DIVISION OF ORTHOPAEDIC SURGERY

MCGILL UNIVERSITY

Annual Report

For the period

January 1, 2014 to December 31, 2014
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**Chair’s Remarks:**

We began the year with a challenge and also an opportunity to reflect upon the changing nature of Resident training and optimising and improving the training program. This was the main topic of February’s retreat and we have all worked hard to address areas for improvement. Nonetheless 2014 has been a successful year, one of our first notable achievements being Thierry Pauyo and Stephane Bergeron winning first place at the AAOS Annual meeting in New Orleans with their work "Changes in Orthopaedic job market demand in the United States over the last decade".

Adam Hart and Adriana Martinez also won 2nd and 3rd prize in the Rocke Robertson Visiting Professor Day for their projects on Distal Radius Fractures and Compartment Syndrome.

Asim Makhdom took 1st place for the New Investigator Research Award at the annual ACPOC meeting for his project "The Accordion maneuver and The Effect of Compression Loading on Delayed Regenerate Bone Formation in cases of Limb Lengthening"

You will doubtless recall Drs. Harvey and Van Lancker were ahead of the curve and in the media with pioneering work on Google Glasses.

Our Visiting Professor, Professor Alain Charles Masquelet from Hôpital Avicenne, Paris provided a stimulating two days providing us with his insights into the now renowned ‘Masquelet Technique’ and membrane regeneration.

The Jo Miller Orthopaedic Research Fund made awards totalling $100,000 to

Drs. Jarzem, Ouellet, Weber and Haglund, Infection as the etiology of degenerative disc disease in adults
Dr. Martineau, Anterior cruciate ligament (ACL) graft failure
Dr. Tanzer, Tissue response and validation of a novel porous material
Drs. Morin and Harvey, Quebec registry for atypical femur fractures
Drs. Martineau and Henderson, Mast Cells and Bone Regeneration
Dr. Steffen, A Self-Setting Poly-Vinylalcohol (PVA) Gel for Minimally Invasive (MI) Repair of Focal Articular Cartilage Defects
Dr. Sato and Barralet, Soft tissue distraction

The fall saw another remarkable success for Adriana Martinez winning the QOA Benoit-Morin 2014 Resident competition and the awarding of the 2014 Current Concepts in Joint Replacement Scholarship to Anthony Albers.

As a Division we enhanced the orthopaedics literature with over 200 peer reviewed papers in 2014, we were awarded 8 CIHR grants, a CIHR Proof of Principle Grant and 2 CHRP wards as well as considerable awards from NIH, Canadian Cancer Research Society and the Dairy Farmers of Canada and the AO Foundation together with numerous other grants totaling over $7.5M for 2014 alone.

It was with some regrets that we saw Francine Lemay, the Division secretary since 1986 take a well-deserved rest in her retirement and I formally acknowledge her hard work over the years in keeping the Division running so efficiently. I also at the same time welcome Italia Gagliani who I am sure will soon be filling the big shoes of her predecessor.
We were fortunate to gain the skills and enthusiasm of Krista Goulding who joins me in Ortho Oncology and we have begun a search for a tenure track position to be filled in 2015.

Good luck to division members facing a move in 2015 and I look forward to the ORL joining us here at the MGH. Thanks to you all for making 2014 a successful year and best wishes for 2015.

RT

Recruitment:

Dr. Krista Goulding – Full-time Assistant Professor (Clinical) joined the division in August 2014. Krista obtained her MD degree at McMaster and completed her residency training at University of Ottawa. She went on fellowship in Ottawa and at the Royal Orthopaedic Hospital in Birmingham UK, both in Orthopedic Oncology. She then did a 6 months fellowship in Reconstructive Arthroplasty/Oncology at the Mayo Clinic in Phoenix AZ. She also started in 2013 a Master of Public Health at the Johns Hopkins Bloomberg School of Public Health in Baltimore MD.
### Residents, Fellows and Graduate Students

#### Residents:

<table>
<thead>
<tr>
<th>RESIDENTS</th>
<th>R4</th>
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<tbody>
<tr>
<td>ABATZIOGLOU, Sarantis</td>
<td>ALKHELAIFI, Khalid</td>
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<td>ABDULJABBAR, Fahad</td>
<td>BEAUMONT COURTEAU, Maxime</td>
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<td>ALBERS, Anthony</td>
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<td>AL-JURAYYAN, Abdulaziz</td>
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<td>AL-QAHTANI, Saad</td>
<td>MAHKDOM, Asim</td>
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<td>DE JESUS, Christopher</td>
<td>MOUSSEAU, Isabelle</td>
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<td>KUMAR, Abhishek</td>
<td>PAUYO, Thierry</td>
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<td>VAN LANCKER, Hans</td>
<td>SUTTON, Carl</td>
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<td>WALY, Feras</td>
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<td>YOUNG, Diana</td>
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<td>ALBISHII, Waleed</td>
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<td>ALZAHRAI, Mohammad</td>
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<td>BALUKI, Wafa</td>
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<td>HUSSEINI, Abdallah</td>
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<tr>
<td>JIANG, Fan</td>
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<td>Martinez Gomez, Adriana</td>
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<td>QUTUB, Ammar</td>
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<td>WAHEED WAHBA MORCOS, Mina</td>
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<td>MUWANIS, Mashael</td>
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<td>ALAQEEL, Motaz</td>
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<td>ALRAIYES, Thamer</td>
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<td>DOWNEY, Emilie-Ann</td>
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<td>PEDNEAULT, Christopher</td>
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Fellows:

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<tr>
<td>AL SOBEAI, Mohammed</td>
<td>Arthroplasty</td>
<td>JGH</td>
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<td>ALATTAS, Mohammed</td>
<td>Sports Medicine</td>
<td>SMH</td>
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<tr>
<td>ALSULAIMANI, Saleh</td>
<td>Oncology</td>
<td>MGH</td>
</tr>
<tr>
<td>ALTURKISTANY, Ahmed</td>
<td>Pediatric Orthopaedics Clinical Fellow</td>
<td>-</td>
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<tr>
<td>BAROUDI, Maher</td>
<td>Sports &amp; Arthroscopy Clinical</td>
<td>-</td>
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<td>DUBOIS-FERRIERE, Victor</td>
<td>Foot &amp; Ankle</td>
<td>JGH</td>
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<tr>
<td>LIODAKIS, Emmanouill</td>
<td>Arthroplasty</td>
<td>JGH</td>
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<td>SCHNEIDER, Prism Steorra</td>
<td>Trauma Fellowship</td>
<td>-</td>
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<tr>
<td>SIMOES, Leonard</td>
<td>Scoliosis &amp; Spine</td>
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Qualifying Postgraduates 2014
Congratulations to:

