



**466th REPORT OF THE ACADEMIC POLICY COMMITTEE TO SENATE
On the APC meeting held on September 17th 2015**

I. TO BE APPROVED BY SENATE

- (A) NEW TEACHING PROGRAMS REQUIRING SENATE APPROVAL** (approvals of new minors and options added to existing programs and major revisions to programs are reported in Section IV.A.1.a. for information)

School of Continuing Studies

Professional Development Certificate in Business Valuation (42.5-43.5 CEUs) – Appendix A

At a meeting on 17th September 2015, APC reviewed and approved a proposal from the School of Continuing Studies to create a Professional Development Certificate in Business Valuation. There is currently no Business Valuation Programs offered in Montreal, and the School of Continuing Studies is seizing the opportunity to be the first one to offer a classroom based program responding to the growing demand for qualified business valuers. This Certificate meets the educational requirements of the Canadian Institute of Chartered Business Valuators (CICBV) and aims at preparing individuals wishing to write the CICBV membership qualification examination.

APC therefore recommends that Senate approve the following resolution:

Be it resolved that Senate approve the Professional Development Certificate in Business Valuation.

- (B) ACADEMIC PERFORMANCE ISSUES / POLICIES / GOVERNANCE/AWARDS - none**

- (C) CREATION OF NEW UNITS / NAME CHANGES / REPORTING CHANGES**

Faculty of Medicine

Proposed name change for the McGill Centre for the Study of Reproduction – Appendix B

At a meeting on 17th September 2015, APC reviewed and endorsed the proposal to change the name of the McGill Centre for the Study of Reproduction to the McGill Centre for Research in Reproduction and Development (Centre de Recherche en Reproduction et Développement), in order to reflect the true scope of the research activities undertaken at the Centre.

APC therefore recommends the following resolution:

Be it resolved that Senate approve the proposed renaming of the McGill Centre for the Study of Reproduction to the McGill Centre for Research in Reproduction and Development, and so recommend to the Board of Governors.

Faculty of Medicine

McGill Cystic Fibrosis Translational Research Centre – Appendix C

At a meeting on 17th September 2015, APC reviewed and approved the proposal for the creation of the McGill Cystic Fibrosis Translational Research Centre (CFTRc). The CFTRc will provide the many researchers working on Cystic Fibrosis at McGill with an administrative structure to

coordinate their activities, seek funds for shared projects and obtain shared resources. This will enhance the McGill basic research activities in Cystic Fibrosis, and help respond to the growing need for translational research in the field.

APC therefore recommends the following resolution:

Be it resolved that Senate approve the creation of the McGill Cystic Fibrosis Translational Research Centre (CFTRc).

Faculty of Science

McGill Space Institute – Appendix D

At a meeting on 17th September 2015, APC reviewed and approved a proposal to create a McGill Space Institute (MSI). The MSI will bring together research communities doing space relevant work in the Faculty of Science and beyond, provide an intellectual home for researchers conducting space-related research, regardless of their home departments, and foster space-related instrumentation development. By enhancing interdisciplinary work and fostering new interactions, and therefore, new research directions and synergies, the MSI will contribute to increase our knowledge of space and our place within it. APC's only request was that the MSI consider reaching out to the McGill Institute of Air and Space Law to foster possible connections.

APC therefore recommends the following resolution:

Be it resolved that Senate approve the creation of the McGill Space Institute (MSI).

(D) CHANGES IN DEGREE DESIGNATION - none

(E) INTER-UNIVERSITY PARTNERSHIPS – none

(F) OTHER - none

II. TO BE ENDORSED BY SENATE / PRESENTED TO SENATE FOR DISCUSSION – none

III. APPROVED BY APC IN THE NAME OF SENATE

(A) DEFINITIONS – none

(B) STUDENT EXCHANGE PARTNERSHIPS / CONTRACTS / INTERUNIVERSITY PARTNERSHIPS - none

(C) OTHER - none

IV. FOR THE INFORMATION OF SENATE

A) ACADEMIC UNIT REVIEWS

B) APPROVAL OF COURSES AND TEACHING PROGRAMS

1. Programs

a) APC approvals (new options/concentrations and major revisions to existing programs)

i. New programs - none

- ii. Major revisions of existing programs - *none*

b) APC Subcommittee on Courses and Teaching Programs (SCTP) approvals (Summary reports: <http://www.mcgill.ca/sctp/documents/>)

- i. Moderate and minor program revisions

Faculty of Arts

Approved by SCTP on 14th May 2015, reported to APC on 17th September 2015

B.A.; Honours in Economics (42 cr.)

B.A.; Joint Honours – Economics component (30 cr.)

B.A.; Joint Honours in Economics and Accounting (60 cr.)

B.A.; Joint Honours in Economics and Finance (60 cr.)

B.A.; Minor Concentration in International Development Studies (18 cr.)

B.A.; Major Concentration in International Development Studies (36 cr.)

B.A.; Joint Honours- International Development Studies component (36 cr.)

School of Continuing Studies

Approved by SCTP on 14th May 2015, reported to APC on 17th September 2015

Certificate in Health and Social Services Management (30 cr.)

Faculty of Engineering

Approved by SCTP on 14th May 2015, reported to APC on 17th September 2015

B.Eng.; Chemical Engineering (142-145 cr.)

B.Eng.; Computer Engineering (133-140 cr.)

B.Eng.; Electrical Engineering (134-139 cr.)

B.Eng.; Honours in Electrical Engineering (138-140 cr.)

B.S.E. (137-144 cr.)

M.U.P.; Non-Thesis (66 cr.)

M.U.P.; Non-Thesis – Transportation Planning (66 cr.)

Faculty of Law

Approved by SCTP on 14th May 2015, reported to APC on 17th September 2015

B.C.L./LL.B. (105 cr.)

Joint M.B.A. and B.C.L./LL.B (144 cr.) – *with the Faculty of Management*

Joint M.S.W. and B.C.L./LL.B (132 cr.) – *with the Faculty of Arts*

Desautels Faculty of Management

Approved by SCTP on 14th May 2015, reported to APC on 17th September 2015

B.Com.; Honours in Economics (42 cr.)

B.Com.; Joint Honours in Economics and Accounting (54 cr.)

B.Com.; Joint Honours in Economics and Finance (54 cr.)

Faculty of Medicine

Approved by SCTP on 14th May 2015, reported to APC on 17th September 2015

B.Sc. (Rehabilitation Science); Major in Physical Therapy (90cr.)

M.Sc.; Public Health; Non-Thesis (60 cr.)

M.Sc. (Applied); Nursing; Non-Thesis; Clinical Nurse Specialist (48 cr.)

M.Sc. (Applied); Nursing; Non-Thesis; Global Health Clinical Nurse Specialist (50 cr.)

- ii. Program retirements

Faculty of Arts

Approved by SCTP on 14th May 2015, reported to APC on 17th September 2015
M.A.; Sociology; Non-Thesis – Social Statistics (45 cr.)

2. Courses

a) New Courses

Reported as having been approved by SCTP on 14th May 2015: 59

Faculty of Arts: 7

School of Continuing Studies: 9

Faculty of Education: 2

Faculty of Engineering: 30

Faculty of Law: 2

Faculty of Medicine: 8

Faculty of Science: 1

b) Course Revisions

Reported as having been approved by SCTP on 14th May 2015: 19

School of Continuing Studies: 1

Faculty of Engineering: 11

Faculty of Medicine: 2

Schulich School of Music: 5

Reported as having been approved by Enrolment Services on behalf of SCTP on 1st August, 2015: 2

Faculty of Agricultural and Environmental Sciences: 1

Faculty of Arts: 1

c) Course retirements

Reported as having been approved by SCTP on 14th May 2015: 3

Faculty of Arts: 3

(B) OTHER



McGill

New Program/Major or Minor/Concentration Proposal Form

(07/2004)

<p>1.0 Degree Title Please specify the two degrees for concurrent degree programs</p> <p>Professional Development Certificate</p>	<p>2.0 Administering Faculty/Unit</p> <p>School of Continuing Studies</p>
<p>1.1 Major (Legacy= Subject)(30-char. max.)</p> <p>Business Valuation</p>	<p>Offering Faculty/Department</p> <p>SCS/Career and Professional Development</p>
<p>1.2 Concentration (Legacy = Concentration/Option) If applicable to Majors only (30 char. max.)</p>	<p>3.0 Effective Term of Implementation (Ex. Sept. 2004 = 200409) Term</p> <p>201509</p>
<p>1.3 Minor (with Concentration, if Applicable) (30 char. max.)</p>	

4.0 Rationale and Admission Requirements for New Proposal

The Chartered Business Valuator (CBV) designation is the premier credential for professional business valuers and litigation support advisors in Canada. According to the Canadian Institute of Chartered Business Valuators (CICBV), demand for business valuations is expected to increase given that about 70% of Canadian business owners will be in a position to retire before 2020 and will therefore need to determine the fair market value of their business as part of succession planning. Currently, there is no Business Valuation program offered in Montreal. The School of Continuing Studies has the opportunity to respond to the growing demand for qualified business valuers by offering the first classroom-based program in Business Valuation in Montreal, and by preparing individuals seeking a professional CBV designation to write the CICBV Membership Qualification examination. Admission requirements: undergraduate degree in any discipline. The CPD Department regularly reviews, revises or retires any existing programs that are obsolete or have low enrolment.

5.0 Program Information
Please check appropriate box(es)

<p>5.1 Program Type</p> <p><input type="checkbox"/> Bachelor's Program</p> <p><input type="checkbox"/> Master's</p> <p><input type="checkbox"/> M.Sc. (Applied) Program</p> <p><input type="checkbox"/> Dual Degree/Concurrent Program</p> <p><input type="checkbox"/> Certificate</p> <p><input type="checkbox"/> Diploma</p> <p><input type="checkbox"/> Graduate Certificate</p> <p><input type="checkbox"/> Graduate Diploma</p> <p><input type="checkbox"/> Ph.D. Program</p> <p><input type="checkbox"/> Doctorate Program (Other than Ph.D.)</p> <p><input type="checkbox"/> Private Program</p> <p><input type="checkbox"/> Off-Campus Program</p> <p><input type="checkbox"/> Distance Education Program (By Correspondence)</p> <p><input checked="" type="checkbox"/> Other (Please specify)</p> <p>Professional Development Certificate</p>	<p>5.2 Category</p> <p><input type="checkbox"/> Faculty Program (FP)</p> <p><input type="checkbox"/> Major</p> <p><input type="checkbox"/> Joint Major</p> <p><input type="checkbox"/> Major Concentration (CON)</p> <p><input type="checkbox"/> Minor</p> <p><input type="checkbox"/> Minor Concentration (CON)</p> <p><input type="checkbox"/> Honours (HON)</p> <p><input type="checkbox"/> Joint Honours Component (HC)</p> <p><input type="checkbox"/> Internship/Co-op</p> <p><input type="checkbox"/> Thesis (T)</p> <p><input type="checkbox"/> Non-Thesis (N)</p> <p><input type="checkbox"/> Other</p> <p>Please specify</p>	<p>5.3 Level</p> <p><input type="checkbox"/> Undergraduate</p> <p><input type="checkbox"/> Dentistry/Law/Medicine</p> <p><input checked="" type="checkbox"/> Continuing Ed (Non-Credit)</p> <p><input type="checkbox"/> Collegial</p> <p><input type="checkbox"/> Masters & Grad Dips & Certs</p> <p><input type="checkbox"/> Doctorate</p> <p><input type="checkbox"/> Post-Graduate Medicine/Dentistry</p> <p><input type="checkbox"/> Graduate Qualifying</p> <p><input type="checkbox"/> Postdoctoral Fellows</p>
---	---	--

<p>6.0 Total Credits</p> <p>42.5 - 43.5 CEUs</p>	<p>7.0 Consultation with Related Units</p> <p>Yes <input checked="" type="checkbox"/> No</p> <p>Financial Consult Yes No <input checked="" type="checkbox"/></p> <p>Attach list of consultations.</p>
---	--

8.0 Program Description (Maximum 150 words)

Business Valuations play an integral role in mergers and acquisitions, corporate tax planning, litigation, quantification of damages, venture capital and private equity. The objective of this program is to provide a sound working knowledge of business valuation theory and practice for those interested in becoming Chartered Business Valuators. It also meets the educational requirements of the Canadian Institute of Chartered Business Valuators (CICBV) and to prepare to take the CICBV Membership Qualification Exam.

9.0 List of proposed program for the New Program/Major or Minor/Concentration.

If new concentration (option) of existing Major/Minor (program), please attach a program layout (list of all courses) of existing Major/Minor.

Proposed program (list courses as follows: Subj Code/Crse Num, Title, Credit weight under the headings of: Required Courses, Complementary Courses, Elective Courses)

Professional Development Certificate in Business Valuation (42.5 – 43.5 CEUs)

Required Courses (26 CEUs)

CBUS 230 Level 1 - Introductory Business Valuation (6.5 CEUs)
CBUS 231 Level 2 - Intermediate Business Valuation (6.5 CEUs)
CBUS 232 Level 3 - Advanced Business Valuation (6.5 CEUs)
CBUS 233 Level 4 - Special Topics in Business Valuation (6.5 CEUs)

Complementary Courses (16.5 – 17.5 CEUs)

12.5 - 13 CEUs from:

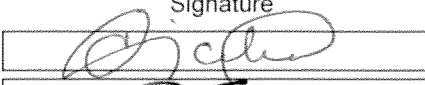
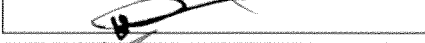



CBUS 234 Litigation Support in Business Valuation (6.5 CEUs)
CBUS 235 Private Company Finance (6.5 CEUs)
CBUS 236 Introduction to Valuation for Financial Reporting (6 CEUs)

4 – 4.5 CEUs from:

CCOM 208 Professional Writing in Business (4 CEUs)
CBUS 216 Interpersonal Skills for Professionals (4.5 CEUs)

10.0 Approvals

Routing Sequence

	Name	Signature	Date
Department	Carmen Sicilia. Director CPD		April 27/2015
Curric/Acad Committee	James Archibald. Associate Dean		April 29/15
Faculty 1	Inna Popova. Associate Director CPD		29 April 15
Faculty 2	Judith Potter. Dean of Continuing Studies		APRIL 29, 2015
Faculty 3	Janice McGraw		April 29/15
SCTP	SCTP		MAY 14, 2015
GS	APPROVED		
APPC		APC approved	Sept 17th, 2015
Senate			

Submitted by

Name:

Phone:

Email:

Submission Date:

To be completed by ARR:
CIP Code



Memorandum Note de service

**Office of the Vice-Principal
(Research and International Relations)**
James Administration Building, Suite 419
Tel.: 514-398-2995 Fax: 514-398-8257

**Bureau de la vice-principale
(recherche et relations internationales)**
Pavillon James de l'administration, bureau 419
Tél.: 514-398-2995 Téléc.: 514-398-8257

Date: July 20, 2015

To/Destinataire(s): Prof. Christopher Manfredi, Chair, Academic Policy Committee

From/De la part de: Dr. Rose Goldstein, Vice-Principal (Research and International Relations)

c.c. Julie Degans, Academic Planning Officer

Subject/Object: Official name change for the McGill Centre for the Study of Reproduction to the McGill Centre for Research in Reproduction and Development/ Centre de recherche en reproduction et développement (CRRD)

The McGill Centre for the Study of Reproduction is a McGill University-approved Research Centre that has existed since 2008. The Centre Director, Daniel Bernard, Faculty of Medicine, has requested that the University approve a formal name change for the Centre to the Centre for Research in Reproduction and Development/ Centre de recherche en reproduction et développement (CRRD) in order to reflect the true scope of the research done at the centre. The proposed name change is supported by the Dean of Medicine.

The Research Advisory Committee (RAC) reviewed the documentation provided by Dr. Bernard at its meeting held on May 5, 2015. In particular it looked at whether the research program had changed with the revised name. It concluded that the name change does not impact the research program; rather, the proposed name better reflects the full range of research activities undertaken by the centre. As such, RAC recommends that APC approve the requested name change.

Attachments

Appendix 1: Bernard letter to request name change



Centre for the Study of/ Centre d'études sur la

Reproduction

Executive Committee

Daniel Bernard, Director
Sarah Kimmins, Associate Director
Terry Hebert, External Member
Cristian O'Flaherty, Elected Member
Aimée Ryan, Elected Member
Rima Slim, Elected Member
Bernard Robaire, Founding Director
Charlotte McCaffrey, Secretary
 e-mail: csr-cer@mcgill.ca

18 March 2015

Dr. Rosie Goldstein
 Office of the Vice-Principal
 (Research and International Relations)
 James Building, Room 419
 845 Sherbrooke Street West
 Montreal, Quebec H3A 0G4

Dear Dr. Goldstein:

I am writing in my capacity as Director of the McGill Centre for the Study of Reproduction/Centre d'études sur la reproduction to request an official name change for our Centre. During its fall meeting, the Executive Committee voted unanimously to change the name to the McGill Centre for Research in Reproduction and Development/ Centre de recherche en reproduction et développement (CRRD). This name better reflects the scope of research conducted by members of the Centre. Therefore, this request reflects a change in name only, not in the research focus or mission of the Centre. Indeed, the research of our members has always focused on the science of reproduction and development, and the Centre name should be changed to reflect this reality.

Thank you for your consideration of this matter. Please do not hesitate to contact me with any questions or concerns you may have.

Sincerely,

Daniel J. Bernard, Ph.D.
 Professor and Director

cc: Dean David Eidelman, Faculty of Medicine
 Maureen Donato, Research and International Relations



McGill

Memorandum Note de service

**Office of the Vice-Principal
(Research and International Relations)**
James Administration Building, Suite 419
Tel.: 514-398-2995 Fax: 514-398-8257

**Bureau de la vice-principale
(recherche et relations internationales)**
Pavillon James de l'administration, bureau 419
Tél.: 514-398-2995 Téléc.: 514-398-8257

Date: July 20, 2015

To/Destinataire(s): Prof. Christopher Manfredi, Chair, Academic Policy Committee

From/De la part de: Dr. Rose Goldstein, Vice-Principal (Research and International Relations)

c.c. Julie Degans, Academic Planning Officer

Subject/Object: McGill Cystic Fibrosis Translational Research Centre (CFTRc)

Purpose:

Please find attached a proposal by Professor John Hanrahan (Faculty of Medicine) for the creation of the *McGill Cystic Fibrosis Translational Research Centre* (CFTRc), which seeks recognition as an official research centre of McGill University. According to the process outlined in the Policy on Research Centres, the proposal has been reviewed and approved by the Research Advisory Committee (RAC). As Chair of RAC, I ask that APC review the proposal for approval and recommendation to Senate.

Background:

At the RAC meeting on February 24, 2015, Professor Hanrahan provided a proposal for the new centre and gave an overview presentation of the CFTRc's research mandate, educational and outreach activities and membership. The Dean of Medicine provided a letter of support endorsing the establishment of the new centre.

RAC members felt the proposal was a very strong one and had few revisions to suggest. As per the current practice for review of new Research Centre proposals, three reviewers from among RAC members were assigned to carry out a detailed assessment: Jim Engle-Warnick, Samer Faraj and Vicky Kaspi.

The following comments were provided to Professor Hanrahan on April 17, 2015:

- *Refine the definitions and provide explanations of the axes of research.*
- *Highlight the positioning of the centre within Quebec, Canada and internationally. Do other such centres exist? How will this one be different?*
- *What new collaborative ties are likely to take place if a formal research centre is formed? In the proposal, it is stated that CFTRc could be a "vehicle for building collaborations with new business model platforms such as Neomed" – please provide additional explanation/information on how that may work.*
- *Please highlight specific fundraising potential in future years. Is there an indication that the funding from Faculty of Medicine Cystic Fibrosis Canada and Zeiss will continue to be available?*

A revised proposal was presented at the May 5, 2015 meeting of RAC. Members were fully satisfied that Professor Hanrahan had addressed all outstanding issues, and the proposal to establish the CFTRc as an official McGill research centre was recommended to move forward for approval by APC.

Next steps:

Upon review and endorsement, APC will approach Senate and the Board of Governors for approval of the CFTRc proposal for official research centre status as per the *Policy on Research Centres*.

Appendix 1: CFTRc Research Centre Proposal



David Eidelman, M.D., C.M.

Vice-Principal, Health Affairs
Dean
Faculty of Medicine
McGill University
3605 de la Montagne Street
Montreal, Quebec
Canada H3G 2M1

Vice-principal, Santé et affaires médicales
Doyen
Faculté de médecine
Université McGill
3605, rue de la Montagne
Montréal, Québec
Canada H3G 2M1

Tel: (514) 398-3524
Fax: (514) 398-4423
david.eidelman@mcgill.ca

November 03, 2014

Research Advisory Committee
Office of the Vice-Principal, Research & International Relations
McGill University
James Administration Building

Re: CFTRc application

Dear Members of the Research Advisory Committee:

I am writing to express my strong support for the establishment of the Cystic Fibrosis Translational Research centre (CFTRc), a McGill Research Centre.

As Vice-Principal (Health Affairs) and Dean of Medicine, I am very familiar with the activities and impact of the proposed Centre, the role it plays, and the place it holds in the faculty, the University and the wider Canadian research community. With renovations and major equipment funding from CFI-6, and longstanding collaborations that were initiated 10 years ago with operating support from CF Canada's BREATHE program, the CFTRc is ideally positioned to promote interdisciplinary research, training and scientific outreach to clinical and basic research scientists. The success of the CFTRc is assured by its world-class faculty members, the outstanding level of external research funding, and the high percentage of salary and stipend support for faculty, postdoctoral researchers, and students. The fact that it has already become a national resource for CF researchers and is being used as a prototype for facilities sponsored by CF Canada, indicates the leadership that this centre will provide for the field. Its strong focus on translational research and in-house spinoff companies suggests that it will be a financially viable centre.

McGill University's Faculty of Medicine has a long tradition of excellence, with breakthroughs in key areas of biomedical science, epigenetics, neuroscience and stem cells, and regenerative medicine. The CFTRc will play a key role in the strategic plan for the future development within the Faculty of Medicine. It will promote research collaborations, positively impact teaching within and outside of the Faculty, and advance McGill University's reputation as one of Canada's leading research-intensive universities.

The proposed Director of the CFTRc, Dr. John Hanrahan, has provided strong leadership in the area of CF research both at McGill and internationally. His establishment of the McGill-based BREATHE program and prominent role in MDEIE and CFI grants are clear examples of the cooperation and sense of community that is reflected in the CFTRc proposal. He has worked productively with other members of the proposed centre, most notably Dr. David Thomas, who was the PI on CFI-6 and will serve as Associate Director of the CFTRc. Drs. Hanrahan and Thomas are the co-founders of Traffick Therapeutics, a spinoff company with an excellent fit to the CFTRc's translational research focus.

These are exciting days in the treatment of CF, with a new drug (Kalydeco, from Vertex) in the clinic which has dramatic benefits for about 4% of CF patients who carry particular mutations in the CFTR gene. This provides a proof of principle for oral therapies that are directed against F508del CFTR, the most common mutation which is carried on at least one chromosome by about 90% of CF patients. Establishment of the CFTRc at McGill is thus appropriate and very timely, and will facilitate efforts to cure this disease. This Centre meshes perfectly with the recently established McGill Centre for Structural Biology. The development of new drugs that alleviate or correct the protein folding defects that underlie many diseases is a priority area for the University and the Faculty of Medicine with ongoing salary, infrastructure, and space commitments for the external funding programs and equipment platforms that comprise the CFTRc.

In conclusion, I strongly support the creation of the Cystic Fibrosis Translational Research centre. It has a clear disease focus and mission, and embodies the Faculty of Medicine's commitment to translational research, resource sharing and collaborative research and training across the University.

