analysis, and we searched the following databases: PubMed, EMBASE, Ovid MEDLINE, Ovid MEDLINE In-Process & Other Non-Indexed Citations, and the Cochrane Database of Systematic Reviews. References of reviewed articles were hand-searched, and electronic searches of conference abstracts from major emergency medicine, cardiology, and critical care conferences were conducted. The authors included prospective cohort and prospective case-control studies that recruited patients presenting to hospital with symptomatic, acute dyspnea, or where there was a clinical suspicion of congestive heart failure, and reported the sensitivity and specificity of B-lines in diagnosing ACPE. Studies of asymptomatic individuals or in patients where there was no suspicion of ACPE were excluded. The outcome of interest was a diagnosis of ACPE using US B-lines. A final diagnosis from clinical follow-up was accepted as the reference standard. Two reviewers independently reviewed all citations to assess for inclusion, abstracted data, and assessed included studies for methodologic quality using the QUADAS-2 tool. Contingency tables were used to calculate sensitivity and specificity. Three subgroup analyses were planned a priori to examine the effects of the type of study, patient population, and lung US protocol employed. RESULTS: Seven articles (n = 1,075) were identified that met inclusion criteria (two studies completed in the ED, two in the intensive care unit [ICU], two on inpatient wards, and one in the prehospital setting). The seven studies were rated as average to excellent methodologic quality. The sensitivity of US using B-lines to diagnosis ACPE is 94.1% (95% confidence interval [CI] = 81.3% to 98.3%) and the specificity is 92.4% (95% CI = 84.2% to 96.4%). Preplanned subgroup analyses did not reveal statistically significant changes in the overall summary estimates, nor did exclusion of three potential outlier studies. CONCLUSIONS: This study suggests that in patients with a moderate to high pretest probability for ACPE, an US study showing B-lines can be used to strengthen an emergency physician's working diagnosis of ACPE. In patients with a low pretest probability for ACPE, a negative US study can almost exclude the possibility of ACPE. Further studies including large numbers of ED patients presenting with undifferentiated dyspnea are required to gain more valid and reliable estimates of test accuracy in ED patients.

2-4-267	
Title	**DMEK and DSAEK performed on different eyes of the same patients, a comparison of visual outcome and endothelial cells survival**
Authors	**Mahmood Showail**, Yakov Goldich, David Rootman
Program	Fellowship-Ophthalmology
University	University of Toronto
Journal	Canadian Ophthalmological Society annual meeting in Halifax on June 7, 2014
Year	2014

Abstract

Purpose: To compare the visual outcomes and endothelial cell survival after Descemet membrane endothelial keratoplasty (DMEK) and Descemet stripping automated endothelial keratoplasty (DSAEK) in the fellow eye of the same patients and to evaluate the patient's perspective on these procedures. Study Design: Single-center, retrospective case series. Methods: Seventeen patients with bilateral Fuchs endothelial dystrophy who underwent DSAEK earlier in one eye, and later underwent DMEK in the contralateral eye, composed our study population. A chart review was completed to obtain follow up data for at least six months after each surgery for each patient. Main outcome measures included best spectacles-corrected visual acuity (BSCVA) and endothelial cell density within a 6-month follow-up period. Subjective questionnaires were used to assess patients' satisfaction. Results: Preoperative best-corrected visual acuity was similar in both groups, 0.66 ± 0.4 logMAR in DMEK and 0.59 ± 0.4 logMAR in DSAEK (P=0.6). No difference was found in BSCVA between the two groups at 3-month time point (0.36 ± 0.2 logMAR and 0.38 ± 0.1 logMAR, for DMEK and DSAEK, respectively, P=0.2). However, DMEK group showed better BSCVA than DSAEK group at 6-month time point (0.25 ± 0.1 logMAR and 0.39 ± 0.1 logMAR, for DMEK and DSAEK, respectively, P=0.02).
Preoperative endothelial cell density was similar in both groups (2647 ± 249 cells/mm2 and 2768 ± 404 cells/mm2, P=0.3) in DMEK and DSAEK, respectively. There was statistically significant difference found in endothelial cell density at 6 months (2227 ± 565 cells/mm2 for DMEK and 1780 ± 433 cells/mm2 for DSAEK, P=0.049) Subjective level of average satisfaction after DMEK was 6 and after DSAEK was 4.87 ± 1.19 (p= 0.002). Conclusion: DMEK provided better visual outcome and lower endothelial cell loss than DSAEK and higher level of patient satisfaction when assessed at 6 months after surgery. Our results comparing the two procedures in the same patients support the benefits of DMEK, and suggest the need for long-term studies observing this new surgical procedure.

4-3-268	
Title	**Kumaravadivelu's Framework as a Basis for Improving English Language Teaching in Saudi Arabia: Opportunities and Challenges**
Authors	**Afnan Masaoud Ahmad**
Program	Master of English
University	Brock University
Journal	English Language Teaching, Vol 7, No. 4, 2014
Year	2014

Abstract

This paper discusses the issues with EFL teaching in Saudi Arabia, including the reliance on traditional teaching methodologies and banning use of first languages in classrooms. As a result, these traditional teaching practices produce less proficient learners who have limited knowledge about proper linguistic use. In order to overcome these issues and have proficient learners who can effectively use the language, however, language teachers should understand an effective change is required. Kumaravadivelu's framework (2006) is an opportunity for teachers to adopt new methods because it relies on global-level strategies, macrostrategies, that are general enough to allow teachers the opportunity to freely adjust their precise implementation in relation to individual teaching demands, along with more particular implementation tactics, microstrategies, that operationalize the macrostrategies in flexible and customizable ways according to perceived needs during the in-context process of teaching.

4-3-269	
Title	**A New Methodology (CON-INFO) for Context-Based Development of a Mobile User Interface in Healthcare Applications**
Authors	**Reem Alnanih**, Olga Ormandjieva and T. Radhakrishnan
Program	PhD English - Linguistics
University	Concordia University
Journal	Chapter in Book: Pervasive Health State of the art and Beyond, 2014
Year	2014

Abstract

Pervasive computing can combine current technologies with wireless computing, voice recognition, and Internet capability. Its goal is to create an environment where the connectivity of electronic devices is unobtrusive and always available. 'Going mobile' is the next logical step in the pervasive computing era. Currently, mobile computing is a supplemental service in hospitals, complementing existing clinical information systems by providing an alternative

means to access medical information and supporting interpersonal communication. Given the increasing role of technology, the risk of errors caused by poor design, and the complexity of healthcare itself, MUI design for healthcare applications is subject to growing scrutiny, precisely because the stakes are so high and the potential gains from technology development in this area are so significant.

4-3-270	
Title	**Are English language teachers in Saudi Arabia ready to integrate technology**
Authors	Nadeem Saqlain, **Fawaz Al-Qarni**, Needal Ghadi
Program	PhD Curriculum and methods of teaching English
University	Memorial University of Newfoundland
Journal	Procedia - Social and Behavioral Sciences 103 (2013) 146 – 153
Year	2014

Abstract
Saudi government is striving to integrate technology at all school levels. In many schools English language is being taught through modern digital technology. Intel program has been launched to integrate technology in teaching and learning in Saudi Arabia. Qualitative research study was used to investigate English language teachers' readiness to integrate technology in Sabt Al-Alaia, Aseer region in Saudi Arabia. 12 in-service English language teachers participated in this study. Data were collected through structured and semi structured interviews. We found five main themes, (a) Understanding of technology, (b) Use of technology for learning and motivation, (c) Types of technology, (d) Teachers' main concerns, and (e) Teachers' unawareness of Intel program. Participants complained about lack of funding, scarcity of technology in schools and paucity of proper training to use technology. Sabt Al-Alaia regional schools do not have access to technology as their counter parts in other regions of Saudi Arabia. However, all the participants were willing to use technology to teach English as a foreign language. The paper includes implications of evaluation findings, recommendations for policy and directions for further research.