<table>
<thead>
<tr>
<th>STUDENT</th>
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<th>MSc/PhD</th>
<th>SUPERVISOR</th>
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<tr>
<td>JennyAnne Pura</td>
<td>Implant-delivered alendronate enhances net bone formation around porous titanium implants</td>
<td>MSc</td>
<td>Dr. M. Tanzer</td>
</tr>
</tbody>
</table>

Qualifying Residents 2014
Congratulations to:

ALDEBEYAN, Wassim
ABDULAZIZ, Al-Maawi
AL-SHEIKH, Khalid
AMITAI, Ari David
CARLI, Alberto
COTA, Adam
PAGÉ, Alexandre
SARDAR, Zeeshan
YOUNG, Diana Starr
APPENDIX 1

GRANTS
2014

Division of Orthopaedic Surgery

Department of Surgery
FACULTY OF MEDICINE

ANTONIOU

2011 - 2014 Biological Repair of Intervertebral Disc Degeneration. Principal Investigator John Antoniou, Co-investigators Fackson Mwale. AO/ASIF Foundation (Hansjörg Wyss Award 2011), $370,000.


2012 – 2016 The efficacy of Link N as a mediator of repair in intervertebral disc degeneration. Principal Investigator Fackson Mwale, Co-investigators John Antoniou. Canadian Institute of Health Research (CIHR), $564,800.

BARRALET

2011 -2016 Structural Bioinorganic, Principal Investigator Jake Barralet NSERC Discovery, $ 200,000 Funding for reporting year $40,000.


2014 Localised bisphosphonate delivery. Principal Investigator: Weber, Co-investigators: Siegel/ Barralet. Townshend Lamarre Award, Faculty of Medicine $20,000.

2014 Axial Vascularization of Bioceramic Scaffolds in a Rat Model. Principal Investigator Makhoul, Co-investigators Jake Barralet James Hayward Grant, $15,000.

2014 Local in situ Controlled Delivery of Biphosphonates in Bone Metastasis. Principal Investigator: Jake Barralet, Co-investigators Weber/Ouellet MITAC, $80,000.

CFI, $1M Tools for minimally invasive surgery, Infrastructure award

2014 NSERC Engage Grant, Graphite exfoliation, $25k, 6mo.

2014 Canadian Cancer Research Society Principal Investigators I Dr. M Weber, CI Dr. P Siegel, 200k, 2 yr Bone scaffolds as delivery systems for local and controlled release of antiresorptive in one metastasis treatment.

2014-2017 NSERC Strategic Grant Nanoparticles to superparticles: new materials for clean energy. Principal Investigator Barralet, Co-investigators Dr. J Gostick 3yr NSERC $500,000.
Training grants


2014-2015  Hypoxic Mimicking Agents to Augment Synthetic Scaffold Bone Regeneration. Primary author of Grant, Principle Investigator Investigators Justin Drager, Jake Barralet, Edward Harvey Orthopaedic Trauma Association Resident Research Grant $20,000.

BERGERON

2014  Royal College of Physicians and Surgeons of Canada (RCPSC) Professional Development Grant (Personal Support Grant) 4000$.

GLORIEUX


HAGLUND

2014-2015  Jo Miller Research Fund Award, Infection as the etiology of degenerative disc disease in adults has been awarded at a level of $16,700, (role Co Investigator, Principle Investigator Peter Jarzem, Co-Investigator Jean Ouellet), budget spent on student under my supervision.

2013-2014  McGill Collaborative Research Fund, Hydrogels for Cartilage and Bone Regeneration: A Prototype for a New Generation of Bio-Materials Able to Both Talk and Listen to The Body, $15 000, (role, Co- Investigator, Principle Investigator, Marta Cerruti) budget spent on student under Dr Cerruti’s and my supervision.

2012-2014  MITACS, Local delivery of biologically active peptides to correct curve progression in a mouse model of EOS, $ 80 000, Training awards, (role, Co-Investigator, with Dr Janet Henderson and Dr. Neil Saran), 44K spent on student under my supervision.

2012-2014  AO Foundation start-up grant, CHAD Fragmentation in Respon to Mechanica Loading, $120 000 CHF ($148 000 CAD) (role, Principle Investigator, Co-Investigators, Dr. Jean Ouellet and Dr. Peter Roughley). 100 LH lab.

2012-2015  CIHR operating grant, Intervertebral Disc Degeneration and P 325 959 (role, Principle Investigator, Co-Investigators, Dr. Laura Stone and Jean Ouellet). 100% in LH lab.

2011-2016  AOSpine Research Network, Biological Repair of the Degenera Intervertebral Disc, $740 000 CHF ($900 000 CAD) (role, Principle Investig Co- Investigators, Dr Thomas Steffen, Dr. Peter Roughley and Dr. Jean Ouell 90% in LH lab.
HAMDY


2012 - 2016  International Shriners $819,257.00 Co P.I. R. Hamdy (P.I. René St-Arnaud) Organization  Title: Blocking FGFR3 Signaling to Accelerate Distraction Osteogenesis.

HARVEY

2012-2014  Principal Investigator – EJ Harvey Co-Investigators -S Morin MD (McGill) S Laverty (UofM) Que.TraumaNet- Quebec trauma network FRQ-S Intersectorial Grant -Ref No 26756 $189 250 per annum x 2 years.

2013-2014  Principal Investigators- J Drager, EJ Harvey, J Barralet Hypoxic Mimicking Agents to Augment Synthetic Scaffold Bone Regeneration Orthopedic Trauma Association  $20 000.


2014-2016  Principal Investigator- Stephane Bergeron Supervisor - EJ Harvey Royal College Education Grant (MPH Studies).


2013-2014  Principal Investigators- J Drager, EJ Harvey, J Barralet Hypoxia Mimicking Agents for Bone Regeneration FRQ-S Junior Investigator Award, $23 000.

2014  Principal Investigators - S Morin E Harvey Quebec Registry for Atypical Femur Fractures McGill Orthopaedic Research Fund $13,500.