Sincerely,



David Eidelman, MD CM, FRCPC, FACP



Proposal to create the Cystic Fibrosis Translational Research centre (CFTRc), a McGill Research Centre

*Submitted by
John W. Hanrahan, PhD
Professor, Department of Physiology
McGill University*

Revised April 2015

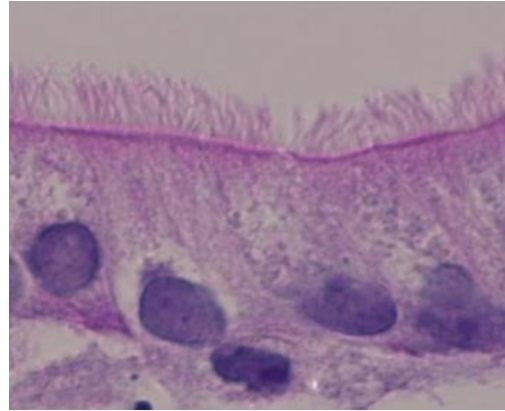


TABLE OF CONTENTS

EXECUTIVE SUMMARY

I. IDENTIFICATION

II. RATIONALE

BACKGROUND: Context behind the creation of the CFTRc

Cystic Fibrosis: an inherited disease with no effective treatment

Moving towards a cure for Cystic Fibrosis

An opportunity to make a difference

OVERALL PURPOSE: Our mission

VISION

PAST HISTORY

Existing research collaborations

Group grants obtained for collaborative projects

RECOMMENDATIONS (internal and EXTERNAL)

III. RESEARCH PROGRAM

LONG- AND SHORT-TERM GOALS

DESCRIPTION OF THE PROPOSED CENTRE AND VALUE ADDED

DESCRIPTION OF THE RESEARCH PROGRAM- AXES OF RESEARCH

Adding value to the discipline

CONTRIBUTION TO TRAINING

Promoting training and education

FUNDING FOR RESEARCH ACTIVITIES

Leveraging new research funding opportunities

IV. STRATEGIC POSITIONING

POSITIONING IN RELATION TO OTHER RESEARCH UNITS

STRATEGIC FIT

Importance to faculties and McGill

Future development plan

V. GOVERNANCE

STRUCTURE

Governing board and International advisory board

Organizational chart

PROPOSED INAUGURAL MEMBERSHIP

FREQUENCY OF BOARD AND OTHER MEETINGS

VI. MEMBERSHIP

CLASSES OF MEMBERSHIP

NEW MEMBERS, OBLIGATIONS AND PRIVILEGES

VII. LAB FACILITIES AND OTHER RESOURCES

Primary Culture Facility

Electrophysiology Facility

Patch-clamp and microelectrodes

High Through-Put electrophysiology

Mouse Colonies

Imaging Facility

High throughput screening (HTS)

VIII. BUDGET

OVERVIEW OF OPERATIONAL BUDGET
OPERATIONAL EXPENDITURES OVER 5 YEARS
PLAN FOR SECURING FUTURE FUNDING

APPENDICES

- Appendix 1: List of joint publications
- Appendix 2 : Bylaws for the operation of CFTRc
- Appendix 3: 2011 Opening Celebration for CFI facilities - Program
- Appendix 4: 2014 CF Symposium program with FKQ
- Appendix 5 : 2015 CF Symposium program with FKQ

EXECUTIVE SUMMARY

Cystic Fibrosis (CF) is the most common fatal genetic disease affecting Caucasians. In Canada, the median life expectancy of a CF patient is presently 48.5 years, however half of the CF patients who died in 2011 were under age 34. Basic research on CF has advanced dramatically since the discovery of the CFTR gene in 1989 however despite improved antibiotics, enzyme supplements and clinical care, there is yet no effective treatment for this disease. Many investigators at McGill and the RI-MUHC work on problems related to CF but there is presently no administrative structure to coordinate their activities, seek funds for joint projects, or obtain shared resources.

The creation of the Cystic Fibrosis Translational Research Centre (CFTRc) will build upon the McGill-based BREATHE (Basic REsearch And THERapy: “Innovative Targets for CF Therapy”) program. This team of 8 investigators was led by J. Hanrahan and ran from 2004 to 2009 with joint funding from Cystic Fibrosis Canada and CIHR (total \$3.6 M operating funds over 5 years). Infrastructure for the CFTRc was built with support from the successful CFI-6 application led by D. Thomas (PI) and co-investigators entitled “The McGill University Life Sciences Complex Disease to therapy initiative” (total value \$26.5M). CFI funds were used to renovate space for the CFTR and purchase major new equipment. Establishing the CFTRc as a McGill University Centre will enhance its basic and translational research activities, which have the goal of developing novel therapeutics to treat CF. The need for translational research in CF is widely recognized and is a direction that the federal government, CIHR and CF Canada are likely to emphasize in future.

The 11 regular members and 17 associate members of the CFTRc will be drawn from various departments within McGill and from other Quebec institutions and the University of British Columbia, as might be anticipated from the multidisciplinary nature of the disease. The Centre will integrate chemical and structural biology, biochemical studies of the rescued protein, and physiological studies of cell cultures, isolated tissues, and whole animals. It has already established a website and will facilitate robust scientific exchange within and outside the Centre, fostering interactions with industry, advising members concerning technology transfer and commercial agreements, and promoting both preclinical and clinical studies.

The CFTRc is presently engaged in three research agreements with private companies. Attaining official status as a McGill Centre will further expand this translational research activity. Establishing a cohesive centre that is focused on CF and related diseases will also increase our competitiveness for program grants. The CFTRc has already catalyzed the establishment of a CF Canada sponsored, nation-wide facility for the procurement of lung tissue and distribution of primary cells to researchers in academia and the private sector, further raising the profile of the McGill Faculty of Medicine in this field. Formal status as a McGill University Centre will facilitate the management of shared resources, provide administrative oversight, ensure regulatory compliance, and enable services to be delivered at the highest level.

I. IDENTIFICATION

The Research centre will have the name “Cystic Fibrosis Translational Research centre, a McGill Research Centre”, or simply “CFTRc”. The proposed director will be John Hanrahan, Department of Physiology and Research Institute - McGill University Health Centre. The lead faculty will be the Faculty of Medicine, with the participation of the Faculty of Science in which some members e.g. Dr. Paul Wiseman are based. The Centre will be physically based in the McIntyre Med. Bldg. on floors 9 - 11. The Centre office will be located in room 1014A, which is located in CFI-renovated space that was identified as a CF Centre in the original application.

II. RATIONALE

BACKGROUND

Context behind the creation of the CFTRc

Many investigators at McGill work on problems related to Cystic Fibrosis (CF) however there is presently no administrative structure to coordinate their activities, seek funds for joint projects, or obtain shared resources, fellowships, etc. The Cystic Fibrosis Translational Research Centre (CFTRc), which was inaugurated on Monday, October 17, 2011 (please see Appendix 3 – Program) will apply to the FRQ-S and to cystic fibrosis foundations in Canada and the USA and other agencies for funding, and will provide core facilities (HTS, primary cell culture, imaging...), training grants and other resources needed by CF researchers across Canada for rapid progress. The Centre will enhance basic research while keeping the focus on the translation of new findings into novel therapeutics. The need for translational research in CF is widely recognized and this is a direction that the federal government and the CIHR are likely to emphasize in future. The recent success of Kalydeco, a drug from Vertex which helps ~4% of CF patients, has generated great excitement among patients, researchers, pharmaceutical companies and investors, and raised expectations that an effective therapy for most patients can be found in the near future. This is an ideal time to formally establish a McGill Centre which can facilitate basic and translational CF research and early stage drug development.

The 11 regular members and 17 associate members of the CFTRc are drawn from various departments (Physiology, Biochemistry, Medicine, School of Computer Science, Microbiology and Immunology, Physics, Pediatrics, and Otolaryngology) within McGill University and also from other Quebec institutions (Université de Montréal, IRCM, Université de Sherbrooke) and the University of British Columbia, as might be expected from the multidisciplinary nature of this disease. The CFTRc will integrate chemical and structural biology, biochemical studies of the rescued protein, DNA sequencing for rare mutations and modifier genes, and physiological studies of cell cultures, isolated tissues, and whole animals. It will also foster interactions with industry, advise members concerning technology transfer and commercial agreements, and promote both preclinical and clinical studies of potential therapeutics.

Cystic Fibrosis: an inherited disease with no effective treatment

CF is the most common fatal genetic disease affecting Caucasians. The prevalence in North America, UK, Europe, Middle East and Australia is ~1 in 3,500 live births although the incidence is much higher in some geographic areas such as the Lac St. Jean region in Quebec,

where it afflicts one in 902 newborns. The mutated gene that causes CF encodes a chloride channel called the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR). Defects in CFTR result in a deficiency of cAMP-stimulated chloride conductance in epithelial cells at mucosal surfaces, which leads to the dehydrated mucous secretions that are viscous and difficult to clear. Abnormal secretions lead to profound tissue inflammation, bacterial colonization, and pulmonary infection. CF affects most exocrine glands, notably the pancreas, and other epithelia such as the intestine, liver and bile duct. However, most morbidity and mortality results from a defect in airway mucociliary clearance, which leads to cycles of bacterial infection, chronic inflammation, fibrosis, and a decline in pulmonary function. In Canada, the median life expectancy of a CF patient is presently 48.5 years. Despite improved antibiotics, enzyme supplements and clinical care, there is no effective treatment for this disease for most patients.

Moving towards a cure for Cystic Fibrosis

Basic research on CF has advanced dramatically during the past 25 years, beginning with the identification of the defective gene and later studies of the CFTR protein. One therapeutic strategy has been gene therapy to replace the mutant CFTR. Although this is an attractive long term solution, it has proven to be technically very challenging. An alternative approach has been to develop small molecule CFTR modulators. There are two general strategies in CF drug development, the first is to identify compounds that ‘correct’ the mutant CFTR trafficking defect and the second is to identify molecules that ‘potentiate’ the small number of mutant CFTR channels that do traffic to the plasma membrane. Optimism has increased since the FDA approved the drug Ivacaftor (Kalydeco) by Vertex Pharmaceuticals, which was developed during the past 15 years with support from the CFFT. This is a potent and effective potentiator of the G551D-CFTR mutant but this mutation carried by ~3-4% of the CF patients worldwide. The world population of known CF cases is 70,000 - 80,000, which may be an underestimate because CF is under diagnosed in some countries (e.g. in India the frequency may be as high as 1:10,000, which would triple the world’s known CF population, and the incidence in African Americans and in Asians is 1:15,000 and 1:31,000, respectively). Nevertheless, CF is considered an orphan disease, and historically the resources of the pharmaceutical industry have not been directed towards CF and other so-called “orphan diseases” because the number of patients does not represent a sufficiently large market to encourage expensive drug development.

An opportunity to make the difference

Academic institutions can fill this gap in health research because they do not have to report to shareholders and may have other advantages, such as investigators with specialized expertise relevant to the disease. Moreover the interest of big pharma in investing in CF research programs has been growing due to the success of Kalydeco as a proof-of-principle CFTR modulator and the realization that CFTR may be an important target in more common diseases such as chronic obstructive pulmonary disease (COPD). The high throughput screening (HTS) and imaging facilities are well-established in the McGill Life Science Complex and make it possible to undertake academic drug discovery programs that previously were only feasible in pharmaceutical companies. Although some might argue that HTS should be out-sourced, screening itself is not usually the rate-limiting step and even relatively small campaigns generate many hits. Most effort is spent validating hits using specialized biochemical and functional assays that are not easily scaled-up and can be implemented in a centre. In-house screening maintains control of intellectual property and once promising hits are identified, a core facility

can provide researchers with a reliable supply of essential reagents including antibodies, CF mice, cell lines, and high quality primary cells from CF patients. The latter are considered “the gold standard” for studying disease mechanisms and preclinical development of new therapeutics and are required by the FDA when filing an investigational new drug (IND) application. The primary cell facility in the CFTRc was established at McGill in 2009 with support from the Cystic Fibrosis Canada (CFC) Breathe program and the Harpur paediatric fund. It now has 4 years-experience isolating and culturing high quality epithelial cells for basic and translational research. In collaboration with CFC, we are developing a trans-Canada network for lung tissue procurement and a cell distribution system to supply CF researchers across Canada with cells. The cells will be used for basic mechanistic studies of the disease and to develop new correctors, potentiators, and other CF therapeutics which can be developed further into clinical candidates through the Orphan Drug Act. Once they achieve IND status they will be tested in clinical networks which have been established by cystic fibrosis foundations in Canada, USA and Europe to facilitate multi-center clinical trials.

OVERALL PURPOSE

The mission of the CFTRc: to find a cure for CF.

To reach this goal, the CFTRc will:

1. enhance CF research by offering unique infrastructure, state-of-the-art equipment, and network resources that accelerate breakthroughs in the field.
2. provide a translational research platform for the development of therapies that target the basic defect underlying CF and other protein trafficking diseases.
3. develop a trans-Canada lung tissue procurement network to isolate and distribute primary cells to researchers across the country.

PAST HISTORY

Existing research collaborations:

Several laboratories in the proposed centre already collaborate extensively and have published together. Please find a list of joint publications between members in **Appendix 1**.

The **Thomas** and **Hanrahan** labs have 7 full time personnel (3 research associates, 1 postdoc, and 3 research assistants) that work collaboratively on projects related to CF drug discovery. This effort includes high throughput screening of compound libraries, identification of drug targets by genome-wide siRNA screens, development of new CFTR antibodies and other reagents, expression of recombinant CFTR domains and studies of their drug binding using small molecule arrays, and biochemical and functional studies of CFTR trafficking correctors in cultured cells and CF mice. **G. Lukacs** is a leader in the area of CFTR folding/misfolding and quality control. His research on proteosomal degradation and the mechanisms of ubiquitination complement projects in the **Hanrahan** and **Thomas** labs is presently collaborating with them on studies of factors that determine corrector efficacy.

The interaction of CFTR with BAP31 is being studied by **G. Shore**'s lab in collaboration with **Thomas** and **Hanrahan** labs. BAP31 plays an important role in apoptosis and in the retrotranslocation of proteins from the endoplasmic reticulum (ER) during quality control. CFTR

folding depends on appropriate interactions with chaperones in the ER such as Hsp/Hsc 70, Hsp90 and many co-chaperones. Shore is also on the advisory committee of the McGill HTS facility.

J. Young is an expert in chaperones and has provided recombinant chaperone proteins and advice regarding assays to the **Hanrahan** lab.

P. Wiseman and **C. Brown** are experts in quantitative fluorescence imaging methods and their use for studying the dynamics of protein movements and interactions in live cells. The **Wiseman** and **Hanrahan** labs have published a collaborative study of CFTR movements on the cell surface using fluorescence recovery after photobleaching (FRAP), time series image correlation spectroscopy (ICS), and single particle tracking. They have co-supervised several postdocs studying CFTR dynamics including A. Abu-Arish, who is presently working in the **Hanrahan** lab. **P. Wiseman** and **C. Brown** have collaborated recently on the use of imaging to track protein movements during cell migration.

C. Haston has much expertise in studying the phenotype of CF mice and role of modifier genes. She presently collaborates with the **Thomas** and **Hanrahan** labs to assess the physiological effects on CF mice of new compounds that have been identified in the Center by high throughput screening. The **Haston** and **Thomas** labs both have ongoing collaborations with **M. Hallett**. The **Thomas** and **Hallett** groups have developed a comprehensive database of human ER proteins called Human ER Aperçu (Hera), which will facilitate studies of $\Delta F508$ CFTR and other proteins that misfold in the ER. **Haston** and **Hallett** recently analyzed gene expression profiles in strains of CF mice that differ in the severity of their symptoms and identified immunological and other genetic factors that influence the severity of lung disease (modifier genes).

D. Radzioch has developed a CF mouse colony which is available to CF researchers upon request. She has collaborated on several CF studies with **Berthiaume**, **Petrof**, **Martin**, **Hanrahan**, **Lands** and **Lukacs**.

J. Martin studies airway inflammation in pulmonary diseases such as asthma and CF. He collaborated with **J. Hanrahan** and **C. Haston** labs to investigate CFTR's role in human airway smooth muscle cell. He was also involved in the development of the primary cell culture facility and is a user of surgical samples from CF transplant recipients.

B. Petrof studies respiratory muscle dysfunction, injury and repair and collaborated with **Radzioch**, **Haston** and **Hanrahan** labs to demonstrate that the lack of CFTR in skeletal muscle predisposes to muscle wasting and diaphragm muscle pump failure in cystic fibrosis mice. He uses the genetically altered CF mouse models from **Haston** lab to elucidate the cellular and molecular events underlying muscle cell injury and repair in CF.

D. Nguyen has provided microbiology advice and *Pseudomonas* strains to the **Hanrahan** lab. Members of **Nguyen** lab were trained in airway epithelial methods in the **Hanrahan** lab. She also has several collaborations with **S. Rousseau**. In 2012, **Rousseau** became leader of the Cystic Fibrosis strategic grouping of the Quebec Respiratory Health Network. He organizes monthly CF research meetings which are open to all the CFTRc members.

L. Lands, **A. Cantin** and **Y. Berthiaume** have collaborated extensively with each other and with the **Hanrahan**, **Thomas** and **Haston** labs. More specifically, **Lands** and **Haston** have performed studies of dietary thiols in CF mice, the groups of **Cantin** and **Hanrahan** published two studies on the effects of oxidant stress and CFTR in vitro and in patients and continue to collaborate on that project. The **Berthiaume** group collaborates with **Cantin**, **Hanrahan** and **Brochiero** in the use of normal and CF airway cell lines and primary cultures. As drug

candidates are being developed, it will be necessary to develop Phase I and II clinical trials with the help of **Lands**, **Berthiaume** and **Cantin**, directors of CF clinics in Montreal and Sherbrooke with experience with trials.

C. Poirier is co-director (with Dr. P. Ferraro) of the Montreal CF transplant clinic. Both are thoracic surgeons who provide CF tissue after lung transplantation. In collaboration with **Brochiero** and **Berthiaume**, CF lung tissue procurement has been centralized at the CHUM. This will provide a sustainable tissue supply for the CFTRc primary cell culture facility, and we anticipate collecting additional lungs and bronchus specimens from 12-15 patients per year from the other four lung transplant clinics across the country once our non-profit contract research organization which is being developed in collaboration with CF Canada is established.

S. Frenkiel and **M. Tewfik** carry out research on the molecular biology of chronic sinusitis, mucociliary physiology, and nasal airflow testing. As surgeons, they provide the CFTRc primary cell culture facility with non-CF nasal polyps and normal (180 specimens collected to date), which are used as controls for CF research.

R. Andersen collaborates with **Thomas** and **Hanrahan** labs. He has provided over 700 extracts from marine sponges and has deconvolved two of the active fractions, which are complex mixtures, into single molecules. This collaboration has already yielded a CFTR trafficking corrector with nM affinity, a UBC-McGill report of invention, a patent application, and joint publications.

S. Gruenheid is working with the **Hanrahan** lab to develop a new model for host-pathogen interactions in CF which exploits the strong phenotype in the CF mouse intestine.

Group grants obtained for collaborative projects:

Several investigators in the proposed centre have applied for funding together. One of the major CF operating grants obtained by CFTRc members was a McGill-based program called BREATHE (Basic REsearch And THERapy: “Innovative Targets for CF Therapy”) which began in 2004 with joint funding from Cystic Fibrosis Canada and CIHR. It was later extended until 2009 (total \$3.6 M over 5 years). The Montreal Breathe program was led by **J. Hanrahan** and included **D. Thomas**, **J.J.M. Bergeron**, **A. Cantin**, **Y. Berthiaume**, **D. Eidelman**, **C. Haston**, and **L. Lands**. BREATHE members met regularly to discuss progress in the various laboratories. The program supported seminars by leading CF researchers every 4 – 6 weeks, usually in collaboration with McGill departments (Anatomy Cell Biology, Biochemistry, Physiology and Medicine/Meakins Christie Labs) and neighboring institutions (e.g. U de Montreal). The program sponsored several initiatives to promote collaborative CF research, for example it invested \$16,000 to develop novel anti-CFTR antibodies, supported a small clinical trial to test the effects of dietary thiols, and established a primary cell culture facility for CF airway epithelial cells.

Another collaborative grant between the groups of **D. Thomas**, **J. Hanrahan**, **M. Hallett** and **M. Bouvier** (U de Montreal) was from Genome Quebec and was entitled “Functional Screening: High content screening facility and target identification”. This funding enabled the development of a cell-based assay which has been used for high throughput screening compound libraries. **D. Thomas** and **J. Hanrahan** currently share two CIHR operating grants and have jointly held 7 grants during the past 5 years, in addition to the CFI6 Leading Edge Fund grant “Disease to therapy initiative” with 8 other co-investigators (\$26,582,371, of which >\$5M was earmarked for CFTRc-related renovations and major equipment.

III. RESEARCH PROGRAM

LONG- AND SHORT-TERM GOALS

The long-term goal of the CFTRc is to help people with CF live a normal, healthy life. The short-term goal is to provide resources and a research environment that will lead to new discoveries regarding the cellular and molecular mechanisms of CF, and to promote the translation of the new knowledge into effective therapies.

A major focus of the translational research will be on pharmacotherapies and are based on two fundamental observations: (1) protein trafficking diseases such as CF arise from retention of mutated, but still functional, proteins in the endoplasmic reticulum (ER); (2) chemicals can act as chaperones or override the ER quality control system, allowing mutant protein to traffic to the cell surface where it can function. CFTRc members will use integrated, multidisciplinary approaches to determine the mechanisms responsible for CFTR retention in the ER, develop genetic and chemical methods to inhibit this retention, and develop novel therapeutic strategies that may be applicable to other protein trafficking diseases. The CFTRc will bring these efforts together with infection, inflammation, genetics and other research areas which are central to CF pathobiology and link basic science to patients.

The CFTRc also has a strong clinical component with links to the respiratory health and clinical trial networks in Quebec, Canada and the USA that should facilitate the transition from preclinical research to Phase I and II clinical trials. **L. Lands** and **E. Matouk** are directors of the pediatric and adult CF clinics of the MUHC, respectively (175 patients total). **A. Lavoie** and **A. Cantin** direct CF clinics at Hôtel Dieu (300 adult patients) and Fleurimont (CHUS, 33 adults and 20 children) hospitals, respectively. All these clinics have participated in CF clinical trials. We will also approach **Dr. Jacques-Edouard Marcotte**, head of the CF clinic at Hôpital Ste. Justine (300 children), regarding the possibility of establishing a joint research program.

DESCRIPTION OF THE PROPOSED CENTRE AND VALUE ADDED

The CFTRc will add value by improving interaction between internationally renowned investigators in physiology and pathophysiology, biochemistry, cell biology, ion channel biophysics, immunology, bacteriology, respirology, gastrointestinal physiology. It will provide infrastructure support and ensure that members are aware of opportunities for collaboration and for sharing expertise, methodologies, equipment and reagents.

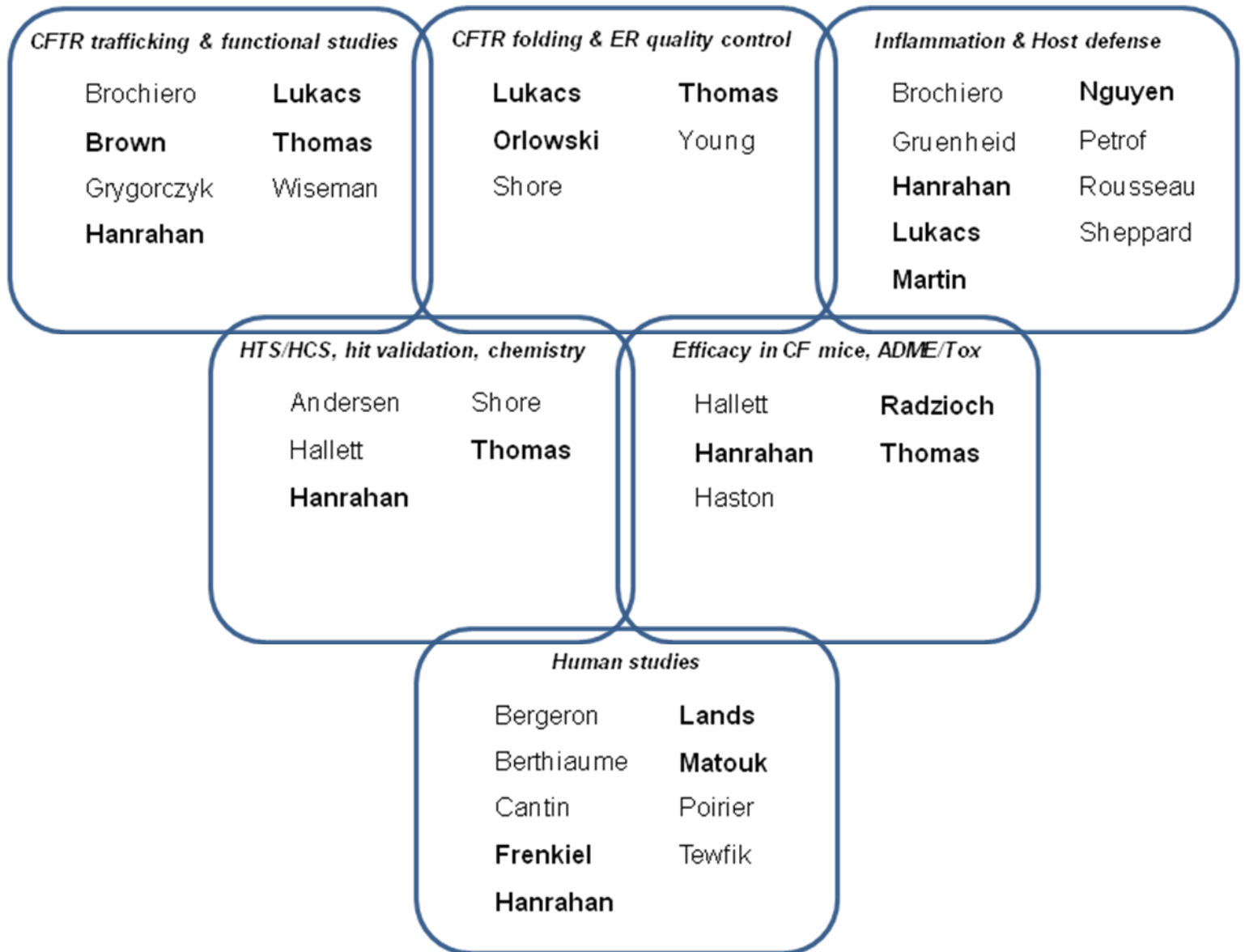
CFTRc members have experience organizing international conferences and have chaired and/or served on the organizing committees for the annual North American CF Conference, CFC Broken Arrow Conferences, and the European CF Basic Science Conference. CFTRc members also communicate research activities through the lectures and seminars that they give around the world. They serve on CFFT consortia, grant panels and other funding agency committees, scientific advisory boards in the private sector, and are reviewers/editors for several international journals.

