



McGILL UNIVERSITY

DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY

2012 ANNUAL REPORT

Submitted by

J. Madrenas, MD, PhD, FCAHS
Canada Research Chair in Human Immunology
Professor and Chairman

On behalf of the

Primary members of the
Department of Microbiology and Immunology

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SECTION I
Introduction

I

Executive Summary

2012 witnessed a continuous growth and renewal of the department of Microbiology and Immunology at McGill. We had our first “State of the Union” retreat in which departmental operations in research, teaching and service were reviewed, resulting in a plan for operational optimization.

During this year, the department started a recruitment drive for 3 new, tenure-track faculty positions. Upon a global search for “the best and the brightest”, we were able to recruit Drs. Irah King, a cellular immunologist from the Trudeau Institute, and Dr. Selena Sagan, a virologist from Stanford University (and former graduate of our department!). Dr. King arrived in August 1, 2012 and Dr. Sagan is starting on August 1, 2013. The third position is under the last stages of negotiation. These recruits have brought to the department a new wave of academic excitement and momentum. We work and appreciate also associate and affiliate members supporting and bringing expertise to the department.

In 2012, our investigators captured over \$19 million in peer reviewed funding from the most stringent funding agencies (CIHR, NIH, NSERC, CFI, etc.). Of note, our success rate in the September '12 reference standard CIHR competition was 87% compared to a National rate of 17%. New infrastructure was brought into the department and McGill, including a state-of-the-art flow cytometry and cell sorting facility. Our research efforts translated into discoveries documented in over 110 publications in international peer-reviewed journals with high profile in the scientific and medical communities. This productivity would not have been possible without funding but, above all, without the continuous unwavering commitment of our faculty members to academic excellence and our bright and energetic trainees. As part of this commitment, we started to align components of our research programs to establish McGill’s Microbiome and Disease Tolerance Centre (MDTC), the first centre of its kind, which received Board of Governors approval on May 2013.

Associated with this excellent performance, 2012 also saw our members receiving many awards, an impressive list that includes Killam award, Queen’s Jubilee Medal, CIHR/CMAJ Health Research Achievement Award, five Canada Research Chairs (3 Tier I and 2 Tier II), CIHR New Investigatorships, McGill Professorship and Dawson Professorship, FRQ-S bourses, and honorary degrees. In all, our members excel at the National and International levels, enhancing the profile of the Faculty of Medicine and McGill University.

In terms of teaching, our programs are educational references across the world. With a population of over 250 undergraduate students and 70 graduate students, our department strives to provide the best learning experience. We graduated 8 PhD students and 14 MSc students during 2012, and they will enhance the reputation of our department with their achievements. To ensure this top tier status, we have embarked in an ambitious program of redevelopment of our undergraduate and graduate programs, with the recruitment of a Teaching Specialist (Dr. Claire Trottier).

We are committed to community outreach and public education. The department projects its energy and activities to the public, participating in McGill activities (Homecoming, Open Houses) and to the regional community and beyond. Our members are present in review panels and committees of federal and provincial institutions, and advise public agencies on issues related to public health and policy.

Altogether, it is a true privilege and honor for me to submit the 2012 report documenting the excellence of the members of the Department of Microbiology and Immunology at McGill University.

a. Faculty Listing

1. List of Faculty members with primary appointments in the Department

Professors

Dr. Joaquin Madrenas (Chairman, 2011-present)

Dr. Albert Berghuis	Dr. Robert Murgita
Dr. James Coulton	Dr. Martin Olivier
Dr. Matthias Götte	Dr. Silvia Vidal
Dr. Greg Matlashewski	Dr. Mark Wainberg

Associate Professors

Dr. Dalius Briedis	Dr. Greg Marczyński
Dr. Benoit Cousineau	Dr. Ciriaco Piccirillo
Dr. Sylvie Fournier	Dr. Donald Sheppard
Dr. Herve Le Moual	Dr. Samantha Gruenheid

Assistant Professors

Dr. Jörg Fritz
Dr. Connie Krawczyk
Dr. Irah King

2. List of Faculty with secondary appointments

Adjunct Professors

Dr. Jacques Archambault	(Institut de Recherches Cliniques de Montréal, IRCM)
Dr. Albert Descoteaux	(Institut Armand Frappier, Université du Québec, INRS)
Dr. Andres Finzi	(Centre de Recherche du CHUM, Université de Montréal)
Dr. Allan Matte	(Macromolecular Structure Group, Biotechnology Research Institute, National Research Council of Canada)
Dr. Suh Woon-Kyung	(Institut de Recherches Cliniques de Montréal, IRCM)

Affiliated Members

Dr. Maziar Divangahi (Meakins-Christie Laboratories, McGill University)

Associate Members

Dr. Jack Antel	(Department of Neurology, Montreal Neurological Institute)
Dr. Amit Bar-Or	(Department of Neurology, Montreal Neurological Institute)

Associate Members (cont'd)

Dr. Marcel Behr	(Division of Infectious Diseases and Medical Microbiology, Montreal General Hospital)
Dr. Miguel Burnier	(Chair, Department of Ophthalmology, McGill University)
Dr. Nicolas Cermakian	(Department of Psychiatry, McGill University)
Dr. Ines Colmegna	(Department of Medicine, Royal Victoria Hospital)
Dr. Andre Dascal	(Senior Physician, Jewish General Hospital)
Dr. Anne Gatignol	(Lady Davis Institute for Medical Research)
Dr. Philippe Gros	(Rosalind and Morris Goodman Cancer Research Centre)
Dr. Sabah Hussain	(Critical Care Division, Royal Victoria Hospital)
Dr. Armando Jardim	(Institute of Parasitology, MacDonald Campus)
Dr. Antonis Koromilas	(Department of Oncology, Lady Davis Institute for Medical Research)
Dr. Arnold Kristof	(Critical Care Division, Royal Victoria Hospital)
Dr. Richard Lalonde	(McGill AIDS Centre)
Dr. Chen Liang	(Lady Davis Institute for Medical Research)
Dr. Rongtuan Lin	(Lady Davis Institute for Medical Research)
Dr. Vivian Loo	(Department of Medicine, Division of Infectious Diseases, Montreal General Hospital)
Dr. Andrew Moulard	(HIV-1 RNA Trafficking Laboratory, Lady Davis Institute for Medical Research)
Dr. Momar Ndao	(Department of Medicine, Division of Infectious Disease)
Dr. Marianna Newkirk	(Division of Rheumatology, Montreal General Hospital)
Dr. Dao Nguyen	(Department of Medicine, Montreal General Hospital Research Institute)
Dr. Kostas Pantopoulos	(Lady Davis Institute, Jewish General Hospital)

Associate Members (cont'd)

Dr. Joyce Rauch	(Department of Rheumatology, Montreal General Hospital)
Dr. Michael Reed	(Medicine, Infectious Diseases, Montreal General Hospital)
Dr. Petra Rohrbach	(Institute of Parasitology, MacDonald Campus)
Dr. Maya Saleh	(Department of Medicine, McGill Life Science Complex)
Dr. Jose Teodoro	(Rosalind and Morris Goodman Cancer Research Centre)
Dr. Michel Tremblay	(Rosalind and Morris Goodman Cancer Research Centre)
Dr. Christos Tsoukas	(Immune Deficiency Treatment Centre – IDTC, Montreal General Hospital)
Dr. Bernard Turcotte	(Hormones & Cancer Research Unit, Department of Medicine)
Dr. Brian Ward	(Montreal General Hospital)
Dr. Ji Zhang	(Biomedical Sciences, Faculty of Dentistry)

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SECTION II
Research

II Research

I. Patents

Berghuis, Albert

“Thienopyrimidine Inhibitors of farnesyl and/or geranylgeranyl pyrophosphate synthase”; Y. S. Tsantrizos, A. M. Berghuis, J.W. De Schutter, C.-Y. Leung, J. Park, M. Sebag - US provisional patent application; filing date: November 20, 2012; Serial number 61/728,489

Olivier, Martin

" Controlled release formulation based on hematin anhydride crystals for the induction of an innate immune reaction" **Martin Olivier** and Marie-Josée Bellemare. (Pending Patent in Canada, USA and International. Priority: US provisional patent application US 61/327,255; Bundling IP US 12/305672. Claiming a priority date February 12th, 2010.

Piccirillo, Ciriaco

In progress- novel biomarkers of functional and dysfunctional regulatory T cells (mouse)

In progress- novel biomarkers of functional and dysfunctional regulatory T cells (human)

Sheppard, Donald

US 61/607,868 – Patent title - Detection of arsenic ions with fungal biosensor. Status: Provisional

II. Awards

Berghuis, Albert

Tier I Canada Research Chair in Structural Biology

Cousineau, Benoit

William Dawson Scholar Award (06/2008 to 06/2013)

Chercheur-Boursier Senior FRSQ (07/2009 to 07/2012)

Fritz, Jorg

Source: Canadian Institutes of Health Research. New Investigator Award (A), Salary Support.

Gotte, Matthias

Career award (Chercheur-boursier Senior) - Fonds de la recherche en santé (FRSQ).

Gruenheid, Samantha

Tier II Canada Research Chair: **Renewal** 2010-2015

Madrenas, Joaquin

Tier I Canada Research Chair in Human Immunology (2012-2019)

Piccirillo, Ciriaco

Tier II Canada Research Chair

Research Excellence Fellowship MUHC- MGH Foundation (2012-2013)

Phil Gold Award for Research Excellence (2012-2013)

Sheppard, Donald

FRSQ Chercheur-Boursier Senior 7/1/2012-7/1/2016

Vidal, Silvia

Tier I Canada Research Chair in Host Response to Viruses. 2011-2018

Wainberg, Mark

2012, Killam Prize for Health Sciences, Canada Council for the Arts and the Killam Trust

2012, Honorary Doctorate in Science (D.Sc) (Honoris causa), Faculté de Médecine, l'Université Laval, Québec, Qc.

2012, James McGill Professor, Faculty of Medicine, McGill University

2012, Queen's Diamond Jubilee Medal, Governor-General of Canada

2012, CIHR and CMAJ Top Achievements in Health Research Award, CIHR and CMAJ

III. Publications

Berghuis, Albert

- Caldwell, S. & Berghuis, A.M. (2012) Small-angle X-ray scattering analysis of the bifunctional antibiotic resistance enzyme aminoglycoside (6') acetyltransferase-Ie / aminoglycoside (2'') phosphotransferase-Ia reveals a rigid solution structure. *Antimicrob. Agents Chemother.* 56, 1899-1906.
- Shi, K. & Berghuis, A.M. (2012) Structural basis for the dual nucleotide selectivity of aminoglycoside 2''-phosphotransferase IVa provides insight on determinants of nucleotide specificity of aminoglycoside kinases. *J. Biol. Chem.* 287, 13094-13102. (Paper of the week)
- Lin, Y.-S., Park, J., De Schutter, J.W., Huang, X.F., Berghuis, A.M., Sebag, M. & Tsantrizos, Y.S. (2012) Design and synthesis of active site inhibitors of the human farnesyl pyrophosphate synthase - Apoptosis and inhibition of ERK phosphorylation in multiple myeloma cells. *J. Med. Chem.* 55, 3201-3215.
- Yachnin, B.J., Sprules, T., McEvoy, M.B., Lau, P.C.K. & Berghuis, A.M. (2012) The substrate-bound crystal structure of a Baeyer-Villiger monooxygenase exhibits a Criegee-like conformation. *J. Am. Chem. Soc.* **134**, 7788-7795.
- Park, J., Lin, Y.S., De Schutter, J.W., Tsantrizos, Y.S. & Berghuis, A.M. (2012) Ternary complex structures of human farnesyl pyrophosphate synthase bound with a novel inhibitor and secondary ligands provide insights into the molecular details of the enzyme's active site closure. *BMC Struct. Biol.* **12**: 32. doi:10.1186/1472-6807-12-32

Entries into the Protein Data Bank (www.wwpdb.org)

- 3UCL - Cyclohexanone-bound crystal structure of cyclohexanone monooxygenase in the Rotated conformation; Yachnin, B.J. & Berghuis, A.M.
- 4DEM - Crystal structure of human FPPS in complex with YS_04_70; Park, J., Lin, Y.-S., Tsantrizos, Y.S. & Berghuis, A.M.
- 4DT8 - Crystal Structure of Aminoglycoside-2''-Phosphotransferase Type IVa in Complex with Adenosine; Shi, K. & Berghuis, A.M.
- 4DT9 - Crystal Structure of Aminoglycoside-2''-Phosphotransferase Type IVa in Complex with Guanosine; Shi, K. & Berghuis, A.M.
- 4DTA - Crystal Structure of F95M Aminoglycoside-2''-Phosphotransferase Type IVa in Complex with Adenosine; Shi, K. & Berghuis, A.M.
- 4DTB - Crystal Structure of F95Y Aminoglycoside-2''-Phosphotransferase Type IVa in Complex with Guanosine; Shi, K. & Berghuis, A.M.
- 4H5C - Crystal structure of human FPPS in ternary complex with YS0470 and inorganic phosphate; Park, J., Lin, Y.-S, Tsantrizos, Y.S. & Berghuis, A.M.
- 4H5D - Crystal structure of human FPPS in ternary complex with YS0470 and inorganic pyrophosphate; Park, J., Lin, Y.-S, Tsantrizos, Y.S. & Berghuis, A.M.
- 4H5E - Crystal structure of human FPPS in ternary complex with YS0470 and isopentenyl pyrophosphate; Park, J., Lin, Y.-S, Tsantrizos, Y.S. & Berghuis, A.M.