**HENDERSON**


2012-2015  Team Co-Pl pFrQesRsN. T/bioactive biomaterials for implants 07/2012- 06/2015 $234,000 Network Coapplicant FRSQ/Oral & bone health network.

2011-2015  $1,850,000.


2013-2015  Support for major infrastructure 09/2013-08/2015 $40,000


**MARTINEAU**

2012-2015  Subvention Établissement jeunes chercheurs Fonds de recherche en santé Québec, Martineau Principal Investigator 30 000$.


2012-2014  Transport properties of contrast agents for cartilage imaging PI: T.M. Quinn, Martineau Co-Investigator AO Foundation - 117500$ over 2 yrs.

2014  Anterior cruciate ligament graft failure – internal award PI: Martineau PA 13300$.

2014  Mast cells and bone regeneration – internal award PI: Martineau PA 16700$.


**MORIN**

2014-2015  CIHR Planning and Dissemination Grant – Institute Community Support, “Developing consensus recommendations for atypical femur fracture care in Canada”, Co-Principal Investigator; Nominated Principal Investigator: Angela Cheung ($10,000).

2014-2017 Dairy Farmers of Canada, “FAmily MILk product two-Year dose-response study to enhance bone health (FAMILY)”, Co-Investigator; Principal Investigator: H. Weiler ($1,066,161).


2012-2014 McGill University Health Centre, in partnership with the Québec Blue Cross, Challenge Q+, “Improving PAIN control following FRactures; towards an Elder-friendly Emergency department (PAINFREE)”, Principal Investigator ($150,000).


2012-2014 FRSQ Operating Grant, “Mise sur pied d’un réseau pancanadien en traumatologie orthopédique par le biais de son antenne au Québec (QUE-TraumaNet)”, Co-Principal Investigator with E. Harvey ($379,500).

2011-2015 FRSQ Subvention d'établissement de jeune chercheur clinicien, « Ostéoporose et fractures de la hanche ; stratégies de traitement », Principal Investigator ($30,000).


MWALE

2012-2016 The efficacy of Link N as a mediator of repair in intervertebral disc degeneration (ongoing). Principal Investigator Fackson Mwale, Co-investigators John Antoniou Canadian Institute of Health Research (CIHR), $564,800.


2011-2014 Tissue engineering of intervertebral discs (ongoing) Principal Investigator John Antoniou, Co-investigators Fackson Mwale. Canadian Institute of Health Research (CIHR) $328,000.


OUELLET


2012 – 2014 AO Spine Peer Reviewed Co P.I. $74,000 X 2 yrs PI: Lisbet Haglund; CoPI: Peter Roughley CHAD Fragmentation in response to mechanical load as indicator of DDD Ortho Research Lab; McGill Scoliosis & Spinal Research.

2014 -2015 Jo Miller Research Award, Peer reviewed Co-PI $16,700.00 Infection as the etiology of degenerative disc disease in adults Principle Investigator Peter Jarzem, Lisbet Hadlun.


2014 – 2017 AO Foundation P.I. $169,402.33 x 3yrsEvaluation of the modern Luqué Trolley growth gliding system vs. conventional treatment of early onset scoliosis patients: A prospective, non-randomized multi-center cohort study with a historical control. CRO – AOCID.
2013 – 2015 FRSQ  Salary support for Post Doc Co P.I. $20,000.00 X 3yrs P.I.: Astrid Brousselle La priorisation des patients: le cas d’une Clinique multidispinaire en orthopédie pédiatrique.


2011 – 2016 AO Foundation Foundation Co P.I. $185,000.00 X5yrs P.I.: Lisbet Haglung Co.PI: Peter Roughley Development of a novel bioreactor for human intervertebral disc allowing the characterization of the pathophysiology of the mechanically loaded disc to develop a regenerative approach for degenerative disc disease.

2010 - 2015 CIHR Peer reviewed Accreditation Co P.I. $144 000.00 X 5yrs Pl: Jill Chorney Pain at Home in Children following Major Surgery:Physical, Psych, $ Consequences. Multicenter Pan Canadian. Pl for Optimism Section.

2012 - 2014 DepuySPINE Educational Grant P.I. $60 000.00 X 2 yrs McGill Minimal Invasive Spine Anesthesia Fellowship.

2005 – 2015 AONA SPINE Peer review Accreditation P.I. $80 000.00 X 10 yrs AONorth American Spine Fellowship accreditation and funding.

RAUCH


2014 – 2019 The role of BRIL in the pathogenesis of osteogenesis imperfect type V. Principal Investigator Moffatt, Co-Investigator Frank Rauch. Canadian Institutes of Health Research

2012 -2016 Causes and treatments of heritable osteoporosis in childhood and adolescence. Principal Investigator Frank Rauch. FRQS Checheur-boursier

2012-2016 Genomic determinants of common long-term treatment effects in childhood acute lymphoblastic leukemia survivors. Principal Investigator Sinnet, Co-Investigator Frank Rauch. Canadian Institutes of Health Research

2013-2014 Metaphyseal dysplasia with maxillary hypoplasia and rachydactyly – studies on the phenotype of a Quebec orphan disease. Principal Investigator Frank Rauch. GDPL $25,000.

2012 -2014 Effect of High-Dose Vitamin D on Bone Density in Osteogenesis Imperfecta. Principal Investigator Frank Rauch. Shriners of North America $242,000.
ROUGLEY

2011- 2016  AO - Biological repair of the degenerate intervertebral disc. $105,000pa Co-PI with Dr Lisbet Haglund.

2012-17  CIHR - The role of hyaluronan in the growth and function of the skeletal system. $110,283pa Co-PI with Dr Pierre Moffatt.

SEGUIN

2012-2017  Genomic determinants of common long-term treatment effects in childhood acute lymphoblastic leukemia survivors Co-investigator: Séguin, Chantal, Co-applicant: Caroline Laverdiere; Principal Investigator: Sinnett, Daniel Canadian Institutes of Health Research (CIHR) CIHR Team Grant: Childhood Cancer Late Effects of Treatment Total Funding - 2,445,054 (Canadian dollar).

2010 – 2015  Osteonecrosis as a Complication of ALL and Lymphoma treatment Principal investigator: Séguin, Chantal Co-investigator: Dr Edward J. Harvey; Janet E. Henderson Leukemia and Lymphoma Society Operating grant (USA) Total Funding - 600,000 (Canadian dollar).


ST ARNAULD

2012-2017  86400 St-Arnaud (PI) $240,142/yr Shriners Hospitals for Children Title: Gene expression in bone cells.