The administrative core will schedule joint lab meetings, meetings to discuss collaborations and research challenges, implement program review and strategic planning, and, if necessary, conflict resolution. The CFTRc will also promote knowledge dissemination through its website: <http://www.mcgill.ca/cftrc>, providing information about the members, their research activities and the platforms that are available. The CFTRc will also continue to promote

knowledge dissemination through press releases and radio and television interviews. For example a television show (Découverte, Radio-Canada) was recently filmed in the Centre.

DESCRIPTION OF THE RESEARCH PROGRAM- AXES OF RESEARCH

The CFTRc will be highly integrated and most members will participate in several inter-related activities. Six main research axes form a platform for translational research (current regular members are indicated in bold):



Definitions and explanations of the axes of research. Cystic fibrosis is a multifaceted disease involving many disciplines and therefore divides naturally into distinct axes of research. Although lung disease causes most of the morbidity and mortality in CF, many other organs and tissues are affected including the pancreas and other exocrine glands (the disease was originally named “Cystic Fibrosis of the Pancreas” by Dorothy Andersen in 1938, and pancreatic sufficiency is still used to distinguish severe from mild mutations). The gastrointestinal and reproductive tracts and bone mineralization are also severely affected in CF, and more subtle abnormalities will probably become apparent as the median survival of CF patients increases as the defective gene is widely expressed.

CF is an autosomal recessive disease caused by many mutations in the *cftr* gene. Severity depends on in part on the nature of the mutation and is also influenced by polymorphisms in other genes, thus the study of genetic (and probably also epigenetic) factors is key to understanding CF. Many mutations in CFTR disrupt its folding, trafficking and stability, thus biochemistry and cell biology are both major areas of CF research. These defects at the protein level adversely affect the biophysical properties of the CFTR channel and its interactions with other proteins, leading to abnormal salt and fluid transport. Thus functional studies of CFTR are a prominent area of CF research. CFTR dysfunction leads to reduced salt and fluid secretion into the airways, which compromises mucociliary clearance and other host defense mechanisms leading to bacterial colonization, chronic inflammation and eventually fibrosis. Thus microbiology, host defense and inflammation form a natural axis of CF research. Although antibiotics, dietary enzyme supplements and improvements in patient care have extended the life span of patients from 10 to 47 yrs, drugs that target the basic defect have recently been developed. One drug called Kalydeco has been approved for patients carrying G551D or one of nine other relatively rare mutations. Thus CF research now encompasses genetics, studies of cell and animal models, microbiology, inflammation and innate immunity, drug development and clinical trials. We have defined axes of CF research based on our expertise and these shared interests provide obvious opportunities for collaboration within the CFTRc.

CFTRc Axes

CFTR trafficking & functional studies: Members of this axis focus on the trafficking of wild-type and mutant CFTR from the Golgi to the plasma membrane, its stability, recycling through endosomes and peripheral quality control, and its functions at the cell surface, which include serving as a tightly regulated conductance for chloride and bicarbonate ions and modulating the activity of other proteins.

CFTR folding and ER quality control: This axis investigates biochemical aspects of CFTR folding and ER quality control which are relevant to the fundamental folding defect that arises from mutations in CFTR. Chaperones that assist protein folding and the endoplasmic reticulum quality control machinery which identifies misfolded mutant protein and targets it for ERAD (ER associated degradation) by the proteasome are major themes.

Inflammation & Host defense: Loss of CFTR leads to exaggerated inflammation, increased susceptibility to infection by bacteria and fungi, development of relatively antibiotic-resistant biofilms, and functional abnormalities and responses to injury in the host. Members of this axis study bacteria and fungi that infect CF patients, epithelial responses to those infections including inflammation, and other CF abnormalities in muscle and epithelial cells.

HTS/HCS, hit validation, chemistry: The development of new CF drugs often begins with screening campaigns that utilize cell-based assays and libraries of small drug-like molecules and

natural products. Another important goal is the identification of drug targets using biochemical and bioinformatics approaches. Members of this axis have expertise in these areas. Although our centre does not presently include medicinal chemists there is medicinal chemistry expertise available in the McGill Life Sciences Complex, and lead optimization is being carried out in collaboration with NuChem Therapeutics Inc., a medicinal chemistry contract research organization based in Montreal.

Efficacy in CF mice, ADME/Tox: Once lead compounds have been identified *in vitro* they can be tested *in vivo* using the two CF mouse colonies which are maintained by the CFTRc (knockout/Balb/c strain and F508del/FVB strain). The centre has considerable expertise in mouse phenotyping and in translational studies of compounds in mice. Chemical characterization of lead compounds and ADME/Tox studies are presently outsourced on a fee-for-service basis to the Plateforme de biopharmacie at the U de Montréal.

Human studies: The most recent and perhaps most ambitious initiative in the CFTRc is the axis which directly involves CF patients. CFTRc co-director Larry Lands will lead the effort to establish Phase I and Phase II clinic trials at the Centre for Innovative Medicine at the new Glen Yards clinical research facility. Both Drs. Lands and Hanrahan are members of the Research Institute of the MUHC, and this axis will enable the CFTRc to cover CF research from the lab bench to the bedside in collaboration with other clinical researchers in Sherbrooke, Montreal and eventually with Toronto through the recent CIHR Strategy for Patient-Oriented Research (SPOR) initiative.

CONTRIBUTION TO TRAINING

Official status as a McGill Centre will enhance training in several ways.

1) It will help members attract graduate students and post-docs because it will highlight the number of researchers working on CF at McGill and the unique multidisciplinary training opportunities this provides. Several students affiliated with CFTRc members presently hold scholarships from federal or provincial agencies or foundations and we would like to attract more high quality graduate students to increase that number. Centre status will increase McGill's profile in CF locally and at large conferences such as the North American CF Conference and the European CF Conference, which will help attract trainees from the large international CF research community.

2) The CFTRc will provide a focal point for establishing a monthly Journal Club, which will be run by graduate students.

3) It will motivate a high quality seminar series, in which speakers working in areas relevant to CF will be invited approximately once per month. This will be done in partnership with appropriate faculty departments and thus will indirectly bolster the seminar programs of participating departments.

4) The CFTRc will host workshops, for example an "open house" event is planned for March 2015 to showcase the equipment available in the centre.

5) The CFTRc will contribute to existing McGill programs such as the Chemical Biology graduate option (a joint initiative of the Departments of Biochemistry, Physiology, Chemistry, and Pharmacology & Therapeutics) by offering a graduate level course relevant to CF drug discovery which covers the breadth of basic and clinical research in this disease. We will coordinate the course with the "Programme de Formation en Santé Respiratoire du Québec - IRSC", which is directed by Drs. François Maltais (Université Laval), **Yves Berthiaume** (IRCM), Kevin Schwartzman (McGill University), **James Martin** (McGill University) and Eric

Rousseau (Université de Sherbrooke), and serves seven Quebec universities (Université de Montréal, McGill University, Université Laval, Université de Sherbrooke, Université du Québec à Chicoutimi, Université du Québec à Montréal and Concordia University). This program provides specialized courses in Respiratory Health via distance learning and enables students to participate in monthly on-line problem solving seminars. It also offers workshops on basic and clinical research, bioethics, biostatistics and the use of databases, and provides access to hands-on research training and state-of-the-art techniques that are available at different centres. The CFTRc course would include basic science related to CFTR and relevant aspects of infection, inflammation and pulmonary biology. This course would be offered in both English and French to maximize its usefulness for distance learning and would consist of videotaped lectures given by members of the Centre, interactive web-based learning tools, assigned readings and problem sets. If funds are available we will host a workshop that would be attended by the ~12 respiratory health students from across Quebec who are presently registered in the program, expanding those already provided by some Centre members.

6) The CFTRc will continue to organize annual symposia similar to CFTR25, which was produced in collaboration with Fibrose Kystique Quebec (FKQ) to celebrate the 25th anniversary of the discovery of the CFTR gene. This one day event was held on May 26th 2014 at the McGill New Residence Hall and featured eight international calibre speakers, including two researchers who helped discover the gene and clone its cDNA (Drs. Johanna Rommens and Jack Riordan). The event also had a poster session to increase the participation by students and postdocs and expose them to potential collaborators and this will continue in future years. The objective of CFTR25, which was open to all investigators, students, lab members, clinicians and nurses working in the CF field in Canada, was to celebrate the discovery of the CF gene and also review what has been learned about the basic defect and the progress that has been made towards an effective therapy. With exceptional plenary speakers, several forums for discussion including food breaks and a ``poster session``, there were many opportunities to discuss ongoing projects and future strategies for combating CF. The event brought together researchers, clinicians and students working in the CF field from the greater Montreal area and beyond and also helped to launch FKQ's 2014 CF awareness fund-raising campaign. It was followed by a press conference which prominently featured several CFTRc members from McGill. The intimate venue of the McGill New Residence Hall provided an excellent environment to encourage discussion. The attached programs contain the speakers in 2014 and confirmed speakers for the symposium which has already been organized for 2015 (see **Appendix**).

FUNDING FOR RESEARCH ACTIVITIES

1) Potential donors to the McGill capital campaign will be invited to provide funding for the CFTRc, and we intend to name individual laboratories, facilities or major equipment according to the wishes of benefactors.

2) We will seek external funding for an administrative core and essential research cores (screening, imaging, CFTR structural and functional analyses, knockout and F508del CF mouse colonies).

3) The CFTRc members are the recipients of several awards, honours and grants. Four hold Canada Research Chairs (Tier 1 – **D.Thomas, G. Lukacs**; Tier 2 – **J. Young, S. Gruenheid**). The total amount of peer-reviewed funding to CFTRc members exceeds \$15 million annually and includes grants from CFI, CIHR, NSERC, FRQ-S, CFC, CFF and the NIH.

The center will encourage members to apply for team grants and promote collaborative proposals; for example Drs. **Nguyen** and **Hanrahan** will apply for funding from the National Sanatorium Association and the Institut Merieux, and Drs. **Thomas** and **Hanrahan** will apply for a Proof of Principle grant (POP-1) from CIHR. Drs. **Rousseau, Nguyen, Hanrahan, Lukacs** and **Brochiero** are organizing a new proposal for Réseau en Santé Respiratoire to study the regulation of CFTR expression.

An example of the fundraising activities of CFTRc is the educational fund, which was established with funds from Zeiss and provides part-time salary (\$50,000 spread over 2 years) for an imaging expert from the Institut Pasteur (Dr. Aurélie Cleret-Buhot) to train new users and maintain the state-of-the-art equipment purchased on CFI6 (LSM 780 confocal, Spinning disc/TIRF combination, upright LSM 700 and wide-field ratiometric fluorescence microscope equipped for electrophysiology, all of which are now installed and available in the CFTRc). Aurélie will organize the open-house in March 2015 is implementing the on-line booking and billing system for equipment users that was developed by MedIT and **Dr. Claire Brown**, director of the Advanced BioImaging Facility in the Life Sciences complex. An important goal of this initiative is to provide training and raise the level of imaging expertise at McGill, focusing on problems related to cystic fibrosis.

IV. STRATEGIC POSITIONING

POSITIONING IN RELATION TO OTHER RESEARCH UNITS

The proposed CFTRc is complementary and will be closely integrated with the *McGill Centre for Structural Biology* (CSB) organized by Kalle Gehring, which will be technology rather than disease-based. Some members (**G. Lukacs, D. Thomas, J. Young**) will belong to both centres.

Some CFTRc members (**C. Haston, D. Thomas**) collaborate with members of the *McGill Centre for Bioinformatics* (MCB) directed by **M. Hallett**. The MCB is a diverse collection of faculty, postdocs, and students who share a common interest in Bioinformatics.

Two members (**D. Radzioch, D. Sheppard**) of the CFTRc are also members of the *McGill Center for the Study of Host Resistance*. Host resistance is a field of study that seeks to explain resistance to disease and the host response. One of the main complications in CF is chronic bacterial infection in the airways, thus examining the molecular mechanisms involved in the inflammatory response is very important in CF.

Several members (**Y. Berthiaume, E. Brochiero, C. Brown, R. Grygorczyk, J. Hanrahan, J. Orłowski, P. Wiseman**) of the CFTRc are also members of the FRQ-S funded research group *Groupe d'Étude des PROtéines Membranaires (GEPROM)* based at the Université de Montréal. GÉPROM was formed in 2001 when the Groupe de recherche en transport membranaire based at the Université de Montréal was expanded to include researchers at McGill, Concordia and UQÀM.

Some members (**M. Hallett, D. Thomas, J. Young, J. Hanrahan**) of the CFTRc are also members of *Pharmaqam* based at UQAM, which has a focus on biopharmaceutical research. The center examines molecular aspects of pharma research and brings together cutting-edge approaches to accelerate drug discovery. Pharmaqam's mission is to develop new approaches to

streamline early stage drug discovery for cancer, viral and bacterial infection, along with orphan and degenerative diseases.

Several members (**C. Bergeron, Y. Berthiaume, E. Brochiero, A. Cantin, J. Hanrahan, C. Haston, L. Lands, B. Petrof, S. Rousseau**) of the CFTRc are also members of the FRQ-S funded *Réseau en santé respiratoire (RSR)*, a consortium of researchers dedicated to respiratory health research. The RSR brings together over 170 researchers, pulmonologists and health professionals from across Quebec. CF is one of the 6 strategic themes within the RSR, which supports joint projects.

Positioning of the centre within Quebec, Canada and internationally. Do other such centres exist? How will this one be different? Establishing this centre will facilitate CF research at McGill and help it to remain competitive nationally and internationally. There are presently 11 CF centres in the USA, which each receive ~ \$500,000 / year from the US Cystic Fibrosis to support administrative costs, core facilities, pilot and feasibility projects, and training programs. Many of those centres also receive a similar amount from NIH P30 grants from NIDDK and/or NHLBI, which is a program that supports shared resources and facilities. The Hospital for Sick Children Research Institute has a Cystic Fibrosis Centre which was founded by Lap-Chee Tsui and is presently directed by Johanna Rommens. Like the CFTRc it has basic and clinical research components and Sick Kids has recently initiated a fund raising campaign to sustain it. Several smaller centres also exist in Europe. To remain competitive and collaborate on an equal footing with groups at Sick Kids and elsewhere it will be important to organize the resources available to CF researchers in the McGill community. Individual members of the CFTRc have expertise and world-class research programs which make the centre inherently different from the other 12 centres mentioned above. Our close association with provincially funded research groups (GRASP, GEPROM) and resources within the McGill Life Sciences Complex (GCC histology core, ABIF imaging facility, etc) also make us different and give us some advantages over other centres.

Importance to Faculties and McGill:

Establishing a centre for CF translational research will enable us to attract funding and build resources that will be made available to colleagues outside the CFTRc. The centre's office in the McIntyre Building will provide an environment that is conducive to world class multidisciplinary research and the development of new therapeutics.

Formation of the CFTRc is consistent with the objectives of the McGill's Strategic Research Plan. It addresses:

***two of the seven broad Areas of Research Excellence identified in the plan:**

(1) *capitalize on the convergence of life sciences, natural sciences and engineering with ``cellular and molecular mechanisms`` as a key area.*

(2) *support health research and improved delivery of care with ``health services``; ``outcomes and translational research`` ; ``infection, immunity and inflammation`` as a key area.*

CF is already a key research area and McGill is recognized internationally for its expertise in protein quality control and cystic fibrosis research. Indeed, recent proposals to CFI and MDEIE for funds to equip the new Bellini building were based on protein trafficking diseases, the main one being CF.

*** one of the Core Commitments: ``collaboration and partnership``**

*** three of the Strategic objectives:**

(1) Enhance McGill's research capacity

Chemical biology and academic drug discovery are relatively new disciplines. Chemical Biology is an emerging strength at McGill and we have an opportunity to take a leading role. The Life Sciences Complex has established a high throughput screening facility, an imaging facility, a hybridoma facility, etc and CF drug discovery is a flagship HTS project. CF is becoming a model for protein trafficking diseases generally. The CFTRc will provide resources needed to continue attracting top quality faculty, students and staff.

(2) Build and strengthen strategic alliances and relationship

The CFTRc will enhance collaboration between investigators working at the intersection between physiology, biochemistry, pharmacology, biophysics, structural biology, chemical biology, mathematics, immunology and clinical medicine.

(3) Emphasize knowledge exchange and translation

As indicated by its name, translational research and commercialization of intellectual property are major objectives of the CFTRc. We presently have research agreements with 3 pharmaceutical companies and this is likely to grow. A business plan was developed and a startup company co-founded by D. Thomas and J. Hanrahan called Traffick Therapeutics Inc., which is based on IP that was generated by in-house CF drug development and returned by McGill. A research agreement has been reached with the local venture capital company AmorChem to fund optimization of one of the lead series called McG339. Medicinal chemistry for this project is being performed by NuChem and biological validation of corrector analogs is presently performed under a service agreement with McGill. Like other agreements with industry this provides 40% indirect costs to the University. CF-related grants have been a major source of operating revenue for the HTS and imaging facilities of the Life Sciences Complex. The translational research agreement between McGill and Traffick Therapeutics will increase that revenue and will help support the facilities at McGill. We are also exploring opportunities, such as BellBrook Labs (Madison, Wisconsin), who would like us to test new high throughput screening plate designs that utilize air-liquid interface cell cultures. Formal status as a Research Centre will help affiliated members raise other funds with agencies and the private sector, thereby maintaining the core facilities when current IOF funding from CFI run out.

New collaborative ties likely to take place if a formal research centre is formed. The CFTRc is expected to increase our visibility in the field and encourage potential collaborators. The CIHR Strategy for Patient-Oriented Research (SPOR) proposal mentioned above will involve collaboration between clinical researchers at the CFTRc and Sick Kids Hospital in Toronto. Another example is our growing interactions with Health Canada, which is interested in our methodologies and in using our primary airway cells from our bank to study the effects of air pollutants. A joint project is being proposed to study the effects of combustion emissions produced by motor vehicles that burn different types of fuel. We anticipate many opportunities to collaborate on basic research related to environmental toxicology.

Future development plans:

We will apply to the FRQ-S centre program (in which McGill is under-represented) if that program continues after 2015. The Physiology department has an interest in recruiting new faculty with expertise in cell signaling and imaging. These members would likely work in the fields of gastrointestinal and renal physiology since recruitment of expertise in these systems is urgently needed to fulfill the department's teaching mission. Nevertheless, GI and renal are systems that share common interests in epithelial cells (indeed, the GI is strongly affected in CF, therefore there may be recruitment of investigators who would fit well).

We would use FRQ-S funding to recruit high quality students and support travel awards for them to present their research work at international conferences. We would develop an exchange program with other CF centers worldwide so that research trainees could acquire expertise that is not available locally and develop new collaborations with in the CF field. We would also be able to use CFTRc as a vehicle for building collaborations with new business model platforms such as Neomed.

V. GOVERNANCE

STRUCTURE

The Director of the Research Centre will report to the Dean of the Faculty of Medicine. His/her term will be for three years (renewable once only). The director will be responsible for managing the daily business of the centre, its various activities and its annual report. An Associate Director for the centre will be selected by the Director. Dr. John Hanrahan will be the first Director. The centre will be overseen by a Governing Board consisting of the Dean of Medicine (or a delegate as assistant chair), the Director of the Research Centre, the Vice-Principal (Research and International Relations) or delegate, the Provost (or delegate), two full members and one CF clinic director, one external member (non-member of the CFTR), one graduate student.

- 1) David Eidelman MD / Shari Baum PhD, Dean, Faculty of Medicine
- 2) John Hanrahan PhD, Centre Director
- 3) Rose Goldstein PhD, VP Res. Intl Relations
- 4) Anthony Masi, PhD, Provost
- 5) David Thomas PhD, Full member
- 6) Gergely Lukacs MD, PhD, Full Member
- 7) Larry Lands MD, PhD, Full Member and Director, Pediatric CF Clinic MUHC
- 8) Alvin Shrier PhD, External member of the board, not a member of the centre
- 9) Mark Bordeleau, Président directeur général, Fibrose Kystique Québec
- 10) Lucie Roussel, Post-doctoral fellow in the lab. of Simon Rousseau
- 11) Shantelle LaFayette, PhD student in the lab. of Dao Nguyen

This Board will be chaired by the Dean of Medicine along with the Vice-Principal or their delegates. It will meet annually to review activities and membership, approve the budget, and resolve any difficulties during the past year. It will provide input regarding space allocation, equipment, multi-investigator grant initiatives and other institutional opportunities. The term of membership on this Board will be 3 years.

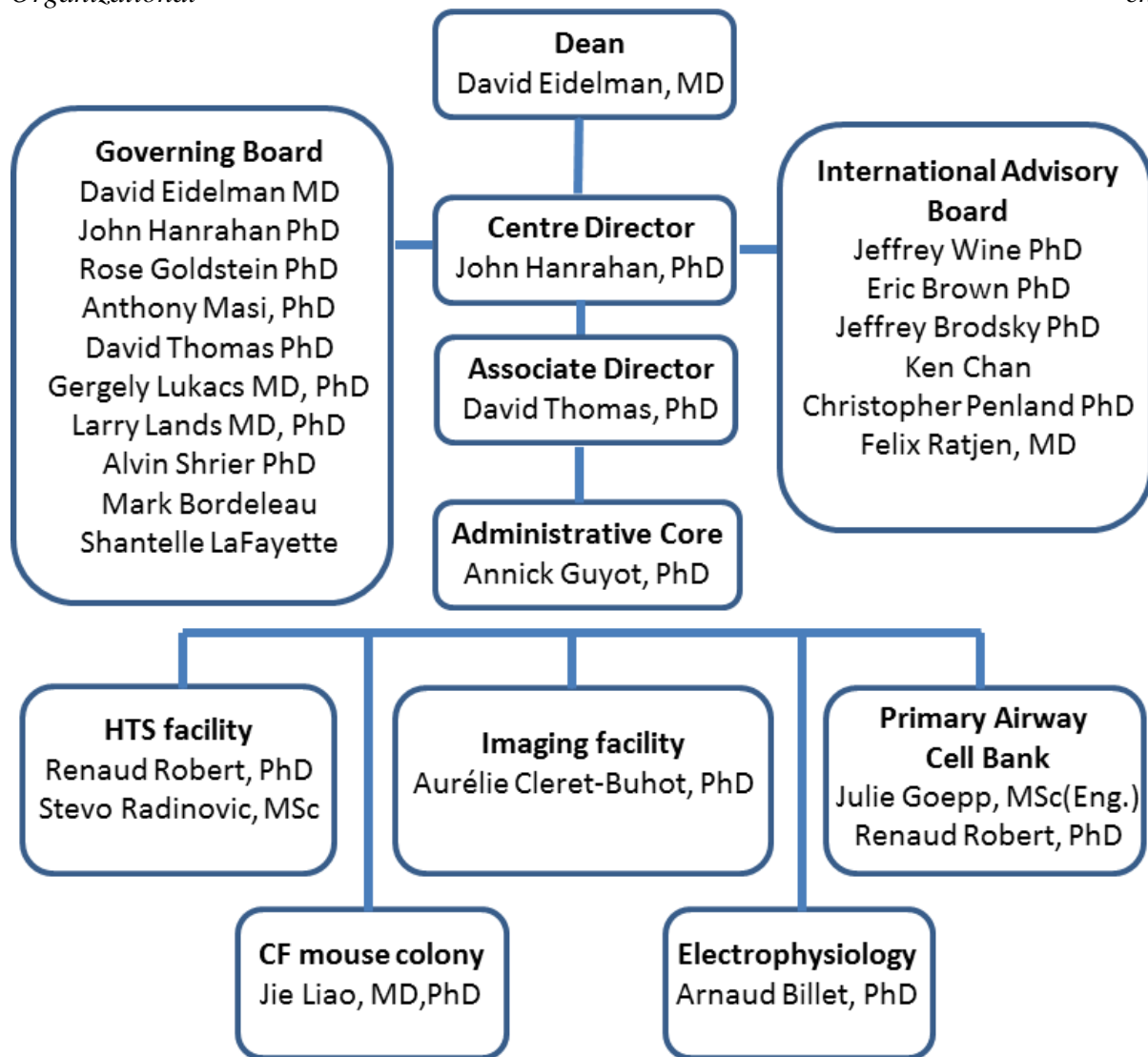
In addition, the CFTRc will have an International Advisory Board (IAB) that will provide scientific and strategic advice to the centre. This Board will include scientific leaders in the areas represented in the operation of the CFTRc. The proposed members for the IAB are:

- Jeffrey Wine PhD, Director, CF Research Center, Stanford Univ.
- Eric Brown PhD, Canada Research Chair in Chemical Biology and Director of the McMaster HTS Laboratory
- Jeffrey Brodsky PhD, Professor, Univ. Pittsburgh
- John Wallenburg, Chief Scientific Officer, Cystic Fibrosis Canada
- Christopher Penland PhD, Director of Research, CF Foundation, Bethesda MD
- Felix Ratjen, MD, Division Chief, Respiratory Medicine, Hospital for Sick Children, University of Toronto

A part-time manager will lead the administrative and financial operation of the centre, and supervise administrative personnel working at the centre.