Coulton, James

- Mah W, Deme JC, Watkins D, Fung S, Janer A, Shoubridge EA, Rosenblatt DS, Coulton JW. Subcellular location of MMACHC and MMADHC, two human proteins central to intracellular vitamin B(12) metabolism. *Molecular Genetics and Metabolism* 2012 Dec 7 [Epub ahead of print]; PMID: 23270877
- Deme JC, Miousse IR, Plesa M, Kim JC, Hancock MA, Mah W, Rosenblatt DS, Coulton JW. Structural features of recombinant MMADHC isoforms and their interactions with MMACHC, proteins of mammalian vitamin B12 metabolism. *Molecular Genetics and Metabolism* 2012 107(3):352-362. PMID:22832074
- Chung JW, Küster-Schöck E, Gibbs BF, Jacques M, Coulton JW. Immunoproteomic analyses of outer membrane antigens of *Actinobacillus pleuropneumoniae* grown under iron-restricted conditions. *Veterinary Microbiology* 2012 159(1-2):187-194. PMID:22541161
- Villamil Giraldo AM, Sivanesan D, Carle A, Paschos A, Smith MA, Plesa M, Coulton J, Baron C. Type IV secretion system core component VirB8 from *Brucella* binds to the globular domain of VirB5 and to a periplasmic domain of VirB6. *Biochemistry* 2012 51(18):3881-3890. PMID:22515661

Cousineau, Benoit

- Isolation and characterization of functional tripartite group II introns using a Tn5-based genetic screen. Ritlop C, Monat C, Cousineau B. *PLoS One*. 2012;7(8):e41589. doi: 10.1371/journal.pone.0041589. Epub 2012 Aug 2.
- Oral immunization using live *Lactococcus lactis* co-expressing LACK and IL-12 protects BALB/c mice against *Leishmania major* infection. Hugentobler F, Di Roberto RB, Gillard J, Cousineau B. *Vaccine*. 2012 Aug 24;30(39):5726-32. doi: 10.1016/j.vaccine.2012.07.004. Epub 2012 Jul 17.
- Immunization against *Leishmania major* infection using LACK- and IL-12-expressing *Lactococcus lactis* induces delay in footpad swelling. Hugentobler F, Yam KK, Gillard J, Mahbuba R, Olivier M, Cousineau B. *PLoS One*. 2012;7(2):e30945. doi: 10.1371/journal.pone.0030945. Epub 2012 Feb 10

Fritz, Jörg

- Abdullah Z., Schlee M., Roth S., Mraheil M.A., Barchet W., Böttcher J., Hain T., Geiger S., Hayakawa Y., **Fritz J.H.**, Civril F., Hopfner K.P., Kurts C., Ruland J., Hartmann G., Chakraborty T. and Knolle P.A. *RIG-I detects infection with live Listeria by sensing secreted bacterial nucleic acids*. *EMBO* (2012) Nov 5;31(21):4153-64
- Slack E., Balmer M.L., **Fritz J.H.**, Hapfelmeier S. *Functional flexibility of intestinal IgA – broadening the fine line*. *Frontiers in Mucosal Immunity* 3:100 (2012)

- Herdy B., Jaramillo M., Svitkin Y.V., Rosenfeld A.B., Kobayashi M., Walsh D., Alain T., Robichaud N., Topisirovic I., Furic L., Dowling R.O.J., Sylvestre A., Rong L., Colina R., Costa-Mattioli M., **Fritz J.H.**, Olivier M., Brown E., Mohr I. and Sonenberg N. *Translational Control of NF- κ B activation and type-I interferon production by eIF4E phosphorylation*. Nat. Immunol. 13(6):543-50 (2012)
- Zhang J., Chen Z., **Fritz J.H.**, Rochman Y., Leonard W.J., Gommerman J.L., Plumb A., Abraham N., Croy A.B. *Unusual Timing of CD127 Expression by Mouse Uterine Natural Killer Cells*. Journal of Leukocyte Biology 91(1), 317-29 (2012)
- **Fritz J.H.**, Rojas O.L., Simard N., McCarthy D.D, Hapfelmeier S., Rubino S., Robertson S.J., Larijani M., Ivanov I.I., Martin A., Casselas R., Philpott D.J., Girardin S.E., McCoy K.D., Macpherson A.J., Paige C.J., Gommerman J.L. *Acquisition of a multifunctional TNF/iNOS-producing IgA⁺ plasma cell phenotype in the gut*. Nature 481(7380): 199-203 (2012)

Götte, Matthias

- Scherrer AU, von Wyl V, Götte M, Klimkait T, Celleraï C, Yerly S, Böni J, Held L, Ledergerber B, Günthard HF. Polymorphic mutations associated with the emergence of the multi-nucleoside/tide resistance mutations 69 insertion and Q151M. J Acquir Immune Defic Syndr. 2012 Feb 1;59(2):105-12.
- Götte M*. The distinct contributions of fitness and genetic barrier to the development of antiviral drug resistance. Curr Opin Virol. 2012 Oct;2(5):644-50. (Review)
- Chatel-Chaix L, Germain MA, Götte M, Lamarre D Direct-acting and host-targeting HCV inhibitors: current and future directions. Curr Opin Virol. 2012 Oct;2(5):588-98. (Review)
- Bennett N, Götte M*. Utility of the Bacteriophage RB69 Polymerase gp43 as a Surrogate Enzyme for Herpesvirus Orthologs. Viruses, in press (Review)
- Marko R, Liu HW*, Ablenas CJ, Ehteshami M, Götte M*, Cosa G*. Binding Kinetics and Affinities of Heterodimeric versus Homodimeric HIV-1 Reverse Transcriptase on DNA-DNA Substrates at the Single-Molecule Level. J Phys Chem B, in press

Book Chapter

- Beilhartz GL, Scarth B, Götte M* Targeting Translocation of HIV-1 Reverse Transcription. In 'HIV Reverse Transcriptase: A Bench-to-Bedside Success'; Eds LeGrice (NCI Frederick, USA) and Götte (McGill University, Montreal, Canada), Springer, in production.

Book

- 'HIV Reverse Transcriptase: A Bench-to-Bedside Success'; Eds LeGrice (NCI Frederick, USA) and Götte (McGill University, Montreal, Canada), Springer, in production.

Other Publications

In 'Annals of the Forum for Collaborative HIV Research'. HCV Phenotype Working Group, HCV Drug Development Advisory Group . Ann Forum Collab HIV Res. Volume 14 (2): 2012; 1-10. Forum for Collaborative HIV Research, University of California Berkeley. School of Public Health.

Gruenheid, Samantha

- Thomassin J, Brannon J, Kaiser J, **Gruenheid S***, LeMoual H*. *Enterohemorrhagic and enteropathogenic Escherichia coli evolved different strategies to resist antimicrobial peptides.* (2012) *Gut Microbes* **3**(6), 556-61 *co-corresponding authors
- Thanabalasuriar A, Gillingham A, Bergeron J, Mimee M, Thomassin J, Strynadka N, Kim J, and **Gruenheid S.** *Sec24 interaction is essential for localization and virulence-associated function of the bacterial effector protein NleA.* (2012) *Cellular Microbiology* **14**(8), 1206-18. (*McGill MedStar award*)
- **Gruenheid S** and LeMoual H *Resistance to Antimicrobial Peptides in Gram-negative Bacteria.* (2012) *FEMS Microbial letters.* **330**, 81-9.
- Bongfen S, Rodrigue-Gervais I, Berghout J, Torre S, Sladek R, Blanchette M, Behr M, **Gruenheid S**, Vidal S, Saleh M, Gros P. *An N-ethyl-n-nitrosourea (ENU)-induced mutation in JAK3 protects against cerebral malaria but causes susceptibility to mycobacteria.* (2012) *PLoS ONE.* **7**(2):e31012.
- Thomassin J, Brannon J, Gibbs B, **Gruenheid S***, LeMoual H*. *OmpT Outer Membrane Proteases of Enterohemorrhagic and Enteropathogenic Escherichia coli Contribute Differently to the Degradation of Human LL-37.* (2012) *Infection and Immunity.* **80**, 483-92. *co-corresponding authors (*Featured in Faculty of 1000.*)

Krawczyk, Connie

- LKB1 and AMPK: central regulators of lymphocyte metabolism and function. Blagih J, Krawczyk CM, Jones RG. *Immunol Rev.* 2012 Sep;249(1):59-71

Herve, Le Moual

- Thomassin, J., Brannon J., Gibbs, B.F., Gruenheid, S. and, Le Moual, H. (2012) OmpT outer membrane proteases of Enterohemorrhagic and Enteropathogenic *Escherichia coli* contribute differently to the degradation of human LL-37. *Infection and Immunity* **80**(2), 483-492. [*Impact factor 4.09*].
- Gruenheid, S. and, Le Moual, H. (2012) Resistance to antimicrobial peptides in Gram-negative bacteria. *FEMS Microbiology Letters* **330**(2), 81-89. [*Impact factor 2.04*].
- Thomassin, J., Brannon J., Gruenheid, S. and, Le Moual, H. (2012) OmpT outer membrane proteases of Enterohemorrhagic and Enteropathogenic *Escherichia coli* contribute differently to the degradation of human LL-37. *Gut Microbes* **3**(6), 556-561.

Madrenas, Joaquin

- Lemmon HR, Sham J, Chau LA, Madrenas J. High Molecular Weight Polysaccharides are Key Immunomodulators in North American Ginseng Extracts: Characterization of the Ginseng Genetic Signature in Primary Human Immune Cells. *J Ethnopharmacol* 2012; 142: 1.
- Christie DA, Kirchoff MG, Vardhana S, Dustin ML, Madrenas J. Mitochondrial and Plasma Membrane Pools of Stomatin-Like Protein 2 Coalesce at the Immunological Synapse during T Cell Activation. *PLoS One* 2012; 7(5): e37144. doi:10.1371/journal.pone.0037144.