2012-2017  85300 St-Arnaud (PI) $156,556/yr Shriners Hospitals for Children Title: Blocking FGFR3 signalling to accelerate Distraction Osteogenesis.

2011-2017  MOP-119306 St-Arnaud (PI) $125,439/yr CIHR Title: The alphaNAC transcriptional coregulator as a downstream effector of PTH action in bone.

2013-2016  85600 St-Arnaud (PI) $231,184/yr Shriners Hospitals for Children Title: Vitamin D synthesis in bone: molecular genetics analysis.

2014-2016  85210 St-Arnaud (PI) $57,918/yr Shriners Hospitals for Children Title: Inhibition of transcriptional coregulator phosphorylation in vivo.

2014-2015    NIST Jones (PI) $15,000/yr $15,000/yr  Title: Physiological role of 3-epi-1, 25(OH) 2D.

TANZER


2014    Unrestricted research grant, $90,000, Zimmer Inc. Principal Investigator Tanzer M. January 2014.

TURCOTTE

2014    Hybrid Image Analysis for Radiotherapy Primary Inst.: IM.EL NAQA C. Freeman, I. Poon, J. Seuntjens, R. Turcotte CIHR $134,809/yr X 4 yrs.


WEBER

2014-2016    Research Institute of the McGill University Health Centre & Merck 2014 Research Competition - Translational approaches to injectable, cell based therapeutics towards curbing degenerative disc disease of the spine Principal Applicant $25,000  year 1 & 2 = $50,000 CAD September 2014-September 2016.

2014-2016    Canadian Cancer Society – Bone scaffolds as delivery systems for local controlled release of anti-resorptive in bone metastasis treatment Principal Applicant $99,745 x 1 year, $99,965 x 1 year = $200,000 CAD February 2014-February 2016.

ZUKOR

2012-2016    CHIR  Extended venous thromboembolism prophylaxis comparing Rivaroxaban to aspirin following total hip and knee arthroplasty (EPCAT II)/ co-applicant.
APPENDIX 2

PEER REVIEWED PUBLICATIONS
2014

Division of Orthopaedic Surgery

Department of Surgery

FACULTY OF MEDICINE
ANTONIOU


BARRALET

B. Marelli, S.N. Nazhat, J.E. BARRALET, Newly identified interfibrillar collagen crosslinking suppresses cell proliferation and remodeling, accepted in Biomaterials.

J. Drager, E.J. Harvey, J.E. BARRALET, Hypoxia Signalling Manipulation for Bone Regeneration, accepted in Expert Reviews in Molecular Medicine.


Geffers M, Barralet JE, Groll J, Gbureck U. Dual-setting brushite-silica gel cements, accepted in Acta Biomater.

BENAROCH


BERGERON

Research collaboration with Mitchel B. Harris, Department of Surgery, Brigham and Women's Hospital, Harvard University, Boston, MA.

BURMAN

Gohil, S., Martineau, P., Burman, M.: Anterior Cruciate Ligament reconstruction using an out to in femoral tunnel with flexible reamers - A technical note. Techniques in Orthopedics (IN PRESS)

FREEMAN


GLORIEUX


GOULDING


HAGLUND

Rosenzweig DH, Quinn T, Haglund L. Low frequency high magnitude mechanical strain of articular chondrocytes activates p38 MAPK and induces phenotypic changes associated with osteoarthritis and pain, Int. J. Mol. Sci. 2014, 15, 14427-14441; doi:10.3390.


Gawri R, Moir J, Ouellet J, Beckman L, AL Thukair R, Steffen T, Roughley P and Haglund L, Physiological loading can restore the proteoglycan content in Research a model of early IVD degeneration, Accepted June 2014 PLOS ONE.


HAMDY


**HARVEY**


Burn Management in Orthopaedic Trauma-A Critical Analysis Review SM AlQahtani, MD, MSc; MM Alzahrani, MD, MSc; A Carli, MD, MSc; EJ Harvey, MD, MSc JBJS Reviews, 2014 Oct;2(10):e4. http://dx.doi.org/10.2106/JBJS.RVW.N.00010.
Treatment with Acetylsalicylic Acid (Aspirin) Prevents Short-To-Mid Term Radiographic Progression of Non-Traumatic Osteonecrosis of the Femoral Head

B. Routy, A. Albers, A. Carli, E.J. Harvey, C. Seguin
Thrombosis Research 05/2014; 133:S51-S52. DOI: 10.1016/S0049-3848(14)50171-5.

HENDERSON


HUK


JANELLE


JARZEM

Richard Assaker*, Karsten Ritter-Lang*, Dominique Vardon, Stéphane Litrico, Stéphane Fuentes, Michael Putzier, Jörg Franke, Peter JARZEM, Pierre Guigui, Gérard Nakach, Jean-Charles Le Huec,
Maverick Total Disc Replacement in a real-world patient population: A prospective, multicentre, observational study, European Spine Journal, June 2014.


MARTINEAU


MORIN


MORT


Ho, Y.Y., Baron, M., Recklies, A.D., Roughley, P.J. and Mort, J.S. (2014) Cells from the skin of patients with systemic sclerosis secrete chitinase-like protein 1. BBA Clinical 1, 2-11.

MWALE


OVELEET


RAUCH


Charles R Farber, Adi Reich, Aileen M Barnes, Patricia Becerra, Frank Rauch, Wayne A Cabral, Alison Bae, Aaron Quinlan, Francis H Glorieux, Thomas L Clemens, Joan C Marini (2014) A novel IFITM5 mutation in severe atypical osteogenesis imperfecta type VI impairs osteoblast production of pigment epithelium-


REINDL


ROUGHLEY


SARAN


SEGUIN


Carli A, Albers A, Séguin C, Harvey EJ. The Medical and Surgical Management of ARCO Stage I and II Osteonecrosis of the Femoral Head. JBJS Reviews, 2014 (Feb); 2(2); 1-10.
Altered gene dosage confirms the genetic interaction between FIAT and NAC. Gene 538: 328-333.


Abnormal calcium handling and exaggerated cardiac dysfunction in mice with defective vitamin D signaling. PLoS ONE 9(9): e108382. doi:10.1371/journal.pone.0108382.


TURCOTTE


WEBER


ZUKOR


APPENDIX 3

HONOURS / AWARDS
2014

Division of Orthopaedic Surgery

Department of Surgery
ANTONIOU


BARRALET

Alan Thompson chair in surgical research.