Organizational

chart:



PROPOSED INAUGURAL MEMBERSHIP

Full members:



Director: John W. Hanrahan, PhD – Professor, Dept. of Physiology, McGill Univ. He is a member of the Research Institute of the McGill University Hospital Centre. His research program focuses on cellular and molecular mechanisms of epithelial anion transport, especially those involved in CF. He helped demonstrate that CFTR is a chloride channel and has characterized its regulation, permeation, and role in chloride and bicarbonate secretion. He led the multi-institutional Canadian CF Foundation Breathe program that was based at McGill for 7 years, and until recently served on the Medical/Scientific Advisory Committee of CF Canada as chair of the research subcommittee. His current interests focus on novel mechanisms

of CFTR regulation by receptors and during host-pathogen interactions, the role of CFTR in mucus and bicarbonate secretion, and the development of novel therapeutics to treat CF. He brings expertise in electrophysiology, biophysics, ion transport, animal models and translational medicine.



Associate Director: David Y. Thomas, PhD – Professor, Dept. of Biochemistry, McGill Univ. He is the former Chair of the Dept. of Biochemistry and holds a tier 1 Canada Research Chair in Molecular Genetics. He led several CFI applications from McGill for new research space, infrastructure and equipment. He has made original research contributions in mitochondrial genetics, protein processing and folding in the ER, G protein signaling, MAP kinase cascades. He leads the Canadian Chemical Biology Network that provides chemical libraries for the Canadian research community, particularly for infectious, orphan and neglected diseases. His present research interests are on the mechanism of ER quality control and its impact on protein trafficking diseases using a variety of high and low throughput technologies. His current focus is on understanding the molecular basis of protein trafficking diseases and using this knowledge to develop a therapy for the most frequent of them, cystic fibrosis.



Claire Brown, PhD - Assistant Professor, Dept. of Physiology McGill Univ. She is the Director of the Life Sciences Complex Advanced BioImaging Facility which annually trains and provides imaging services to 200 researchers from >60 different laboratories across Montreal. Her research focuses on the use of advanced biophysical light microscopy techniques to elucidate the molecular mechanisms that control cell migration at the fundamental level and in the context of breast cancer invasion and metastasis. She is an expert in training and education and has designed and offered more than 60 introductory and advanced hands-on workshops during the last 8 years, including founding of the internationally recognized Montreal Light Microscopy Course. She brings 20 years of experience in advanced light microscopy techniques including live cell imaging, correlation microscopy, fluorescence resonance energy transfer (FRET), photobleaching techniques (FRAP), total internal reflection fluorescence (TIRF) microscopy and image processing and analysis.



Saul Frenkiel, MD - Professor and Chair, Dept. of Otolaryngology - Head and Neck Surgery, McGill Univ., Chief, McGill Univ. Health Centre. His clinical interests are in the sub-specialty of Rhinology and Endoscopic Sinus Surgery. Research activities have included work on the molecular biology of chronic sinusitis, mucociliary physiology, nasal airflow testing and more recently, the technology of virtual and simulated sinoscopy. He previously served as President of the Canadian Society of Otolaryngology – Head and Neck Surgery, Executive of the Association d'oto-rhino-laryngologie et de chirurgie cervico-faciale du Québec, Associate Editor of the Journal of Otolaryngology – Head and Neck Surgery, and as Fellowship Examiner for the Royal College of Physicians and Surgeons of Canada.



Larry Lands, MD, PhD – Professor, Dept. of Pediatrics, McGill Univ. He is Director of Pediatric Respiratory Medicine, Director of The Pediatric CF Clinic, and Director of the Pulmonary Function Laboratory at the Montreal Children’s Hospital-McGill Univ. Health Centre. He is a member of the Canadian Patient Data Registry Oversight Committee of CF Canada and former Chair of CF Canada’s Clinic Committee and Clinical Studies Network. He is a member of the steering committee for the newly created RENASCENT national respiratory training program. He is a member of the Respiratory and CF Clinical Studies Group of the

Medicines for Children Research Network of the United Kingdom’s National Institutes of Health Research. His research interests focus on improving functional ability in patients with chronic lung disease and modulation of the innate immune system. He is currently investigating the potential of vitamin D to modulate inflammatory responses in respiratory epithelial cells and macrophages and therapies aimed at enhancing innate anti-viral responses to rhinovirus infections in respiratory epithelial cells.



Gergely Lukacs, MD, PhD – Professor, Dept. of Physiology, McGill Univ. He holds a Tier 1 Canada Research Chair in Molecular and Cellular Biology of CF and Other Conformational Diseases. His long-term goal is to elucidate the molecular and cellular basis of CF caused by mutations that interfere with the folding, stability, activity and/or membrane trafficking of the channel. To achieve this goal, he utilizes a combination of biochemical, biophysical, cell biological and genetic techniques. Another aspect of his research is to gain insights into the recognition and elimination mechanism of non-native membrane

proteins from post-ER/Golgi compartments in mammalian cells. His laboratory also works on the structural and biochemical basis of ubiquitin recognition as an endocytic and post-endocytic sorting signal.



James G. Martin, MD – Professor, Dept. of Medicine, Meakins Christie Laboratories, McGill Univ. He is a clinician scientist and he is currently interim chair of the Dept. of Medicine. His primary research interests are the exploration of inflammatory airway diseases, including asthma and CF. His expertise lies in the area of animal and cellular models of disease and his research program is focused on airway remodeling and oxidative stress. He has extensively explored the mechanisms of airway smooth muscle hyperplasia and the mediators that are responsible for its occurrence. He also explores the functional

significance of airway smooth muscle remodeling for airway function.



Elias Matouk, MD - Associate Professor, Dept. of Medicine, McGill Univ. He is a senior physician and the medical director of the adult CF Clinic of McGill Univ. Health Centre at the Montreal Chest Institute. His interests include clinical pulmonary medicine and CF. He is the

founder of the CF Patient Data Registry at the Montreal Chest Institute and has been involved in running several multi-center clinical trials for CF.



Dao Nguyen, MD – Assistant Professor, Dept. of Medicine, Division of Respiriology, McGill Univ. She is a clinician scientist with a clinical practice in adult pulmonary medicine and research experience in molecular microbiology. She has expertise in bacterial genetics, biofilm biology, microbiology of CF patients and molecular microbiology of *P. aeruginosa*. Her research program focuses on understanding the mechanisms of molecular antibiotic tolerance in bacteria, with particular emphasis on the opportunistic pathogen *P. aeruginosa*, as well as host-pathogen interactions and inflammation relevant to CF respiratory

infections.



John Orlowski, PhD – Professor and Chair, Dept. of Physiology, McGill Univ. James McGill Professor. The research interests of his laboratory are to better understand the molecular mechanisms underlying pH homeostasis of mammalian cells, focusing on a certain family of transporters called sodium/proton exchangers. In addition to regulating cytoplasmic and organellar pH, they play an important role in the maintenance of cell volume and the (re)absorption of sodium across intestinal and renal epithelial cells. Abnormal expression of some of these transporters has been implicated in the pathogenesis of certain

human diseases, including essential hypertension, congenital secretory diarrhea, and injuries resulting from episodes of cardiac ischemia and reperfusion



Danuta Radzioch, PhD – Professor, Depts of Medicine and Human Genetics, McGill Univ. Her research program focuses on the molecular mechanisms involved in the regulation of inflammatory response in asthma, CF and cancer. More specifically, Dr. Radzioch explores the role of chromatin remodelling in the regulation of transcriptional regulation and the mechanisms of posttranscriptional control of genes involved in the control of inflammatory response. Her team has discovered a pharmacological intervention which enables to normalize fatty acid metabolism during chronic bacterial infections in CF, chronic

allergic responses, during acute spinal cord injuries leading to permanent motoric dysfunction. She brings expertise in molecular biology, genetics, and mouse models of CF lung disease.

Associate members:



Raymond Andersen, PhD – Professor, Dept. of Chemistry, Univ. British Columbia. The research interests of his group involve isolating and elucidating the structure of novel organic metabolites produced by

marine organisms. Biosynthetic studies are carried out on the novel metabolites whenever feasible the structures of new metabolites are elucidated primarily by spectroscopic analysis. Multipulse 1D and 2D nmr experiments play a pivotal role in the structure elucidation. As a rule, the molecules investigated have to meet one or more of the following criteria: i) they should be of theoretical interest due to the novelty of their biogenesis - for example terpenes with new carbon skeletons, ii) they should display biological activity *in vitro* which makes them potential leads for the development of pharmaceutical agents, and/or iii) they should display biological activities that allow them to play a central role in the biology of the producing organism (i.e. chemical ecology).



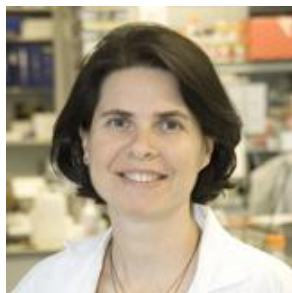
Céline Bergeron, MD, MSc – Assistant Clinical Professor, Dept. of Medicine, U. de Montréal and Pneumologist, CHUM.

Her research interests include the role of eicosanoids after lung transplantation, the role of bronchiolar apoptosis in chronic rejection and the airway remodelling and inflammation in asthma and chronic obstructive pulmonary disease.



Yves Berthiaume, MD, MSc – Research Professor, IRCM and Professor, Faculty of Medicine, U. de Montréal.

He is the Executive Director of the clinic and clinical research, Director of the Cellular and Molecular Lung Biology research unit, and associate member of the Meakins-Christie Laboratories, McGill University. He is the former director of the CF clinic at the Hôtel Dieu.



Emmanuelle Brochiero, PhD, Associate Professor, Dépt. de Médecine, Centre de recherche du CHUM, U. de Montréal. The main purpose of her research program is to explore the role of ion channels (especially CFTR and K⁺ channels) in the pathophysiology of lung diseases, particularly CF, acute lung injury and lung cancer. Her main project in CF is to better understand the role of the CFTR basic defect and of infection/inflammation on airway epithelial injury and repair mechanisms. Her laboratory is also evaluating novel therapeutic strategies aiming at promoting airway epithelial regeneration in CF.



André Cantin, MD, Professor, Faculty of Medicine, Respiratory Division, CHUS-Fleurimont, Univ. de Sherbrooke. He received his MD degree from the Univ. of Sherbrooke, and completed a fellowship in lung biology at the National Institutes of Health. He is the director of the

adult CF clinic at the CHUS. His research focuses on lung inflammation, oxidants, and antioxidants in CF and pulmonary fibrosis. He served as chair of the Medical/Scientific Advisory Committee for CF Canada.



Samantha Gruenheid, PhD, Associate Professor, Dept. Microbiology and Immunology. She holds a Tier 2 Canada Research Chair in Bacterial Pathogenesis. An expert in host/pathogen interactions, her research is focused on identifying and studying the molecules and pathways that play critical roles during the interaction of bacteria with the intestine. This is addressed from two angles, the mechanisms employed by bacteria to cause disease, and the mechanisms employed by the host to resist infection. One of her projects involves studying CF mice infected with intestinal gram-negative bacteria as a model for airway infection in CF.



Ryszard Grygorczyk, PhD, Professor, Dept. of Medicine, U. de Montréal He is the Director of the Laboratory of lung cellular physiology and biophysics at the CRCHUM. His research is focused on lung epithelial cell physiology, specifically mechano-sensitive ATP release, purinergic signaling, mucus secretion in CF, and cell volume regulation. He uses advanced light microscopy imaging techniques, such as total internal reflection fluorescence microscopy (TIRF), real-time luminescence imaging of ATP release, and 3D single cell imaging.



Michael Hallett, PhD, Professor, School of Computer Science, McGill Univ. He is the Director of the McGill Centre for Bioinformatics. He uses tools from statistical inference and algorithm design to address problems arising in biological and medical research. His research currently focuses on breast cancer, the endoplasmic reticulum interactome, and cystic/pulmonary fibrosis. Each of these projects contains many statistical and computational problems and solid, pragmatic solutions to these problems can have significant impact on our understanding and treatment of diseases.



Christina Haston, Ph.D, Associate Professor, Dept of Medicine, McGill Univ. The focus of her research program is to identify the genes involved in the radiation-induced lung diseases of pneumonitis and fibrosis. She has mapped murine strain differences in propensity to develop lung disease in a C57BL/6J and C3H mouse model and is currently using genetic variation defined in the mouse Hap Map, along with gene expression data and siRNA investigations to identify the underlying causal genetic variations. She is also collaborating with the Division of Radiation Oncology to investigate whether these genetic

variations, identified in mice, predict for the normal tissue side effect in the clinic. Another project is to determine whether the intestinal microbiome of CFTR deficient mice influences the lung and intestinal disease which develops in this model. These studies include characterization of the intestinal microbiome of cystic fibrosis mice using Illumina sequencing technology.



Basil Petrof, MD. Professor, Division of Respiratory Medicine, Faculty of Medicine; Associate Director, Meakins-Christie Laboratories, McGill Univ. He is a physician-scientist whose research program focuses on elucidating the basis for respiratory muscle dysfunction in patients with lung disease and infection. He brings expertise in molecular and physiologic mechanisms underlying skeletal muscle wasting and weakness in CF, using animal models and *in vitro* methods.



Charles Poirier, MD, Clinical Associate Professor, Dept. of Medicine, U. de Montréal and Pneumologist, CHUM. He is head of the respiratory division, CHUM and medical director, program of lung transplantation, CHUM. His research interests are: multi-centre study of lung transplantation and new therapies against acute and chronic rejection.



Simon Rousseau, PhD, Assistant Professor, Dept. of Medicine, McGill Univ. The aim of his research program is to understand the mechanisms of signal transduction regulating inflammation in response to infectious agents, in order to identify key molecules that could be targeted for drug discovery programs to restore a proper balance in the inflammatory response and fight respiratory diseases in children.



Donald Sheppard, MD, Associate Professor, Dept. of Microbiology and Immunology, McGill Univ. He is a Clinician Scientist whose research program focuses on elucidating the molecular mechanisms underlying the pathogenesis of invasive fungal infections, in particular those due to the opportunistic mold *Aspergillus fumigatus*. He brings expertise in molecular mycology, host-pathogen interactions, animal models and translational medicine. He is also section head of the clinical mycology lab at the McGill Univ. Health Centre and the McGill Program Director of the Royal College training programs in Infectious Diseases and Medical Microbiology.



Gordon Shore, PhD, Professor, Dept. of Biochemistry, McGill Univ. He is a member of the Goodman Cancer Research Center at McGill Univ. He is internationally recognized for his research on cell survival and death mechanisms. In 1998, he leveraged this research and co-founded GeminX Pharmaceuticals Inc. Until 2011 and the acquisition of GeminX by Cephalon, he was Director and CSO of the company. He was also interim CEO (2007/8). During this period, Gemin X advanced 2 novel, targeted small molecule drug candidates from concept, through discovery and into late stage clinical development in oncology. He focused additional research efforts both at Gemin X and at McGill to elucidate rational paths to clinical proof of concept studies for these agents. In 2010, Shore together with his colleague Anne Roulston extended such research at McGill, raising grant monies to build an Integrated Functional Genomics Platform that exploits genome-wide approaches focused on synthetic lethality and personalized medicine. The goal of this Integrated Platform is to generate the knowledge and tools to elucidate a clinical path forward for new targeted agents, especially in but not limited to oncology. In 2013, this McGill Platform partnered with Therillia Development Co., where Shore is CSO, to help guide clinical development strategies for several early stage drug candidates.



Marc Tewfik, MD, Assistant Professor, Dept. of Otolaryngology - Head and Neck Surgery, McGill Univ. Following medical school and a degree in Honours Biochemistry from McGill, he completed residency training in 2008, and has earned a Master of Science concurrent with his clinical training. The subject of his thesis was an investigation of the association between genes responsible for innate immunity and chronic rhino sinusitis. He completed an 18-month rhinology fellowship in South Australia, under the tutelage of Professor Peter-John Wormald. His current medical practice is divided between rhinology and endoscopic skull base surgery. His research interests include the role of innate immunity in chronic rhino sinusitis, as well as the repair of large skull base defects.



Jason Young, PhD, Associate Professor, Dept. of Biochemistry, McGill Univ. He holds a Tier 2 Canada Research Chair in Molecular Chaperones. He investigates how cells manage the challenge of misfolded proteins, through the system of molecular chaperones that assist protein folding. A particular interest is in membrane proteins for which misfolding leads to defects in intracellular trafficking, with mutated CFTR an important focus. The approaches taken range from pure protein biochemistry to molecular and cell biology.



Paul Wiseman, PhD, Professor, Depts of Chemistry and Physics, McGill Univ. He is the recipient of the 2006 Leo Yaffe Award for Excellence in Teaching, 2007 Principal's Prize for Teaching, 2008 Fessenden Professorship, 2009 Keith Laidler Award, and 2007-2009 NSERC Accelerator Supplement. His work on live cell imaging of macromolecular dynamics and protein clustering phenomena reveals their role in assembly of cell adhesion structures and in receptor "cross-

talk". He is an expert in optics, biophysics, quantum dots, fluorescence microscopy and novel methods of super-resolution and single particle imaging and holds multiple CIHR and NSERC grants.

FREQUENCY OF BOARD AND OTHER MEETINGS

The Governing board will meet in May or early June after a draft annual report has been prepared. The results of these discussions will be incorporated into the final annual report which will be submitted to the Dean of Medicine by July 1. Monthly open meetings will be held throughout the year to discuss any issues that come up related to operation of the centre, and these will be coordinated with the monthly seminar series to encourage participation.

VI. MEMBERSHIP

CLASSES OF MEMBERSHIP

In addition to full members, individuals belonging to other research units may opt for associate membership. Both full and associate members will have access to the equipment and resources available at the CFTRc. However associate members may not be eligible for postdoc and student support, if they belong to another research group that receives FRQ-S funding.

NEW MEMBERS, OBLIGATIONS AND PRIVILEGES

Investigators with research interests that align with the mission of the CFTRc will be invited to join. Membership as a principal investigator will require a faculty appointment, external peer-reviewed funding, and active commitment to excellence in research in one or more of the themes covered within the CFTRc. Membership within the CFTRc will be approved by > 50% (50% + 1 vote) of the current primary voting members of the CFTRc and confirmed by the Governing Board, and will be held initially for 5 years. Membership will be renewable thereafter, subject to satisfactory performance review by the Governing Board.

New members of the centre will be elected by the board for 5 years by secret ballot. Multiple terms will be allowed. Centre members will report annually to the Director to facilitate preparation of the draft Annual Report for the meeting of the Governing Board. All members of the Governing Board have one vote each and decisions will be taken by a plurality of votes. Membership and the terms of reference will be aligned with the blueprint document from McGill. The Governing Board will be responsible for approving the centre's annual budget, which will be forwarded in the final Annual Report to the Associate Dean of Research for approval.

VII. LAB FACILITIES AND OTHER RESOURCES

The CFTRc is based in the McIntyre Bldg on the 10th and 9th floors:

- 200 sq ft for administrative core,
- 400 sq ft for each of the 4 research cores (screening, imaging, medicinal chemistry, and CFTR function),
- 600 sq ft office space for post-docs and students

Total 2,400 sq ft

The CFTRc is currently managing 5 platforms: a primary airway cell biobank, an imaging facility and a high-throughput screening, electrophysiology stations, and two CF mouse colonies.

Primary Culture Facility:

Well differentiated primary epithelial cells are essential for studies of airway physiology/pathophysiology, cell biology, and mucosal immunity and for translational research to develop new therapeutics. They also remain the gold standard for many kinds of basic and applied research in Respiratory Health, including the development of new therapeutics. The facility was established at McGill in 2009 and moved into newly renovated space in 2012. Initially supported by CFC Breathe extension funding and the E. Mackenzie Harpur Paediatric Fund, the facility now has 5 years of experience isolating and culturing high quality epithelial cells for basic and translational research.

During the past 4 years the facility has collected donor/recipient bronchus specimens from 31 lung transplant patients in Montreal, including 23 complete CF lungs. This has enabled us to cryopreserve >1.2 billion CF bronchial epithelial cells and >500 million non-CF cells. We have also received CF and non-CF nasal and bronchoscopy brushings at regular intervals, including 11 CF and 45 non-CF nasal brushing specimens and >67 bronchoscopy brushings from the airways of transplant recipients. The bronchoscopy brushings are unique in that CF and non-CF cells are from the same airway (non-CF cells from the donor below the anastomosis, and CF cells from the recipient above the anastomosis). Finally, we have obtained CF and non-CF nasal polyps and normal mucosae, and have obtained 206 specimens which are used as controls. Our success rate is comparable to leading facilities in the USA (UNC Chapel Hill, Univ. Iowa), and the cultures are highly differentiated and closely resemble native surface epithelium. We plan to extend this to laser dissected submucosal glands cells using new ROCK inhibitor/feeder cell methods. This success has been due to excellent training received at UNC Chapel Hill and also our effective collaborations and ability to build and maintain a strong network with surgeons and CF clinicians at various sites and institutions in Montreal. We have received requests for cells and tissue samples from other groups and could potentially ship them to most researchers in Canada by overnight courier. To date, five studies using our primary cells have been published in leading peer-reviewed journals.

The CFTRc primary culture facility has recently been transformed into a national resource that is subsidized and administered by CF Canada. It arranges lung tissue procurement from transplant clinics across Canada and makes highly differentiated pulmonary cells available to researchers for basic and applied CF research. During 2014-2015, lung tissue from the five transplant clinics across Canada will be anonymized, shipped to McGill by courier together with minimal patient information. Through years of experience we have found that cells can be isolated with good yield up to 72 h after lung removal, which is ample time for shipment across Canada by air freight. Cells will be isolated and banked after being subjected to rigorous quality control, then distributed. Cryovials or growing monolayers will be shipped directly to researchers as requested Cystic Fibrosis Canada (CFC), who will subsidize the cell bank and manage the network on a non-profit, cost-recovery basis. CF lung tissue procurement networks exist in the USA, however this facility based at McGill would be the first of its kind in Canada. The cells will also be made available to pharmaceutical companies working on CF

therapies. The cost of cells will be higher for private laboratories and this will help subsidize cells for university and hospital-based researchers. Patient cells are essential for the development of new therapeutics to help people with CF, and also for basic studies of the pathogenesis of CF disease therefore we strongly believe this will become an important national resource for CF researchers.

Electrophysiology Facility:

Patch-clamp and microelectrodes:

Fully equipped manual patch clamp and microelectrode rigs, with fluorescence microscopes, perfusion chambers with temperatures controller, capacitor feedback Patch Clamp amplifiers (Axopatch 200B) coupled to low noise data acquisition systems (Digidata® 1440a), computers, pipette pullers and fire polisher, vibration control. This equipment enables detailed characterization of transepithelial, whole cell, and single channel currents in conventional configurations.

High throughput electrophysiology:

The QPatch 16X patch clamp station (Sophion Bioscience) purchased recently allows automated, moderate-throughput assays of whole cell current with giga-ohm seal resistance. With user-friendly protocols, the Qpatch system records from 16 different cells simultaneously with individual controls. The four independent pipetting heads with intelligent scheduler allow efficient liquid handling when adding multiple drugs or agonists. This automated platform presents many other features including single- or multi-hole plate recordings, clone screening, multiple intracellular solution testing and automated data analysis.