- Christie DA, Mitsopoulos P, Blagih, Dunn SD, St-Pierre J, Jones RG, Hatch GM, Madrenas J. SLP-2 deficiency in T cells is associated with impaired mitochondrial respiration and defective CD4⁺ T cell responses. *J Immunol* 2012; 189: 4349.
- El-Far M, Isabelle C, Chomont N, Bourbonnière M, Fonseca S, Ancuta P, Said EA, Peretz Y, Chouikh Y, Eichbaum Q, van Grevenynghe J, Halwani R, Schwartz O, Madrenas J, Freeman GJ, Boulassel MR, Routy JP, Haddad EK, Sékaly RP. HIV-1 Nef enhances T cell activation and viral replication by facilitating CTLA-4 accelerated degradation. *PLoS One* 2012; in press.
- Peres AG, Madrenas J. The broad landscape of immune interactions with *Staphylococcus aureus*: From commensalism to lethal infections. *Burns*; 2012: in press.

Matlashewski, Greg

- McCall L, Zhang W, Ranasinghe S, and Matlashewski G. Leishmanization revisited: Immunization with a naturally attenuated cutaneous *Leishmania donovani* isolate from Sri Lanka protects against visceral leishmaniasis. Vaccine in press, 2012
- Zhang, WW, and Matlashewski, G. Deletion of an ATP-binding cassette protein subfamily C transporter in *Leishmania donovani* results in increased virulence. *Mol. Biochem. Parasit.* 185: 165-169, 2012
- Ranasinghe S, Zhang WW, Wickremasinghe R, Abeygunasekera V, Chandrasekharan V, Athauda S, Mendis S, Hulangamuwa S, Matlashewski G, and Pratlong F. *Leishmania donovani* zymodeme MON-37 isolated from an autochthonous visceral leishmaniasis patient in Sri Lanka. *Path Glob Health.* 106: 412-424, 2012. **Note:** GM and RP and co-senior authors
- McCall L, and Matlashewski, G. Involvement of the *Leishmania donovani* virulence factor A2 in protection against heat and oxidative stress. *Exp. Parasit.* 132: 109-115, 2012
- Raman, V., Duthie, M., Fox, C., Matlashewski, G., and Reed, S. Adjuvants for *Leishmania* Vaccines: From Models to Clinical Application. *Frontiers in Immunol.* 3(144): 1-15, 2012.
- McCall L, Zhang W, and Matlashewski G. Determinants for the development of visceral leishmaniasis disease. (peer reviewed Review Article) *PLoS Path.* 9:e1003053, 2013
- Zhang WW, McCall L, and Matlashewski G. The role of cytosolic glyceraldehyde-3-phosphate dehydrogenase in visceral organ infection by *Leishmania donovani*. *Euk. Cell* 12: 70-77, 2013
- Tsukayama P, Nunez J, Santos M, Sobero V, Lucas C, Matlashewski G, Llano-Cuentas A, Ore M, Baldevianol C, Edgel K, Lescano A, Graf P, and Bacon D. A FRET-Based Real-Time PCR Assay to Identify the Main Causal Agents of New World Tegumentary Leishmaniasis. *PLoS Negl. Trop. Dis.* 7: e1956, 2013.
- Matlashewski G, Das VN, Pandey R, Das P. One more death from visceral leishmaniasis goes unnoticed; What can be done? (peer reviewed viewpoint) *PLoS Negl Trop Dis.* in press

- Ranasinghe S, Wickremasinghe R, Munasinghe A, Hulangamuwa S, Seneviratne K, Bandara S, Athauda I, Navaratne C, Silva O, Wackwella H, Matlashewski G, Wickremasinghe R. A cross sectional study to assess risk factors for leishmaniasis in an endemic region of Sri Lanka. *Am J Trop Hyg* under revision. **Note** GM and WR are co-senior authors

Oliver, Martin

- F. Raymond, S. Boisvert, G. Roy, J.-F. Ritt, D. Légaré, A. Isnard, M. Stanke, M. Olivier, M.J. Tremblay, B. Papadopoulou, M. Ouellette, J. Corbeil. Genome analysis of the lizard parasite *Leishmania tarentolae* reveals expansion of insect-specific and loss of genes preferentially expressed in the intracellular stage of human pathogenic *Leishmania* species. *Nucleic Acid Research* 40:1131-1147 (2012).
- M.T. Shio, K. Hassani, A. Isnard, B. Ralph, I. Contreras, M.A. Gomez, I. Abu-Dayyeh and M. Olivier. Host cell signalling and *Leishmania* mechanisms of evasion. *Journal of Tropical Medicine* 2012:819512 (2012).
- F. Hugentobler, K.K. Yam, R. Mahbuda, M. Olivier and B. Cousineau. Immunization against *Leishmania major* infection using LACK- and IL-12-expressing *Lactococcus lactis* induces delay in footpad swelling. *PLoS ONE* Epub 2012 Feb 10 7(2):e30945 (2012).
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- E. Yurchenko, M.T. Shio, T.C. Huang, M. Szyf, **M. Levings**, M. Olivier and C.A. Piccirillo. Inflammation-driven reprogramming of CD4⁺Foxp3⁺ regulatory T cells into pathogenic Th1/Th17 effectors is abrogated by mTOR inhibition *in vivo*. *PLoS ONE* 7(4): e35572. doi:10.1371/journal.pone.0035572 (2012).
- Isnard, M.T. Shio and M. Olivier. Impact of *Leishmania* metalloprotease GP63 on Macrophage Signalling. *Frontiers in Cellular and Infection Microbiology* 2: 72 doi: 10.3389/fcimb.2012.00072 (2012).
- M. Olivier, V.D. Atayde, A. Isnard, K. Hassani and M.T. Shio. The *Leishmania* Zinc-Metalloprotease GP63: A Critical Virulence Factor. *Microbes and Infection* Jun 6. [Epub ahead of print] (2012). C.P. Gomez, M.T. Shio, M. Olivier and A. Descoteaux. The protein tyrosine phosphatase SHP-1 regulates phagolysosome biogenesis. *Journal of Immunology* 189: 2203-2210 (2012).
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Piccirillo, Ciriaco

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- Asahchop EL, Wainberg MA, Oliveira M, Xu H, Brenner BG, Moisi D, Ibanescu IR, and Tremblay C. Distinct Resistance Patterns to Etravirine and Rilpivirine in Viruses Containing NNRTI Mutations at Baseline. *AIDS* (accepted for publication)
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IV. Presentations & Lectures

Berghuis, Albert

- Caldwell, S.J. & Berghuis, A.M. (2012) SAXS analysis of the bifunctional antibiotic resistance enzyme AAC(6')-Ie/APH(2'')-Ia. presented at the 11th Annual Chemical Biophysics Symposium, Toronto, Ontario.
- Yachnin, B.J., Lau, P.C.K. & Berghuis, A.M. (2012) Unveiling the substrate-bound structure of a Baeyer-Villiger monooxygenase. presented at the Canadian Light Source 15th Annual Users' Meeting, Saskatoon, Saskatchewan.
- Shi, K. & Berghuis, A.M. (2012) Structural analysis of the aminoglycoside modifying enzyme APH(2'')-IVa. presented at the Canadian Light Source 15th Annual Users' Meeting, Saskatoon, Saskatchewan. (Received the Louis T.J. Delbaere Poster Prize)
- Caldwell, S.J. & Berghuis, A.M. (2012) Structural studies of a widespread antibiotic resistance enzyme: low-resolution model suggests a role of electrostatics in antibiotic detoxification by AAC(6')-Ie/APH(2'')-Ia. presented at the Gordon Research Conference – Diffraction Methods in Structural Biology, Lewiston, Maine.
- Shi, K. & Berghuis, A.M. (2012) Structural Analysis of APH(2'')-IVa Provides Insight on Substrate Specificity and Rational Inhibitor Design Against Aminoglycoside Kinases. presented at the 2012 Annual Meeting of the American Crystallographic Association, Boston, Massachusetts.
- Yachnin, B.J., Lau, P.C.K. & Berghuis, A.M. (2012) Towards a structural description of Baeyer-Villiger monooxygenase substrate specificity. presented at the 2012 Annual Meeting of the American Crystallographic Association, Boston, Massachusetts.
- Rodionov, D., & Berghuis, A.M. (2012) Engineered legume lectins with altered quaternary structures. presented at the 2012 Annual Meeting of the American Crystallographic Association, Boston, Massachusetts.
- Park, J., Lin, Y.-S., Tsantrizos, Y.S. & Berghuis, A.M. (2012) Crystal structure of human farnesyl pyrophosphate synthase in complex with a novel bisphosphonate compound with anti-cancer activity. talk

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given at the 2012 Annual Meeting of the American Crystallographic Association, Boston, Massachusetts. (Refereed Presentation)

- Gobeil, S., Park, J., Clouthier, C.M., Doucet, N., Berghuis, A.M. & Pelletier, J.N. (2012) Structure-based recombination of beta-lactamases: functional, structural and dynamic investigation of artificially-evolved enzymes. presented at 26th Annual Symposium of the Protein-Society, San Diego, California. (Received a Protein Society Poster Award)
- Yachnin, B.J., McEvoy, M.B., Lau, P.C.K. & Berghuis, A.M. (2012) Towards a structural description of Baeyer-Villiger monooxygenase substrate specificity. talk given at the Annual GRASP Symposium, Montreal, Quebec. (Refereed Presentation)
- Gobeil, S., Park, J., Clouthier, C.M., Doucet, N., Berghuis, A.M. & Pelletier, J.N. (2012) Structure-based recombination of beta-lactamases: functional, structural and dynamic investigation of artificially-evolved enzymes. talk given at the Annual GRASP Symposium, Montreal, Quebec. (Refereed Presentation)
- Caldwell, S.J., Huang, Y., Berghuis, A.M. (2012) Crystallization of the bifunctional antibiotic resistance enzyme AAC(6')-Ie/APH(2'')-Ia. presented at the Annual GRASP Symposium, Montreal, Quebec.
- Rodionov, D., & Berghuis, A.M. (2012) Engineered legume lectins with altered quaternary structures. presented at the Annual GRASP Symposium, Montreal, Quebec.
- Park, J., Lin, Y.-S., Tsantrizos, Y.S. & Berghuis, A.M. (2012) Ternary complex structures of human farnesyl pyrophosphate synthase bound with a novel inhibitor and secondary ligands provide insights into the molecular details of the enzyme's active site closure. presented at the Annual GRASP Symposium, Montreal, Quebec.
- Antibiotic resistance in atomic details. Canadian Light Source 15th Annual Users' Meeting. Saskatoon, Saskatchewan, May, 2012.
- Structural biological studies of antibiotic resistance mechanisms. Department of Biochemistry, University of Saskatoon, Saskatoon, Saskatchewan. May, 2012.