CHAPTER 4
Conference Presentations

1-4-271	
Title	**Time-predictable Execution of Multithreaded Applications on Multicore Systems**
Authors	Ahmed Alhammad, Rodolfo Pellizzoni
Program	Doctor of Philosophy in Engineering
University	University of Waterloo
Conference	Design, Automation & Test in Europe March 24 to March 28, 2014, Dresden, Germany
Year	2014

1-4-272	
Title	**Deposition of a Mesoporous Silica Coating on Magnesium Alloy AZ31**
Authors	Afrah Alhegy, Joy Gray-Munro
Program	Master in Chemical Science
University	Laurentian University
Conference	The Materials Science and Technology Conference 13, October 27-31, 2013 Montreal, Canada
Year	2014

1-4-273	
Title	**دراسة مسحية حول نمذجة المتطلبات غير الوظيفية عوائل المنتجات**
Authors	**Reham Fadul**
Program	Master in Software Engineering
University	McMaster University
Conference	المؤتمر الدولي لعلوم وهندسة الحاسوب باللغة العربية الدورة التاسعة، تونس
Year	2014

1-4-274	
Title	**Novel Surfactant Delivery System for Transporting and Releasing Surfactants at the Target Oil Saturation**
Authors	**Hassan Alhassawi**, Laura Romero-Zerón
Program	Master in Chemical Engineering
University	University of New Brunswick
Conference	63rd Canadian Chemical Engineering Conference, October 20th to 23rd, 2013 Fredericton, Canada
Year	2014

1-4-275	
Title	**Variable Ordering and Constraint Propagation for Constrained CP-Nets**
Authors	**Eisa Alanazi** and Malek Mouhoub
Program	PhD-Computer Science
University	University of Regina
Conference	27th International Conference on Industrial Engineering &Other Applications of Applied Intelligent Systems (IEA/AIE 2014)held in Kaoshiung, Taiwan
Year	2014

1-4-276	
Title	**Location-Based Patient-Device Association and Disassociation**
Authors	Raoufeh Rezaeea, **Malak Baslymana**, Daniel Amyota, Alain Moutthama, Rana Chreyhc, Glen Geigerc
Program	Master of Computer Science
University	University of Ottawa
Conference	The 4th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH-2014)
Year	2014

1-4-277	
Title	**Towards an RTLS-based Hand Hygiene Notification System**
Authors	**Malak Baslymana**, Raoufeh Rezaeea, Daniel Amyota, Alain Moutthama,b, Rana Chreyhc, Glen Geigerc
Program	Master of Computer Science
University	University of Ottawa
Conference	The 4th International Conference on Current and Future Trends of Information and Communication Technologies in Healthcare (ICTH-2014)
Year	2014

1-4-278	
Title	**Terrestrail Method For Airborne Lidar Quality Control Assessment**
Authors	**N. M. Alsubaie**, H. M. Badawya, M. M. Elhabiby, N. El-Sheimy
Program	Doctorate in Geomatics Engineering
University	University of Calgary
Conference	International Society for Photography and Remote Sensing ISPRS Technical Commission I Symposium, Denver, Colorado, USA from 17 – 20 November 2014
Year	2014

1-4-279	
Title	**Automated DTM Extraction and Classification of Airborne LiDAR Data**
Authors	**Naif Alsubaie**, Adel Moussa and Dr. Naser El-Sheimy
Program	Doctorate in Geomatics Engineering
University	University of Calgary
Conference	The 9th National GIS Symposium, April 28-30, 2014, Sheraton Hotel and Towers, Dammam, Saudi Arabia
Year	2014

1-4-280	
Title	**Non-Iterative Identication of IIR Wiener Systems Using Orthogonal Polynomial**
Authors	**Ibrahim Aljamaan**, David T. Westwick, Michael Foley
Program	Doctorate in Electrical and Computer Engineering
University	University of Calgary
Conference	The 19th World Congress of the International Federation of Automatic Control, Cape Town, South Africa, 24-29 August 2014
Year	2014

1-4-281	
Title	**Reinforcement Learning using Monte Carlo Policy Estimation for Disaster Mitigation**
Authors	**Mohammed Talat Khouj**, Sarbjit Sarkaria, Cesar Lopez, Jose Marti
Program	Doctorate in Electrical Power Engineering
University	University of British Columbia
Conference	Eighth Annual IFIP WG 11.10 International Conference on Critical Infrastructure Protection SRI International, March 17-19, 2014, Arlington, Virginia, USA
Year	2014

1-4-282	
Title	**Material development from Straw Biomass for Oil-Spill Absorbent**
Authors	**M. M. Tijani**, A. Aqsha, and N. Mahinpey
Program	Master of Science in Chemical Engineering
University	University of Calgary
Conference	64th Canadian Chemical Engineering Conference, Niagara Falls, On, Oct 19-22, 2014
Year	2014

1-4-283	
Title	**Learner Perceptions of a Successful Mobile Learning Platform: a Systematic Empirical Study**
Authors	**Muasaad Alrasheedi** and Luiz Fernando Capretz
Program	Doctorate in Software Engineering
University	The University of Western Ontario
Conference	The World Congress on Engineering and Computer Science WCECS 2014 -- International Conference on Education and Information Technology (ICEIT'14), San Francisco, USA, 22-24 October, 2014
Year	2014

1-4-284	
Title	**Time-predictable Execution of Multithreaded Applications on Multicore Systems**
Authors	**Ahmed Alhammad**
Program	Doctor of Philosophy in Engineering
University	University of Waterloo
Conference	Design, Automation & Test in Europe, Dresden, Germany March 24–28, 2014
Year	2014

1-4-285	
Title	**Schedulability Analysis of Global Memory-predictable Scheduling**
Authors	**Ahmed Alhammad**
Program	Doctor of Philosophy in Engineering
University	University of Waterloo
Conference	Embedded Systems Week 2014, October 12th 17th Jaypee Greens, New Delhi, India
Year	2014

1-4-286	
Title	**Removal of Secondary Components of Arabic Handwritten Words Using Morphological Reconstruction**
Authors	**Amani T. Jamal**, Ching Y. Suen
Program	PhD in Computer Science
University	Concordia University
Conference	ICIT 2014 International Conference of Information Technology
Year	2014

1-4-287	
Title	**On Network Coding in Intermittently Connected Network**
Authors	**Ahmed B. Altamimi** and T. Aaron Gulliver
Program	Computer systems and Networking
University	University of Victoria
Conference	2014 IEEE 80th Vehicular Technology Conference, VTC2014-Fall
Year	2014

1-4-288	
Title	**Privacy and Node Cooperation in Mobile Social Networks**
Authors	**Ahmed B. Altamimi** and T. Aaron Gulliver
Program	Computer systems and Networking
University	University of Victoria
Conference	The 28th IEEE International Conference on Advanced Information Networking and Applications (AINA-2014)
Year	2014

1-4-289	
Title	**Most Influential Variables for Solar Radiation Forecasting Using Artificial Neural Networks**
Authors	**B. M. Alluhaidah**, S. H. Shehadeh, and M. E. El-Hawary
Program	Electrical Engineering
University	Dalhousie University
Conference	Electric Power and Energy Conference 2014, Calgary, Alberta, Canada, 12-14 November 2014, http://sites.ieee.org
Year	2014

1-4-290	
Title	**Evaluation of In-plane Shear Deformation Of –Out-Of- Autoclave Carbon/Epoxy Prepregs Using Bias Extension Test**
Authors	**Hassan A. Alshahrani**, Rahul P. Mohan, Mehdi H. Hojjati
Program	Mechanical and Industrial Engineering
University	Concordia University
Conference	CA M E X Conference
Year	2014

1-4-291	
Title	**Evaluation of Road Transportation Improvement 2 Plan for Makkah, Saudi Arabia**
Authors	**Hasan Tayyeb**, Omar Abdelalim, Abd El Halim O. Abd El Halim, Ali Kassim
Program	PhD Civil Engineering
University	Carleton University
Conference	The Transportation Research Board (TRB) annual conference in Washington D.C. January 2014
Year	2014

1-4-292	
Title	**Specifying Trace Directives for UML Attributes & State Machines**
Authors	**Hamoud Aljamaan**, Timothy C. Lethbridge, Omar Badreddin, Geoffrey Guest, Andrew Forward
Program	PhD Computer Science
University	University of Ottawa
Conference	MODELSWARD 2014
Year	2014