Partial support for the automated patch clamp facility is provided by Verona Pharma plc, who also funded a summer student in the Physics and Physiology program (Alanna Darling) to work on this equipment during the summer of 2013 and is presently negotiating an extended contract (with 40% overhead to McGill) that will support a postdoc for two years.

CF mouse colonies:

F508del-CFTR mice (*Cftr*^{tm1Eur} backcrossed onto the FVB background) were obtained from B. Scholte and colleagues at Erasmus Univ. Medical Center in Rotterdam NL. A *cftr* null mouse strain (*Cftr*^{tm1UNC} backcrossed onto the BALBc/J background) from Hospital for Sick Children (Toronto) is used for studies of CF phenotype, inflammation, and infection. This is presently supported by a research contract with GSK.

Imaging Facility:

The CFTRc has 3 different types of state-of-the-art confocal microscope and several wide-field microscopes for high resolution imaging of fixed and live cells. Differential interference contrast (DIC) for imaging the cell surface, fluorescence correlation spectroscopy (FCS) to study ligand binding in solution and inside cells, sub-resolution total internal reflection fluorescence (TIRF) microscopy, quantitative imaging of protein mobility and rapid vesicle dynamics by spinning disk confocal microscopy, ratiometric measurement of intra and extracellular pH, Ca²⁺ and other ions with fluorescence indicators are all available in the CFTRc. The main imaging equipment includes:

- the latest generation laser scanning confocal microscope (LSM780, Zeiss) mounted on an inverted Axio Observer fully motorized microscope; equipped with 3 high NA/DIC objectives (20x, 40xW, 63xOil)
- a combination Spinning-Disk/TIRF microscope (Zeiss) mounted on an inverted Axio Observer fully motorized microscope with an incubation unit; equipped with a 63x Oil objective designed for TIRF experiments
- an upright LSM700 motorized microscope fully equipped for imaging of airway surface liquid on cultures
- two ratiometric wide-field imaging systems (PTI inverted microscope, Olympus and Axio Examiner upright, Zeiss) for intra and extracellular measurements of pH and ion indicators.

The maintenance and training of new users by Dr. Aurélie Cleret-Buhot is supported by an educational fund established by Zeiss Canada.

High-Throughput Screening (HTS):

The scientific aim of the McGill HTS Facility is to facilitate chemical biology projects in academic labs that require high throughput screening through shared infrastructure, materials and expertise. The goal is to create an open and interactive environment which stimulates drug discovery and basic research and provides training for graduate students and post-doctoral fellows. The HTS facility offers unique services for academic and industrial investigators, for screening and non-screening projects. It operates on a staff-assisted, cost recovery model in which users contribute modest funds to support equipment maintenance, salaries of highly-trained and qualified staff, and the costs of consumables used for their project. The services provided include HTS assay development, optimization and validation, management of shRNA libraries for genome-scale screening for human or mouse and individual bacteria clones picking, customization of sub-libraries, primary and secondary screening, access to chemical compound library from commercial sources and to siRNA libraries for human genome-scale screening. Users of the HTS facility have also access to liquid-handling workstations and fully integrated robotic systems, plate readers for various applications, cell culture room and to training and assistance. For more details please go to: <http://www.mcgill.ca/lifesciencescomplex/core/hts-hcs>.

The HTS Facility is now seeking CFI approval to build two different enclosures to protect the personnel and the users when performing reading of HTS and cell-based assays using level 2+ biological agents – such as lentivirus, cystic fibrosis infected samples (*Pseudomonas aeruginosa*, other bacteria, virus) or cystic fibrosis human primary cell cultures from surgical rejection. We foresee an important increase in the development of new assays requiring level 2+ protection in the near future due to the recent acquisition of the MISSION shRNA library by the HTS/HCS Facility, which uses a lentiviral vector, hence the urgency to properly equip the facility. One enclosure would be dedicated to an integrated robot while the second enclosure would provide a walk-in environment that allows the appropriate plate reader to be moved in and out depending on the particular assay system, e.g. In Cell analyzer, QPatch or the Pherasta. The protective enclosure is essential to protect the users when the plate cover is removed to provide access to the liquid-handling robot and plate reader injectors on the Pherastar. The enclosures will be an innovative addition that offers access to a wide variety of equipment for level 2+ assays such as those in development for Cystic Fibrosis research. To our knowledge this platform equipped with an integrated HTS robot and level 2+ biological agent capability will be unique in Montreal.

VIII. BUDGET

OVERVIEW OF OPERATIONAL BUDGET - first year

Some CFTRc facilities will require base operating budgets to retain personnel (administrative core, imaging facility to maintain microscopes, primary cell culture facility) and purchase basic supplies, whereas others will operate on a cost recovery basis (electrophysiology and mouse facility).

Costs:

Personnel:

Annick Guyot, PhD

Centre manager: To help with the preparation of grant applications, organization of meetings, manage studentship and fellowship competitions, compile annual reports, schedule seminars, keep records of expenditures (\$22,800 + 28% benefits, 40% effort) \$29,184

Aurélie Cleret-Buhot, PhD

Imaging specialist: To train new users, organize workshops and open house events, maintain the microscopes and related major equipment, perform specific imaging projects on a fee-for-service basis, identify and install upgrades (\$20,400 + 28% benefits, 40% effort) \$26,112

Julie Goepp, MSc (Eng.-Biotechnol.)

Primary cell culture facility: To manage the Primary Airway Cell Bank, a national resource based in the CFTRc and operated in collaboration with Cystic Fibrosis Canada. Duties include Organize, optimize and maintain all the operational procedures concerning tissue procurement, cell isolation, and cell storage and research studies, isolate airway cells from excised trachea/bronchi of human lungs for distribution to investigators, prepare and maintain primary airway cell cultures and prepare (or provide support for preparation of) well-differentiated airway epithelial cultures from passaged, or cryopreserved and thawed human cells, on permeable substrates and cryopreserve freshly-isolated and early passage cultured airway cells in liquid nitrogen (\$36,000 + 28% benefits, 80% effort). \$46,080

Research materials and consumables:

Imaging supplies (gas cylinders for vibration tables and incubation chambers etc) \$10,000

CF mice: Maintenance of F508del and CFTR k/o colonies, housing, food, genotyping and other technical services \$40,000

Centre administration:

Tel, fax and courier, preparation of joint posters, manuscripts, office supplies \$2,500

Meetings: To host work-in-progress and board meetings, annual symposium \$2,500

Seminars: To invite leading researchers (8-10 seminars/yr) \$15,000

Training/education: To run workshops, prepare course materials on CF, support student and postdoc travel to conferences to present their work \$5,000

Total expenses \$176,376

Revenue:

Faculty of Medicine (- received) \$35,000

Requested from VP(RIR) \$35,000

Cystic Fibrosis Canada (- received) \$75,000

Educational fund from Zeiss (- received) \$25,000

User fees (anticipated) \$6,376

Total revenue \$176,376

PLAN FOR SECURING FUTURE FUNDING

A goal of the CFTRc is to become financially self-sufficient in 2- 3 years. It will have a heavy emphasis on translational research, as indicated by its name, and the facilities are already attracting interest from companies (Verona Pharma, GSK, N30, and our own spin-off Traffick Therapeutics). We will advertise our capabilities and increase the number and value of contracts with pharmaceutical companies and our association with Cystic Fibrosis Canada, consistent with our function as a translational research centre. We are also developing expertise in the area of chronic obstructive pulmonary disease (COPD) where an acquired CFTR deficiency is now believed to play a major role. This should open up additional funding opportunities in the future through Health Canada and other agencies. Operational expenses are expected to remain relatively constant for the next four years, after which funding will be needed to continue maintenance contracts on major equipment.

Fibrose Kystique Quebec (FKQ) is associated with CF Canada. It also sponsors its own events such as an annual conference which we help organize. FKQ is planning an annual fund raising event to support clinical and basic research at the CFTRc. Another potential source of funds may be the distribution of airway epithelial cells from non-CF donors to researchers at Health Canada and the private sector. If no funding mechanism to support CF Centres such as CFTRc is developed in Canada during the next year we will request that the US CF Foundation consider an application from us. There was a Research Development Program in Toronto many years ago and several members of the CFTRc already hold individual research grants from the US foundation (e.g. Lands, Lukacs, Hanrahan, Nguyen) so there are precedents for cross-border CF funding. Finally several companies have signed translational research contracts with the Hanrahan and Thomas labs. This type of revenue should increase as the CFTRc becomes established as a translational research centre and its full capabilities become widely known. Contracts will also generate revenue for McGill. For example our own startup company Traffick Therapeutics Inc. will generate > \$300,000 in indirect costs for the university in 2014-2016. Hopefully some fraction of those funds will come back to the CFTRc to cover the indirect costs actually associated with the work, such as maintenance contracts on equipment.

It remains unclear if FRQ-S will extend the group and centre funding programs beyond early 2017. If they are extended or replaced with some other funding mechanism we will apply to opportunities that become available. Another revenue stream will be user fees from the microscopes and other equipment. Cost recovery from shared facilities is expected to increase during the next 2 years as more laboratories take advantage of the high-end facilities available in the CFTRc. We will also apply for any McGill infrastructure support that becomes available and will also apply to the Cystic Fibrosis Foundation centre program, which fund 11 CF Centres in the USA. Once we establish ourselves as a CF centre, individuals with affected family members may wish to make donations specifically to support the CF research.

APPENDIX 1

List of the joint publications since 2004 (collaborations between Center investigators are indicated in bold):

1. **Cantin AM, Berthiaume Y**, Sokol PA, **Lands LC**, Chiarot J, Gren P, Morrison C 2004 The cystic fibrosis effort in Canada: advancing on many fronts. *Pediatr Pulmonol.* 37(4):379-81.
2. Bernardes JF, Shan J, **Tewfik M**, Hamid Q, **Frenkiel S**, Eidelman DH 2004 Protein nitration in chronic sinusitis and nasal polyposis: role of eosinophils. *Otolaryngol Head Neck Surg.* 131(5):696-703.
3. Divangahi M, Matecki S, Dudley RW, Tuck SA, Bao W, **Radzioch D**, Comtois AS, **Petrof BJ** 2004 Preferential diaphragmatic weakness during sustained *Pseudomonas aeruginosa* lung infection. *Am J Respir Crit Care Med.* 169(6):679-86.
4. **Brochiero E**, Dagenais A, Privé A, **Berthiaume Y**, **Grygorczyk R** 2004 Evidence of a functional CFTR Cl(-) channel in adult alveolar epithelial cells. *Am J Physiol Lung Cell Mol Physiol.* 287(2):L382-92.
5. Leroy C, Dagenais A, **Berthiaume Y**, **Brochiero E** 2004 Molecular identity and function in transepithelial transport of K(ATP) channels in alveolar epithelial cells. *Am J Physiol Lung Cell Mol Physiol.* 286(5):L1027-37.
6. Dagenais A, Fréchette R, Yamagata Y, Yamagata T, Carmel JF, Clermont ME, **Brochiero E**, Massé C, **Berthiaume Y** 2004 Downregulation of ENaC activity and expression by TNF-alpha in alveolar epithelial cells. *Am J Physiol Lung Cell Mol Physiol.* 286(2):L301-11.
7. Scott MS, **Thomas DY**, **Hallett M** 2004 Predicting subcellular localization via protein motif co-occurrence. *Genome Res.* 14(10A):1957-66.
8. Scott M, Lu G, **Hallett M**, **Thomas DY** 2004 The Hera database and its use in the characterization of endoplasmic reticulum proteins. *Bioinformatics.* 20(6):937-44.

9. **Wiseman PW, Brown CM**, Webb DJ, Hebert B, Johnson NL, Squier JA, Ellisman MH, Horwitz AF 2004 Spatial mapping of integrin interactions and dynamics during cell migration by image correlation microscopy. *J Cell Sci.* 117(Pt 23):5521-34.
10. Dagenais A, Gosselin D, Guilbault C, **Radzioch D, Berthiaume Y** 2005 Modulation of epithelial sodium channel (ENaC) expression in mouse lung infected with *Pseudomonas aeruginosa*. *Respir Res.* 6:2.
11. Yamagata T, Yamagata Y, Massé C, Tessier MC, **Brochiero E, Dagenais A, Berthiaume Y** 2005 Modulation of Na⁺ transport and epithelial sodium channel expression by protein kinase C in rat alveolar epithelial cells. *Can J Physiol Pharmacol.* 83(11):977-87.
12. Nagel G, Barbry P, Chabot H, **Brochiero E, Hartung K, Grygorczyk R** 2005 CFTR fails to inhibit the epithelial sodium channel ENaC expressed in *Xenopus laevis* oocytes. *J Physiol.* 564(Pt 3):671-82.
13. Scott MS, Calafell SJ, **Thomas DY, Hallett MT** 2005 Refining protein subcellular localization. *PLoS Comput Biol.* 1(6):e66.
14. Scott MS, Perkins T, Bunnell S, Pepin F, **Thomas DY, Hallett M** 2005 Identifying regulatory subnetworks for a set of genes. *Mol Cell Proteomics.* 4(5):683-92.
15. **Haston CK**, Tomko TG, Godin N, Kerckhoff L, **Hallett MT** 2005 Murine candidate bleomycin induced pulmonary fibrosis susceptibility genes identified by gene expression and sequence analysis of linkage regions. *J Med Genet.* 42(6):464-73.
16. Digman MA, Sengupta P, **Wiseman PW, Brown CM**, Horwitz AR, Gratton E 2005 Fluctuation correlation spectroscopy with a laser-scanning microscope: exploiting the hidden time structure. *Biophys J.* 88(5):L33-6.
17. Digman MA, **Brown CM**, Sengupta P, **Wiseman PW**, Horwitz AR, Gratton E 2005 Measuring fast dynamics in solutions and cells with a laser scanning microscope. *Biophys J.* 89(2):1317-27.
18. **Cantin AM, Hanrahan JW**, Bilodeau G, Ellis L, Dupuis A, Liao J, Zielenski J, Durie P 2006 Cystic fibrosis transmembrane conductance regulator function is suppressed in cigarette smokers. *Am J Respir Crit Care Med.* 173(10):1139-44.
19. **Cantin AM**, Bilodeau G, Ouellet C, Liao J, **Hanrahan JW** 2006 Oxidant stress suppresses CFTR expression. *Am J Physiol Cell Physiol.* 290(1):C262-70.
20. **Cantin AM**, Bacon M, **Berthiaume Y** 2006 Mechanical airway clearance using the frequencer electro-acoustical transducer in cystic fibrosis. *Clin Invest Med.* 29(3):159-65.
21. **Cantin AM, Berthiaume Y**, Cloutier D, Martel M 2006 Prolastin aerosol therapy and sputum taurine in cystic fibrosis. *Clin Invest Med.* 29(4):201-7.

22. **Tewfik MA, Frenkiel S**, Gasparrini R, Zeitouni A, Daniel SJ, Dolev Y, Kost K, Samaha M, Sweet R, Tewfik TL 2006 Factors affecting unanticipated hospital admission following otolaryngologic day surgery. *J Otolaryngol.* 35(4):235-41.
23. **Tewfik MA**, Al-Qahtani K, Payne RJ, **Frenkiel S** 2006 Pneumomediastinum and cervicofacial emphysema following a nasally obstructed sneeze. *J Otolaryngol.* 35(5):355-7.
24. Moisan J, Camateros P, Thuraisingam T, Marion D, Koohsari H, Martin P, Boghdady ML, Ding A, Gaestel M, Guiot MC, **Martin JG, Radzioch D** 2006 TLR7 ligand prevents allergen-induced airway hyperresponsiveness and eosinophilia in allergic asthma by a MYD88-dependent and MK2-independent pathway. *Am J Physiol Lung Cell Mol Physiol.* 290(5):L987-95.
25. Dagenais A, Fréchette R, Clermont ME, Massé C, Privé A, **Brochiero E, Berthiaume Y** 2006 Dexamethasone inhibits the action of TNF on ENaC expression and activity. *Am J Physiol Lung Cell Mol Physiol.* 291(6):L1220-31.
26. Dudley RW, Khairallah M, Mohammed S, **Lands L**, Des Rosiers C, **Petrof BJ** 2006 Dynamic responses of the glutathione system to acute oxidative stress in dystrophic mouse (mdx) muscles. *Am J Physiol Regul Integr Comp Physiol.* 291(3):R704-10.
27. Dudley RW, Danialou G, Govindaraju K, **Lands L**, Eidelman DE, **Petrof BJ** 2006 Sarcolemmal damage in dystrophin deficiency is modulated by synergistic interactions between mechanical and oxidative/nitrosative stresses. *Am J Pathol.* 168(4):1276-87; quiz 1404-5.
28. Leroy C, Privé A, Bourret JC, **Berthiaume Y**, Ferraro P, **Brochiero E** 2006 Regulation of ENaC and CFTR expression with K⁺ channel modulators and effect on fluid absorption across alveolar epithelial cells. *Am J Physiol Lung Cell Mol Physiol.* 291(6):L1207-19.
29. Bates IR, **Wiseman PW, Hanrahan JW** 2006 Investigating membrane protein dynamics in living cells. *Biochem Cell Biol.* 84(6):825-31.
30. Bates IR, Hebert B, Luo Y, Liao J, Bachir AI, Kolin DL, **Wiseman PW, Hanrahan JW** 2006 Membrane lateral diffusion and capture of CFTR within transient confinement zones. *Biophys J.* 91(3):1046-58.
31. Scott MS, Oomen R, **Thomas DY, Hallett MT** 2006 Predicting the subcellular localization of viral proteins within a mammalian host cell. *Virol J.* 3:24.
32. **Haston CK**, Cory S, Lafontaine L, Dorion G, **Hallett MT** 2006 Strain-dependent pulmonary gene expression profiles of a cystic fibrosis mouse model. *Physiol Genomics.* 25(2):336-45.

33. **Brown CM**, Hebert B, Kolin DL, Zareno J, Whitmore L, Horwitz AR, **Wiseman PW** 2006 Probing the integrin-actin linkage using high-resolution protein velocity mapping. *J Cell Sci.* 119(Pt 24):5204-14.
34. Carlile GW, Robert R, Zhang D, Teske KA, Luo Y, **Hanrahan JW**, **Thomas DY** 2007 Correctors of protein trafficking defects identified by a novel high-throughput screening assay. *ChemBiochem.* 8(9):1012-20.
35. Bhangoo MK, Tzankov S, Fan AC, Dejgaard K, **Thomas DY**, **Young JC** 2007 Multiple 40-kDa heat-shock protein chaperones function in Tom70-dependent mitochondrial import. *Mol Biol Cell.* 18(9):3414-28.
36. Young J, **Frenkiel S**, **Tewfik MA**, Mouadeb DA 2007 Long-term outcome analysis of endoscopic sinus surgery for chronic sinusitis. *Am J Rhinol.* 21(6):743-7.
37. Camateros P, Tamaoka M, Hassan M, Marino R, Moisan J, Marion D, Guiot MC, **Martin JG**, **Radzioch D** 2007 Chronic asthma-induced airway remodeling is prevented by toll-like receptor-7/8 ligand S28463. *Am J Respir Crit Care Med.* 175(12):1241-9.
38. **Lands LC**, Milner R, **Cantin AM**, Manson D, Corey M 2007 High-dose ibuprofen in cystic fibrosis: Canadian safety and effectiveness trial. *J Pediatr.* 151(3):249-54.
39. Hammana I, Malet A, Costa M, **Brochiero E**, **Berthiaume Y**, Potvin S, Chiasson JL, Coderre L, Rabasa-Lhoret R 2007 Normal adiponectin levels despite abnormal glucose tolerance (or diabetes) and inflammation in adult patients with cystic fibrosis. *Diabetes Metab.* 33(3):213-9.
40. Robert R, Carlile GW, Pavel C, Liu N, Anjos SM, Liao J, Luo Y, Zhang D, **Thomas DY**, **Hanrahan JW** 2008 Structural analog of sildenafil identified as a novel corrector of the F508del-CFTR trafficking defect. *Mol Pharmacol.* 73(2):478-89.
41. Wang B, Heath-Engel H, Zhang D, Nguyen N, **Thomas DY**, **Hanrahan JW**, **Shore GC** 2008 BAP31 interacts with Sec61 translocons and promotes retrotranslocation of CFTRDeltaF508 via the derlin-1 complex. *Cell.* 133(6):1080-92.
42. Guilbault C, De Sanctis JB, Wojewodka G, Saeed Z, Lachance C, Skinner TA, Vilela RM, Kubow S, **Lands LC**, Hajdich M, **Matouk E**, **Radzioch D** 2008 Fenretinide corrects newly found ceramide deficiency in cystic fibrosis. *Am J Respir Cell Mol Biol.* 38(1):47-56.
43. Papaioannou A, Kennedy CC, Freitag A, Ioannidis G, O'Neill J, Webber C, Pui M, **Berthiaume Y**, Rabin HR, Paterson N, Jeanneret A, **Matouk E**, Villeneuve J, Nixon M, Adachi JD 2008 Alendronate once weekly for the prevention and treatment of bone loss in Canadian adult cystic fibrosis patients (CFOS trial). *Chest.* 134(4):794-800.

44. Ferraro P, Martin J, Dery J, Prenovault J, Samson L, Coutu M, Chen LQ, **Poirier C**, Noiseux N, Duranceau A, **Berthiaume Y** 2008 Late retrograde perfusion of donor lungs does not decrease the severity of primary graft dysfunction. *Ann Thorac Surg.* 86(4):1123-9.
45. Guilbault C, Wojewodka G, Saeed Z, Hajduch M, **Matouk E**, De Sanctis JB, **Radzioch D** 2009 Cystic fibrosis fatty acid imbalance is linked to ceramide deficiency and corrected by fenretinide. *Am J Respir Cell Mol Biol.* 41(1):100-6.
46. Barriere H, Bagdany M, Bossard F, Okiyoneda T, Wojewodka G, Gruenert D, **Radzioch D**, **Lukacs GL** 2009 Revisiting the role of cystic fibrosis transmembrane conductance regulator and counterion permeability in the pH regulation of endocytic organelles. *Mol Biol Cell.* 20(13):3125-41.
47. Annan RB, Lee AY, Reid ID, Sayad A, Whiteway M, **Hallett M**, **Thomas DY** 2009 A biochemical genomics screen for substrates of Ste20p kinase enables the in silico prediction of novel substrates. *PLoS One* 4(12):e8279.
48. Jansen G, Lee AY, Epp E, Fredette A, Surprenant J, Harcus D, Scott M, Tan E, Nishimura T, Whiteway M, **Hallett M**, **Thomas DY** 2009 Chemogenomic profiling predicts antifungal synergies. *Mol Syst Biol.* 5:338.
49. Michoud MC, Robert R, Hassan M, Moynihan B, **Haston C**, Govindaraju V, Ferraro P, **Hanrahan JW**, **Martin JG** 2009 Role of the cystic fibrosis transmembrane conductance channel in human airway smooth muscle. *Am J Respir Cell Mol Biol.* 40(2):217-22.
50. Divangahi M, Balghi H, Danialou G, Comtois AS, Demoule A, Ernest S, **Haston C**, Robert R, **Hanrahan JW**, **Radzioch D**, **Petrof BJ** 2009 Lack of CFTR in skeletal muscle predisposes to muscle wasting and diaphragm muscle pump failure in cystic fibrosis mice. *PLoS Genet.* 5(7):e1000586.
51. Robert R, Carlile GW, Liao J, Balghi H, Lesimple P, Liu N, Kus B, Rotin D, Wilke M, de Jonge HR, Scholte BJ, **Thomas DY**, **Hanrahan JW** 2010 Correction of the Delta phe508 cystic fibrosis transmembrane conductance regulator trafficking defect by the bioavailable compound glafenine. *Mol Pharmacol.* 77(6):922-30.
52. Okiyoneda T, Barrière H, Bagdány M, Rabeh WM, Du K, Höhfeld J, **Young JC**, **Lukacs GL** 2010 Peripheral protein quality control removes unfolded CFTR from the plasma membrane. *Science.* 329(5993):805-10.
53. **Lands LC**, Iskandar M, Beaudoin N, Meehan B, Dauletbaev N, **Berthiaume Y** 2010 Dietary supplementation with pressurized whey in patients with cystic fibrosis. *J Med Food.* 13(1):77-82.
54. Roussel L, Houle F, Chan C, Yao Y, Bérubé J, Olivenstein R, **Martin JG**, Huot J, Hamid Q, Ferri L, **Rousseau S** 2010 IL-17 promotes p38 MAPK-dependent endothelial activation enhancing neutrophil recruitment to sites of inflammation. *J Immunol.* 15;184(8):4531-7.