Student Award
Huaifa Zhang Great travel award ($500) 2014 Canadian Chapter of the Controlled Release Society travel award ($250).

Zeeshan Sheikh Dentistry Graduate Studentship Award (McGill University, Faculty of Dentistry). $4000. April, 2014.

Jinke Xu CC-CRS travel award.


BERGERON

Salary Award Royal College of Physicians and Surgeons of Canada (RCPSC) Professional Development Grant (Personal Support Grant) 4000$.


Teacher of the Year Award (2014), Division of Orthopaedic Surgery, McGill University.

Outstanding Teacher of the Year Award (2014), Surgical Teaching Award, Post Graduate Education Department of Surgery, McGill University.

GLORIEUX

Arabella I. Leet Memorial Lecture, Johns Hopkins University, Baltimore, MD.

William F Neuman Award, American Society for Bone and Mineral Research for outstanding and major scientific contributions in the area of bone and mineral research and for contributions to associates and trainees in teaching, research and administration.

Humanitarian Award, Osteogenesis Imperfecta Foundation, USA for outstanding commitment to people with Osteogenesis Imperfecta.

GOULDING

Tomlinson award, Henry &Margaret Johnson Oncology Award, MGH Foundation Award.

HAGLUND

Research Award, the Auxiliary of the MGH Research Award.
HAMDY

Teacher of the Year award, Department of Paediatric Surgery, McGill University.

New Investigator Research Award Paper for Dr. Asim Makhdom, Annual ACPOC meeting, Anaheim, California, March 2014 Title: The Accordion Maneuver And The Effects Of Compression Loading On Delayed Regenerate Bone Formation In Cases Of Limb Lengthening Authors : Asim Makhdom, Reggie C. Hamdy.

HARVEY

Salary award Hornstein Chair in Surgical Excellence.

2014 H. Rocke Robertson 19th Annual Trauma Research Day 2nd place Fixation Methods of Ulna Fractures A Hart, M Collins, L Beckman, T Steffen, EJ Harvey, PA Martineau.

2014 Canadian Pharmaceutical Society and Controlled Release Society combined meeting, Montreal, Qc, June 2014 Third Prize Presentation Winner, “Local Delivery of Iron Chelators on Osteoclast Mediated Bone Resorption” Drager J, Sheikh Z, Harvey EJ, Barralet J.

2014 AAOS (American Academy of Orthopaedic Surgery) Achievement Award- presented to AAOS members who have supported the orthopaedic community through volunteerism.

MARTINEAU


Salary Award, FRSQ chercheur clinician boursier junior 1 (2012-2016).

MORIN

Vice-Chair, Scientific Advisory Council, Osteoporosis Canada Sep 2012-present.

Chair, Guidelines Committee, Osteoporosis Canada Jun 2009-present.


McGill University Health Centre, The Patient Education Committee Grant Award, Bone’ing up on skeletal health”, Principal Investigator ($2,500) 2014-2015.

MWALE


OUELLET


Platinum Member of AOSpine North America 2012 – 2015.

RAUCH

Salary Support Award; Fonds de la Recherche en Santé du Québec, Senior 2012.

SARAN

Personalité de la Semaine, La Presse Newspaper, Montreal, QC, July 7th, 2014.

TANZER

WEBER

The Cedars Cancer Institute – Henry R. Shibata Fellowship Award (2014) $20,000.
Montreal General Hospital Foundation Award (2014) $10,000.

Student Awards
Octavian Dobrescu, Summer 2014, Supervised his project: Cervical Muscle Morphology in Cervical Spondylotic Myelopathy. Awarded McGill Fall research bursary 2014 in the amount of $2,000.

Corrado De Marco, Summer 2014, Supervisor for his project: Bioceramic Bone Grafts for the In Situ Controlled Release of Biphosphonate in a Bone Defect Following Tumour Resection.
APPENDIX 4

Division Faculty and Staff
2014

Division of Orthopaedics
Department of Surgery
FACULTY OF MEDICINE
# CLINICAL FACULTY

<table>
<thead>
<tr>
<th>Core Clinical</th>
<th>Rank</th>
<th>Sub-Specialty</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>ANTONIOU, John</td>
<td>Assistant Professor</td>
<td>Arthroplasty</td>
<td>SMBD - JGH</td>
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<td>BENAROCCH, Thierry</td>
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<td>TURCOTTE, Robert</td>
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<td>ZUKOR, David</td>
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### AFFILIATED CLINICAL

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### RESEARCH FACULTY

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### ADMINISTRATION

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### RESEARCH COORDINATORS

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</table>
Other Scholarly Activities & Services to the Profession and Community
2014

Division of Orthopaedic Surgery

Department of Surgery

FACULTY OF MEDICINE
ANTONIOU
Community Service
Canadian Orthopaedic Research Society - President.
Orthopaedic Research Society – Co-chair International Committee.
American Academy of Orthopaedic Surgeons, Member of Adult.
Reconstruction; Hip Program Committee Member.
Canadian Orthopaedic Association - Board Member.
Canadian Arthritis Society – Orthopaedic expert for the Scientific Advisory Committee.

Presentation

Editorial Activity
Journal of Arthroplasty – editorial board elite reviewer.
European Spine Journal – editorial board member.
Spine – editorial board member.