1-4-293	
Title	**Experimental Study of the Hydrodynamic Resistance of Liquid Droplets in Polycarbonate Microchannels**
Authors	**Zeyad Almutairi**, Carolyn L. Ren, David Johnson
Program	PhD Mechanical Engineering
University	McGill University
Conference	APS March Meeting, Colorado March 3-7, 2014
Year	2014

1-4-294	
Title	**Learning Mid-Level Features from Object Hierarchy for Image Classification**
Authors	**Somayah Albaradei**, Yang Wang, Liangliang Cao, Li-Jia Li
Program	MSc Artificial Intelligence
University	University of Manitoba
Conference	IEEE,USA, March 24-26, 2014
Year	2014

1-4-295	
Title	**On the Possibility of Insider Threat Detection Using Physiological Signal Monitoring**
Authors	**Abdulaziz Almehmadi**, Khalil El- Khatib
Program	PhD Information Technology
University	University of Toronto Institute of Technology
Conference	SIN conference, Sept. 09 - Sept. 11. 2014, Canada
Year	2014

1-4-296	
Title	**A Technique to Detect Fatigue in the Lower Limbs**
Authors	**Abdullatif Alwasel**, Eihab Abdel-Rahman, Carl Haas
Program	PhD Vital organs Engineering
University	University of Waterloo
Conference	ASME 26th Conference, 20 August, 2014, Canada
Year	2014

1-4-297	
Title	**Resources Allocation in Disaster Response using Ordinal Optimization Based Approach**
Authors	**Abdullah Alsubaie**, Jose Marti, Khaled Alutaibi, Antonio Di Pietro, Alberto Tofani
Program	PhD Electrical and Computer Engineering
University	University of British Columbia
Conference	IEEE International Humanitarian Technology Conference Montreal, Canada, June 1-4, 2014
Year	2014

1-4-298	
Title	**The Use Of Remote Sensing Technique To Predict Gross Domestic Product (GDP): An Analysis Of Built-Up Index And GDP I Nine Major Cities in Canada**
Authors	**Kamil Fasial**, Ahmed Shakera
Program	PhD in Civil Engineering
University	Ryerson University
Conference	ISPRS TC VII Mid-Term Symposium, Sept. 29 to Oct. 2, 2014, Canada
Year	2014

1-4-299	
Title	**Binary Linear Programming-based Release Planning for Multi-tenant Business SaaS**
Authors	**Mubarak Alrashoud**, Lubaid Ahmed, Abdolreza Abhari
Program	Software Engineering
University	Ryerson University
Conference	Proceedings of the 2014 International C Conference on Computer Science & Software Engineering
Year	2014

1-4-300	
Title	**Novel Modulo Based Aloha Anti-Collision Algorithm for RFID Systems**
Authors	**Mohammed J. Hakeem**, Kaamran Raahemifar and Gul N. Khan
Program	PhD –Electrical Engineering
University	Ryerson University
Conference	8th Annual IEEE Canadian- Orlando -10-04-2014
Year	2014

1-4-301	
Title	**Investigation into the development of foam mibe fill**
Authors	**M Hefni** , FP Hassani, M Nokken, M Kermani, D Vatne Vatne
Program	Engineering
University	McGill University
Conference	11th International symposium on Mining with Backfill-May 20-22, 2014
Year	2014

1-4-302	
Title	**Rhetorical Figuration as a Metric in Text Summarization**
Authors	**Mohammed Alliheedi**, Chrysanne Di Marco
Program	PhD-Math and Computer Science
University	University of Waterloo
Conference	27th Canadian Conference on Artificial Intelligence, Canadian AI 2014 Montréal, QC, Canada, May 6–9, 2014, Proceedings
Year	2014

1-4-303	
Title	**NFC-Based Framework for Checking the Five Rights of Medication Administration**
Authors	**Maali Alabdulhafith**, Srinivas Sampalli
Program	PhD-Information and Communications Networks
University	Dalhousie University
Conference	The 4th International Conference Current and Future Trends of Information and Communication Technologies in Health Care ICTH –September 22-25 ,2014
Year	2014

1-4-304	
Title	**Classification of Participatory Sensing Privacy Schemes**
Authors	**Alswailim, M.A.**; Sch. of Comput., Queen's Univ., Kingston, ON, Canada; Zulkernine, M.; Hassanein, H.S.
Program	PhD-Computer Science –Information Security
University	Queen's University
Conference	LCN 2014 The 39th Annual IEEE Conference on Local Computer Networks (LCN)- September 8-11, 2014
Year	2014

1-4-305	
Title	**Frame-based Mobility Estimation via Compressive Sensing in Delay-Tolerant Vehicular Networks**
Authors	**Waleed Alasmary**, Shahrokh Valaee, Samah El-Tantawy, Baher Abdulhai
Program	PhD-Computer Engineering
University	University of Toronto
Conference	IEEE WIVEC-Vancouver
Year	2014

1-4-306	
Title	**Accommodating High Levels of Renewable Generation in Remote Microgrids under Uncertainty**
Authors	**Walied Alharbi**, Kankar Bhattacharya
Program	PhD-Electrical Engineering
University	University of Waterloo
Conference	EPEC 2014-Calgary
Year	2014

1-4-307	
Title	**Sensing in Mobile Sensor Networks with Noisy Mobility Knowledge**
Authors	**Waleed Alasmary** and Shahrokh Valaee
Program	PhD-Computer Engineering
University	University of Toronto
Conference	VTC- Sep 2014
Year	2014

1-5-308	
Title	**Development of Nanostructural Hydrogel Saptial and Temporal Controlled Release of Active Compounds**
Authors	**Shaker Alsharif**, Xavier Banquy
Program	MSc Analytical Chemistry
University	University of Montreal
Conference	"CSPS" 17th , June 10-13 , 2014 Montreal, Canada
Year	2014

1-5-309	
Title	**Graphene Oxide Membranes: Their Modification for Water Purification and Desalination Application**
Authors	**Abdulrahman Alhadhrami**, Vivek Maheshwari
Program	PhD Physical Chemistry
University	University of Waterloo
Conference	97th Canadian Chemistry, Vancouver, Canada, June 01-05, 2014
Year	2014

1-5-310	
Title	**NFC - Enabled Smartphone for Checking the Five Rights of Medication Administration**
Authors	**Maali Alabdulhafith**, Srinivas Sampalli
Program	PhD-Information and Communications Networks
University	Dalhousie University
Conference	CRA - omen Graduate Cohort Conference-April 11-12, 2014 -USA
Year	2014

1-5-311	
Title	**A Visual Spreadsheet using HTML5 for Whole Genome Display**
Authors	**Nada Alhirabi**, Greg Butler
Program	Master –Computer Science &Information Technologies
University	Concordia University
Conference	ISMB 2014 in Boston, United States
Year	2014

1-5-312	
Title	**Assessment of the Maximum Bio-Accessibility of Arsenic in Arabic Area Rice Using Online Leaching With Deduction by Inductively Coupled Plasma Mass Spectroscopy**
Authors	**R. Althobiti**, D. Beauchemin
Program	MSc Chemistry
University	Queens University
Conference	97th Canadian Chemistry Conference, June 1-5, 2014, Canada
Year	2014

1-5-313	
Title	**Chitin Degradation By Pseudomonas Fluorescence**
Authors	**Azahr Alhasaw**, Vasu Appanna
Program	PhD Melocular Biochemistry
University	Laurentian University
Conference	International Union of Microbiological Societies in Montreal from July 27-August 1, 2014, Canada
Year	2014

1-5-314	
Title	**Proteomics of The Secretome of a Clinical Isolate Related to Streptomyces albus**
Authors	**Fatin Alsalmi**, Mazen Saleh
Program	MSc Biological Sciences
University	Laurentian University
Conference	International Union of Microbiological Societies Congresses, July 27 – August 1, 2014, Canada
Year	2014

2-4-315	
Title	**Ly49-deficient mice are protected from lethal Influenza virus infection**
Authors	**Ahmad Bakur**, Ahmad Mahmoud
Program	Doctor of Philosophy in Biochemistry, Microbiology and Immunology
University	University of Ottawa
Conference	30th Annual Clinical Virology Symposium
Year	2014