55. Camateros P, Marino R, Fortin A, **Martin JG**, Skamene E, Sladek R, **Radzioch D** 2010 Identification of novel chromosomal regions associated with airway hyperresponsiveness in recombinant congenic strains of mice. *Mamm Genome*. 21(1-2):28-38.
56. Boncoeur E, Tardif V, Tessier MC, Morneau F, Lavoie J, Gendreau-Berthiaume E, **Grygorczyk R**, Dagenais A, **Berthiaume Y** 2010 Modulation of epithelial sodium channel activity by lipopolysaccharide in alveolar type II cells: involvement of purinergic signaling. *Am J Physiol Lung Cell Mol Physiol*. 298(3):L417-26.
57. Epp E, Vanier G, Marcus D, Lee AY, Jansen G, **Hallett M**, **Sheppard DC**, **Thomas DY**, Munro CA, Mullick A, Whiteway M 2010 Reverse genetics in *Candida albicans* predicts ARF cycling is essential for drug resistance and virulence. *PLoS Pathog*. 6(2):e1000753.
58. Dorfman R, Taylor C, Lin F, Sun L, Sandford A, Paré P, **Berthiaume Y**, Corey M, Durie P, Zielenski J; Members of Canadian Consortium for CF Genetic Studies. Collaborators (90) Nakielna EM, Davidson G, Gravelle A, Montgomery M, Semple L, Rabin HR, Leong J, Gjevre J, Brunoro C, Ramlall K, Turtle C, Holmes SB, Beaurivage B, Waters I, Wiltse S, Habbick B, Jacob J, Bourgh S, Kepron W, Wells T, Pasterkamp H, Lowe M, Brown NE, Salgado J, Zuberbuhler P, Tabak J, Solomon M, Taylor L, Tullis E, Tsang A, Lyttle B, Patterson N, Kean P, Pedder L, Freitag A, Hennessey R, van Wylick R, Loughheed D, McCulloch D, Malhotra K, Jackson M, Peterson L, Boland M, Kovesi T, Smith A, Kumar VJ, Gervais W, Piche C, Aaron S, Devesceri K, Vandamheen K, Hughes D, Barrett P, Michael RT, Gosse F, Dale A, Morris R, Sheppard E, Garey DN, Stackhouse R, Marcotte JE, Fauvel V, Bureau N, Dicaire R, Simard F, Martineau C, Petit N, Boucher L, Cote G, LaPerriere M, Charette L, Marsolais S, Boucher J, Raymong F, Rivard L, **Cantin A**, Plante M, Bigonnesse P, Rivard G, Ruel M, Brosseau F, Roussin M, **Matouk E**, Paquet F, Berthiaume Y, Jeanneret A, van Spall M, Levesque R, **Lands L**, Gaul M 2011 Modulatory effect of the SLC9A3 gene on susceptibility to infections and pulmonary function in children with cystic fibrosis. *Pediatr Pulmonol*. 46(4):385-92.
59. Sampson HM, Robert R, Liao J, Matthes E, Carlile GW, **Hanrahan JW**, **Thomas DY** 2011 Identification of a NBD1-binding pharmacological chaperone that corrects the trafficking defect of F508del-CFTR. *Chem Biol*. 18(2):231-42.
60. Robins S, Roussel L, Schachter A, Risse PA, Mogas AK, Olivenstein R, **Martin JG**, Hamid Q, **Rousseau S** 2011 Steroid-insensitive ERK1/2 activity drives CXCL8 synthesis and neutrophilia by airway smooth muscle. *Am J Respir Cell Mol Biol*. 45(5):984-90.
61. Chang Y, Al-Alwan L, Risse PA, Roussel L, **Rousseau S**, Halayko AJ, **Martin JG**, Hamid Q, Eidelman DH 2011 TH17 cytokines induce human airway smooth muscle cell migration. *J Allergy Clin Immunol*. 127(4):1046-53.e1-2.
62. Ramsingh R, Grygorczyk A, Solecki A, Cherkaoui LS, **Berthiaume Y**, **Grygorczyk R** 2011 Cell deformation at the air-liquid interface induces Ca²⁺-dependent ATP release from lung epithelial cells. *Am J Physiol Lung Cell Mol Physiol*. 300(4):L587-95.

63. Warr MR, Mills JR, Nguyen M, Lemaire-Ewing S, Baardsnes J, Sun KL, Malina A, **Young JC**, Jeyaraju DV, O'Connor-McCourt M, Pellegrini L, Pelletier J, **Shore GC** 2011 Mitochondrion-dependent N-terminal processing of outer membrane Mcl-1 protein removes an essential Mule/Las1 protein-binding site. *J Biol Chem.* 286(28):25098-107.
64. Gosline SJ, Nascimento M, McCall LI, Zilberstein D, **Thomas DY**, Matlashewski G, **Hallett M** 2011 Intracellular eukaryotic parasites have a distinct unfolded protein response. *PLoS One.* 6(4):e19118.
65. Balghi H, Robert R, Rappaz B, Zhang X, Wohlhuter-Haddad A, Evagelidis A, Luo Y, Goepf J, Ferraro P, Roméo P, Trebak M, **Wiseman PW**, **Thomas DY**, **Hanrahan JW** 2011 Enhanced Ca^{2+} entry due to Orail plasma membrane insertion increases IL-8 secretion by cystic fibrosis airways. *FASEB J.* 25(12):4274-91.
66. Risse PA, Kachmar L, Matusovsky OS, Novali M, Gil FR, Javeshghani S, Keary R, **Haston CK**, Michoud MC, **Martin JG**, Lauzon AM 2012 Ileal smooth muscle dysfunction and remodeling in cystic fibrosis. *Am J Physiol Gastrointest Liver Physiol.* 303(1):G1-8.
67. Fonseca BD, Diering GH, Bidinosti MA, Dalal K, Alain T, Balgi AD, Forestieri R, Nodwell M, Rajadurai CV, Gunaratnam C, Tee AR, Duong F, **Andersen RJ**, **Orlowski J**, Numata M, Sonenberg N, Roberge M 2012 Structure-activity analysis of niclosamide reveals potential role for cytoplasmic pH in control of mammalian target of rapamycin complex 1 (mTORC1) signaling. *J Biol Chem.* 287(21):17530-45.
68. Veit G, Bossard F, Goepf J, Verkman AS, Galiotta LJ, **Hanrahan JW**, **Lukacs GL** 2012 Proinflammatory cytokine secretion is suppressed by TMEM16A or CFTR channel activity in human cystic fibrosis bronchial epithelia. *Mol Biol Cell.* 23(21):4188-202.
69. Zhang D, Ciciriello F, Anjos SM, Carissimo A, Liao J, Carlile GW, Balghi H, Robert R, Luini A, **Hanrahan JW**, **Thomas DY** 2012 Ouabain Mimics Low Temperature Rescue of F508del-CFTR in Cystic Fibrosis Epithelial Cells. *Front Pharmacol.* 3:176.
70. Carlile GW, Keyzers RA, Teske KA, Robert R, Williams DE, Lington RG, Gray CA, Centko RM, Yan L, Anjos SM, Sampson HM, Zhang D, Liao J, **Hanrahan JW**, **Andersen RJ**, **Thomas DY** 2012 Correction of F508del-CFTR trafficking by the sponge alkaloid latonduine is modulated by interaction with PARP. *Chem Biol.* 19(10):1288-99.
71. Beaudoin T, Lafayette S, **Nguyen D**, **Rousseau S** 2012 Mucoic Pseudomonas aeruginosa caused by mucA mutations result in activation of TLR2 in addition to TLR5 in airway epithelial cells. *Biochem Biophys Res Commun.* 428(1):150-4.
72. Bardou O, Privé A, Migneault F, Roy-Camille K, Dagenais A, **Berthiaume Y**, **Brochiero E** 2012 K^{+} channels regulate ENaC expression via changes in promoter activity and control fluid clearance in alveolar epithelial cells. *Biochim Biophys Acta.* 1818(7):1682-90.

73. Chang NC, Nguyen M, Bourdon J, Risse PA, **Martin J**, Danialou G, Rizzuto R, **Petrof BJ**, **Shore GC** 2012 Bcl-2-associated autophagy regulator Naf-1 required for maintenance of skeletal muscle. *Hum Mol Genet.* 21(10):2277-87.
74. Anjos SM, Robert R, Waller D, Zhang DL, Balghi H, Sampson HM, Ciciriello F, Lesimple P, Carlile GW, Goepf J, Liao J, Ferraro P, Phillippe R, Dantzer F, **Hanrahan JW**, **Thomas DY** 2012 Decreasing Poly(ADP-Ribose) Polymerase Activity Restores Δ F508 CFTR Trafficking. *Front Pharmacol.* 3:165.
75. Sampson HM, Lam H, Chen PC, Zhang D, Mottillo C, Mirza M, Qasim K, Shrier A, Shyng SL, **Hanrahan JW**, **Thomas DY** 2013 Compounds that correct F508del-CFTR trafficking can also correct other protein trafficking diseases: an in vitro study using cell lines. *Orphanet J Rare Dis.* 8:11.
76. **Hanrahan JW**, Sampson HM, **Thomas DY** 2013 Novel pharmacological strategies to treat cystic fibrosis. *Trends Pharmacol Sci.* 34(2):119-25.
77. Birault V, Solari R, **Hanrahan J**, **Thomas DY** 2013 Correctors of the basic trafficking defect of the mutant F508del-CFTR that causes cystic fibrosis. *Curr Opin Chem Biol.* 17(3):353-60.
78. Beaudoin T, LaFayette S, Roussel L, Bérubé J, Desrosiers M, **Nguyen D**, **Rousseau S** 2013 The level of p38 α mitogen-activated protein kinase activation in airway epithelial cells determines the onset of innate immune responses to planktonic and biofilm *Pseudomonas aeruginosa*. *J Infect Dis.* 207(10):1544-55.
79. Boncoeur E, Bouvet G, Migneault F, Tardif V, Ferraro P, **Radzioch D**, de Sanctis JB, Eidelman DH, Govindaraju K, Dagenais A, **Berthiaume Y** 2013 Induction of Nitric Oxide Synthase Expression By Lipopolysaccharide is Mediated by Calcium-dependent PKC α - β 1 in Alveolar Epithelial Cells. *Am J Physiol Lung Cell Mol Physiol.* 305(2):L175-84
80. Dagenais A, Tessier MC, Tatur S, **Brochiero E**, **Grygorczyk R**, **Berthiaume Y** 2013 Hypotonic Shock Modulates Na(+) Current via a Cl(-) and Ca(2+)/Calmodulin Dependent Mechanism in Alveolar Epithelial Cells. *PLoS One.* 8(9):e74565.
81. Al-Alwan LA, Chang Y, Mogas A, Halayko AJ, Baglolle CJ, **Martin JG**, **Rousseau S**, Eidelman DH, Hamid Q 2013 Differential Roles of CXCL2 and CXCL3 and Their Receptors in Regulating Normal and Asthmatic Airway Smooth Muscle Cell Migration. *J Immunol.* 191(5):2731-41.

APPENDIX 2: Bylaws for the operation of the CFTRc

1. Name and Location

The name of the centre is “Cystic Fibrosis Translational Research centre, a McGill Research Centre”. The name will be abbreviated as CFTRc. It will be based on floors 9-11 of the McIntyre Med. Sci. Bldg and indicated on the directory opposite the elevators on the 10th floor. We will also ask that it be added to building directories near the first and 6th floor entrances to the McIntyre Med. Sci Bldg.

2. Purpose

The main goal is to find a cure for CF. To reach this objective the CFTRc will 1) enhance CF research by offering unique infrastructure, state-of-the-art equipment, and network resources that accelerate breakthroughs in the field, and 2) provide a platform for translational research that facilitates the development of therapies that target the basic defect underlying CF. More specifically, the CFTRc will provide facilities for primary cell culture, CF mouse colonies, HTS electrophysiology, and other equipment relevant to CF research. It will facilitate communication between members and promote knowledge dissemination through a web site and preparation of teaching materials. It will enhance training by hosting invited seminar speakers, annual symposia in collaboration with Fibrose Kystique Québec, a journal club, practical workshops, and by subsidizing students to attend conferences where they can present their work. The centre will highlight the critical mass of expertise in CF at McGill, which should help attract additional funding.

3. Management

Governance will be the responsibility of the board. The director of the research centre will be responsible for the management and will report to the Dean of Medicine (or delegate) – who will also act as chair of the board. In the event of an extended absence of the director, the associate director will manage the centre.

4. Membership of the Board

The membership of the board of the CFTRc will include the Dean of the Faculty of Medicine (David Eidelman / Shari Baum), Centre Director (John Hanrahan), VP Res. Intl Relations (Rose Goldstein), Provost (Anthony Masi), two full members (David Thomas, Gergely Lukacs), a full member with research and clinical responsibilities (Larry Lands, Director, Pediatric CF Clinic MUHC), an external member (Alvin Shrier), a foundation representative (Mark Bordeleau, Président directeur général, Fibrose kystique Québec), a post-doctoral fellow (Lucie Roussel, postdoc in lab of Simon Rousseau), and a graduate student (Shantelle LaFayette, PhD student in the laboratory of Dao Nguyen).

The board members who are also members of the CFTRc and who do not serve *ex officio* will be elected by their appropriate constituencies. The terms of appointment of the board members, other than the dean(s), Vice-Principal (Research and International Relations), or their delegates, will be three years for faculty and one or two years for students and postdoctoral fellows.

5. Appointment of the Director

Recommendations for nomination of the director and associate director of the CFTRc will be made to the board by a subcommittee consisting of at least the dean, two active full members of the CFTRc, and one other member of the board. If necessary, the board may decide to conduct an open search for a director. The recommendation of the board for the appointment of a director and, if necessary, an associate director, will be conveyed to the Provost by the Dean of Medicine. The Provost has the responsibility of approval of the appointments. In the case of appointments across multiple Faculties, the deans of all Faculties affected must be consulted. The appointment of the director and, if necessary, associate director, will normally be for a term of three years, renewable once.

6. Annual Report

The director of the research centre will prepare an annual report that includes all financial details of the operation of the research centre, along with the centre's measurable goals for the coming year. This will be presented to the board for approval. Following its approval, the annual report will be submitted to the Provost, the Vice-Principal (Research and International Relations), and the Dean of Medicine.

7. Membership of the Centre

The centre will have five classes of membership:

- (i) Full member: a principal investigator with a major research affiliation with the CFTRc;
- (ii) Associate member: an established researcher, such as a faculty member, with significant research affiliation with the centre;
- (iii) Visiting member: a visiting scholar, appointed to the CFTRc for a limited term;
- (iv) Postdoctoral scholar/research associate member;
- (v) Graduate student member.

Nominations for new full and associate members of the CFTRc must include full *curricula vitae* and letters of support and be submitted to the board for approval. Terms of membership are renewable, and each term will be up to six years for full and associate members, up to two years for student members and postdoctoral scholar/research associate members, and up to one year for visiting members.

8. Research Resource Allocations and Budget

The research centre's budget will be prepared by the director for approval by the board. Recommendations for the allocation of CFTRc resources to members will also be made by the director to the board. Full and associate members can bring appeals concerning resource allocation to the board, whose decision will be final.

9. Annual General Meeting

There will be an annual general meeting of all members of the research centre, during which the annual report will be presented and approved. All 11 members of the board will have a vote and at least seven must be present quorum.

10. Meetings of Board

The board will meet at least once a year to receive the annual report, review activities and membership, approve the budget, and help resolve any difficulties that may have arisen during the past year. An extraordinary meeting of the board will be convened if a written request to do

so, signed by at least two-thirds of the full and associate members of the research centre, is submitted to the chair of the board.

11. Research Agreements, Contracts, Grants, and Gifts

The CFTRc does not have the right to sign and enter into research agreements, grants, or contracts that would require McGill institutional approval, however it may receive gifts that are explicitly directed toward CF research at the centre.



McGill

Memorandum Note de service

**Office of the Vice-Principal
(Research and International Relations)**
James Administration Building, Suite 419
Tel.: 514-398-2995 Fax: 514-398-8257

**Bureau de la vice-principale
(recherche et relations internationales)**
Pavillon James de l'administration, bureau 419
Tél.: 514-398-2995 Téléc.: 514-398-8257

Date: June 23, 2015

To/Destinataire(s): Prof. Christopher Manfredi, Chair, Academic Policy Committee

From/De la part de: Dr. Rose Goldstein, Vice-Principal (Research and International Relations)

c.c. Julie Degans, Academic Planning Officer

Subject/Object: McGill Space Institute

Purpose:

Please find attached the proposal by Professor Vicky Kaspi (Faculty of Science) for the *McGill Space Institute* (MSI), which seeks recognition as an official research centre of McGill University. According to the process outlined in the Policy on Research Centres, the proposal has been reviewed and approved by the Research Advisory Committee (RAC). As Chair of RAC, I ask that APC review the proposal for approval and recommendation to Senate.

Background:

At the RAC meeting on February 24, 2015, Professor Kaspi provided a proposal and gave an overview presentation of the MSI's research mandate, educational and outreach activities and membership.

RAC members felt the proposal was a very strong one and had few revisions to suggest. As per the current practice for review of new Research Centre proposals, three reviewers among the RAC members were assigned to carry out a detailed assessment: Shari Baum, Benoit Boulet and Julie Coté.

The following reviewer comments were provided to Professor Kaspi on April 17, 2015:

- *Describe the reasons for why the name includes "Institute" and not "Research Centre".*
- *Highlight and expand on the advantages and added value of the establishment of the research centre at McGill.*
- *Address specifically how this centre will contribute to training*
- *Will researchers outside of McGill be able to join the Centre? e.g., UdeM researchers*
- *Please provide clarity on the relationship with the inter-institutional strategic network, funded by FRQNT, [Centre for Research in Astrophysics of Québec \(CRAQ\)](#). Concern: Given the limited resources available within the province, it seems very unlikely that the FRQ would support more than one research group in this domain, rendering the long-term sustainability of the MSI of concern in the absence of such a merger. Moreover, it is not entirely clear (particularly given some funding provided by CRAQ for joint programs) why this new centre is*

not positioned as an extension of CRAQ. Additional details regarding the renewal date for CRAQ might help to clarify this issue.

- *Are there any strategic or signature initiatives coming that this research institute would be well positioned to pursue other than FRQNT cluster as this could be difficult to obtain?*

The revised proposal was presented at the May 5, 2015 meeting of RAC. Members were fully satisfied that Professor Kaspi had addressed the content issues and the proposal to establish the MSI as an official McGill research centre was recommended to move forward for approval by APC.

However, considerable discussion took place about naming the proposed centre an *Institute* vs. a *Research Centre*. In accordance with the current Policy on Research Centres in place (revised 2013), the VP-RIR has approached the naming issue by assessing the *functioning* of the unit. An entity that is functioning according to the definition of a Research Centre may seek recognition under the above Policy, even if the term “Research Centre” is not part of its name. We should recognize that in certain contexts the name “Centre” does not work well and, in such cases, ask proponents to give a clear rationale for why they prefer “Institute” over “Centre.”

Professor Kaspi provided the following rationale for naming the new entity an Institute:

- The nomenclature within the field usually uses ‘Institute’ for similar entities, e.g., University of Toronto Institute for Aerospace Studies, Canadian Aeronautics and Space Institute, MIT Kavli Space Institute, Institute for Space Research (U. Calgary)
- The term ‘space centre,’ by contrast, is usually used for centres that are open to the general public and oriented toward educational activities. The name “McGill Space Institute” was chosen to differentiate the MSI as a *research* centre.

With this clarification, RAC approved the proposal to go forward to APC under the proposed name.

Next steps:

Upon review and endorsement, APC will propose approval of the MSI proposal to Senate and the Board of Governors for official research centre status as per the *Policy on Research Centres*.

Appendix I: MSI Research Centre Proposal

McGill University

February 2, 2015

Professor Vicky Kaspi,
Physics Department,
McGill University

Dear Vicky,

I write to confirm formally my strong support of your proposed Space Institute at McGill. This is a great initiative for our University, and I commend you on your leadership!

Yours sincerely,



Martin Grant
Dean



McGill

Dr. Chandra A. Madramootoo, Eng.

James McGill Professor and Dean
Faculty of Agricultural
and Environmental Sciences

McGill University
Macdonald Campus

Titulaire d'une chaire James McGill et Doyen

Faculté des sciences de
l'agriculture et de l'environnement

Université McGill
Campus Macdonald

Tel. : (514) 398-7707
Fax : (514) 398-7766

21,111 Lakeshore
Ste-Anne-de-Bellevue
Québec, Canada H9X 3V9

February 4, 2015

Professor Vicky Kaspi
McGill University
Faculty of Science
Department of Physics
Dawson Hall

Re: FAES Dean's Letter of Support

Dear Professor Kaspi,

The Faculty of Agriculture and Science (FAES) strongly endorses the establishment of the new McGill Space Institute (MSI) and believes that it will be an excellent addition to McGill University as well as the FAES. The inclusion of a planetary science and astrobiology component within the new MSI will ensure the legacy of the NSERC CREATE Canadian Astrobiology Training Program (CATP) that will be ending in March 2015. Indeed, the MSI will be a crucial pillar in continuing and expanding the excellent research activities by CATP McGill faculty and developing new and exciting initiatives in this field.

Many thanks to your colleagues and yourself for your efforts and leadership.

Sincerely,

Chandra A. Madramootoo Ph.D., Ing., FCSBE, FASABE
James McGill Professor and Dean

CAM/md

Research Centre Proposal: McGill Space Institute

April 24, 2015

Proposal for a Research Centre: The McGill Space Institute (MSI)

Identification:

Name of the research centre – McGill Space Institute

Proposed director – Victoria Kaspi, Professor, Department of Physics

Lead Faculty and other Faculties involved -- Faculty of Science (Lead), Faculty of Agriculture and Environmental Science

Physical location of the research centre (office space) -- 3550 University (the Institute 'House')

Institute Rationale:

The creation of the McGill Space Institute (MSI) brings together research communities doing space-relevant work around the Faculty of Science and beyond, to provide an intellectual home for space-related research and to foster space-related instrumentation development, cross-fertilization via interdisciplinary interactions and collaborations in an area of major research promise and considerable public interest.

Background: In the past 15 years, McGill has made major investments in astrophysics and cosmology via many new faculty hires in the Department of Physics. Since 2000, McGill has committed six faculty slots to cosmology or astrophysics. Three of these faculty are Canada Research Chairs, four are Canadian Institute for Advanced Research Senior Fellows, and three have received Sloan Fellowships. Kaspi holds the Lorne Trottier Chair in Astrophysics & Cosmology, whose annual revenue is shared among the astrophysics and cosmology faculty members in support of research. This investment has been successful by any metric, resulting in world-leading and high-impact research results (including major results in cosmology, physics of compact objects, and gravitation), leadership in major world-class research projects (e.g. the upcoming CHIME telescope, chime.phas.ubc.ca/); the search for gravitational waves using pulsars (www.nanograv.org); and the South Pole Telescope (www.spt.org), as well as strong engagement with students, the McGill community, alumni and the public via a vigorous outreach program and social media initiatives via AstroMcGill (www.astro.physics.mcgill.ca/outreach.php). McGill is now recognized as one of the top astrophysics research groups in Canada. In parallel with this successful investment, McGill has supported important research efforts in planetary sciences, such as the McGill Arctic Research Station (www.mcgill.ca/mars/), as well as research initiatives relevant to astrobiology (including the successful McGill-led NSERC CREATE Canadian Astrobiology Training Program). In addition there has been significant faculty renewal in the Department of Earth and Planetary Sciences (EPS) and Atmospheric and Oceanic Sciences (AOS), with a host of new hires in areas related to planetary science. These latter efforts are moving beyond our solar system, with new hires in AOS actively researching in exoplanetary science and most recently, EPS joining with Physics to search for a joint hire in exoplanetary science. This resonates strongly with ongoing successful research by Montreal-area scientists, specifically the exoplanets research group in the Astronomy Department at Université de Montreal. Clearly the timing is right for an institute that combines these space-focused research efforts and further, can inform the search for exoplanets and extraterrestrial biosignatures.

Research program:

The MSI represents the union of McGill researchers working in space-related research, here defined as research that illuminates objects and processes beyond our home planet. These research areas have potentially significant overlap yet are traditionally housed in different University departments. Therein lies the primary advantage of MSI: it is an interdisciplinary research centre that brings together faculty, postdocs and students working on related topics who might not otherwise interact. It brings added value to the research landscape at McGill by fostering new interactions and therefore new research directions and synergies which will ultimately lead to new understanding of space and our place within it.