Refereed Research
eCM XIV 2014, Davos, Switzerland. June 16-18, 2014
MP Grant LM Epure, J Antoniou, F Mwale. Human cartilaginous endplate degeneration is regulated by the extracellular calcium-sensing receptor.
MP Grant, LM Epure, O Salem, O Ciobanu, M Alaqeel, J Antoniou, F Mwale. Development of a whole bovine long-term organ culture system that retains vertebral bone for intervertebral disc repair and biomechanical studies.
M Alaqeel, MP Grant, LM Epure, O Salem, OL Huk, J Antoniou, F Mwale. Link N suppresses Interleukin-1β induced human osteoarthritic cartilage degradation through down-regulation of NF-κB signalling.
H Noorwali, P Madiraju, L Epure, J Antoniou, F Mwale. Effect of Link N treatment on pain associated with intervertebral disc degeneration.
MP Grant, LM Epure, J Antoniou, F Mwale. Activation of the extracellular calcium-sensing receptor as a contributor in human cartilaginous endplate degeneration.  
R Gawri, J Ouellet, P Önnerfjord, B Alkhatib, T Steffen, D Heinégård, P Roughley, J Antoniou, F Mwale, L Haglund. Link-N is cleaved by human annulus fibrosus cells generating a fragment with retained biological activity.  
A Alaseem, P Madiraju, S Aldebeyan, J Antoniou, F Mwale. Mechanism of Naproxen induced type X collagen expression in mesenchymal stem cells.  
H Noorwali, P Madiraju, J Antoniou, F Mwale. Link-N as a therapeutic agent for pain associated with intervertebral disc degeneration.  
M Alaqeel, MP Grant, LM Epure, O Salem, OL Huk, J Antoniou, F Mwale. Effect of Link N on the synthesis and degradation of matrix proteins in human articular osteoarthritic cartilage.  
F Mwale, HT Wang, P Roughley, J Antoniou, L Haglund. Link N and stem cell therapy for the repair of intervertebral disc degeneration.  
MP Grant, LM Epure, M Alaqeel, O Salem, OL Huk, J Antoniou, F Mwale. The calcium-sensing receptor in health and osteoarthritis.  
MP Grant, LM Epure, J Antoniou, F Mwale. Regulation of the Calcium-Sensing Receptor by Link N in the cartilaginous endplates of human intervertebral discs. SY Brin, LM Epure, AS Cartaleanu, OL Huk, DJ Zukor, J Antoniou. TKA and THA procedure duration affect the rate of wound complications and length of hospital stay.  

**Patent**  
PCT/CA2014/000656/ In progress/ Filling date: 2014-08-27/ Patent Title: “Methods and Compositions for Treatment of Cartilage and Disc Tissue Pathologies”.  

**BARRALET**  

**Presentation**  
Organized Conferences/Symposia
Canadian Society for Pharmaceutical Sciences 2014 Annual Meeting.
Fraser Gurd Surgical Research Day-2014.

Editorial Board
Journal of Biomaterials Applications 2004-Present
Journal of Biomedical Materials Research (B) 2006- Present
Journal of Biomedical Materials Research (A) 2007- Present
Acta Biomaterialia 2011- Present

BENAROCH

Presentation
Benaroch, T. E., “Painful Valgus Foot Deformity”, Presented at the 11th Annual Fall Orthopaedic Symposium: Pediatric Orthopaedics: A Thirty-Year Experience (Times Two), October 24, 2104, The University of Texas Southwestern Medical Center, Texas Scottish Rite Hospital for Children, Dallas, Texas, USA.

Professional Development
April 2, 2014 Program Director Workshop, Montreal, Quebec, Canada.
April 10, 2014 New Program Director Workshop, McGill University, Montreal, Quebec, Canada.

BERGERON

Editorial Activity
Clinical Orthopaedic and Related Research.

Invitation
Course Faculty, Canadian Orthopaedic Resident Forum (CORF) -- trauma section, Calgary, April 4 - 7, 2014.

Continuing Professional Development Activity
Master in Public Health summer semester (6 weeks), Harvard School of Public Health Completion of practicum for MPH degree.

Presentation
Refereed Presentation

Local, national, international research collaborations
Research collaboration with Mitchell B. Harris, Department of Surgery, Brigham and Women’s Hospital, Harvard University, Boston, MA.

BURMAN

Community Involvement
Head Orthopedic Surgeon/Team Physician Montreal Impact FC.
Orthopedic Surgeon/Team Physician Montreal Alouettes Football Team.
Orthopedic Surgeon McGill Redmen/Martlets Varsity Athletics.
Soccer Coach – Girls Intercity Soccer.
Orthopedic Consultant/Surgeon for Nunavik Communities.

Editorial Activity
Manuscript reviewer: J. Arthroscopy, International J. Sports Medicine, KSSTA Journal, CJS.
COA 70th Annual Meeting - Sports Medicine Section Abstract Reviewer.

Invitation
Invited faculty Canadian Orthopedic Residents Forum – Calgary, AB.

Professional Development
Canadian Orthopedic Association (COA/AOA) Combined Meeting.
AANA 33rd Annual Meeting.
McGill/UdeM Shoulder Arthroscopy Course.

GLORIEUX

Visiting Professorship
March 2014 Johns Hopkins University, Baltimore, MD.

GOULDING

Invitation

Professional Development
Finishing of clinical fellowship – Mayo Clinic (August'2014).
Editorial activity
European Orthopaedic Surgery & Traumatology.

Local, national, international research collaborations
PARITY trial (international RCT – antibiotic prophylaxis in bone sarcoma)- McMaster Compress endoprostheses (in collaboration with Mayo clinic)
Golf Ball project – evaluating an education intervention to family physicians in soft tissue sarcoma (Royal Orthopaedic Hospital, Birmingham, UK)

HAGLUND

Editorial activity

Invitation
Invited Speaker - Anatomy and Cell Biology Retreat McGill University, Mont Saint Gabriel, May 2014, Title: Intervertebral Disc Degeneration and Pain.
Invited Speaker - World Forum for Spine Research, Xi’an China May 2014 Title: Bioreactors; How good are they.
Speaker World Forum for Spine Research, Xi’an China May 2014 Title: The Ability of Physiological Load to Restore Disc Function.

Scientific or Specialty Society Contribution
2014—Present Vice President, Canadian Connective Tissue Society (CCTS).
2012 – Present Board member, Canadian Connective Tissue Society (CCTS).
2011 – Present Executive Board Member, AOSpine Research Network (AOSRN).
2009 – Present Member, Orthopaedic Research Society (ORS).
2008 – Present Member, McGill Scoliosis and Spine Research Group.
2007 – Present Member, AOSpine.

HAMDY

Conference, Seminar Workshops
XXVI SICOT Triennial World Congress combined with 46th SBOT Annual Meeting 2014 Rio de Janeiro, Brazil, November 20-23 Invited Speaker.
COA Basic Science Course (Post-Graduate Course) 2014 Ottawa, October 27.
MCH Telehealth Distance Teaching & Learning Center, January 15 2014.
HARVEY

Editorial activity
Journals Editor in Chief - Canadian Journal of Surgery.
Editorial Board - Journal of Orthopaedic Trauma Reviewer.

Invitation
June 2014 Combined BOA - EFFORT meeting June 2014 “Orthopaedic Trauma Processes in Canada” Panel Member: Upper Extremity Trauma.
Chairman of COA-AOA combined meeting 2014.
Co- Chairman of McGill Medicine Class of ’89 Medical Seminar- 2014 “New Perspectives, Old Problems” Speaker - Avascular Necrosis of The Hip: Not your Father's Oldsmobile Anymore.