Coulton, James

- Sverzhinsky A. Coulton JW. Cytoplasmic membrane protein complex from E. coli: ExbB-ExbD. Microbiology and Immunology Graduate Student Research Day, May 25, 2012
- Sverzhinsky A, Rouiller I, Coulton JW. Cytoplasmic membrane protein complex from E. coli: ExbB-ExbD. Groupe d'étude des protéines membranaires (GEPROM) Journée scientifique, June 1, 2012
- Coulton JW. Electron microscopy of membrane proteins. Presentation to the International Scientific Advisory Board, Facility for Electron Microscope Research (FEMR), McGill University, September 24, 2012
- Deme J, Miousse I, Plesa M, Kim J, Hancock M, Mah W, Rosenblatt D, Coulton JW. Structural features of recombinant MMADHC isoforms and their interactions with MMACHC, proteins of vitamin B12 metabolism. Groupe de recherche axé sur la structure des protéines (GRASP) Symposium, November 19, 2012

Jörg, Fritz

- Penn State University, Department of Veterinary and Biomedical Sciences, Bortree Lecture Series/Molecular Toxicology Seminar, PA, USA- B cells regulate innate resistance
- University of Montreal, Department of Pharmacologie, Montreal, QC, Canada. A novel role for B cells in regulating innate resistance
- INRS-Institut Armand Frappier, Montreal, QC, Canada. The IgA-positive plasma cell: linking innate and adaptive immunity in the intestine
- Montreal Children's Hospital Research Institute, Montreal, QC, Canada. B cells regulate innate resistance
- *Duerr C.U., Pothlichet J., Vidal S., **Fritz J.H.** Regulation and Function of innate lymphoid cells in lung infection. 25th Annual meeting of the Canadian Society for Immunology (CSI), St. John's, NL, 15-18th June 2012
- *Paradis M. and **Fritz J.H.** The regulation of antimicrobial B cell responses by Nod1-mediated peptidoglycan recognition. 25th Annual meeting of the Canadian Society for Immunology (CSI), St. John's, NL, 15-18th June 2012
- ***Fritz J.H.**, Rojas O.L., Ng D., Paradis M., Duerr C.U., Bouillane B., McCarthy D.D., Yu M.D., Summers DeLuca L.E., Ward L.A., Waldron J.B., Philpott D.J., Gommerman J.L. A TNF α /CCL20/CCR6 axis supplants homeostatic LT β R signaling during inflammation-induced B cell recruitment. 25th Annual meeting of the Canadian Society for Immunology (CSI), St. John's, NL, 15-18th June 2012
- *Duerr C.U., and **Fritz J.H.** Synergistic activity of Nod1 and Nod2 signaling pathways with IFN $\tilde{\gamma}$. 99th Annual Meeting of The American Association of Immunologists (AAI), Boston, MA, USA, 4-8th May 2012
- Department of Physiology, McGill University, Montreal, QC, Canada. Novel functions of B cells
- Immunology Montreal, Montreal, QC, Canada. Novel functions of B cells

Gotte, Matthias

- Invited Presentation: International Roundtable on Nucleosides, Nucleotides and Nucleic Acids, Montreal, Quebec, Canada, August 5-9, 2012.
- Invited Presentation: 19th International Methods in Protein Structure Analysis (MPSA) Conference. Ottawa, Ontario, Canada; June 26-28, 2012
- Invited Presentation: Li Ka Shing Institute of Virology and Gairdner Foundation Symposium: "Meeting the Challenge of Emerging, Acute and Persistent Viral Diseases", University of Alberta, Edmonton, Alberta, Canada; May 31- June 1, 2012
- Invited Presentation: The Biotech City 10th Anniversary, Laval, Quebec, Canada; May 2, 2012

Gruenheid, Samantha

- Invited speaker: Banff Conference on Infectious Diseases, 2012, Banff, Canada. NleA, a bacterial virulence factor that inhibits COPII.
- Invited speaker: Dalhousie University Department of Microbiology and Immunology, Halifax, Canada 2012. Identification and characterization of Cri: a locus controlling susceptibility of mice to intestinal infection.

King, Irah

- ImmunoMontreal Happy Hour Speaker (Oct. 25, 2012): “Mechanisms of T follicular helper cell persistence in the germinal center niche during infection”
- Meakins-Christie Laboratories Beer Seminar Speaker (Oct. 29, 2012): “Mechanisms of T follicular helper cell persistence in the germinal center niche during infection”
- Institute of Parasitology Seminar Series Speaker (Nov. 9, 2012): “Chasing T cells during chronic helminth infection”

Krawczyk, Connie

- Understanding how dendritic cells distinguish immunological threats” McGill Faculty of Science Soup and Science” January 2012

Le Moual, Herve

- Le Moual, H. Targeting bacterial resistance to host antimicrobial peptides as an alternative strategy to treat infections. *Invited speaker*, 2nd Annual World Congress of Microbes, Guangzhou, China. July 2012.
- Le Moual, H. Antimicrobial peptide resistance mechanisms in Enterohemorrhagic and Enteropathogenic *Escherichia coli*. *Invited speaker*, International Conference on Clinical Microbiology and Microbial Genomics, San Antonio, TX, USA. November 2012.
- Thomassin, J., Gruenheid, S. and Le Moual, H. OmpT Antimicrobial Peptide Resistance Mechanisms in Enterohemorrhagic and Enteropathogenic *Escherichia coli*. *Poster*, First Microbiology and Immunology Graduate Student Research Day, May 25, 2012.
- Viau, C. and Le Moual, H. Phosphoethanolamine Modifications Promote Lipopolysaccharide Transport to the Outer Membrane. *Poster*, First Microbiology and Immunology Graduate Student Research Day, May 25, 2012.
- Brannon J. and Le Moual, H. Differential Cleavage of Antimicrobial Peptides by Omptin Outer-membrane Proteases. *Poster*, First Microbiology and Immunology Graduate Student Research Day, May 25, 2012.

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- Desloges I., Gruenheid, S. and Le Moual, H. Heterogeneity of outer membrane protease T activity in Uropathogenic *Escherichia coli* clinical isolates. *Poster*, Undergraduate Research Conference, McGill University. October 4, 2012. *Second prize in category Medical Sciences*.

Madrenas, Joaquin

- Invited Presentation: Madrenas J. Career Planning. KRESCENT Workshop, Montreal, QC, December 9, 2011.
- Invited Presentation: Madrenas J. Slipin Beauty: How SLP-2 Awakens Mitochondrial Function. Hopital Rosemont-Maisonneuve, Universite de Montreal, Montreal, QC, February 24, 2012.
- Invited Presentation: Madrenas J. Slipin Beauty: How SLP-2 Awakens Mitochondrial Function. University of Geneva, Geneva, Switzerland, March 26, 2012.
- Invited Presentation: Madrenas J. Pathobionts, Symbionts and Probiotics: towards a new understanding of infection and immunity. Seminari VHIR, Barcelona, Spain, March 28, 2012.
- Invited Presentation: Madrenas J. Pathobionts, Symbionts and Probiotics: reassessing the concepts of infection and immunity. Immunology and Infection Program Seminar, McMaster University. Hamilton, ON, April 18, 2012.
- Invited Presentation: Madrenas J. Infectious Music: how microbes have shaped our music. TEDx Montreal, May 5, 2012, Montreal, QC.
- Keynote Speaker: Madrenas J. A Career in Arts and Sciences: my own experience. CIHR National Medical Student Research Meeting, Winnipeg, MB, June 12, 2012.
- Keynote Speaker: Madrenas J. Career planning. CIHR Student Research Symposium. Winnipeg, MB, June 13, 2012.
- Keynote Speaker: Madrenas J. Pathobionts, Symbionts and Probiotics: towards a new understanding of infection and immunity. Winnipeg, MB, June 14, 2012.
- Madrenas J. TLR2 Regulation of Bacterial Commensalism vs. Infection. Immune Regulatory Mechanisms In Health And Disease: A Jointly Sponsored Satellite Symposium of the 2012 FOCIS Annual Meeting Vancouver, BC, June 20, 2012.
- Madrenas J (delivered by A. Peres). Human System Immunobiology of *Staphylococcus aureus* (*S. aureus*) Commensalism Reveals Novel Mechanisms of Pathobiosis. Human Immunity Cell Symposium, Lisbon, Portugal, August 19-21, 2012.
- Invited Presentation: Madrenas J. Mining for novel immunomodulatory strategies. Abbott Bioresearch Center, Worsceter, MA, August 28, 2012.
- Invited Presentation: Madrenas J. Infectious Music: how microbes have shaped our music. University Women's Club of Montreal, October 17, 2012, Montreal, QC.

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- Invited Presentation: Madrenas J. Activación de linfocitos T y función mitocondrial. Seminario de la Corporación Académica Ciencias Básicas Biomédicas, Universidad de Antioquia, November 22, 2012, Medellín, Colombia.
- Invited Presentation: Madrenas J. Infectious Music: how microbes have shaped our music. Calgary History of Medicine Society Seminar Series, University of Calgary, November 19, 2012, Calgary, AB.
- Invited Presentation: Madrenas J. What is *Staphylococcus aureus*? From Superbug to Probiotic. University of Calgary Snyder Endowed Chair Seminar Series. Calgary, AB, November 30, 2012.
- Mitsopoulos P, Christie DA, Dustin ML, Dunn SD, Hatch GM, Madrenas J. Stomatin-like protein-2 regulates the formation of specialized membrane microdomains in mitochondrial and plasma membranes: physiological implications. Cold Spring Harbour Laboratory Meeting on Gene Expression and Signalling in the Immune System. Cold Spring Harbour NY, April 24-28, 2012.
- Christie D, Elias IM, Chau LA, Lian D, Wang H, Ball EH, Dunn SD, Hatch GM, Madrenas J. SLP-2 regulates T cell activation by optimizing cardiolipin compartmentalization in mitochondrial membranes and enhancing cellular respiration. Immunology 2012: Annual Meeting of the American Association of Immunologists. Boston, MA, May 4-8, 2012.
- Mitsopoulos P, Christie DA, Welch I, Madrenas J. *In vivo* Induced Deletion of the Mitochondrial Protein Stomatin-like Protein-2 Is Associated with Development of an Inflammatory Motor Deficit Disorder. Immunology 2012: Annual Meeting of the American Association of Immunologists. Boston, MA, May 4-8, 2012.
- Peres A, Madrenas J. Molecular Players at the Interface between Innate Immunity and Behaviour. 7th Annual Symposium CIHR Training Program in Neuroinflammation. Montreal, QC, May 11, 2012.
- Mitsopoulos P, Christie DA, Welch I, Madrenas J. *In vivo* Induced Deletion of the Mitochondrial Protein Stomatin-like Protein-2 Is Associated with Development of an Inflammatory Motor Deficit Disorder. First Microbiology and Immunology Research Day, McGill University. Montreal, QC, May 25, 2012.
- Peres A, Fernandez T, Hugentobler F, Cousineau B, Desrosiers M, Madrenas J. Human System Immunobiology of *Staphylococcus aureus* (*S. aureus*) Commensalism Reveals Novel Mechanisms of Pathobiosis. Human Immunity Cell Symposium, Lisbon, Portugal, August 19-21, 2012.
- Madrenas J. Systems (immuno)Biology of *S. aureus* Commensalism and Infection. Department of Biochemistry Seminar Series, McGill University. Montreal, QC, January 16, 2012.
- Madrenas J. Slipin Beauty: From Membrane Compartmentalization to Mitochondrial Diseases. MUHC Nephrology Conference. McGill University, Montreal, QC, January 27, 2012.
- Madrenas J. Music to Learn: an afternoon of music, art, and infectious diseases. Lyman Duff Amphitheatre, McGill University, Montreal, QC, February 3, 2012.
- Madrenas J. What Superbugs can tell us on Immune Tolerance. MUHC Medical Grand Rounds, McGill University, Montreal, QC, February 14, 2012.
- Madrenas J. Pathobionts, Symbionts and Probiotics: reassessing the concepts of infection and immunity. Seminar Series, Lady Davis Research Institute, Montreal, QC, June 5, 2012.