To be more specific, MSI comprises the research areas of cosmology, astrophysics, planetary sciences, planetary analogues and microbial life in extreme environments, with the following four primary mission goals:

- ❖ Provide an intellectual home for faculty, research staff, and students engaged in space-related

Research Centre Proposal: McGill Space Institute

April 24, 2015

- research at McGill, regardless of their home department
- ❖ Support the development of technology and instrumentation for space-related research
- ❖ Foster cross-fertilization and interdisciplinary interactions and collaborations among Institute members in Institute-relevant research areas
- ❖ Share with students, educators, and the public an understanding of and an appreciation for the goals, techniques and results of the Institute's research.

At founding, the Institute will have specific focus themes that are consistent with its mandate and vision. These founding research themes, in logical research-relevant progressive order (which could be exactly reversed as well) are listed below:

Early Universe

Cosmology

Galaxy Evolution

Astrophysics

Nuclear Astrophysics

Compact Objects

Exoplanets

Search for Extraterrestrial Biosignatures

Astrobiology

Planetary Science / Exploration

Planetary Analogues

Microbial Life in Extreme Environments

McGill's core strengths and long-term vision are described in its 2013 Strategic Research Plan. The vision of MSI aligns very well with one of the plan's seven areas of research excellence, "Explore the natural environment, space and the universe."

MSI's specific long-term research goals can be summarized by the following list, which includes some of the most fundamental questions in Science today:

- ❖ Understand the origin and evolution of the Universe
- ❖ Understand the nature of Dark Matter and Dark Energy
- ❖ Understand the nature of gravity
- ❖ Understand the nature of matter in extreme environments
- ❖ Understand the contents and evolution of the Milky Way
- ❖ Understand the Milky Way's population of extrasolar planets
- ❖ Understand the structure, formation and habitability of planets
- ❖ Understand the nature of microbial life in extreme environments
- ❖ Understand the biosignatures that may be used to detect extraterrestrial life

Shorter-term goals of the Institute include (i) the development of a world-class exoplanetary research program by uniting researchers and their trainees (graduate students, postdocs, research associates and research undergraduates) from multiple departments as well as fostering interaction with the exoplanet group at U. Montreal, led by Prof. R. Doyon, a new Adjunct Professor at McGill and a founding MSI member. Specific questions to be addressed include the frequency of exoplanets, and the structure and composition of exoplanet atmospheres and interiors and their implications for planet formation. With thousands of exoplanets now known, the field is moving from a phase of discovery to one of characterization where interdisciplinary work is essential. Another shorter-term goal of MSI is (ii) to act as a vehicle for the continuation of McGill's productive focus on Astrobiology, by creating new opportunities for MSI participation in planetary analogues and exploration, and enhancing them to include exoplanetary and related astrophysical research themes. (iii) The MSI will also nurture the world-class cosmology team at McGill, via encouraging continued instrumentation development for maintaining a forefront presence in observational cosmology, as well as strong theoretical components examining the universe and its evolution right from the Big Bang. (iv) The MSI will also foster a new collaborative axis, specifically among the members of the cosmology group and those studying compact objects,

April 24, 2015

via joint work on outfitting upcoming CHIME telescope – designed for cosmology – for detailed studies of radio pulsars and their potential use as gravitational wave detectors and gravitational laboratories in general. Additional potential collaborative axes exist among MSI researchers; these include the study of potential Dark Matter signatures given recent new astrophysical constraints, exploration of the role of compact objects in models of the early universe, as well as collaborations yet unimagined, to be fostered by creating an environment in which researchers with broadly related interests can interact formally and informally. We summarize current collaborative interactions as well as envisioned future collaborations among MSI members in Figure 1. The significantly increased number of collaborations is key added value of the MSI, given its interdisciplinary nature and emphasis on fostering interaction.

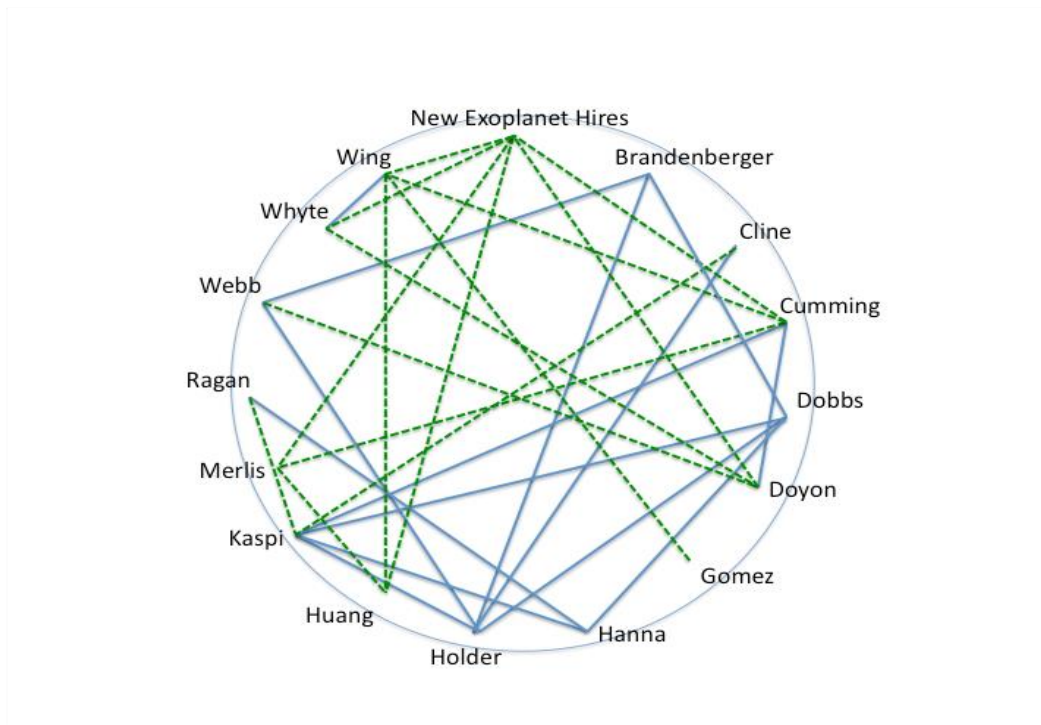


Figure 1: Diagram of existing (blue, solid) and envisioned (green, dashed) research collaborations among MSI Full Members (see Members list below for more details on individual researchers). MSI unites researchers who are already collaborative within their own Departments, in order to encourage cross-disciplinary engagement and new research directions in areas of common interest, as well as to create a focal point for space-related public interest. The green dashed lines represent potential collaborations that have just begun to be explored as a direct result just of discussions relating to the formation of MSI.

Training:

As described below, training of postdocs, graduate students and undergraduates (“trainees” for short) is a key component of activities within MSI. Although MSI is a research centre and does not offer any degree program or courses of its own, the research fostered by MSI comprises by its very nature significant training. MSI faculty all supervise trainees as part of their research programs. The added value with the creation of MSI will therefore naturally flow down to those trainees: they will benefit from the greater pool of researchers with whom to interact and a wider range of expertise and technical know-how upon which to draw. Further, the planned in-reach and out-reach activities in MSI (described below) will benefit trainees by introducing them to a broader range of external researchers through seminars, colloquia and visitors via in-reach and by providing them with opportunities to develop professional skills through participation in public events and development of outreach

April 24, 2015

activities via the MSI outreach endeavours.

Planned Institute Activities:

In-reach activities: Including but not limited to seminars and colloquia given by members, other McGill researchers, or more typically, visitors from other institutions, on topics broadly related to any Institute research themes; postdoctoral or student workshops organized by Institute members on Institute-relevant themes for postdocs and students at McGill and visiting from other institutions; organization of future graduate level courses in Institute relevant themes, etc. This will constitute specific research training opportunities for graduate students, postdocs and research associates, offering them an enhanced, multidisciplinary environment in which to contextualize their individual projects while sowing the seeds for future, novel research directions.

Outreach activities: The broad goals of Institute outreach efforts are to promote Institute activities and research, as well as science in general, in the broad McGill community and in the general public. Institute research themes resonate strongly with the general public and have potential to interest McGill alumni; outreach efforts partnering with McGill's development office are to be encouraged and could be an important catalyst for Institute-relevant philanthropy. Envisioned outreach initiatives include but are not limited to public lectures by Institute members and their invitees, special public events surrounding major Institute-relevant milestones and special occurrences (transit of Venus, first detection of gravitational waves, Mars exploration, etc), and programs involving school children in K-12 as well as CEGEP students, as resources permit. In addition, activities will include public outreach in the form of web-based information sharing, videos, podcasts and other activities, social media promotion of institute activities, research and institute-relevant scientific results via Facebook, twitter, etc. This will also act as important training ground for graduate students and postdocs, particularly for developing strong communication and outreach skills that will serve them well in their future careers.

MSI Technical Resources:

The formation of the MSI brings together a rich variety of technical resources in addition to the intellectual ones. Indeed technical resources available to MSI members include significant onsite laboratory and supercomputing resources, the McGill Arctic Research Station, as well as access to a variety of telescopes that spans the electromagnetic spectrum and circle the globe, both figuratively and literally. This huge ensemble of research capability represents a significant magnet for recruitment of new trainees and future faculty hires, and a large technical toolbox of which MSI members and their trainees can make use. These technical resources are listed in detail in Appendix I.

MSI's Intellectual Hub – 3550 University: The intellectual hub of the Institute will be at 3550 University St. where a significant number of MSI Faculty and their students will sit. This 'house' is meant to act as a home for its members, in concert with the mission statement; as such the house layout will be arranged to the greatest extent possible to maximize interaction and community feeling. The house's conference room, common areas and lounge will be open to all Institute members. Desks will be set aside for MSI visitors who have been invited by MSI members, and who are doing research associated with any MSI research theme. MSI events such as seminars and workshops will be held in the house to the extent space permits. MSI Board meetings (see Governance) will take place in the house as well. Given the proximity of 3550 University to the Rutherford Physics Building, for logistical simplicity, 3550 will be administered and managed by the Department of Physics (under guidance from Physics Chair P. Grutter and Rutherford Building Manager Prof. D. Ryan) working in consultation with the MSI Director. The Department of Physics will therefore have access to 3550 University space resources including the conference room.

Strategic positioning:

No similar research centre exists at McGill. Top McGill researchers doing space-related research work largely in 'silos' defined by departmental boundaries. This is particularly true of planetary science, both within the Solar System as well as beyond, where researchers in Physics, EPS, AOS, Natural Resource Sciences and at U. Montreal, were not even aware of their common research themes prior to discussion on the formation of MSI. MSI's top primary mission goal is to bring these researchers together to build on each others' knowledge and expertise, and to further engage them with astrophysics and cosmologists in the Physics, where highly collaborative research in related areas is ongoing independently. At McGill, a small subset of MSI researchers

Research Centre Proposal: McGill Space Institute

April 24, 2015

run the Canadian Astrobiology Training Program funded by the NSERC CREATE program however that is highly focused on astrobiology, and will reach its five-year mandate's end in 2015.

No research centre or institute of comparable scope to MSI exists in Quebec. While there exists Centre de Recherche Astrophysique de Quebec (CRAQ), a FRQNT Centre, its raison d'être is to unify specifically cosmology and astrophysics in 4 different Universities (Laval, U. Montreal, McGill and Bishops) and includes no planetary science or astrobiology. U. Montreal has recently created a highly focused exoplanets institute, but it excludes the bulk of astrophysics, including cosmology, as well as planetary science and astrobiology.

No research centre or institute of comparable scope to MSI exists in Canada. The Canadian Institute for Theoretical Astrophysics (CITA), based at U. Toronto, includes much of MSI's research themes (though not planetary science or astrobiology) but excludes laboratory or observational components. U. Toronto's Dunlap Institute for Astronomy & Astrophysics includes no planetary science or astrobiology, and is hosted at a separate research centre on another U. of T campus (the Centre for Planetary Science at U. of T.'s Scarborough campus). U. Western Ontario's Centre for Planetary Science & Exploration includes no astrophysics or cosmology. McMaster's Origins Institute concerns itself with the origins of a wide variety of topics, including species, biodiversity and consciousness. Thus its reach is much less focused than MSI. We believe MSI's broad foundation but well defined research mandate gives it a research and outreach vision that is distinct from any research centre or institute in Canada.

MSI is thus unique at McGill, in Quebec and Canada in that it unifies researchers across the space spectrum, bringing together a unique and impressive range of technical and intellectual resources that can be brought to bear on a wide variety of space-related research problems. This will make McGill a new magnet for future graduate students and postdocs interested in doing space-related research, offering them a wide variety of research topics and resources, as well as act as a recruitment vehicle for new McGill faculty hires. This is all in addition to MSI's primary mission goals as well as its long- and short-term research goals described above. We note that our broad definition of "space-related research" also resonates strongly with the general public's sense of what space research is all about, making MSI a magnet for public and press attention.

Internationally, there are two analogues to the MSI of which we are aware. The Kavli Center for Astrophysics at MIT includes all the MSI research themes, but also deals with traditional "space science" relating to the Earth's magnetosphere and the Solar wind. The NASA Astrobiology Institute's "node" hosted at the University of Washington (the Virtual Planetary Laboratory) has similar research themes that stretch from astrophysics to astrobiology, but it is a distinctly short-term initiative, with a funding mandate that ends in a few years.

Future development of MSI may include broadening our scope to include faculty in the Faculty of Engineering who are doing space-related research. This would assist in the second of our primary mission goals (see above), and potentially lead to a program in which students and postdocs can work cross-Faculty on projects that involve instrumentation, data analysis and science components, true end-to-end space-related training. Other potential broadening could be to include research interested in Earth's climate, particularly as it pertains to extrasolar planetary atmospheres and biosignatures of extraterrestrial life. There is also scope for MSI and the newly formed U. Montreal exoplanetary institute to perhaps join one another, or for MSI to eventually grow to encompass the current CRAQ program.

Membership:

Members - there are multiple different types of membership

- (i) Full members: McGill faculty members, adjuncts included, with significant space-related research interests; founding Full members are listed below. Only Full members may sit on the Board.
- (ii) Associate members: McGill faculty members with minor space-related research interests and/or faculty members from other nearby institutions who spend significant time at MSI or bring specific added value, as well as visiting faculty from other institutions with MSI stays of >6 months. Associate members may not sit on the Board.

April 24, 2015

- (iii) Postdoctoral members: McGill postdocs with major space-related research interests; to be called "MSI Fellows," includes external postdocs visiting MSI for more than 6 months; affiliated with one or more Full or Associate members. One postdoctoral member may sit on the Board.
- (iv) Graduate student members: McGill MSc and PhD students, as well as students visiting MSI as part of long-term (> 6 months) exchanges or long-term research-related collaborative visits. Must be supervised by one or more Full or Associate members. One graduate student member may sit on the Board.
- (v) Visitors: visiting faculty, postdocs or students who stay for <6 months; must be sponsored for visitor status by a Full member. Visitors may not sit on the Board except possibly as the "Outside" Board member.

Any members may formally propose new Institute activities or initiatives to the Board for consideration, and should use the Institute as an affiliation on publications. Only Full members may supervise student or postdocs funded via MSI scholarships or fellowships, and those fundees must be members. There are no term limits for members, however there will be a review of all Full and Associate members by the Board every 2 years to evaluate continued Institute participation and interest (see Governance below). New members of any category can be proposed to the Board at any time; such a proposal should be accompanied by a one-page statement of rationale and how the new member will benefit the Institute and vice versa. Board decisions regarding membership proposals will be rendered and communicated in a timely fashion (typically within 3 weeks of the request). All members are expected to indicate their McGill Space Institute affiliation on publications and other relevant documents.

Founding Institute Full Members (alphabetized)

- **Robert Brandenberger** (CRC, Prof., Physics) – cosmology, early universe
- **Jim Cline** (Prof., Physics) -- cosmology, early universe, particle astrophysics, dark matter
- **Andrew Cumming** (Assoc. Prof., Physics) – exoplanets, nuclear astrophysics, compact objects
- **Matt Dobbs** (CRC, Assoc. Prof., Physics) – cosmology, compact objects, radio astronomy
- **Rene Doyon** (Prof., UdeM, McGill Physics Adjunct) -- exoplanets, astrophysics, search for extraterrestrial biosignatures
- **Natalya Gomez** (CRC, Asst. Prof., EPS) – exoplanets, coupling between solid parts of planets and their fluid shells (arrives Sept. 2015)
- **David Hanna** (Macdonald Prof., Physics) – astrophysics, cosmology, gamma-ray astronomy, radio astronomy
- **Gil Holder** (CRC, Prof., Physics) -- cosmology, galaxy evolution, early universe
- **Yi Huang** (Asst. Prof., AOS) -- exoplanets, physical climatology, atmospheric radiation and radiative transfer
- **Victoria Kaspi** (Director, CRC, Trottier Chair in Astrophysics & Cosmology, Prof., Physics) – astrophysics, compact objects
- **Timothy Merlis** (Asst. Prof., AOS) – exoplanets, climate dynamics including tropical meteorology, climate sensitivity, the ocean-atmosphere general circulation
- **Ken Ragan** (Macdonald Prof., Physics) – astrophysics, gamma-ray astronomy
- **Tracy Webb** (Assoc. Prof., Physics) – astrophysics, galaxy evolution
- **Lyle Whyte** (past CRC (2003-2013), Assoc., Prof., Nat. Res. Sci) – astrobiology, environmental microbiology, microbial life in extreme environments, cryomicrobiology, biosignatures
- **Boswell Wing** (Dawson Chair, Assoc. Prof., EPS) – planetary analogues, co-evolution of microbial metabolisms and Earth's global environment, astrobiology, biosignatures
- **NEW EXOPLANET POSITION 1** (Physics/EPS) – new approved faculty position in exoplanets (2015)
- **NEW EXOPLANET POSITION 2** (TBD) – new approved faculty position in exoplanets /planetary science (2016)

Research Centre Proposal: McGill Space Institute

April 24, 2015

Governance:

MSI governance as described next is based on the Sample Guidelines for By-Laws for the Operation of a Research Centre (as approved by the Board of Governors Nov 28, 2013).

The governance of MSI is the responsibility of the Board. The Director of the MSI is responsible for the management and reports to the Dean of Science, who acts as Chair of the Board. In the event of an extended absence of the Director, the Associate Director manages the MSI.

Membership of the Board consists of the Dean of Science (Chair), the Vice-Principal (RIR) or delegate, the Provost (or delegate), the MSI Director, the MSI Associate Director, three active Full Members, one Member graduate student, one Member postdoc and at least one person who is not a Member of MSI. The Board Members who are also members of MSI will be elected by the Full Members. The terms of appointment to the Board for Full Members and the outside person will normally be three years, and one year for the student and postdoc Members.

Recommendations for nomination of the Director and Associate Director of MSI will be made to the Board by a subcommittee consisting of at least the Dean, two active MSI Full Members, and one other Member of the Board. The recommendation of the Board for the appointment of a Director and Associate Director will be conveyed to the Provost by the Dean of Science. The Provost is responsible for approval of the appointments. The appointment of the Director and Associate Director will normally be for a term of up to six years.

The MSI Director will prepare the annual report, which will include all financial details of the operation of MSI along with MSI's measurable goals for the coming year. This will be presented to the Board for approval. Following approval, the annual report will be submitted to the Provost, the Vice-Principal (RIR), and the Deans of Science and any other contributing Faculties. The Director and Associate Director must have primary offices in 3550 University.

A MSI Coordinator, funded via MSI resources, will assist the Director and Associate Director in the running of MSI and preparation of reports. The Coordinator will sit in 3550 University and will be selected as necessary by an ad hoc subcommittee appointed by the Director.

Membership classes in MSI have been defined above. Nominations for new Full and Associate Members of MSI must include full Curriculum Vitae and 2 letters of support with rationale. They must be submitted to the Board for approval. Terms of membership are renewable, however every 2 years every Full and Associate Member will be reviewed by the Board for their continued MSI participation and research relevance to MSI goals.

MSI's budget is prepared by the Director for approval by the Board. Recommendations for the allocation of MSI resources will also be made by the Director to the Board. Full members can bring appeals concerning resource allocation to the Board, whose decision will be final.

There will be an Annual General Meeting of all members of MSI during which the annual report will be presented and approved via vote by all Full Members.

The Board must meet at least once per year to receive the annual report, review activities and membership, approve the budget, and help resolve any difficulties that arise. In the first 2 years of the existence of MSI, the Board will meet twice per year. An extraordinary meeting of the Board will be convened if a written request to do so, signed by at least two-thirds of the Full members, is submitted to the Chair of the Board.

A significant gift has been given to MSI for scholarships and fellowships for MSI graduate students and postdocs (see Budget below). A subcommittee of at least three Full Members, appointed by the Director, will allocate these funds according to guidelines proposed by the Director and approved by the Board.

Research Centre Proposal: McGill Space Institute

April 24, 2015

MSI and MSI members do not have the right to sign and enter into research agreements, grants or contracts that require McGill institutional approval from authorized University signing officers. Similarly, gifts to MSI must be managed through the appropriate University channels.

Subsequent modifications to the above by-laws will be proposed by the Board and reviewed as part of the centre's cyclical review.

The proposed inaugural MSI Director is Victoria Kaspi, Professor in the Department of Physics.

The proposed inaugural MSI Associate Director is Andrew Cumming, Associate Professor in the Department of Physics.

The proposed inaugural Board three Full Members are Matt Dobbs (Physics), Boswell Wing (EPS), and Lyle Whyte (Natural Resource Sciences).

The proposed inaugural graduate student member TBD (AOS/EPS/NRS) and postdoc member is Dr. Dave Tsang (Physics).

The proposed inaugural outside person on the Board is Lorne Trottier.

Budget:

At the inauguration of MSI, which presently has provisional status, the following sources of funding are secured and available for its operation:

- ❖ \$230K of seed funding from the Provost Office with spending deadline or restrictions, assumed to be used in equal parts after initial set-up expenses for 'the house' (\$20K + \$70K/yr * 3 yr)
- ❖ \$190K/yr (for 5 years) for MSI graduate student scholarships and fellowships from Trottier MSI gift
- ❖ \$10K/yr (for 5 years) for Coordinator Salary to assist in administration of MSI scholarships and fellowships, from Trottier MSI gift
- ❖ \$5K/yr for Coordinator Salary from Department of Physics
- ❖ \$10K/yr for Coordinator Salary from Trottier Chair in Astrophysics & Cosmology in support of Coordinator's role in astrophysics & cosmology outreach
- ❖ \$10K/yr from Trottier Chair in Astrophysics & Cosmology for general MSI operations and initiatives of joint interest to Astrophysics & Cosmology and MSI, including outreach
- ❖ \$10K/yr from FRQNT CRAQ Centre funds for joint programs between MSI and CRAQ, such as speakers and workshops (subject to renewal of the CRAQ program, expected in April 2015)

Total available for 2015-2016: \$90K + 190K + 10K + 5K + 10K + 10K + 10K = \$325K

The following are the foreseen expenditures of MSI for its inaugural year:

- ❖ \$20K for initial 'house' set-up expenses: appliances (refrigerator, microwave oven, coffee makers), blackboards & whiteboards, a television for computer projection, furniture, and miscellaneous items (garbage pails, recycling bins, umbrellas, rubber mats, etc) in 'the house'.
- ❖ \$55 K/yr Coordinator salary

Research Centre Proposal: McGill Space Institute

April 24, 2015

- ❖ \$10K/yr Coordinator benefits
- ❖ \$180 K graduate student scholarships and postdoctoral fellowships
- ❖ \$20K graduate student and postdoctoral conference, workshop, fieldwork and collaborative travel
- ❖ \$20K MSI seminar series with outside speakers
- ❖ \$5K Miscellaneous MSI expenses (refreshments, supplies, house repairs, etc)
- ❖ \$15K Outreach including at least 2 major public events

Total expenses for 2015-16 $\$20K + 55K + 10 + 180K + 20K + 20K + 5K + 15K = \$325K$

We anticipate that the budgets for two subsequent years will be very similar except for the \$20K of initial house set-up expenses.

Within the first year of the inauguration of MSI, we intend to apply for an NSERC CREATE grant to further one or more of the purposes of MSI, as well as to investigate possibilities for FRQNT Team Grants and Cluster Grants, in order to ensure continued availability of full Coordinator salary support, MSI operations funds, and outreach programs. Currently the Centre de Recherche en Astrophysique de Quebec (CRAQ), as mentioned above, holds FRQNT Centre status, although this is up for renewal in 2015 (decision expected late April). If renewed for the requested 5 years, this would help fund astrophysics and cosmology research within MSI. We believe there could be scope for a second Centre in planetary or exoplanetary science which could be led by MSI; the overlap with CRAQ would not be large as it would include only the CRAQ exoplanetary researchers (3-4 in total). If CRAQ is not renewed in 2015, strategic repositioning of this research domain in Quebec would be required and MSI would be in an excellent position to lead such an initiative, potentially in partnership with U. Montreal in light of their newly formed exoplanetary institute led by MSI member (McGill adjunct faculty member) R. Doyon.