Refereed Presentation
MLTD Thrombosis Meeting Valencia Spain 2014: Poster presentation Treatment with acetylsalicylic acid (aspirin) prevents short to mid-term radiographic progression of non-traumatic osteonecrosis of the femoral head, B. Routy, A. Albers, A. Carli, E.J. Harvey, C. Séguin.
5th International Conference on Osteoimmunology Kos, Greece June 2014 Poster Presentation Identification of a novel mutation in heritable osteonecrosis of the femoral head, T Wang, W Mah, EJ Harvey, J Majewski, DS Rosenblatt, C Séguin.
Canadian Pharmaceutical and Controlled Release Society combined meeting, Montreal, QC, June 2014 69 Poster Presentation “Local Delivery of Iron Cheltators on Osteoclast Mediated Bone Resorption” Drager J, Sheikh Z, Harvey EJ, Barralet J.

Community Service
1997 - present Consultant Physician Montreal Alouettes Professional Football Team.
2006- present Consultant Physician Toronto Maple Leafs Professional Hockey Team.
2009- present  Member of the NHL Physicians Group.
Coach of Novice A intercity, High school (Marcelline) and Midget AA hockey.

RUIS/Outreach
Launched Google glass project in Far North and Haiti.

Patent

HUK

Invitation
Ceramic-on-ceramic: Better than We Thought. 3rd Annual Canadian Arthroplasty Society Meeting.

Refereed Presentation
O Huk, A Aoude, LM Epure, Y Brin, K Smith, DJ Zukor, M Tanzer, J Antoniou. Ceramic-on-ceramic: Better than We Thought.
eCM XIV 2014, Davos, Switzerland. June 16-18, 2014
M Alaqeel, MP Grant, LM Epure, O Salem, OL Huk, J Antoniou, F Mwale. Link N suppresses Interleukin-1β induced human osteoarthritic cartilage degradation through down-regulation of NF-κB signalling.
M Alaqeel, MP Grant, LM Epure, O Salem, OL Huk, J Antoniou, F Mwale. Effect of Link N on the synthesis and degradation of matrix proteins in human articular osteoarthritic cartilage.
MP Grant, LM Epure, M Alaqeel, O Salem, OL Huk, J Antoniou, F Mwale. The calcium-sensing receptor in health and osteoarthritis.
SY Brin, LM Epure, AS Cartaleanu, OL Huk, DJ Zukor, J Antoniou. TKA and THA procedure duration affect the rate of wound complications and length of hospital stay.
MP Grant, LM Epure, M Alaqeel, O Salem, OL Huk, J Antoniou, F Mwale. The role of the extracellular Calcium-Sensing Receptor in osteoarthritis.

JANELLE

Personnel Development
Réunion conjointe de l’AOA et L’ACO et SROC. Conférence d’enseignement. Montréal, Qc 21 juin 2014.
JARZEM

Invitation
When to send patients for Kyphoplasty and Vertebroplasty, McGill Annual Refressher Course, Montreal, December 3, 2014.

Program / Meeting Chair
Meeting Chair, REGIONAL PERSPECTIVES ON NETWORKS OF CARE, Montreal Neurological Institute, Jan 10, 2014.

Refereed Research Presentation

LENCZNER

Professional Development
CDA Meeting Montreal 2014.

MARTINEAU

Community Service
Head Team Orthopaedic Surgeon, Montreal Canadiens.
Team Orthopaedic Surgeon, Montreal Alouettes.
Orthopaedic Consultant, McGill University Athletics.
Orthopaedic Consultant, Concordia University Athletics.

Quality of Clinical Contribution

Refereed Research Presentation


**Editorial Activity**

2013-Present Editor The Journal of Bone and Joint.
2011- Present Reviewer Bone & Joint Research.
2009- Present Associate Editor Canadian Journal of Surgery.
2009- Present Reviewer Canadian Journal of Surgery.

**Invitation**

Canadian Orthopaedic Residents Association Meeting, Montreal, Quebec (2014), scientific session moderator.

**Scientific or Specialty Society Contribution**


**Personal Development**

NHL Hockey Specific Advanced Trauma Life Support Course taken.

**MORIN**

**Editorships and Member of Journal Editorial Board**


**Invited Presentations /Lectures**

“Vitamin D in 2014: Not so fast?” Plenary, 65th Annual Refresher Course for Family Physicians, McGill University, Montreal, Quebec Dec 2 2014.
“Osteoporosis Management”, Workshop, 65th Annual Refresher Course for Family Physicians, McGill University, Montreal, Quebec Dec 2 2014.
Keynote Speaker, “Improving PAIN control following FRactures; towards an Elder friendly Emergency department (PAINFREE)”, Combined Annual Research Day 2014: Health Outcomes Axis & McGill Division of Geriatric, Montreal, Quebec June 12, 2014.

“Calcium: bon pour les os, dangereux pour le coeur?” 45th Laurentian Conference of Rheumatology, Tremblant, Quebec May 10 2014.

“Drug Holiday”, Beyond the Break Inter-professional Education Series, Osteoporisis Canada and Women’s College Hospital, Toronto, Ontario (via Telemedicine) May 9 2014.

“Women's Health-Beyond Bisphosphonates”, 45th Annual Drug Therapy Course (CME), McGill Center for Continuing Medical Education, Montreal, Quebec May 8 2014.

**MORT**

*Editorial activity*
Editorial board member BBA Clinical 2014 -Present.

*Book Chapters and Invited Manuscripts*


**MWALE**

*Organised Conferences/Symposia*

*Scientific Peer-Review Processes*
Canadian Institute of Health Research, Biomedical Engineering peer review committee (May and December session).

*Editorial Board*
2010-present Invited editor International Journal of Biomaterials.
2007-present The Open Orthopaedics Journal.
2007-present The Open Biomedical Engineering Journal.

*Community-relations activity*
61 Annual Meeting of the Orthopaedic Research Society. Las Vegas, NV. Abstract reviewer
Invitation
National Institute of Musculoskeletal and skin diseases (NIAMS) round table “The greatest scientific challenges related to understanding pathological changes leading to disc degeneration”. Washington. October 27. 2014.
LINK N as a therapeutic agent to treat early intervertebral disc degeneration – ISAET and PSRC
The LINK between intervertebral disc degeneration and regeneration - World Forum for Spine Research Xi’an, China. May 15-17, 2014.