Marczynski, Gregory

- J. Taylor, G.T. Marczynski, short talk at the 4th International Caulobacter Meeting
- R. Wargachuk, G.T. Marczynski, short talk at the 4th International Caulobacter Meeting
- J. Taylor, G.T. Marczynski, Poster at the 4th ASM Conference of Prokaryotic Cell Biology

Matlashewski, Greg

- Invited Presentation: Matlashewski, G. Implementation research for point of care diagnosis of visceral leishmaniasis in India. Grand Challenges in Global Health meeting. Bill and Melinda Gates Foundation, Seattle. May 8, 2012
- Invited Presentation: Matlashewski, G. Elimination of Visceral leishmaniasis. Department of Epidemiology, McGill, April 11, 2012
- Matlashewski, G. Visceral leishmaniasis, a major Neglected Tropical Disease. McGill Student association for Neglected Tropical Diseases, McGill, Nov. 15, 2012

Olivier, Martin

- Hemozoin and Inflammatory Biomarkers: Impact on Innate Immunity and Malaria Progression. XXVIII Annual Meeting of SBPZ and XXXIX Meeting on Basic Research in Chagas Disease, Caxambu, Brazil. October 2012
- Malaria Cérébrale, Apolipoprotéines et Plaquettes: Un Cocktail Néfaste...Journée Scientifique Annuelle du Centre de Recherche en Rhumatologie et Immunologie. Centre de Recherche du CHUL, Québec, Qc, Canada. November 2012

Piccirillo, Ciriaco

- Invited speaker Translational control of gene expression and environmental sensing in CD4⁺Foxp3⁺ regulatory T cells. FOCIS Annual meeting, 2012 (Vancouver, BC)
- Invited speaker The ICOS pathway in CD4⁺Foxp3⁺ regulatory T cell stability in T1D. International Diabetes Society (Victoria, BC)
- Invited speaker Translational control of gene expression and environmental sensing in CD4⁺Foxp3⁺ regulatory T cells. **FOCIS Satellite Symposium (CHIN) *Immune Regulatory Mechanisms in Health & Disease***. (Vancouver, BC)
- Invited Speaker: International Conference on Clinical & Cellular Immunology (Chicago, US)
- Meakins-Christie Seminar Series
- Immune Tolerance in Allergic Disease Symposium (McGill)

- Immunology Lecture Series –CHOPS
- Immunology Seminar Series – Concordia University
- Invited speaker at 6th Montreal Diabetes Research Centre annual retreat.
- Immunology Lecture Series –Marseille, France
- Immunology Lecture Series – Munich, Germany

Sheppard, Donald

- Invited Presentation: American Society for Hematology, Meet the Expert Session. Atlanta, Georgia USA- *Integrating diagnostics into management of fungal infections*. December 6 2012
- Invited Presentation: Asia Pacific Congress of Clinical Microbiology and Infection. Beijing, China. *Intracellular pharmacokinetics of antifungals determines activity*. October 24 2012.
- Invited Presentation: XXVII Annual Meeting of the Spanish Hematology Society. *Binding of hydrophobic antifungals to conidial hydrophobins mediates efficacy*. Salamanca, Spain. October 20th 2012
- Invited Presentation: Molecular Mycology of Pathogenic Fungi Summer Course, Marine Biology Laboratories, Woods Hole, Massachusetts. (Invited Faculty). *Intracellular pharmacokinetics of antifungals mediate activity*. Aug 2 2012
- Keynote Speaker. Philippines Infectious Disease Society Master Class on Management of Fungal Infections. Manila Philippines. *Molecular Diagnostics for Invasive Fungal Infections*. July 19 2012
- Invited Presentation: 18TH International Society for Human and Animal Mycology Meeting. Berlin, Germany. *Endoplasmic reticular concentration of hydrophobic antifungals mediates efficacy*. June 14 2012
- Invited Presentation: 3rd Annual PRIME Meeting. Xian, China. *Novel Diagnostics for Invasive Aspergillosis*. May 27 2012
- Invited Presentation: 5th Advances Against Aspergillosis, Istanbul Turkey. *Adhesins of Aspergillus fumigatus – role of galactosaminogalactan*. Jan 28 2012
- Choe SI, Gravelat FN, Al Abdallah Q, Lee MJ, Sheppard DC. *Aspergillus niger arcA and its application as an arsenic biosensor*. 18th Congress of the International Society for Human and Animal Mycology. Berlin, Germany. 2012
- Lee MJ, Hong L, Al Abdallah Q, Gravelat FN, Filler SG, Sheppard DC. *Heterologous expression of A. fumigatus UDP-Glucose 4-Epimerase in A. nidulans increases galactosaminogalactan production, adherence and virulence*. 18th Congress of the International Society for Human and Animal Mycology "From Laboratory to Clinic". Berlin, Germany. Mycoses. 2012;55(SI):P252.

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- Lee MJ, Gravelat FN, Sheppard DC. Galactosaminogalactan biosynthesis correlates with reported virulence in *Aspergillus* species. 18th Congress of the International Society for Human and Animal Mycology "From Laboratory to Clinic". Berlin, Germany. *Mycoses*. 2012;55(SI):P253.
- Snarr B., Urb M., Sheppard, DC. Mast cells promote chronic airway colonization by *Aspergillus fumigatus*. 18th Congress of the International Society for Human and Animal Mycology "From Laboratory to Clinic". Berlin, Germany. 2012 – selected for oral presentation
- Liu H, Lee MJ, Solis NV, Sheppard DC, Filler SG. Role of *Aspergillus fumigatus* CalA in host cell interactions, and biofilm adherence. Gordon Research Conference: Cellular & Molecular Fungal Biology. Holderness, New Hampshire, USA. June 2012.
- Campoli P, Annias O, Kristof AS, Perlin DS, Sheppard DC. Posaconazole concentrates within the endoplasmic reticulum of host and fungal cells. "Lab news: from diagnosis, in vitro activity, pathomechanism to antifungal resistance". European Congress Clinical Microbiology and Infectious Diseases, London, UK, 2012.
- Gravelat FN, Beauvais A, Kravtsov I, Latge J, Sheppard DC. *Aspergillus fumigatus* UDP-glucose epimerases Uge3 and Uge5 play inter-related roles in the biosynthesis of cell wall glycans and adhesion of the fungus to host cells. Keystone Symposia "Fungal Pathogens: From Basic Biology to Drug Discovery." Santa Fe, New Mexico, USA. 2012
- National Consultation Meeting on Antifungal Strategies in Neutropenic Leukemia Patients *Intracellular active antifungals in prophylaxis against fungal infections*. Toronto, Ontario. September 21 2012
- Hematology Grand Rounds, Vancouver General Hospital. *Combining prophylaxis and diagnostics to manage fungal infections*. June 17 2012
- Invited Seminar, Department of Microbiology, University of Manchester, UK. *Intracellular pharmacokinetics of azoles mediates efficacy*. April 19 2012
- Invited Seminar, Leeds Medical Center, Leeds, UK. *Intracellular pharmacokinetics of azoles in antifungal prophylaxis*. April 17 2012
- Microbiology Grand Rounds, Lakeshore General Hospital, Montreal. *Integrating novel diagnostics for the management of fungal infections*. April 11 2012
- Ontario Regional Consultation on Fungal Infections in Hematology Oncology Patients. *Role of intracellular antifungals in treatment of fungal infections*. Ottawa, Ontario. March 24 2012
- Invited Seminar, All India Institute of Medical Sciences, Delhi, India. *Endoplasmic reticulum concentration of azole antifungals as a novel pharmacokinetic parameter*. March 7 2012

Vidal, Silvia

- "Mouse ENU mutagenesis to understand gene function during inflammatory and immune responses against pathogens". Canadian Human and Statistical Genetics Meeting. Niagara-on-the-lake, ON, Canada, April 29-May 2, 2012. Invited speaker.

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- Yuki Ke, Eva MM, Richer E, Chung D, Paquet M, Canonne-Hergaux F, Vaulont S, Vidal S and D Malo. Suppression of hepcidin and iron overload mediate Salmonella susceptibility in ankyrin 1 ENU-induced mutant. 15th International Congress of Infectious Disease in Bangkok, Thailand from June 13-16 2012.
- Yuki Ke, Eva MM, Richer E, Chung D, Paquet M, Canonne-Hergaux F, Vaulont S, Vidal S and D Malo. Suppression of hepcidin and iron overload mediate Salmonella susceptibility in ankyrin 1 ENU-induced mutant. Canadian Human and Statistical Genetics Meeting. Niagara-on-the-lake, ON, Canada, April 29-May 2, 2012.
- Marton, J., Vidal, S. Genetic control of coxsackieviral myocarditis: shared and distinct loci control early viral replication and viral clearance. Canadian Human and Statistical Genetics Meeting. Niagara-on-the-lake, ON, Canada, April 29-May 2, 2012.
- Leiva-Torres*, G., Sladek, R., Vidal, S. Genetic and functional characterization of *Glynn*, an ENU-induced mutation conferring susceptibility to virus infection. Niagara-on-the-lake, ON, Canada, April 29-May 2, 2012.
- Moussa*, P., Fodil-Cornu, N. and Vidal, S. Exome capture and next generation sequencing to identify candidate genes for the genetic modulator of cytomegalovirus resistance, *Cmv5*. Canadian Human and Statistical Genetics Meeting. Niagara-on-the-lake, ON, Canada, April 29-May 2, 2012.
- Wiltshire, S., and Vidal, S. Transgenic expression of *Tnni3k* elicits an exacerbated inflammatory response against cardiotropic coxsackievirus. Canadian Human and Statistical Genetics Meeting. Niagara-on-the-lake, ON, Canada, April 29-May 2, 2012.
- Eva MM, Yuki KE, Dauphinee SM, Schwartzentruber JA, Pyzik M, Lathrop M, Majewski J, Vidal S and Malo D. An ENU-induced mutation in *STAT4* increases innate susceptibility to acute Salmonella Typhimurium infection in mice. Canadian Human and Statistical Genetics Meeting. Niagara-on-the-lake, ON, Canada, April 29-May 2, 2012.
- Eva MM, Yuki KE, Dauphinee SM, Schwartzentruber JA, Pyzik M, Lathrop M, Majewski J, Vidal S and Malo D. An ENU-induced mutation in *STAT4* increases innate susceptibility to acute Salmonella Typhimurium infection in mice. New Perspectives on Immunity to Infection, Heidelberg, Germany, May 19-24, 2012.
- Moussa*, P., Fodil-Cornu*, N. and Vidal S. Molecular and functional characterization of *Cmv5*, a genetic modulator of resistance to cytomegalovirus infection. 13th meeting of the Society for Natural Immunity. Asilomar Conference Center, Pacific Grove, CA. April 20th-24th, 2012.
- Fodil-Cornu*, N., Moussa*, P. and Vidal S. NK-cell specific genetic control of IFN γ secretion in A/J mice. Asilomar Conference Center, Pacific Grove, CA. April 20th-24th, 2012.
- Mouse ENU mutagenesis to identify new mechanisms of host response against pathogens. Meakins-Christie Laboratories Beer Seminar, Montreal. April, 2 2012.
- Genome-wide ENU mutagenesis to identify new pathways that regulate host responses against infection. Ottawa Health Research Hospital Seminar Series, Ottawa, March 26, 2012.

Wainberg, Mark

- January 2012. University of Western Australia, Perth Australia. Novel drug resistance mutations in HIV reverse transcriptase and their impact on therapy.
- March 2012. Journées quebécoises VIH Conference, Montreal. “Une mise-a-jour de la CROI 2012”.

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- March 2012. Conference Mondiale de la francophonie sur le SIDA. <<Le problème de résistance anti-drogues et sous-types virales>>
- May 2012. HIV/AIDS Conference in Romania. Cibiù, Romania. Invited speaker. The Use of HIV Drug to prevent and treat HIV infection.
- May 2012. ISHEID Conference on Treatment of HIV Disease. Marseille, France. Invited speaker. “The use of HVI Drugs in the prophylaxis of HIV disease: a debate”.
- May 2012. L’Université de Montréal, Laval, Que. «HIV drug resistance and transmission of resistant viruses : A public health problem»
- May 2012. University of Alberta, Edmonton, Alberta. International Symposium on Treatment of viral Diseases. Invites speaker. Is HIV Drug Resistance still Important in the Aftermath of Widespread Therapeutic Success?”
- July 2012. International conference on HIV Transmission. Washington, DC. Invited speaker. “Factors involved in the inter-cellular transmission of HIV”
- August 2012. Moshi, Tanzania, Invited lecture. “The problem of HIV K65R multi-nucleoside drug resistance: An issue for Africa”.
- September 2012. International Botswana HIV CLINICAL Conference. Gaborone, Botswana. Invited speaker. “Is HIV drug resistance a concern in PREP and other drug-based prevention research?”
- October 2012. Seminar. Université Bordeaux (CHU) Bordeaux, France. <<L’importance de la capacité de répliquions virale du VIH et la transmission virale.>>
- Oct. 2012. WHO/CHAIN meeting on Prevention of HIV drug resistance. Geneva, Switzerland. “Subtype differences and the dangers of mutational transmission”
- November 2012. Conference on HIV Therapy Glasgow, Scotland “Resistance against Dolutegravir Compromises Viral Replication.
- November 2012. South African Clinicians’ Conference. Capetown, South Africa. Subtype Differences that Govern HVI Drug Resistance.
- December 2012. DART Conference on HIV Drug Development. San Diego, California “The Selection of Resistance Against Dolutegravir compromises viral Replication Capacity”.
- December 2012. Université de Montpellier, Montpellier, France “Est-ce que la résistance aux médicaments anti-VIH a toujours une pertinence Clinique?”