2-4-316	
Title	**Oncolytic MG1-IL-12 Virus Improves Anti-tumour Immunity in An infected Cell Vaccine**
Authors	**Almohanad Alkayya**, Lee-Hwa Tai, Jiqing Zhang, Christiano T de Souza, Abhirarni Anu Ananth, Charles Lefebvre,Andrew P. Makrigiannis, John C. Bell, David F. Stojdl, and Rebecca C. Auer
Program	Ph.D. Medical Technology - Virology
University	University of Ottawa
Conference	TFRI 5th Annual Scientific Meeting
Year	2014

2-4-317	
Title	**The Impact of Proton Pump Inhibitors on Bone Healing and Implant Osseintegration**
Authors	**Ahmed Alsubaie**, Elham Emami, Hazem Emier, Mohamed Nur Abdallah, Faleh Tamimi
Program	Oral & Maxillofacial Surgery
University	McGill University
Conference	American Association for Dental Research Annual Meeting and Exhibition Charlotte, NC, USA March 19-22, 2014
Year	2014

2-4-318	
Title	**Influence of previous angular deformation on cyclic fatigue resistance of K3XF instruments**
Authors	**Abdullah Riyahi**
Program	Endodontics
University	University of British Columbia
Conference	2014 American Association of Endodontists, Washington, April 30- May2, 2014
Year	2014

2-4-319	
Title	**Influence of Cyclic Torsional loading on the fatigue resistance of K3XF instruments**
Authors	**Abdulmohsen Alfadly**
Program	Endodontics
University	University of British Columbia
Conference	15th Annual General Meeting of the Canadian Academy of Endodontics, Toronto, Ontario, October 22-25, 2014
Year	2014

2-4-320	
Title	**Secretion of Neuropeptide Y by the Right Heart in Response to a Physiological Stimulus**
Authors	**A. ALKhunaizi**,S.A. Magder, X. Zehua, G. Bkaily, D. Jacques
Program	Intensive Care
University	McGill University
Conference	American Thoracic Society 2014 International Conference
Year	2014

2-4-321	
Title	**A Long-term Comparison of Neurodevelopmental Outcome Between Infants with Bronchiolitis Received Sedation and Non-sedation Infants in PICU: Feasibility Study**
Authors	Withington D, **Mujallid R.**
Program	Pediatric Anesthesia
University	McGill University
Conference	The Canadian Paediatric Anesthesia Society Annual Meeting
Year	2014

2-4-322	
Title	**D-TAG/VSD/LVOTO: A Survey of Perception, Preferences and Experience**
Authors	**Mohammed k. Al-Jughiman**, Maryam A. Al-Omair, Glen S. Van Arsdell, Victro O. Morell and Marshall L. Jacob
Program	Cardiothoracic Surgery
University	University of Toronto
Conference	The Congenital Heart Surgeons Society Meeting
Year	2014

2-4-323	
Title	**Hematopoietic Stem Cell Transplantation for Hepatosplenic T-cell Lymphoma**
Authors	**Mubarak AlGhamdi**, Lothar Huebsch, and Christopher Bredeson
Program	Hematology
University	University of Ottawa
Conference	BMT Tandem Meeting Grapevine, Texas Feb 26 - Mar 2, 2014
Year	2014

2-4-324	
Title	**Improving Ascending Aortic Aneurysm Risk Predication by Correlating Medical Imaging with Tissue Testing**
Authors	**M. Alreshidan**, N. Shahmansouri, J. Chung, V. Lash, A, Seminovo, E. D. Martino, K. Lachapelle, R. Leask
Program	Cardiac Surgery
University	McGill University
Conference	25th Scientific Conference of the Saudi Heart Association, Riyadh KSA Feb 4 - 7, 2014
Year	2014

2-4-325	
Title	**Mechanism of human and bovine Link N – induced proteoglycan synthesis in the intervertebral disc**
Authors	Mwale, Fackson, **Aldebeyan, Sultan**, Epure, Laura; Grant, Michael; Rampersad, Sonia; and Antoniou, John
Program	Orthopedic Surgery
University	McGill University
Conference	Canadian Orthopedic Research Society (CORS) Montreal June 19, 2014
Year	2014

2-4-326	
Title	**Serum Albumin Level < 32 g/l on Day 30 Can Predict Higher Risk of Non-Relapse Mortality in Acute Lymphoblastic Leukemia Following Allogeneic Stem Cell Transplantation**
Authors	**Feras Alfraih**, Jieun Uhm, Vikas Gupta, John Kuruvilla, Jeffrey H. Lipton, Hans A. Messner, Mtthew Seftel and Dennis (Dong Hwan) Kim
Program	Hematology
University	University of Toronto
Conference	Canadian Blood and Marrow Transplantation group meeting on June 11-14, 2014
Year	2014

2-4-327	
Title	**Intraplacental Villous Artery Resistance Indices and Identification of Placenta Mediated Diseases**
Authors	**I Babic**, ZM Ferraro, K. Garbedian, A Oulette, CG Ball, F Moretti, A Gruslin
Program	Maternal Fetal Medicine
University	University of Ottawa
Conference	The 2nd International Conference on Fetal Growth, Baltimore, Maryland, USA September 19-21
Year	2014

2-4-328	
Title	**Chorioamnionitis and the effect of maternal glucose supplementation on neurodevelopmental outcomes in offspring**
Authors	**Alshammary M.**
Program	Maternal Fetal Medicine
University	University of Ottawa
Conference	34th Annual Meeting, American Society for Reproductive Immunology which was held in Long Beach, New York, June 2-5th, 2014
Year	2014

2-4-329	
Title	**Research on Simulation-based Educational Interventions**
Authors	**Amani Azizalrahman**
Program	Emergency Medicine Simulation
University	University of Calgary
Conference	Simulation Summit Toronto Sep 12, 2014
Year	2014

2-4-330	
Title	**Detection of Circulating Norovirus Genotypes: Hitting a Moving Target**
Authors	B.L.Rooney, **K. Binkhamjs**, J. Pettipas, E. Grudeski, X.L. Pang, T. Booth, T. Hatchette, J. Leblan
Program	Clinical Microbiology
University	Dalhousie University
Conference	2014 AMMI – CACMID Annual Conference (Association of Medical Microbiology and Infectious Diseases)- (Canadian Association for Clinical Microbiology and Infectious Diseases), held in Victoria, April 2-5, 2014
Year	2014

2-4-331	
Title	**AntiNMDA receptor encephalitis**
Authors	**Salman Aljarallah**, A Wilner, J. Teitelbaum
Program	Neurology
University	McGill University
Conference	The Canadian Neurological Science Federation 49th annual congress, Banf Alberta, June 3, 2014
Year	2014

2-4-332	
Title	**Inhibition of Fibroblast Growth Factor Receptor 3 (FGFR3) Signaling to Accelerate Bone Formation During Distraction Osteogenesis of Mice Tibiae**
Authors	**Albishr Waleed,** Hussein Abdallah, Arnaud Rene, Hamdy Reggif
Program	Orthopaedic Surgery
University	McGill University
Conference	Combined Meeting of The American Orthopaedic Association and the Canadian Orthopaedic Association (2014 AOA & COA) , Montreal, JUNE 18 -21, 2014
Year	2014

2-4-333	
Title	**Premature Failure of Edwards Sapien Valve Treated with Implantation of St. Jude Portico Valve**
Authors	**Sami Alnasser**
Program	Cardiac catheterization
University	University of Toronto
Conference	Transcatheter Valvular Therapeutics (TVT), Vancouver BC, Canada 5-7 June 2014
Year	2014

2-4-334	
Title	**Internal Derangement of Temporomandibular Joint: Umbrella Perforated Screw Technique**
Authors	**Khalid Arab**, Alain Danino
Program	Plastic Surgery
University	University of Montreal
Conference	Canadian Society of Plastic Surgery Annual Meeting, Montreal. June 27, 2014
Year	2014

2-4-335	
Title	**The Use of Fenestrated Endovascular Grafts for the Treatment of Juxtarenal and Suprarenal Abdominal Aortic Aneurysms**
Authors	**Abdulmajeed Altoijry**, Cherrie Z. Abraham, Kent S. MacKenzie, Marc-Michel Corriveau, Daniel I. Obrand, Oren K. Steinmetz
Program	Surgery
University	McGill University
Conference	Canadian Society for Vascular Surgery. Toronto, Canada. September 26-27, 2014
Year	2014