Patent
PCT/CA2014/000656: Methods and Compositions for Treatment of Cartilage and Disc Tissue Pathologies.

OUELLET

Invitation and Presentation
SPORC Ste-Justine Paediatric Orthopaedic Review Courses in Association with The Shriners Hospital for Children and The Montreal Children's Hospital. Since 2002 to 2015 Guest Speaker: Idiopathic Scoliosis: How Efficient is Conservative Treatment?
Centre Mont-Royal / Montreal Children's Hospital – McGill Faculty of Medicine Course Title: Annual Specialty Day: It doesn't have to be so complicated: Demystifying the child with complex medical needs. Practical Problems in Pediatrics (1 hour course for staff, residents and nurses) - Course Topic: Back to Basics: Back Problem in Children.

Editorial Board
2009 - Present Evidence Base Spine Journal.
2009 - Present Global Spine Journal.

Book Chapter

RAUCH

Editorial activity

REINDL

Refereed Presentation

Editorial Activity
European Spine Journal.

Invitation
AO Course Davos Switzerland.

Local, national, international research collaborations
Canadian Orthopaedic Trauma Society AO Trauma.

ROUGHLEY

Editorial Activity
Editorial Board member for the following Journals: eCM Journal Osteoarthritis & Cartilage Biochemical Journal.

Presentation
Intervertebral disc degeneration – Why does it occur and can it be reversed? - Physiatry Rounds, Hopital Notre Dame, Montreal.
Invitation
The life of aggrecan - ECM XV Meeting on Cartilage & Disc: Repair and Regeneration, Davos, Switzerland.

SARAN

Book Chapter

Presentation

SEGUIN

Invited Presentation

ST-ARNAUD

Editorial Activity
Managing Editor, GENE; Editorial Board Member, BONE.

Invitation
Invited speaker: 8th Clare Valley Bone meeting, Adelaide, Australia.

Professional Development
Manager’s retreat (2), Shriners Hospitals for Children – Canada: Recognition in the workplace; Transition.

TALBOT

Personal Development
2014- Present MBA student, John Molson School of Business.

Book Chapter
TANZER

Invitations – Lectures & Presentations

“Surgical Etiquette”, Montreal Neurologic Hospital, Montreal, Canada, March 21, 2014.


- “Advancement in Bearing Surface Technology for TKA”
- “The Revision Continuum: Techniques and Options”


- “Persona Advanced Bearing Surface”

MUHC Radiology Technicians In-Service Lecture – “ Templating in THA & TKA”, Montreal, Canada, November 6, 2014.

Refereed Research Presentation

Poster Presentation: Orthopaedic Research Society Sixtieth Annual Meeting, New Orleans, LA, USA. March 2014. Pura, JA; Bobyn, JD; Lim, L; Bobyn, KM; Tanzer, M: Implant-Delivered Alendronic Acid Increases Bone Formation Around Porous Titanium Implants.


Journal Editorial Boards

Elite Reviewer Journal of Arthroplasty 2012 - Present
Journal of Arthroplasty 2002- Present

Scientific or Specialty Society Contribution

J Arthroplasty Editorial Board.
Hip Society Membership Committee.
American Academy of Orthopaedic Surgery Instructional Course Lecture Committee.

Patent

-Title: BONE REPLACEMENT IMPLANTS WITH MECHANICALLY BIOCOMPATIBLE CELLULAR MATERIAL: PASINI, Damiano, KHANOKI, Sajad Arabnejad, TANZER, Michael.

United States Provisional Patent ApplicationTitle: BIOCOMPATIBLE, BIODEGRADABLE AND TOUGHENED MULTILAYERED BONE GRAFT SUBSTITUTE MADE FROM CALCIUM PHOSPHATE, GELATIN, AND
TURCOTTE

Editorial Activity
Editorial Board: World Journal of Orthopaedics (WJO)
Current Oncology – Section Editor.

Invitation
2014/02 MUHC Dept of Radio Oncology What’s new in bone metastases April 2014 Musculoskeletal oncology to University of Sherbrooke orthopaedic residents.
2014/04 MGH OR nurses weekly rounds Reconstruction following bone tumor resection
Quebec Orthopaedic Association annual meeting, Gatineau, Qc, Oct 3rd 2014 Tumor implants for non-tumorous condition.
Department of Orthopaedic Surgery, Sherbrooke University, April 16th 2014 Benign bone tumors
3rd Canadian Orthopaedic Resident Review in Joint Reconstruction Course (CORR-RECON), Mississauga, Ontario (January 16th to 18th, 2014) Metastatic bone disease Mock Orals.
Moderator or discusser June 2014 Moderator, Tumor papers session COA-AOA Combined meeting, Montreal, Quebec, Canada.

Community Service
Montreal specialized medicine chair table.
Musculoskeletal services organization committee 2013- Present.
Clinical sub-committee in Orthopaedic surgery APSS-CUSM/CRDS-Wes.

Professional development
2014 Leadership Development Program McGill Faculty of Medicine, Feb 24-27th 2014.
2014 Fujitsu Lean.

WEWEB

Professional Development
Attended NASS Nov (San Francisco CA; November 2014).

Presentations
Fahad Abduljabbar, MBBS ; Jacob Mathew, MBBS ; Asim M. Makdom, MD, MSc; Mona T. Rajeh DMD, Msc; Weber MH , MD, PhD, FRCSC , Jean Ouellet, MD, FRCSC; Peter Jarzem, MD, FRCSC: The Predictors of
Clinical Outcomes After Lumbar Interbody Fusion with A Porous Nitinol Implant. COA, Montreal, June, 2014.

**ZUKOR**

**Invitation**
Procedure duration of total knee arthroplasty and total hip arthroplasty affects the rate of wound complications and length of hospital stay. 3rd annual Canadian Arthroplasty Society Meeting, Toronto, ON November 27-28-2014.

**Refereed presentation**
3rd annual Canadian Arthroplasty Society Meeting, Toronto, ON November 27-28-2014.
O Huk, A Aoude, LM Epure, Y Brin, K Smith, DJ Zukor, M Tanzer, J Antoniou. Ceramic-on-ceramic: Better than We Thought.
SY Brin, LM Epure, AS Cartaleanu, OL Huk, DJ Zukor, J Antoniou. TKA and THA procedure duration affect the rate of wound complications and length of hospital stay.