V. Grants & Research Funds 2012

Agency	Grant title	Duration of Grant	Funding Amount/year	Total amount of grant	Researcher	status
CFI	Structural biology at the crossroads of biology and medicine	2012	\$4,834,800.00	\$4,834,800	Berghuis, Albert	Co-applicant
CFI	Regulation of inflammatory and adaptive immune responses upon innate immune recognition by pathogens	2011-2016	\$250,000.00	\$1,250,000	Fritz, Jörg	PI
CFI	Regulation of inflammatory and adaptive immune responses upon innate immune recognition by pathogens”.	2011-2016	\$20,000.00	\$100,000	Fritz, Jörg	PI
CFI		2012	\$250,000.00	\$250,000	Krawczyk, Connie	PI
CIHR	Structural studies of the fungal mannan biosynthesis pathway	2011-2016	\$165,037.00	\$825,186	Berghuis, Albert	PI
CIHR	Structural proteomics of host-pathogen interactions	2011-2016	\$30,000.00	\$3,033,946	Berghuis, Albert	Co-applicant
CIHR	CIHR strategic training program in chemical biology	2009 – 2015	\$300,000.00	\$1,800,000	Berghuis, Albert	Co-applicant
CIHR	Structural biology of the TonB interactome	2008-2013	\$160,497.00	\$802,485	Coulton, James	PI
CIHR	Sheldon Biotechnology Centre: Surface Plasmon Resonance Facility	2007-2012	\$78,662.00	\$393,310	Coulton, James	PI
CIHR			\$390,000.00		Fournier, Sylvie	Co-applicant
CIHR	Committee: Immunology & Transplantation, “Functions of Nod1 and Nod2 in host resistance”	2011-2016	\$132,523.00	\$662,615	Fritz, Jörg	PI
CIHR	HCV Genetic Variability and Drug Resistance	2011-2014	\$136,000.00	\$408,000	Götte, Matthias	PI
CIHR	Molecular mechanisms involved in resistance to different classes of RT inhibitors	2007-2012	\$115,000.00	\$575,000	Götte, Matthias	PI
CIHR	Genetic dissection of the host response to intestinal infections	2008-2013	\$116,974.00	\$584,870	Gruenheid, Samantha	PI

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Agency	Grant title	Duration of Grant	Funding Amount/year	Total amount of grant	Researcher	status
CIHR	Resistance of <i>C. rodentium</i> and related enteric pathogens to antimicrobial peptides	2010-2013	\$106,445.00	\$319,335	Gruenheid, Samantha	Co-applicant
CIHR	Resistance of <i>Citrobacter rodentium</i> and related enteric pathogens to antimicrobial peptides	2010-2013	\$90,310.00	\$296,000.00	Herve, Le Moual	PI
CIHR	The role of SLP-2 in TCR signalosome assembly and T cell activation	2007-2012	\$134,694.00	\$649,192	Madrenas, Joaquin	PI
CIHR	London Regional Cell and In Vitro Molecular Imaging Facility	2007-2012	\$51,500.00	\$277,500	Madrenas, Joaquin	Co-applicant
CIHR	Systems Immunology of <i>S. aureus</i> infection	2010-2015	\$166,672.00	\$833,360	Madrenas, Joaquin	PI
CIHR	CIHR Human Immunology Network	2011-2014	\$200,000.00	\$600,000	Madrenas, Joaquin	PI
CIHR	Subversion of Macrophage Signaling by the Protozoan Parasite <i>Leishmania</i>	2011-2016	\$168,000.00	\$840,000	Olivier, Martin	PI
CIHR	Hemozoin and Malaria Biomarkers: Role in the modulation of inflammatory responses and development of Malaria-related Pathologies	2012-2017	\$150,000.00	\$750,000	Olivier, Martin	PI
CIHR	Translational control of gene expression in Foxp3+ regulatory T cells function	2012-2017	\$825,000.00	\$165,000	Piccirillo, Ciriaco	PI
CIHR	Human Immunology Network				Piccirillo, Ciriaco	Co-applicant
CIHR	Mechanisms of Chronic Airway Colonization with <i>Aspergillus</i>	2012-2017			Sheppard, Donald	PI
CIHR	Molecular Mechanisms of Invasive <i>Aspergillosis</i>	2009-2014	\$133,933.00	\$669,665	Sheppard, Donald	PI
CIHR	Genetics of natural killer cell response to virus infection	2010-2015	\$179,000.00	\$895,000	Vidal, Silvia	PI
CIHR	CIHR team in mutagenesis and infectious diseases	2008-2013	\$1,086,000.00	\$5,430,000	Vidal, Silvia	PI

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Agency	Grant title	Duration of Grant	Funding Amount/year	Total amount of grant	Researcher	status
CIHR	Molecular genetics of host susceptibility to cardiovirulent coxsackievirus infection	2006-2012	\$130,000.00	\$780,000	Vidal, Silvia	PI
CIHR	Genetic Dissection of Airway Hyperresponsiveness and Susceptibility to Allergic Asthma	2010-2015	\$142,633.00	\$713,165	Vidal, Silvia	Co-applicant
CIHR	CIHR Training Program in Integrative Approaches to Human Health	2009-2015	\$488,619.00	\$2,443,095	Vidal, Silvia	Co-applicant
CIHR	Genetic dissection of host response against respiratory virus infection in RCS mice	2008-2013	\$200,000	\$1,000,000	Vidal, Silvia	Co-applicant
CIHR	Genetic signatures and functional phenotypes implicated in HIV-1 transmission and drug resistance	2012-2017	\$148,645	\$743,225	Wainberg, Mark	PI
CIHR	Development of New Strategies to Target HIV Replication and Stimulate anti-HIV Post-Exposure Immunity	2011-2014	\$166,666	\$600,00	Wainberg, Mark	PI
CIHR	The Botswana-Canada AIDS Vaccine Discovery Partnership	2012-2015	\$125,000	\$2,400,000	Wainberg, Mark	PI
CIHR	Structural biological studies of antibiotic resistance mechanisms	2011-2016	\$211,951	\$1,059,754	Berghuis, Albert	PI
CRC	Structural studies for combating infectious diseases	2009 – 2016	50,000	\$350,000	Berghuis, Albert	PI
CRC	Canada Research Chair in Bacterial Pathogenesis	2010-2015	25,000	125,000	Gruenheid, Samantha	PI
CRC	Cell Sorting Unit	2012	500,000	500,000	Madrenas, Joaquin	PI
CRC			100,000		Piccirillo, Ciriaco	PI
CRC	Canada Research Chair in Host Response to Virus Infections	2011-2018	50,000	350,000	Vidal, Silvia	PI
FQRNT	Centre for Host-Parasite Interactions	2009 – 2015	350,000	\$2,100,000	Berghuis, Albert	Co-applicant

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Agency	Grant title	Duration of Grant	Funding Amount/year	Total amount of grant	Researcher	status
FQRNT	PROTEO, le regroupement québécois de recherche sur la fonction, la structure et l'ingénierie des protéines	2008 – 2014	\$350,000	\$1,400,000	Berghuis, Albert	Co-applicant
FQRNT		2010-2012	\$30,000	\$60,000	Cousineau, Benoit	PI
FQRNT	Les systèmes de régulation à deux composantes comme cibles thérapeutiques pour le traitement des infections causées par les Escherichia coli entéropathogènes	2012-2015	\$60,000	\$180,000	Gruenheid, Samantha	Co-applicant
FQRNT	Les systèmes de régulation à deux composantes comme cibles thérapeutiques pour le traitement des infections causées par les Escherichia coli entéropathogènes	2012-2015	\$60,000	\$180,000	Herve, Le Moual	PI
FQRNT	Centre for Host-Parasite Interactions	2009-2014	\$70,000	\$350,000	Olivier, Martin	Co-applicant
FRQS	Groupe d'étude des protéines membranaires (GÉPROM; www.geprom.umontreal.ca), Université de Montréal,	2011-2015	\$275,000	\$1,100,000	Coulton, James	Co-applicant
FRSQ	Groupe de recherche axé sur la structure des protéines (GRASP)	2012 – 2016	\$350,000	\$1,400,000	Berghuis, Albert	Co-applicant
FRSQ	Réseau Québécois de Recherche sur le Médicament (RQRM)	2012 – 2014	\$450,000	\$900,000	Berghuis, Albert	Co-applicant
NIH	Visualizing invariant NKT cell dynamics following immunization and infection	2012-2014	133,000.00	266,000	King, Irah	PI
NIH	Fine Mapping and Function of Genes for type 1 diabetes	2009-2014	1,358,058	6,790,290	Piccirillo, Ciriaco	Co-applicant
NIH	Functional biology of OGR1	2010-2015	425,000.00	2,125,000	Piccirillo, Ciriaco	Co-applicant
NSERC	NSERC CREATE Training Program in Bionanomachines	2011 – 2017	300,000.00	\$1,650,000	Berghuis, Albert	Co-applicant

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Agency	Grant title	Duration of Grant	Funding Amount/year	Total amount of grant	Researcher	status
NSERC	Cbl interactome for vitamin B12 metabolism	2007-2012	\$28,000	\$140,000	Coulton, James	PI
NSERC	Cellular dynamics of macromolecular complexes (www.cdmc-create.ca)	2010-2015	\$300,000	\$1,500,000	Coulton, James	Co-applicant
NSERC	RTI/ fluorescence microplate reader	2012	\$25,392	\$25,392	Cousineau, Benoit	Co-applicant
NSERC			\$30,000		Fournier, Sylvie	PI
NSERC	Cellular and molecular mechanisms regulating immunoglobulin A production	2012-2017	\$30,000	\$150,000	Fritz, Jörg	PI
NSERC	Fluorescence microplate reader for solution- and cell-based assays		\$25,392	\$25,392	Gruenheid, Samantha	Co-applicant
NSERC			\$26,000		Krawczyk, Connie	PI
NSERC	Signal transduction by bacterial Ser/Thr Kinases	2008-2013	\$25,000	\$125,000	Herve, Le Moual	PI
NSERC	Fluorescence plate reader for solution- and cell-based assays	April, 2012	\$25,392	\$25,392	Herve, Le Moual	PI
NSERC			\$41,000		Marczynski, Greg	PI
NSERC	Role of Iron in the Regulation of PTPs: Impact on Cell Signaling and Functions	2012-2017	\$48,000	\$240,000	Olivier, Martin	PI
NSERC		2008-2013	\$42,500	212,500	Cousineau, Benoit	PI
NSERC	Structural studies of Baeyer-Villiger monooxygenases	2012 – 2013	\$28,000	\$28,000	Berghuis, Albert	PI
other	Supporting Active Learning and Technological Innovation in Science Education (SALTISE), Faculty of Education, McGill University		\$11,500		Coulton, James	Co-applicant
other			\$500.00	\$500	Coulton, James	applicant
Other		2008-2013	\$15,000	\$75000	Cousineau, Benoit	PI
Other			\$90,000		Fournier, Sylvie	PI