2-4-336	
Title	**Side-to-Side Ureterocystotomy: Keeping an Intact UVJ, Simplifying The Kaefer Technique as a Strategy to Address Obstructed Megaueters in Children**
Authors	**Fahad Alyami**, Paul R. Bowlin, Joseph M. Gleason, Luis H. Braga, Martin A. Koyle, Armando J. Lorenzo
Program	Urinary Tract
University	University of Toronto
Conference	Pediatric Urology Fall Congress. Lowes Miami Beach, Florida. October 24-26, 2014
Year	2014

2-4-337	
Title	**Delayed Acetaminophen Absorption Resulting in Hepatotoxicity**
Authors	**Bader Alyahya**, Alexandre Larocque, Erik Holody, Sumayah Aljenedil, Sophie Gosselin
Program	Pharmacology and Toxicology
University	McGill University
Conference	North American Congress of Clinical Toxicology. New Orleans, LA. October 17-21, 2014
Year	2014

2-4-338	
Title	**Does Short Length of Stay sollowing total hip and Knee Arthroplasty increases 30 day readmission rate**
Authors	**AbduJaziz Almaawi**, Mohammed Alattas, Laura M Epure, Olga L. Huk, DavidJ. Zukor, John Antoniou
Program	Foot and ankle surgery
University	University of Toronto
Conference	The combined Canadian Orthopedics Association and the American Orthopedics Association in Monreal, 19-21 June 2014
Year	2014

2-4-339	
Title	**Identification of Claudin-14 Promoter and Calcium Sensing Receptor (CaSR) Responsive Elements**
Authors	**Jawad F. A1zamil**, Wanling Pan, R. Todd Alexander
Program	Health Sciences
University	University of Alberta
Conference	International Research Training Group in Alberta. April 6-9, 2014
Year	2014

2-4-340	
Title	**Traditional & Electronic Ki-67 Quantitation in Oligodendrogliomas**
Authors	**S. Asiry**, P. Rizek, R. Hammond
Program	Neurology
University	UAQU University
Conference	The Canadian Association for Neuropathologists (CANP)54th Annual Meeting on Oct. 15-18, 2014
Year	2014

2-4-341	
Title	**Comparison of Two Ultrasound-Guided Techniques for Administration of Steroids Around the Greater Occipital Nerve Injection for Treatment of Refractory Primary Headache Syndromes**
Authors	**H. Alakkad**, A. Bhatia, P. Peng, A. Gorden
Program	Anesthesiology
University	University of Toronto
Conference	American Academy of Pain Medicine Conference - March 6-9, 2014
Year	2014

2-4-342	
Title	**Echocardiography training for cardiac surgery residents: results of a Canadian needs assessment**
Authors	**M. Fatani**
Program	Cardiac Surgery
University	McGill University
Conference	The Royal College of Physicians and Surgeons of Canada's International Conference on Residency Education(Oct. 23-25, 2014)
Year	2014

2-4-343	
Title	**Fixation Failure and non-union post bilateral sagittal split osteotomy: a case series**
Authors	**Sami Alissa**
Program	Oral and Maxillofacial Surgery
University	University of Toronto
Conference	10th Annual Lindsay-Thomson Symposium in Pediatric Plastic Surgery, June, 2014, Toronto
Year	2014

2-4-344	
Title	**"Predictors of live birth in women at least 40 years of age treated with in-vitro fertilization (IVF)"**
Authors	**Nouf Al-Asmari,** Weon Son, Seang Tan, Michael Dahan
Program	Infertility and endoscopy diseases
University	McGill University
Conference	American Society for Reproductive Medicine (ASRM) Meeting 2014, October 18 to 22, 2014, Honolulu, Hawaii
Year	2014

2-4-345	
Title	**Regional Colorectal Cancer Community Of Practice – The Ottawa Model: A Unique Model For Healthcare Delivery That Facilitates Quality Improvement**
Authors	**H. Redwan**, I. Yang, R. Musselman, R. Auer, H. Moloo, M. Fung Kee Fung, R. P. Boushey
Program	Colon Surgery
University	University of Ottawa
Conference	The American Society of Colon and Rectal Surgeons Annual Meeting Hollywood, USA, May 17- 21, 2014
Year	2014

2-4-346	
Title	**Can recent health service use predict postoperative complications in seniors undergoing colon cancer surgery**
Authors	**Haytham H. Alabbas**, Stanimira Krotneva, Aliya Ramjaun, Tewodros Eguale, Ari-Nareg Meguerditchian
Program	General Surgery
University	McGill University
Conference	Canadian Society of Surgical Oncology Twentieth Annual Scientific Meeting, Toronto, Ontario, May 2014
Year	2014

2-4-347	
Title	**Prevalence of Non-Alcoholic Fatty Liver Disease in Adolescents with Polycystic Ovary Syndrome**
Authors	**Mrouge Sobaihi**, Yogita Malan, Evelyn Constantin, Najma Ahmed, Helen Bui
Program	Endocrine glands in children
University	McGill University
Conference	2014 Scientific Meeting of the Canadian Pediatric Endocrine Group, Montreal , Feb 20-22, 2014
Year	2014

2-4-348	
Title	**Referral Bias among Electrophysiologists performing atrial fibrillation radio-frequency ablation (AF-RFA) vs electrophysiologists not performing AFRFA: A randomized evaluation**
Authors	**Naeem Al-Shoaibi**
Program	Medicine heart
University	McMaster University
Conference	Heart Rhythm Society's 35th Annual Scientific Sessions, San Francisco, California, May 7-10, 2014
Year	2014

2-4-349	
Title	**Aging Workers with Work-related Musculoskeletal Injuries**
Authors	**Algarni Fahad**, Gross D.P., Senthilselvan A., Battié M.C.
Program	Physiotherapist
University	University of Alberta
Conference	The 3rd International Conference of the work disability Prevention and Integration, Canada Sep. 29 to Oct. 1, 2014
Year	2014

2-4-350	
Title	**The Efficacy and Safety of Dipeptidyl Peptidase-4 Inhibitors In The Treatment of Type 2 Diabetes Mellitus In Patients With Chronic Kidney Disease: A Meta-Analysis of Randomized Clinical Trials**
Authors	**S. Khojah**, W.Altuwaijri, S.Walker , B. Hiebert, K.Macdonald, P.Komenda, C.Rigatto, N.Tangri
Program	Fellowship -Nephrology
University	University of Western Ontario
Conference	ASN Kidney Week 2014 Annual Meeting, November 13-16, 2014in Philadelphia, PA
Year	2014

2-4-351	
Title	**Down Syndrome : Clinical and EEG Correlates During Development**
Authors	**Ahmed Bamaga**, Micuela A.
Program	Fellowship -PGY3 Pediatric Neurology Resident
University	University of Toronto
Conference	13th International Child Neurology Congress (ICNC2014) in Iguazu Falls, Brazil from May 4 to May 9, 2014
Year	2014

2-4-352	
Title	**DMEK and DSAEK performed on different eyes of the same patients, a comparison of visual outcome and endothelial cells survival**
Authors	**Mahmood Showail**, Yakov Goldich, David Rootman
Program	Fellowship-Ophthalmology
University	University of Toronto
Conference	Canadian Ophthalmological Society annual meeting in Halifax on June 7,2014
Year	2014

2-4-353	
Title	**"Myopathy with Hexagonally Cross-Linked Crystalloid Inclusions"**
Authors	**M. Alturkustani**, F. AlSufiani, L-C. Ang
Program	Anatomy
University	University of Western Ontario
Conference	The Canadian Association of Neuropathologists, October 15-18, 2014
Year	2014

2-4-354	
Title	**Reduction in Allogenic Blood Transfusion with The Use of Recombinant Human Erythropoietin in pediatric Craniosynostosis Surgery: a Systematic Review**
Authors	**H Aljaaly**, J Diaz Abele, M Garunanayka, SAldekhayel, M Gilardino
Program	Fellowship –Plastic Surgery
University	MGill University
Conference	Canadian Society of Plastic Surgeons, Sixty eighth Annual Meeting Soixante huitième Réunion annuelle Montréal, Québec June 24-28 2014
Year	2014