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Agency	Grant title	Duration of Grant	Funding Amount/year	Total amount of grant	Researcher	status
other	Phage-based screening platform for the discovery of antivirals	2010-2013	\$239,868	\$719,604	Götte, Matthias	PI
other		2012-2014	\$95,000		King, Irah	PI
other			\$70,000		Krawczyk, Connie	PI
other	Modulation of PD-associated peritonitis by the bacterial cell wall	2010-2012	\$50,000	\$100,000	Madrenas, Joaquin	PI
Other	Point of care diagnosis of Visceral leishmaniasis in India	2011-2014	\$295,666	\$887,000	Matlashewski, Greg	Co-applicant
Other	Novel treatment modalities for visceral leishmaniasis	2011-2015	\$633,333.00	\$1,900,000	Matlashewski, Greg	Co-applicant
Other	Development of a proposal for treating cutaneous leishmaniasis using Radio frequency-induced heat.	2012-2014	\$75,000.00	\$150,000	Matlashewski, Greg	Co-applicant
Other	Use a permanent make-up (PMU) device to target intra-dermal delivery of an anti-Cutaneous Leishmaniasis therapy	2011-2012	\$113,000	\$113,000	Olivier, Martin	Co-applicant
Other	Mechanisms of Aspergillus fumigatus induced progression of chronic airway disease in cystic fibrosis.	2012-2015	\$77,325	\$231,975	Sheppard, Donald	PI
other	Pharmacokinetics and efficacy of membrane-associated posaconazole	2011-2012	\$65,875	\$65,875	Sheppard, Donald	PI
Other	Transcriptional regulation of A. fumigatus virulence	2012-2016	\$90,053	\$90,053	Sheppard, Donald	Co-applicant
Other	New Animal Models for Invasive Aspergillosis	2010-2016	80,000.00	400,000	Sheppard, Donald	Co-applicant
other	“Genetic Dissection of Colon Cancer Metastasis	2012-2014	100,000.00	300,000	Vidal, Silvia	Co-applicant
other	Investigating the role of subtype-specific polymorphisms in HIV-1 resistance to integrase inhibitors		80,000.00		Wainberg, Mark	PI

Total Grant per year	\$19,843,662.00
Total Grants	\$63,615,476

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SECTION III
Teaching and Learning

III TEACHING

Initiatives and Innovations related to Teaching Programs

a. Graduate Program

The Graduate Program Committee has revised the MSc and PhD programs to better take into account the diversity of the disciplines covered by the department and the location of our students at different sites across McGill. The changes include of two new permanent graduate courses align with the priorities of our department namely the Microbiome and Disease Tolerance Centre and the seminar series in Infection and Immunity.

- **1st Annual Graduate Student Research Day**

The Graduate Committee organized the 1st Annual Graduate Student Research Day which included a keynote lecture and presentations (oral and poster) by graduate students and postdoctoral fellows who shared the latest developments in their research projects. The goals of this meeting were to facilitate information sharing among members of our Department, to discuss gaps in research knowledge as well as research opportunities and to network and develop collaborations.

- **MIMM 386**

Claire Trottier PhD, from the Centre for Advanced Training Coordinator, Research Institute of the MUHC and funded by SALTISE (*Supporting Active Learning and Technological Innovation in Science Education*), and Prof. S. Fournier are re-designing the immunology section of the undergraduate laboratory course MIMM386. The scientific component of the course is being updated to reflect current content and practices in teaching immunology. The re-design uses a Constructivist approach to build on existing knowledge using clear learning objectives, and aligns new instructional strategies such as problem-based learning projects.

b. Undergraduate Program

One of our major tasks at McGill is to teach a curriculum to MIMM undergraduate students in the Faculty of Science. The last time we reviewed our department's curriculum was during a retreat in March 2010; recommendations at that retreat had significant impact on our educational programs. In 2012, the Undergraduate Committee, newly chaired by James Coulton, advocated assessment of our undergraduate program and identification of the needs and opportunities to make it even better.

Throughout 2012 and in consultation with Teaching and Learning Services (TLS), a Teaching Retreat was planned for early 2013 to discuss our teaching and our curriculum: content, assessment, strategy, and outcomes. Dr. Mariela Tovar and her team, professionals at TLS, guided our deliberations and offered their experience to enhance and to evolve our teaching. Discussions gave us the opportunity to consider ideas about our courses and programs and to develop renewed understanding of our potential and challenges for our department's teaching and curriculum.

The immunology stream of the MIMM curriculum has seen significant changes. A new course: MIMM 214, Introductory Immunology: Elements of Immunity, was prepared to be delivered in winter semester 2013, with projected enrollment of 332 students. The course was tabled at the Academic Committee, Faculty of Science, deliberated, discussed, modified and approved, also by the Faculty of Medicine for launch in January 2013.

Claire Trottier, doctoral graduate of MIMM, was engaged as Research Associate and Educational Consultant under an award from Supporting Active Learning and Technological Innovation in Science Education (SALTISE). Partnering with the Faculty of Education at McGill and with Dawson College, she facilitates our transition to active learning through the re-design of the immunology section of our U2 undergraduate lab

course MIMM 386. The goals of the project are to modernize the scientific component of the course and to utilize novel pedagogical approaches, including problem-based learning.

c. Success Stories

Sarah McCuaig, undergraduate student was awarded the McGill's 134th Rhodes Scholar on November 2012. The Rhodes Scholarships rewards individuals who have achieved high academic standing and who have demonstrated respect for their fellows, an unselfish spirit and the potential for leadership. The world's oldest and pre-eminent academic fellowship, the Rhodes covers two years of study, valued at approximately, \$20,000 U.S. per year, with the possibility of renewal for a third year, at Oxford. On top of being an award-winning student, McCuaig is an accomplished distance runner and team captain of the McGill track and cross-country teams. One of the most decorated student-athletes at the University, in both the classroom and on the track, the conference all-star runner earned Academic All-Canadian status, made the Principal's Student-athlete Honour Roll and qualified for the Dean's Honour List.

Edward Mason, a Star undergraduate Honors student was awarded the Top prize at the 2012 McGill Undergraduate research Day.

Natan Bensousan, Undergraduate student, CSM Undergraduate was awarded the Canadian Society of Microbiologists, CSM Undergraduate award of \$500. The award will be presented to him at the annual CSM conference banquet held in Ottawa on June 20, 2013.

Daisy Ji, undergraduate student in the Interdepartmental Honors Immunology program in our deptment, got the Governor General's Silver Medal.

Mara Kornete, a PhD student was awarded the Federation of Clinical Immunology Societies (FOCIS) 2012, Travel Award on June 2012.

d. List of Students who received M. Sc. degrees

Student	Thesis Title	Supervisor
Cottreau, Andrew	High-resolution electron microscopy of energy-transducing proteins of «Escherichia coli»	Dr. James W Coulton
Donato, Samuel	Analysis of genetic variability within the Beijing lineage of «Mycobacterium tuberculosis»	Dr. Michael Reed
Dufort, Alexander	The identification of a novel regulator of «Mycobacterium tuberculosis» Sigma Factor K through the use of transposon mutagenesis	Dr. Marcel A Behr
Lalande, Jean-Daniel	NOD2 mediates innate and adaptive immunity to «Mycobacterium avium paratuberculosis»	Dr. Marcel A Behr
Sverzhinsky, Aleksandr	Energy-transducing proteins of «Escherichia coli»: lipid-based crystallization trials	Dr. James W Coulton
Vyboh, Kishanda	Mapping HIV-1's evasion of host defense	Dr. Andrew J Mouland
Campoli, Paolo	Concentration of antifungal agents within host cell membranes: a new paradigm governing the efficacy of prophylaxis	Dr. Donald Sheppard , Arnold Scott Kristof
Khakimova, Malika	The role of the stringent response in the regulation of anti-oxidant defenses in «Pseudomonas aeruginosa»	Dao Nguyen
Zaguia, Fatma	Cytotoxic NKG2C+ CD4 T cells target oligodendrocytes in Multiple Sclerosis	Jack P Patel, Nathalie Arbour
Ismail, Hodan	Vascular endothelial growth factor and angiopoietin-1 regulate leukocyte adhesion to endothelial cells through the nuclear receptor Nur77	Sabah N A Hussain

Xiao, Bei	Functional characterization of zinc cluster transcriptional regulators Ert1 and Uga3 in gluconeogenesis and gamma-amino butyrate catabolism in « <i>Saccharomyces cerevisiae</i> »	Dr. Bernard Turcotte
Narcross, Lauren	Novel splicing factors of the group II intron L1.LtrB from <i>L. lactis</i>	Dr. Benoit Cousineau
Trnkus, Amanda	Comparing wild-type p53 and a p53 isoform, p47	Dr. Greg J Matlashewski
Zheng, Lei	eIF4E-dependent translational control of gene expression in CD4+ T cell subsets	Dr. Ciriaco Piccirillo
Choe, Se-In	The role of <i>acrA</i> in arsenic resistance of « <i>Aspergillus niger</i> » and its use as the basis for the development of an arsenic detecting biosensor	Dr. Donald Sheppard
Lawrie, Sarah	Characterization of differentially activated human B cells and effects of their soluble products on regulatory T cell suppressive function: assay development and design	Dr. Amit Bar-Or
Lee, Crystal	Suppressive activity of CD4+Foxp3+ regulatory T cells in an animal model of spontaneous CD8+ T cell-mediated demyelinating disease	Dr. Sylvie Fournier
Ralph, Benjamin	SHP-1/PTP-1B Macrophage interactome upon « <i>Leishmania mexicana</i> » infection	Dr. Martin Olivier
Teatero, Sarah	<i>Citrobacter rodentium</i> causes fatal diarrhea through R-spondin 2-mediated activation of Wnt signaling	Dr. Samantha Gruenheid
Yao, Edmund	Effects of DNA methyltransferase-inhibition on FOXP3 expression in CD4+ T cells	Dr. Ciriaco Piccirillo

e. List of Students who received Ph.D. degrees

Bélanger, Simon	The role of natural killer cell receptors in the control of natural killer cell functions	Dr. A. Makrigianni, Silvia Vidal
Powdrill, Megan	Characterization of the hepatitis C virus NS5b RNA-dependent RNA polymerase: novel inhibitors and antiviral resistance	Dr. Matthias Gotte
Schader, Susan	The evaluation of candidate microbicide antiretrovirals against wild type and drug resistant HIV-1 «in vitro»	Dr. Mark Wainberg
Beilhartz, Gregory	HIV-1 reverse transcriptase-associated ribonuclease H activity: novel mechanisms of inhibition	Dr. Matthias Gotte
Hassani, Kasra	« <i>Leishmania</i> » parasites and the host macrophage: Interaction via secretion	Dr. Martin Olivier
Hugentobler, Felix	Engineered « <i>Lactococcus lactis</i> » live vaccines against « <i>Leishmania major</i> »	Dr. Benoit Cousineau
Urb, Mirjam	Mechanisms of « <i>Aspergillus fumigatus</i> » chronic airway disease	Dr. Donald Sheppard
Leveille, Simon	Combination strategies in oncolytic cancer therapy	Dr. John Hiscott

Data on Departmental Activities

TABLE 1. Undergraduate students graduations Winter 2012, Spring 2012, Fall 2012

	Winter	2012	Spring	2012	Fall	2012
Liberal		1	Liberal	6	Liberal	1
Honours		0	Honours	20	Honours	0
Majors		2	Majors	34	Majors	6
		3	IHI	11		7
				71		
TOTAL		81				

Total Graduate Degrees granted over the past four years

	Winter 2012		Spring 2012		Fall 2012	
	registered	graduated	registered	graduated	registered	graduated
M.Sc.	25	6	22	4	22	6
Ph.D.	46	1	45	2	44	4
TOTAL	71	7	67	6	66	10
	2009-10		Fall 2010		2011	
	registered	graduated	registered	graduated	registered	graduated
M.Sc.	31	11	40	5	69	16
Ph.D.	47	14	32	2	135	7
TOTAL	78	25	72	7	204	23

TABLE 3. Graduate student and enrolment and funding

	2006-07	2007-08	2008-09	2009-10	Fall 2010	2011	2012
Total Number of:							
Graduate Students	77	75	85	78	72	74	68*
Number of New Graduate Students	18	26	33	25	13	22	15
Average CGPA of Incoming Students	3.60	3.46	3.49	3.66	3.65	3.76	3.53
Fellowships/ Scholarships/ Bursaries	482,811	\$697,410	\$747,345	\$1,066,902		\$710,685.43	\$348,922.88
Teaching/ Demonstratorships/ Service	81,693	\$74,104	\$78,877	\$101,876		\$52,611.64	\$68,465.40
**Research Assistantships	869,850	\$713,350	\$922,900	\$1,398,486		\$1,035,422.63	\$921,360.39
Total Funding	1,432,354	\$1,484,863	\$1,749,122	\$2,567,265		\$1,818,790.88	\$1,338,748.67
Average Funding per Registered Trainee per annum	18,602	\$19,798	\$20,578	\$18,459	\$29,227/19 mths*	\$20,208.78	\$20,284.00

TABLE

4. Funding of graduate students by source

A. Departmental Awards

1.	F.C. Harrison Fellowships	3	\$19,100.00
	Dr. Jacob Rozanis Fellowship	5	\$9,212.27
	Max Stern Recruitment Fellowship	0	\$0
	TOTAL	8	\$28,312.27

B. Internal Funding

1	Differential Fee Waiver	1	\$6,200
2	Graduate Excellence Fellowship (GEF)	32	\$166,600
3	Research Assistants	66	\$921,360
4	GREAT Travel Awards	15	\$6,000
5	Teaching/Demonstrators/Service	18	\$68,465
	TOTAL	132	\$1,168,626

C. External Fellowships

1.	CIHR	15	\$276,257
2	FRSQ	3	\$40,833
3	RI-MUHC Studentship	2	\$4,970
4	NSERC	3	\$61,500
5	IRCM Gérard Limoges scholarship	1	\$10,000
6	Neuroinflammation	2	\$20,000
	TOTAL	26	\$413,560

GRAND TOTAL **166** **\$1,610,498**

List of Guest Seminar Speakers in the Infection and Immunity Seminar Series from January to December 2012

<i>DATE</i>	<i>SPEAKER</i>	<i>TITLE</i>
Jan. 12, 2012	Dr. Peter Moffett Associate Professor Department of Biology, University of Sherbrooke	“Installing effective antivirus programs: lessons from the plant immune system”
Feb. 9, 2012	Dr. John Dalton Professor Department of Parasitology, McGill University	“Immunomodulatory molecules of the human and animal helminth parasite, <i>Fasciola hepatica</i> ”
Feb. 22, 2012	Dr. Rodney Russell Assistant Professor Memorial University, Newfoundland	“Hepatitis C Virus Assembly: A Puzzle with No Picture on the Box”
Feb. 23, 2012	Dr. Tracy Raivio Associate Professor Alberta Heritage Foundation for Medical Research Senior Scholar, Department of Biological Sciences, University of Alberta	“Mutations that impact the Gram negative envelope stress response alter virulence”
Feb 27, 2012	Dr. Jacques Neefjes Head, Division of Cell Biology The Netherlands Cancer Institute, Amsterdam	“A genome-wide siRNA screen for global understanding of MHC class II antigen presentation”
Mar. 8, 2012	Dr. Marceline Côté Post Doctoral Trainee, Brigham and Women’s Hospital Children’s Hospital Boston and Harvard Medical School	“Small molecule inhibitors reveal Niemann-Pick C1 is essential for Ebola virus infection”
Apr. 5, 2012	Dr. Jose Teodoro Assistant Professor Department of Biochemistry Goodman Cancer Research Centre McGill University	“Tumour Cell Specific Apoptosis Induced by Viral Targeting of the Anaphase Promoting Complex”

<i>DATE</i>	<i>SPEAKER</i>	<i>TITLE</i>
Apr. 19, 2012	Dr. Nicolas Cermakian Associate Professor Douglas Mental Health University Institute, Department of Psychiatry McGill University	“Is it the right time for antigen presentation? The crosstalk between the circadian and immune systems.”
May 3, 2012	Mr. Jesse Vincent-Herscovici, MA Director, Strategic Accounts and Business Development	“Mitacs: Tools to help you continue (or start) partnering with industry”
Aug. 2, 2012	Dr. Francesca Cappitelli Professor, Department of Food, Environmental & Nutritional Sciences Università degli Studi di Milano	“Cultural heritage microbiology and biofilm research”
Sep. 27, 2012	Dr. Josée Harel Director GREMIP & CRIP Faculté de médecine vétérinaire, Université de Montréal	“Phase variation of the fimbrial adhesin F1651: When Escherichia coli plays heads or tails”
Oct. 25, 2012	Dr. Dawn Bowdish Assistant Professor McMaster Immunology Research Centre & M. G. DeGrootte Institute for Infectious Disease Research	"Aging gracefully with the pattern recognition receptors"
Nov. 8, 2012	Dr. Julian Guttman Associate Professor Department of Biological Sciences, Simon Fraser University	"Strategies pathogenic E. coli and Francisella tularensis use to control cytoskeletal and endocytic components of host cells to cause disease"
Nov. 15, 2012	Dr. Maritza Jaramillo Assistant Professor Institut National de la Recherche Scientifique (INRS) Institut Armand-Frappier	"Translational Control of the Innate Immune Response: A Double-edged Sword?"

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<i>DATE</i>	<i>SPEAKER</i>	<i>TITLE</i>
Nov. 22, 2012	Dr. Danielle Malo Associate Professor Department of Medicine and Department of Human Genetics, McGill University	"ENU mutagenesis: analyzing gene function in mouse models of Salmonella infection"
Nov. 29, 2012	Meso Scale Dr. Al Akowitz Director Northeast USA and Canada	"How to Multiplex Like a Rock Star"
Dec. 6, 2012	Dr. Tania Watts Professor Department of Immunology, University of Toronto	"TNFR family members in control of viral infection"
Dec. 13, 2012	Dr. Diego Miranda-Saavedra Associate Professor Immunology Frontier Research Center (IFReC) Osaka University, Japan	"Systems biology approaches to dissect and manipulate the anti-inflammatory response"

SECTION IV

Academic and Community Service

IV

Selected External Academic & Community Service

Berghuis, Albert

- Internal member - Life science strategic review panel for the large infrastructure fund competition, Ontario Research Fund
- Full member - DDR study section, NIH (USA)
- Editorial Board Member - Antimicrobial Agents and Chemotherapy (ASM Journal)
- Editorial Board Member - Protein Engineering Design & Selection (Oxford Journal)

Coulton, James

- Co-organizer, Annual GRASP Symposium; Montreal
- Invited reviewer: Centre de Recherche du Centre Hospitalier de l'Université de Montreal (CHUM)
- Invited reviewer: Leaders Opportunity Fund, Canada Foundation for Innovation, November 2012
- Organizer of the annual international symposium of 11 speakers, June 2012: *Cellular dynamics of macromolecular complexes*, Université de Montréal
- Member of the Local Organizing Committee, International Congress of Crystallography 2014, Montreal.

Fritz, Jorg

- Academic Editor for PLOS One: handling of 25 manuscripts.
- Editorial Board Member of the Journal of Clinical & Cellular Immunology
- Invited Member – Canadian Arthritis Society – Grant Review Panel
- Invited Member - Canadian Institutes of Health Research (CIHR)/Fall Competition

Götte, Matthias

- Organizer of Canadian Symposium on Hepatitis C Virus, Montreal, Canada
- International HIV & Hepatitis Virus Drug Resistance Workshop
- Member of the Scientific Committee (Since 2007); Sessions Chair 'HCV Drug Resistance'
- NIH AIDS special emphasis, ad hoc
- FRQ-S, 'chercheur boursier' Junior 1, ad hoc
- The Ontario HIV Treatment Network, ad hoc

Gruenheid, Samantha

- ALFA Travel Award review panel June 2012
- Poster judge Canadian Society for Microbiology annual meeting 2012

Madrenas, Joaquin

- International Reviewer, Agencia Nacional de Promoción Científica y Tecnológica, Secretaría de Ciencia y Técnica, Ministerio de Cultura y Educación, Argentina
- Member, Medical Review Panel of the Canada Gairdner Foundation Awards
- Member, Board of Directors of Immunology Montreal
- Member, Alberta Innovates – Health Collaborative Research and Innovation Opportunities Review Panel.
- Reviewer, The Medical Research Council, UK
- Member, Canadian College of Reviewers
- Member, Abstract Review Committee, 2012 FOCIS International Meeting, Vancouver, BC, June 20, 2012.
- Chair Organizing Committee, Immune Regulatory Mechanisms In Health And Disease: A Jointly CIHR Human Immunology Network-Canadian Society of Immunology Sponsored Satellite Symposium of the 2012 FOCIS International Meeting, Vancouver, BC, June 20, 2012.

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- Chair Organizing Committee, 2012 Faculties of Science and of Medicine Homecoming Weekend, Department of Microbiology and Immunology, McGill University, October 12-15, 2012.
- Co-Chair Organizing Committee, Tissue-intrinsic mechanisms of immunoregulation: neuroinflammation and beyond. A Jointly ACTRIMS/CIHR Human Immunology Network Sponsored Satellite Symposium of the 2013 FOCIS International Meeting, Boston, MA, June 26, 2013.
- Member, Scientific Advisory Board of the CIHR New Emerging Team in Clinical Autoimmunity
- Expert Member, Skolkovo Foundation, Moscow, Russia

Marczynski, Greg

- Local organizer of the 4th International *Caulobacter* Meeting, held 4-6 May.

Matlashewski, Greg

- Associate editor: PLoS Neglected tropical diseases
- Advisor to the World Health Organization on visceral leishmaniasis elimination.

Olivier, Martin

- Member of the Selection Committee for the World Leish 5 meeting (2011-2012)
- Member of the LOC (Since January 2012), The Neutrophil in Immunity, Montréal, Canada. (June 2014)

Piccirillo, Ciriaco

- JDRF Center review panel
- NIAID Special Emphasis Panel: Investigator Initiated Program Project Applications (P01)
- NIDDK Special Emphasis Panel (PAR-11-350-DP3)
- FOCIS Satellite Symposium *Immune Regulatory Mechanisms in Health & Disease*, June 2012 (CHIN)
- FOCIS Annual Meeting- CHAIR: Effector/Regulatory T cell balance in Inflammatory Disease.

Sheppard, Donald

- Member, CIHR Microbiology and Infectious Diseases Panel
- Member, FRQS Chercheur-Boursier review panel.
- Reviewer, Awards Committee of the Assoc. of Med. Microbiology and Infectious Disease Society of Canada
- Member, Scientific and Organizing Committee for the 6th Advances Against Aspergillosis Meeting, Madrid

Vidal, Silvia

- CIHR, Immunology and Transplantation Panel
- CIHR, Genetics Panel
- Alberta Innovates Health Solutions: Collaborative Research and Innovation Opportunities Member
- 6th Orthomyxovirus Res. Conference: Pandemic Influenza Preparedness, Chateau Bromont, , Sep. 19-22

Wainberg, Mark

- Retrovirology Editor
- Journal of International AIDS Society – Editor –in-chief
- Plos One Editor
- Journées Québécoises VIH March 2012

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SECTION V
Consulting Activities

V Consulting Activities

Faculty Member	Private Sector Consulting	Public Sector Consulting	Total
Dr. Albert Berghuis		NIH – 10 days ORDCF – 2 days UAC-CLS – 5 days	17 days
Dr. Ciriaco Piccirillo	GSK, ProScan, Novartis Alcimed GmbH, Cariplo Fnd, Broad Foundation		
Dr. Joaquin Madrenas		Board of Directors of ImmunoMontreal	4days
Dr. Joaquin Madrenas		Alberta Innovates – Health Collaborative Research and Innovation Opportunities Review Panel.	4 days
Dr. Joaquin Madrenas		The Medical Research Council, UK	1 day
Dr. Joaquin Madrenas		Skolkovo Foundation, Moscow, Russia	1 day