2-4-355	
Title	**"Uveal Effusion Syndrome"**
Authors	**Mohamed Haji**
Program	Fellowship-Ophthalmology
University	University of Montreal
Conference	"Les Entretiens Ophthalmologique de l'Université de Montreal" in Montreal, QC, Canada, that took place from 15-16 May, 2014
Year	2014

2-4-356	
Title	**Simple vs. Endoscopic Cubital Tunnel Release: a Systematic Review & Meta-Analysis**
Authors	**S. Aldekhayel**, A. Govshievich, J. Lee, Y. Tahiri, M. Luc
Program	Plastic and Reconstructive Surgery
University	McGill University
Conference	American Association for Hand Surgery (ASSH) 2014 annual meeting Hawaii
Year	2014

2-4-357	
Title	**Supernumerary Carpal Bones in Larsen's Syndrome: A Case Report and review of Literature**
Authors	**S. Aldekhayel**, A. Govshievich, A.Shararah, W. Al-Hertani, H.B. Williams
Program	Plastic Surgery
University	McGill University
Conference	Annual Meeting of the Quebec Association of Plastic and Aesthetic Surgeons in Orford, Quebec
Year	2014

2-4-358	
Title	**Phototherapy-Induced Lichenoid Papules of Vitiligo**
Authors	**Mohammed AlJasser**, Harvey Lui, Youwen Zhou
Program	Dermatology
University	University of British Columbia
Conference	2014 Annual Vitiligo Working Group meeting, Colorado, USA, 20-Mar-14
Year	2014

2-4-359	
Title	**Microsurgical Flap Failure Caused by Heparin-Induced Thrombocytopenia: A Review of the Literature and an Algorithm**
Authors	**S. Aldekhayel**, H. Retrouvey, A. Izadpanah, T. Zadeh
Program	Plastic & Reconstructive Surgery
University	McGill University
Conference	Group pour L'Avancement de la Microchirugie Canada (GAM)-2014
Year	2014

2-4-360	
Title	**Patient' Perspective On Xiaflex For Duputren's Disease A Prospective Study**
Authors	James Lee, Mélissa Roy, **Salah Aldekhayel**, Mario Luc
Program	Plastic and Reconstructive Surgery
University	McGill University
Conference	Annual Meeting: The Canadian Society of Plastic Surgeons June 27th 2014
Year	2014

2-4-361	
Title	**“Electroconvulsive Therapy for Behavioral & Psychological Symptoms of Dementia”**
Authors	**Bandar AlAqeel** , Ilan Fischler, Pirathapan Parameswaran, Robyn Waxman, Omar Ghaffar
Program	Psychiatry
University	University of Toronto
Conference	2014 Ontario Psychiatric Association Conference, Toronto, ON Canada March 14, 201
Year	2014

2-4-362	
Title	**A Long-Term Analysis of Auricular Position in Pediatric Patients who Underwent Post-auricular Approaches**
Authors	Paul Hong, Todd Arseneault, **Fawaz Makki**
Program	Head & Neck Surgery
University	Dalhousie University
Conference	68th Canadian Society of Otolaryngology - Head & Neck Surgery Annual Meeting, May 11 - 13, 2014
Year	2014

2-4-363	
Title	**A Randomized Controlled Trial Comparing Near Infrared Spectroscopy to Intracranial Pressure Monitoring in The Management of Traumatic Brain Injury**
Authors	**Wael Alshaya**
Program	Head & Neck Surgery
University	University of Alberta
Conference	Alberta Neurosurgical Society Meeting, March 14, 2014
Year	2014

2-4-364	
Title	**The Effect of Isolated Finger Stiffness on the Mition of Adjacent Digits**
Authors	**R Baaqeel**, D Ross, S Chinchalkar
Program	Plastic Surgery
University	University of Western Ontario
Conference	68th Annual Meeting of the Can. Society of Plastic Surgeons, Montreal, QC, June 24 - 28, 2014
Year	2014

2-4-365	
Title	**Toll-Like Receptor 3 is Expressed in all Layers of the Human Retina**
Authors	**Mohammed Qutub**, Natalia Vila, Shawn Maloney, Dana Faingold, Nouf Al-Saati, Emilia Antecka, Miguel N. Burnier, Jr
Program	Ophthalmology
University	McGill University
Conference	The Association for Research in Vision and Ophthalmology -May 4-8, 2014
Year	2014

2-4-366	
Title	**Ocular Toxoplasmosis: A Very Unusual Case**
Authors	**Mohammed Qutub**, Vasco Bravo Filho, Pablo Zoroquiain, Natalia Vila, Sultan Aldrees, Crisitina Miyamoto Miguel N. Burnier
Program	Ophthalmology
University	McGill University
Conference	The American Academy of Ophthalmology 2014 Conference, Chicago, IL Oct. 18-21, 2014
Year	2014

2-4-367	
Title	**SIRT2 Expression is Higher in Uveal Melanoma than Ocular Melanocytes**
Authors	**Mohammed Qutub**, Henry Wood, Pablo Zoroquiain, Patrick Logan, Shawn Maloney, Miguel N. Burnier
Program	Ophthalmology
University	McGill University
Conference	20th Annual Meeting FRQS Vision Health Research Network Nov. 28, 2014
Year	2014

2-4-368	
Title	**Aortic Stenosis: Do we only consider the Trans-valvular Gradient in Treatment Decisions?**
Authors	**Ibrahim Jelaidan,** Yves Landry, Mandy Jeffery, Michael Chu, David McCarty
Program	Internal Medicine
University	University of Western Ontario
Conference	Canadian Cardiovascular Congress, Vancouver, BC October 25 - 29, 2014
Year	2014

2-4-369	
Title	**Predictors of Post-Operative Delirium in Cardiac Surgery, a Machine Learning Approach**
Authors	**H.N. Mufti**, S. Abidi, G.M. Hirsch
Program	Cardiac Surgery
University	Dalhousie University
Conference	Canadian Cardiovascular Congress Vancouver, BC- October 25-28, 2014
Year	2014

2-4-370	
Title	**Paraplegin Variant Increase The risk of Coronary Artery Disease and Type 2 Diabetes**
Authors	**Naif A.M. Almontashiri**
Program	PhD- Genetics
University	University of Ottawa
Conference	Lindau Nobel Laureates Conference - Germany - June 29th - July 4th, 2014
Year	2014

2-4-371	
Title	**Functional Coronary Artery Disease Mutant Increases Mitochondrial Fusion**
Authors	**Naif A. M. Almontashiri1,** Hsiao-Huei Chen, Ryan J. Mailloux, Takashi Tatsuta, Ahmad B. Mahmoud, Tiffany Ho, Mary Ellen Harper, Robert Roberts
Program	PhD- Genetics
University	University of Ottawa
Conference	The Ottawa Heart Conference -May 8, 2014
Year	2014

2-4-372	
Title	**Molecular Regulation of Early Myogenesis**
Authors	**Hamood AlSudais** and Qiao Li
Program	Laboratory Medicine - Molecular Medicine
University	University of Ottawa
Conference	Epigenetics and Chromatin, Cold Spring Harbor Laboratory from September 9 – 13-2014 in New York
Year	2014

2-4-373	
Title	**The Role of Post Treatment Chest Radiography Screening in Head and Neck Squamous Cell Carcinoma and a Survey on Pulmonary Screening Practices Among Otolaryngology-Head and Neck Surgeons Across Canada**
Authors	**Abdulaziz Alrasheed**
Program	Ear, Nose and Throat
University	McGill University
Conference	5th World Congress of IFHNOS & Annual Meeting of the AHNS in New York July 26-30, 2014
Year	2014

2-5-374	
Title	**Influence of the Dopamine Receptor Type 2 (D2) Antagonist on The Cannabinoid Receptor Type 1 (CB1) Function**
Authors	**Amina M. Bagher**, Robert B. Laprairie, Melanie E.M. Kelly and Eileen M. Denovan-Wright
Program	Pharmacology
University	Dalhousie University
Conference	ICRS 2014 (The International Cannabinoid Research Society) on June 29th in Italy
Year	2014

2-5-375	
Title	**Role of PAX2 in The Initiation and Progression of Ovarian Cancer**
Authors	**Ensaf Alhujaily**
Program	Cellular and Molecular Pathology
University	University of Ottawa
Conference	Canadian Conference on Ovarian Cancer Research, May 24-27, 2014
Year	2014

2-5-376	
Title	**Replacing The Staphylococcal Protein A(spa)**
Authors	**A. Khateb**, J. Cqnly, K. Wu, J. McClure, G. D. Armstrong, J. Zhang
Program	Microbiology
University	University of Calgary
Conference	AMMI Canada CACMID
Year	2014

2-5-377	
Title	**Molecular Regulation of Early Myogenesis**
Authors	**Hamood AlSudais** and Qiao Li
Program	Laboratory Medicine - Molecular Medicine
University	University of Ottawa
Conference	Epigenetics and Chromatin, Cold Spring Harbor Laboratory) from September 9 – 13-2014 in New York
Year	2014

2-5-378	
Title	**Resistance to Chipping of All Porcelain Crowns Under Cyclic Loading Fatigue**
Authors	**M. Alsarani**, O. El-Mowafy, G. De Souza and A. Rizkalla
Program	Dentistry
University	University of Toronto
Conference	American Association for Dental Research Annual Meeting and Exhibition Charlotte, NC, USA March 19-22, 2014
Year	2014

2-5-379	
Title	**Surface Chemical Treatment of Orthodontic Brackets for Improved Tooth Adhesion**
Authors	**Omar Alaqeel**, Palge Kozak, Mohaned-Nur Abdallah, Jean-Marc Retrouvey, Narta Cerrutl, Faleh Tamimi
Program	Craniofacial Science
University	McGill University
Conference	American Association for Dental Research Annual Meeting and Exhibition Charlotte, NC, USA March 19-22, 2014
Year	2014

2-5-380	
Title	**Sonographic Diagnosis of Puerperal Uterine Inversion aided by Colour Doppler Mapping**
Authors	**E. M. Jalal**, F. M. Moretn, K. Nague, M. Walker, K. Fung Kee Fung
Program	Fetal & Neonatal Medicine
University	University of Ottawa
Conference	24th World Congress on Ultrasound in Obstetrics and Gynecology (ISUOG)
Year	2014

2-5-381	
Title	**Acute Stroke Patients Treated with Stent Retrievers in Carotid "T" Occlusions Have Improved Recanalization and Outcome**
Authors	**Nohammed Al Hazzaa**
Program	Neurology
University	University of Ottawa
Conference	Canadian Stroke Congress, Montreal, QC: Oct 17-20, 2013
Year	2014

2-5-382	
Title	**Analgesia in Neurocritical Care: Systematic Review of The Literature**
Authors	**Fahd Alsubaie**, Zeller, Fred; Teltelbaum, Jeanne; Skroblk, Yoanna
Program	Radio Gamma knife surgery
University	Sherbrook University
Conference	Canadian Conference of Neurological Science (CNSF) meeting June 5th, 2014
Year	2014

2-5-383	
Title	**Defining the Presence of Obstruction in Mixed Obstructive Restrictive Lung Disorder**
Authors	**Mohammed Algamdi**, Clare Ramsey, Zoheir Bshouty
Program	Respirology
University	University of Manitoba
Conference	Canadian Respiratory Conference, "A Breath of Fresh Air" Calgary, AB April 24 – 26, 2014
Year	2014

2-5-384	
Title	**Assessing Bimanual Performance in Brain Tumor Resection using a Novel Virtual Reality Simulator NeuroTouch**
Authors	**Fahad Eid Alotaibi**
Program	Neurosurgery
University	McGill University
Conference	Canadian Neuro-Oncology meeting June 14th, 2014 Halifax, NS
Year	2014

2-5-385	
Title	**Novel Metrics Development and Validation for Bimanual Performance using Neuro Touch, Idea and Software to extract Data from NeuroTouch platform**
Authors	**Fahad Eid Alotaibi**
Program	Neurosurgery
University	McGill University
Conference	NeuroTouch R&D Consortium – 4th Meeting Montreal, QC
Year	2014

2-5-386	
Title	**Can We Use Newcastle Varices in Primary Biliary Cirrhosis (PBC) Score As a Quality Improvement Indicator**
Authors	**Fahad Albogami**, James Kiberd, Geri Hirsch, Mari Laryea, Kevork M. Peltekian
Program	Gastroenterology
University	McGill University
Conference	On Sunday, February 9th at the 2014 Canadian Digestive Diseases Week (CDDW) and Annual CASL Winter Meeting
Year	2014

2-5-387	
Title	**The First Reported Results of Lumbar Puncture, CT and MRI in a Case of Quinacrine Induced Psychosis Involving a Patient with Cutaneous Lupus Erythematosus**
Authors	**Noura AL Osaimil**, Carole Richford, John Kelsall
Program	Internal Medicine
University	University of Ottawa
Conference	69th Annual Canadian Rheumatology Association Meeting Whistler, BC February 26th – March 1st , 2014
Year	2014

2-5-388	
Title	**Laboratory Ordering Patterns for Coagulation Testing in a Pediatric Teaching Hospital**
Authors	**Ibrahim Ghemlas**, Nick Barrowmai, Elaine, I Eung
Program	Pediatric Hematology oncology
University	University of Toronto
Conference	American Society of Pediatric Hematology Oncology -27th annual meeting , Chicago , May 14-17,2014
Year	2014

2-5-389	
Title	**Pre-treatment with Manganese Porphyrin Enhances the Function of Neonatal Pig Islet Transplants in Diabetic Mice**
Authors	**Awrad Nasralla**, Kunimasa Suzuki, Baoyou Xu, Ping Wu, Kunsong Chen, Xian Li, Yulian Wu, Jon Piganelli, Ray Rajotte, Gina Rayat
Program	Experimental Surgery
University	University of Alberta
Conference	2014 World Transplant Congress July 26- 31st
Year	2014

2-5-390	
Title	**Association of catechol-Omethyltransferase (COMT) gene with the reverse placebo effect in children with ADHD**
Authors	**Weam Fageera**, Jennifer Nyarko, Kevin Hamdullahpur
Program	MSc Cancer Biology
University	Laurentian University
Conference	37th Canadian College of Neuropsychopharmacology Conference, June 18-21, 2014, Canada
Year	2014

2-5-391	
Title	**Treatment with extracts of Uncaria Tomentosa promotes apoptosis in the Human breast cancer cell line, MCF7**
Authors	**Aljehani A.**, Lafrenie R.
Program	MSc Human Genetics
University	McGill University
Conference	The 11th Annual Conference of the Natural Health Products Research Society of Canada, May 13-16, 2014, Canada
Year	2014

2-5-392	
Title	**Impaired Satiety Effect of GLP-1 Agonist is Associated With GLP-1 Resistance in Intestinal Afferent Nerves**
Authors	**Ala'a Al-Helaili,** Beini Wang, Michael J Beyak
Program	MSc Biology
University	Queen's University
Conference	Digestive Disease Week 2014, May 3-6, 2014, USA
Year	2014

2-5-393	
Title	**The Impact of Vitamin D on Disease Activity In crohn,s Disease (CD)**
Authors	**Dania Alrefai**, Hassanali Vatanparast, Jennifer jones, Wael El-matary, Abdulrahman Aljebreen
Program	MSc Nutrition
University	University of Saskatchewan
Conference	Experimental Biology EB 2014, April 26-30, 2014, USA
Year	2014

2-5-394	
Title	**The Effect of Nigella Sativa (black seed) om Murine Melanoma Cell Line B16-BL6**
Authors	**Aldawd Hessah**, Robert Lafrenie
Program	MSc Cancer Biology
University	Laurentian University
Conference	The 11th Annual Conference of the Natural Health Products Research Society of Canada, May 13-16, 2014, Canada
Year	2014

2-5-395	
Title	**Uncaria Tomentosa as an apoptosis in Melanoma B16-Bl6 Cell Line**
Authors	**Hajer Alfarteesh**, Robert Lafrenie
Program	MSc Tissue physiology
University	Laurentian University
Conference	The 11th Annual Conference of the Natural Health Products Research Society of Canada, May 13-16, 2014, Canada
Year	2014

2-5-396	
Title	**Incidence of Eosinophilic Esophagitis in Children In Northern Alberta**
Authors	**Mona ALAsmi**, Mordechai Slae, Aldrich Leung, Amr Abdelradi, Rabin Persad and Hien Q. Huynh
Program	Digestive Diseases in Children
University	University of Alberta
Conference	Annual CASL winter meeting/ conference, Toronto, Ontario February 8-11, 2014
Year	2014

2-5-397	
Title	**Safety AND Efficiency of Transradial Approach in Elderly, Meta- Analysis and Systemic Review**
Authors	**Sami Alnasser**, Akshay Bagai, Sanjit S. Jolly, Warren J. Cantor, Olivier Bertrand, Asim N. Cheema
Program	Cardiac Catheterization
University	University of Toronto
Conference	American College of Cardiology, March 2014, in Wahington, USA
Year	2014

2-5-398	
Title	**Radial access in Octagenerian Angioplasty Meta-Analysis**
Authors	Sami Alnasser, Olivier Bertrand, Asim N. Cheema
Program	Cardiac Catheterization
University	University of Toronto
Conference	Montreal live Conference of Interventional Cardiology, Montreal, Canada 10-12th June 2014
Year	2014

2-5-399	
Title	**Unsuspected Epithelial Neoplasias Associated with Pterygium: A 20- year study**
Authors	**Sultan Aldrees**, Pablo Z., Francisco C., Helena D., Patrick L., Etc.
Program	Pathology
University	McGill University
Conference	FQRS Vision Health Research Network Presentation. Montreal, QC. November 28, 2014
Year	2014

2-5-400	
Title	**Frailty and Mortality in Dialysis: Evaluation of a Clinical Frailty Scale**
Authors	**Talal Alfaadhel**, Steven Soroka, Bryce Kiberd, Paige Moorhouse, Karthik Tennankore
Program	Nephrology
University	University of Toronto
Conference	ASN Kidney Week 2014 Annual Meeting. November 11-16, 2014. Philadelphia
Year	2014

2-5-401	
Title	**Differing Patterns of AS in Females & Males**
Authors	**Ibrahim Almaghlouth.**, Arane T., Zoya Q., Eric G., Nigil H., Robert D.
Program	Medicine Mystical
University	University of Toronto
Conference	American College of Rheumatology Annual Meeting. Boston November 14-19, 2014
Year	2014

2-5-402	
Title	**Fatigue in Ankylosing Spondylitis a Multivariable Analysis implicates Inflammation as The Key Determinant of Disability**
Authors	**Bedaiwi M**, Thavaneswaran A, Haroon N, Anton A, Inman RD
Program	Rheumatology
University	University of Toronto
Conference	American College of Rheumatology Annual Meeting (ACR/ARHP). Boston November 14-19, 2014
Year	2014

2-5-403	
Title	**Effects of Sclerostin Depletion on Fracture Healing in the Mouse Model**
Authors	**M. M. AlZahrani**, R.C. Hamdy
Program	Orthopedic Surgery
University	McGill University
Conference	American Society of Bone and Mineral Research 2014 Meeting September 12-15, 2014
Year	2014

2-5-404	
Title	**Cast Indices as a Predictor of Return visit due to a Tight Cast Following Forearm Fracture Reduction**
Authors	**S. Tamur**
Program	Pediatrics
University	McGill University
Conference	Pediatric Emergency Research Council Jan. 27, 2014
Year	2014

2-5-405	
Title	**Examination of Diabetes Nurse Educator Guided Diabetes Care Team in Pediatric type 1 Diabetes**
Authors	**Eman AlShehri**, Karen McAssey
Program	Endocrine Glands in Children
University	McMaster University
Conference	40th International Society for Pediatric and Adolescent Diabetes Conference (ISPAD2014) , Sep 3-6, 2014
Year	2014

2-5-406	
Title	**The Best Choice and Use of Guide Wires When Buttressed During Stenting or Ureteroscopy**
Authors	**Alzabrani Tarek,** Ghiculete Daniela, Pace Kenneth; Honey R. John
Program	Aware of Urology
University	University of Toronto
Conference	69th Annual Meeting of the Canadian Urological Association, June 28 -July 01, 2014
Year	2014

2-5-407	
Title	**Changing Patient Position Can Eliminate Arrhythmias Developing During Shock Wave**
Authors	**Alzabrani Tarek,** Ghiculete Daniela, Pace Kenneth; Honey R. John
Program	Aware of Urology
University	University of Toronto
Conference	World Congress of Endourology, Taiwan, Sep 3-7 2014
Year	2014

2-5-408	
Title	**Pilot Study of the Effect of Intravitreal Dexamethasone Implant (700 µg) on Diabetic Macular Edema after Cataract Surgery**
Authors	**Fadwa AlAdel**, Pilar Calvo, Michael Brent
Program	Ophthalmology and Retinal Surgery
University	University of Toronto
Conference	2014 Annual Meeting of The Canadian Ophthalmological Society, Halifax, June 4-7, 2014
Year	2014

2-5-409	
Title	**"Predictors of Pregnancy in Women at Least 40 Years of Age Treated with in-Vitro Fertilization (IVF)"**
Authors	**Nouf Al-Asmari,** Weon Son, Seang Tan, Michael Dahan
Program	Infertility and Endoscopy Diseases
University	McGill University
Conference	Canadian Fertility and Andrology Society Meeting 2014, Sep 11-14,2014, Quebec City
Year	2014

2-5-410	
Title	**The Influence of a Modeled Treatment Couch on Dose Distributions in IMRT and RapidArc**
Authors	**Ghada Aldosary,** A. Nobah, F. Alzorkani, S. Devic, B. Moftah.
Program	Medical Radiation Physics
University	McGill University
Conference	International Conference on Radiation Medicine (ICRM) 2014, in Riyadh, Saudi Arabia
Year	2014

2-5-411	
Title	**Functional Diversity of the Rhizosphere Microbiome in Petroleum-Hydrocarbon Contaminated Soils**
Authors	**Fahad Al-Otaibi**, Terrence Bell, Etienne Yergeau, Mohamed Hijri, Marc St-Arnaud
Program	Mkrologia
University	University of Montreal
Conference	International Union of Microbiological Societies Congresses, July 27th to August 1st, 2014 in Montréal, Canada
Year	2014

2-5-412	
Title	**The Challenges of Teaching Caring as a Multidimensional Concept**
Authors	**Latifah M. Almater**
Program	Nursing
University	Dalhousie University
Conference	NLN Education Summit, September 17-20,2014.USA
Year	2014

2-5-413	
Title	**Audit of Trauma Exanguination Protocol for Management of Trauma Patients with Massive Bleeding**
Authors	**Khan E.**, Chipperfield K., Roland K.
Program	Hematological Pathology
University	University of British Columbia
Conference	CSTM Conference, Quebec, QC, May 2-3, 2014
Year	2014

2-5-414	
Title	**EWSR1 Negative Ewing Sarcoma**
Authors	**Fahd Al Sufiani,** Bret Wehrli and Lee-Cyn Ang
Program	Anatomical Pathology
University	University of Western Ontario
Conference	Ontario Association of Pathologists 2014 Annual Meeting Sept. 19-21, 2014
Year	2014

3-4-415	
Title	**Understanding Second Screen Experience: the Use of Social Media and Mobile Devices While Watching Live Television**
Authors	**Lama Khoshaim**
Program	PhD Electronic Trade
University	Dalhousie University
Conference	International Conference on Social Media and Society, September 27-28, 2014 in Toronto, Canada
Year	2014

3-4-416	
Title	**Change Management in Service Oriented Virtual Organizations A Structural Framework to Identify the Impacts and Triggers of Changes**
Authors	**Waeal J. Obidallah** and Bijan Raahemi
Program	PhD-E-business
University	Ottawa University
Conference	WEBIST 2014-Spain-April 2014
Year	2014

4-4-417	
Title	**Empirical Evaluation of Intelligent Mobile User Interfaces in Health Care Undergoing Colon Cancer Surgery**
Authors	**Reem Alnanih**, Olga Ormandjieva Thiruvengadam Radhakrishnan
Program	PhD English - Linguistics
University	University of Waterloo
Conference	27th Canadian Conference on Artificial Intelligence, May 6 to 9, 2014
Year	2014

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