We also plan a vigorous outreach program which we hope will continue to attract the interests of philanthropists interested in contributing to the goals of MSI. Members are responsible for obtaining research support through grants and contracts for research projects related to the activities of the centres.

Appendices:

Appendix I: MSI Technical Resources

Current Laboratory and Computing facilities of MSI members:

- The **McGill Stable Isotope Laboratory** includes facilities for making high precision measurements of natural abundance stable isotope ratios in earth and planetary materials. It hosts a custom-built fluorination line and a large-radius mass spectrometer that together make Canada's only facility for determination of all four stable isotopes of sulfur. A second gas-source isotope-ratio mass spectrometer is dedicated to measurement of the full spectrum of carbon and oxygen stable isotopes. Support facilities include a wet chemistry laboratory for dealing with a wide range of materials, including recalcitrant matrices and complex mixtures. A fully equipped microbiological laboratory is also available, and includes equipment for high-throughput culturing of anaerobic microbes of astrobiological interest.
- The **McGill Cosmology Instrumentation Laboratory** includes facilities for developing complex digital and ultra-low noise analog cryogenic electronics for astrophysics. The lab includes engineering support and state-of-the art software for developing cutting edge electronics systems. There are separate labs for radio instrumentation and mm-wave instrumentation. The mm-wave lab includes two sub-Kelvin cryogenic systems (valued about \$500k each) and TES bolometer systems for testing mm-wavelength readout system developments. The team has deployed complex detector readout systems

April 24, 2015

for many of the world's leading mm-wave telescopes including The South Pole Telescope, POLARBEAR at the James A. Ray Observatory, ASTE, The Simon's Array, and the EBEX stratospheric Balloon telescope (launched by NASA in 2012). Through our hardware contributions, the team has full partnership access to data from these instruments. The radio lab is developing digital correlator electronics that are being used for the CHIME telescope and prototypes of a future international Square Kilometer Array telescope.

- The **Gamma-ray Astronomy Laboratory** has instrumentation for the development of instrumentation for astroparticle and particle physics detectors. Significant elements of the STACEE and VERITAS gamma-ray telescopes were designed, characterized, and built there. The team has also used its instrumentation for gamma-ray spectral analysis in homeland security applications.
- **Prof. Whyte's laboratory** includes infrastructure for molecular biology/microbiology. It is one of the few worldwide with the facilities to perform fundamental studies at subzero temperatures of the microbiology of cryoenvironments, effects of global warming on permafrost microbial communities, and astrobiology-related investigations of polar cryoenvironments that are considered Mars, Enceladus, and Europa analogues. Specific instrumentation includes: 2 high precision cold temperature walk-in cyro-chambers (-5°C to -20°C, -10° to -30°C), qPCR and PCR, DGGE, a fluorescent phase contrast microscope system, microarray reader, hybridization equipment, anaerobic chamber, ultracentrifuge for SIP, Scintillation counter for radiorespiration assays, 6 cold-temperature incubator freezers, and 10 orbital shakers. With these tools, novel cold-adapted microorganisms of relevance to astrobiology can be screened, isolated, and characterized at various cold temperatures ranging from -20°C to 50°C. Polar samples can be stored long term. New technologies, such as drills, sensors and other instrumentation can be harsh-environment tested prior to field deployment.
- **The McGill High Arctic Research Station (MARS) and its field equipment** support field research activities consisting of sample acquisition, some limited laboratory microbial and molecular analyses, and *in situ* analyses for microbial activity. The infrastructure that supports these research activities includes: a Portable Permafrost drilling system, a LiCor 8100 CO₂ soil flux system, a Picarro CDRS Methane Isotope Analyzer (CH₄, CO₂), an SRI Field GC system (CO₂, CH₄, N₂O, H₂S), a phase contrast microscope, centrifuges, and field molecular biology and microbiology equipment. This instrumentation allows for the measurement of indicator gasses for determining methanogenesis, methanotrophy, respiration, S metabolism, denitrification metabolic processes in pure cultures and environmental samples.
- CFI-built 128 computing cores in AOS and 200 TB storage space on Guillimin (Huang).
- 324 core-years of Compute Canada time on the Guillimin supercomputer (Kaspi, 2014-2015), dedicated 100 TB tape archive administered by Compute Canada.
- 104 core-years of Compute Canada time on the Guillimin supercomputer (Holder, 2014-2015).
- CANARIE-funded computer cluster and 30 TB RAID array in Department of Physics (Kaspi).

Current Ground-based Telescope Facilities available to MSI members (listed here are facilities currently being used by MSI Full Members, generally on the basis of competitive peer-reviewed proposal opportunities, with exceptions noted):

- McGill is co-owner of the Canadian Hydrogen Intensity Mapping Experiment (CHIME), together with UBC and Toronto, located at the DRAO. The \$11M CHIME telescope is the only major telescope installation to be built on Canadian soil in the last several decades. CHIME is a radio telescope, optimized for cosmology and radio transient searches. (Dobbs, Hanna)
- Pulsar backend recording and analysis system for CHIME (Kaspi, Dobbs)
- VERITAS Gamma-ray Telescope (Hanna, Ragan)
- South Pole Telescope – mm-wave, Cosmic Microwave Background (Dobbs, Holder)
- POLARBEAR and the Simon's Array – mm-wave, Cosmic Microwave Background (Dobbs)
- Arecibo Observatory – radio wavelengths (Kaspi)
- Green Bank Telescope – radio wavelengths (Kaspi)
- Gemini Observatory (Webb)
- Canada France Hawaii Telescope (Webb)
- Atacama Large Millimeter Array (Webb)

Research Centre Proposal: McGill Space Institute

April 24, 2015

- Jansky Very Large Array (Webb)

Current Space-based Telescope Facilities available to MSI members (listed here are facilities currently being used by MSI Full Members, generally on the basis of competitive peer-reviewed proposal opportunities):

- The NASA/CSA-funded EBEX stratospheric balloon telescope was co-built in the McGill Cosmology Instrumentation Laboratory.
- NASA/Hubble Space Telescope (Webb)
- NASA/Swift X-ray Telescope (Kaspi, Cumming)
- NASA/NuSTAR X-ray Mission (Kaspi, Cumming)
- NASA/Chandra X-ray Observatory (Kaspi, Webb)
- ESA/XMM-Newton X-ray Telescope (Kaspi, Cumming, Webb)
- NASA Spitzer Space Telescope (Webb)

Future Facilities with significant MSI member access:

- CHIME radio telescope (Dobbs, Hanna, Kaspi)
- NASA/James Webb Space Telescope (Doyon)
- SPIROU (Doyon)
- NASA/NICER X-ray Telescope (Kaspi)

Future Facilities with potential for significant MSI-participation:

- NASA's TESS exoplanet mission (new exoplanet hire)
- ESA's Plato exoplanet mission (new exoplanet hire)
- ESA's ExoMars 2018 Mission (Whyte)
- Mars 2020
- Future mission to other solar system objects (Europa 2022 Mission; Enceladus)
- Thirty Metre Telescope (TMT)
- Meerkat (South African radio telescope)
- Square Kilometer Array Telescope (SKA)
- CCAT (Webb)

Appendix II: Letters of support (must include deans of Faculties involved)

CURRICULUM VITAE

Name: VICTORIA MICHELLE KASPI, FRS, FRSC

Biography: Born in Austin, Texas; June 30, 1967
 Dual U.S./Canadian citizen
 Married, three children (aged 14 yr, 12 yr, 10 yr)

Address: Physics Department
 McGill University, Rutherford Physics Building
 3600 University Street, Montreal, QC H3A 2T8

Phone: 514-398-6412 **Fax:** 514-398-3733

Email: vkaspi@physics.mcgill.ca

WWW: <http://www.physics.mcgill.ca/~vkaspi/>

Professional Affiliations:

American Astronomical Society, High Energy Astrophysics Division,
 Canadian Astronomical Society, International Union of Radio Science
 International Union of Pure and Applied Physics

Education:

1993	Princeton University	Ph.D. (Physics)
1991	Princeton University	M.A. (Physics)
1989	McGill University	B.Sc. Honors (Physics)

Research Interests: Neutron stars: timing, high-precision timing, searching,
 birth properties, evolution, supernova remnant associations,
 pulsar wind nebulae; binary dynamics, binary evolution,
 high-energy properties (X-ray, γ -ray).

Employment:

2013–	Associate Dean Research & Graduate Education	McGill University, Faculty of Science
2008–9	Visiting Scientist	Canadian Space Agency, Space Sciences Division
2006–	Professor	McGill University, Physics Department
1999–2006	Associate Professor	McGill University, Physics Department
1997–2002	Assistant Professor	Massachusetts Institute of Technology, Physics Department
1997	Hubble Postdoctoral Fellow	Massachusetts Institute of Technology, Center for Space Research
1994–96	Hubble Postdoctoral Fellow	Jet Propulsion Laboratory, IPAC
1994–96	Visiting Associate	California Institute of Technology, Astronomy Department
1994	Higgins Instructor	Princeton University, Physics Department

Awards and Fellowships:

- 2014 University of Chicago Brinson Lectureship
- 2014 Caltech Greenstein Lectureship
- 2013 MIT Pappalardo Distinguished Lectureship
- 2013 Peter G. Martin Award of Canadian Astronomical Society
- 2013 Queen Elizabeth II Diamond Jubilee Medal
- 2012 University of Toronto Helen Sawyer Hogg Distinguished Visitorship
- 2011 NSERC John C. Polanyi Award
- 2010 Election to U.S. National Academy of Sciences
- 2010 Fellow of the Royal Society of London
- 2010 Killam Research Fellowship
- 2009 Prix du Quebec Marie-Victorin
- 2009 California Institute of Technology Moore Scholar
- 2009 Harvard University Sackler Prize Lecturer
- 2008 Fellow of Royal Society of Canada
- 2007 ACFAS Prix Urgel-Archambault
- 2007 Rutherford Medal in Physics of Royal Society of Canada
- 2006 Steacie Prize for Natural Sciences
- 2006- Lorne Trottier Chair in Astrophysics and Cosmology
- 2006- Canada Research Chair in Observational Astrophysics, Tier I
- 2006- R. Howard Webster Foundation Fellow
of the Canadian Institute for Advanced Research
- 2005 Salpeter Lectureship, Cornell University
- 2004 Canadian Association of Physicists Herzberg Medal
- 2003 NSERC Steacie Fellow
- 2002 Fellow of Canadian Institute for Advanced Research,
Gravity and Cosmology Program
- 2002 Canadian Institute for Advanced Research Young Explorer Prize
- 2001-05 Canada Research Chair in Observational Astrophysics, Tier II
- 1998 Alfred P. Sloan Research Fellowship
- 1998 Annie Jump Cannon Prize of the American Astronomical Society
- 1997 Ernest F. Fullam Award of the Dudley Observatory
- 1994 Higgins Award Instructorship, Princeton University Physics Department
- 1993 URSI Young Scientist Award, XXIVth URSI-GA, Kyoto, Japan
- 1989-90 Joseph Henry Merit Award, Princeton University
- 1989-92 Natural Sciences and Engineering Research Council
of Canada 1967 Graduate Fellowship
- 1989 Anne Molson Gold Medal in Mathematics and Natural Philosophy,
McGill University
- 1989 Moyse Travelling Scholarship, McGill University
- 1988-89 John Stuart Foster Scholarship in Physics, McGill University
- 1988-89 J.W. McConnell Award, McGill University
- 1988-89 Marion McCall Daly Award, McGill University
- 1987-88 Garnet A. Woonton Prize in Physics, McGill University
- 1987-88 Emily Ross Crawford Scholarship, McGill University
- 1987-88 Margaret Jane Allan Scholarship (shared), McGill University

Refereed Publications:

H-index 61; 12253 citations (average 48.8 citations per paper) as of Nov. 12, 2014; source NASA Astrophysical Data System.

Items identified with “” have as first author a student or postdoc under my supervision. All students/postdocs under my supervision are underlined.*

1. * Archibald, A. M., **Kaspi, V. M.**, Hessels, J. W. T., Stappers, B., Janssen, G., Lyne, A. G. “Long-Term Radio Timing Observations of the Transition Millisecond Pulsar PSR J1023+0038,” *Astrophys. J.*, in press, 2014. (arXiv:1311.5161)
2. Bachetti, M. et al. “An ultraluminous X-ray source powered by an accreting neutron star,” *Nature*, 514, 202, 2014. (24 authors)
3. Arzoumanian, Z. et al. “Gravitational Waves from Individual Supermassive Black Hole Binaries in Circular Orbits: Limits from the North American Nanohertz Observatory for Gravitational,” *Astrophys. J.*, 794, 141, 2014. (40 authors)
4. * An, H. et al. “High-energy X-Ray Imaging of the Pulsar Wind Nebula MSH 1552: Constraints on Particle Acceleration and Transport,” *Astrophys. J.*, 793, 90, 2014. (14 authors)
5. Mori, K. et al. “A Broadband X-Ray Study of the Geminga Pulsar with NuSTAR and XMM-Newton,” *Astrophys. J.*, 793, 88, 2014. (17 authors)
6. Bogdanov, S., Ng, C. Y., **Kaspi, V. M.** “Constraining the Evolutionary Fate of Central Compact Objects: ”Old” Radio Pulsars in Supernova Remnants,” *Astrophys. J.*, 792, L36, 2014.
7. Stovall, K. et al. “The Green Bank Northern Celestial Cap Pulsar Survey. I. Survey Description, Data Analysis, and Initial Results,” *Astrophys. J.*, 791, 67, 2014. (32 authors)
8. Spitler, L. et al. “Fast Radio Burst Discovered in the Arecibo Pulsar ALFA Survey,” *Astrophys. J.*, 790, 101, 2014. (33 authors)
9. * An, H. et al. “NuSTAR Observations of X-Ray Bursts from the Magnetar 1E 1048.1-5937,” *Astrophys. J.*, 790, 60, 2014. (16 authors)
10. Stappers, B. W. et al. “A State Change in the Missing Link Binary Pulsar System PSR J1023+0038,” *Astrophys. J.*, 790, 39, 2014. (12 authors)
11. Vogel, J. K. et al. “NuSTAR Observations of the Magnetar 1E 2259+586,” *Astrophys. J.*, 789, 75, 2014. (18 authors)
12. Gotthelf, E. V. et al. “NuSTAR Discovery of a Young, Energetic Pulsar Associated with the Luminous Gamma-Ray Source HESS J1640-465,” *Astrophys. J.*, 788, 155, 2014. (12 authors)
13. Swiggum, J. K. et al. “Arecibo Pulsar Survey Using ALFA. III. Precursor Survey and Population Synthesis,” *Astrophys. J.*, 787, 137, 2014. (36 authors)
14. Jakobsen, S. J., Tomsick, J. A., Watson, D., Gotthelf, E., **Kaspi, V. M.**, “Investigating CXOU J163802.6-471358: A New Pulsar Wind Nebula in the Norma Region?,” *Astrophys. J.*, 787, 129, 2014.

15. * Olausen, S. A. & **Kaspi, V. M.** “The McGill Magnetar Catalog,” *Astrophys. J. Supp.*, 212, 6, 2014.
16. **Kaspi, V. M.** et al. “X-ray Timing and Flux Evolution of the Galactic Center Magnetar SGR J1745–2900,” *Astrophys. J.*, 786, 84, 2014. (22 authors)
17. * Scholz, P., **Kaspi, V. M.**, Cumming, A. “The Long-term Post-outburst Spin Down and Flux Relaxation of Magnetar Swift J1822.3–1606,” 786, 62, 2014.
18. * Dib, R., **Kaspi, V. M.** “16 yr of RXTE Monitoring of Anomalous X-ray Pulsars,” *Astrophys. J.*, 784, 37, 2014.
19. * Scholz, P., Archibald, R. F., **Kaspi, V. M.**, Ng, C.-Y., Bearmore, A. P., Gehrels, N., Kennea, J. A. “On the X-Ray Variability of Magnetar 1RXS J170849.0-400910,” *Astrophys. J.*, 783, 99, 2014.
20. * An, H. et al. “NuSTAR results and future plans for magnetar and rotation-powered pulsar observations,” *Astronomische Nachrichten*, 335, 280, 2014. (29 authors)
21. Grefenstette, B. W. et al. “Asymmetries in core-collapse supernovae from maps of radioactive ^{44}Ti in Cassiopeia A,” *Nature*, 506, 339, 2014. (31 authors)
22. Kitaguchi, T. et al. “NuSTAR and Swift Observations of the Fast Rotating Magnetized White Dwarf AE Aquarii,” *Astrophys. J.*, 782, 3, 2014. (14 authors)
23. Zhu, W. et al. “Searching for pulsars using image pattern recognition,” *Astrophys. J.*, 781, 117, 2014. (43 authors)
24. Ransom, S. R., et al. “A millisecond pulsar in a stellar triple system,” *Nature*, 505, 520, 2014. (21 authors)
25. Lazarus, P., Tauris, T. M., Knispel, B. Freire, P. C. C., Deneva, J. S., **Kaspi, V. M.**, Allen, B., Bogdanov, S., Chatterjee, S., Stairs, I. H., Zhu, W. W. “Timing of a Young Mildly Recycled Pulsar with a Massive White Dwarf Companion,” *Mon. Not. Roy. Astron. Soc.*, 437, 1485, 2014.
26. Patruno, A., Archibald, A. M., Hessels, J. W. T., Bogdanov, S., Stappers, B. W., Bassa, C. G., Janssen, G. H., **Kaspi, V. M.**, Tendulkar, S., Lyne, A. G. “A New Accretion Disk Around the Missing Link Binary Pulsar PSR J1023+0038,” *Astrophys. J. Letters*, 781, L3, 2014.
27. * An, H. et al. “NuSTAR observations of magnetar 1E 1841–045,” *Astrophys. J.*, 779, 163, 2013. (21 authors)
28. * An, H., Dufour, F., **Kaspi, V. M.**, Harrison, F. A. “Swift Observations of 1FGL J1018.6–5856,” *Astrophys. J.*, 775, 135, 2013.
29. * Dufour, F., **Kaspi, V. M.** “Limits on the Number of Galactic Young Supernova Remnants Emitting in the Decay Lines of ^{44}Ti ,” *Astrophys. J.*, 775, 52, 2013.
30. Allen, B. et al. “The Einstein@Home Search for Radio Pulsars and PSR J2007+2722 Discovery,” *Astrophys. J.*, 773, 91, 2013. (46 authors)
31. Lee, K. J. et al. “PEACE: pulsar evaluation algorithm for candidate extraction - a software package for post-analysis processing of pulsar survey candidates,” *MNRAS*, 433, 688, 2013. (44 authors)

32. Nice, D. J. et al. “Timing and Interstellar Scattering of 35 Distant Pulsars Discovered in the PALFA Survey,” *Astrophys. J.*, 772, 50, 2013. (37 authors)
33. * Archibald, R. F., **Kaspi, V. M.**, Ng, C.-Y., Gourgouliatos, K. N., Tsang, D., Scholz, P., Beardmore, A. P., Gehrels, N., Kennea, J. A. “An Anti-Glitch in a Magnetar,” *Nature*, 497, 591–593, 2013.
34. Mori, K. et al. “NuSTAR Discovery of a 3.76-second Transient Magnetar near Sagittarius A*,” *Astrophys. J.*, 770, L23, 2013. (23 authors)
35. Harrison, F. A. et al. “The Nuclear Spectroscopic Telescope Array (NuSTAR) High-Energy X-ray Mission,” *Astrophys. J.*, 770, 103, 2013. (81 authors)
36. Deller, A. T., Boyles, J., Lorimer, D. R., Lynch, R. S., **Kaspi, V. M.**, McLaughlin, M. A., Ransom, S., Stairs, I. H., Stovall, K. “VLBI Astrometry of PSR J2222–0137: A Pulsar Distance Measured to 0.4% Accuracy,” *Astrophys. J.*, 770, 145, 2013.
37. Antoniadis, J. et al. “A 2 solar mass pulsar in a Compact Relativistic Binary,” *Science*, 340, 448, 2013. (21 authors)
38. Wang, Z., Kaplan, D. L., Slane, P., Morrell, N., **Kaspi, V. M.** “Serendipitous Discovery of an Infrared Bow Shock near PSR J1549–4848 with Spitzer,” *Astrophys. J.*, 769, 122, 2013.
39. * He, C., Ng, C.-Y., **Kaspi, V. M.** “The Correlation between dispersion measure and X-ray Column Density from Radio Pulsars,” *Astrophys. J.*, 768, 64, 2013.
40. * Ferdman, R. D., Stairs, I. H., Kramer, M., Breton, R. P., McLaughlin, M. A., Freire, P. C. C., Possenti, A., Stappers, B. W., **Kaspi, V. M.**, Manchester, R. N., Lyne, A. G. “The Double Pulsar: Evidence for Neutron Star Formation without an Iron Core-collapse Supernova,” *Astrophys. J.*, 767, 85, 2013.
41. Yu, M. et al. “Detection of 107 Glitches in 36 Southern Pulsars,” *MNRAS*, 429, 688, 2013. (12 authors)
42. * Olausen, S., Zhu, W. W., Vogel, J. K., **Kaspi, V. M.**, Lyne, A. G., Espinoza, C. M., Stappers, B. W., Manchester, R. N., Kramer, M. “X-ray Observations of High-B Radio Pulsars,” *Astrophys. J.*, 764, 1, 2013.
43. * An, H., **Kaspi, V. M.**, Archibald, R., Cumming, A. “Spectral and Timing Properties of the Magnetar CXOU J164710.2–455216,” *Astrophys. J.*, 763, 82, 2013.
44. * Lynch, R. et al. “The Green Bank Telescope 350 MHz Drift-scan Survey II: Data Analysis and the Timing of 10 New Pulsars, Including a Relativistic Binary,” *Astrophys. J.*, 763, 81, 2013. (19 authors)
45. Boyles, J. et al. “The Green Bank Telescope 350 MHz Drift-scan Survey I: Survey Observations and the Discovery of 13 Pulsars,” *Astrophys. J.*, 763, 80, 2013. (19 authors)
46. Demorest, P. B. et al. “Limits on the Stochastic Gravitational Wave Background from the North American Nanohertz Observatory for Gravitational Waves,” *Astrophys. J.*, 762, 94, 2013. (27 co-authors)

47. * Scholz, P., Ng, C.-Y., Livingstone, M. A., **Kaspi, V. M.**, Cumming, A., Archibald, R. “Post-outburst X-ray flux and timing evolution of Swift J1822.3–1606,” *Astrophys. J.*, 761, 66, 2012.
48. * Ng, C.-Y., **Kaspi, V. M.**, Ho, W. C. G., Weltevrede, P., Bogdanov, S., Shannon, R., Gonzalez, M. E. “Deep X-ray Observations of the Young High-Magnetic-Field Radio Pulsar J1119–6127 and its Supernova Remnant G292.2–0.5,” *Astrophys. J.*, 761, 65, 2012.
49. Crawford, F. et al. “Four Highly Dispersed Millisecond Pulsars Discovered in the Arecibo PALFA Galactic Plane Survey,” *Astrophys. J.*, 757, 90, 2012. (32 authors)
50. Deneva, J. S. et al. “Two Millisecond Pulsars Discovered by the PALFA Survey and a Shapiro Delay Measurement,” *Astrophys. J.*, 757, 89, 2012. (32 authors)
51. * An, H., **Kaspi, V. M.**, Tomsick, J., Cumming, A., Bodaghee, A., Gotthelf, E. V., Rahoui, F. “Chandra Observations of SGR 1627–41 near Quiescence,” *Astrophys. J.*, 757, 68, 2012.
52. Deller, A. T. et al. “A Parallax Distance and Mass Estimate for the Transitional Millisecond Pulsar System J1023+0038,” *Astrophys. J.*, 756, L25, 2012. (12 authors)
53. Rousseau, R. et al. “Fermi-LAT constraints on the pulsar wind nebula nature of HESS J1857+026,” *Astron. & Astrophys.*, 544, 3, 2012. (16 authors)
54. Kaplan, D. L. et al. “Discovery of the Optical/Ultraviolet/Gamma-Ray Counterpart to the Eclipsing Millisecond Pulsar J1816+4510,” *Astrophys. J.*, 753, 174-, 2012. (24 authors)
55. * Dib, R., **Kaspi, V. M.**, Gavriil, F. P. “*RXTE* Observations of Anomalous X-ray Pulsar 1E 1547.0–5408 During and After its 2008 and 2009 Outbursts,” *Astrophys. J.*, 748, 3, 2012.
56. * Lazarus, P., **Kaspi, V. M.**, Champion, D. J., Hessels, J. W. T., Dib, R. “Constraining Radio Emission from Magnetars,” *Astrophys. J.*, 744, 97, 2012.
57. * Breton, R. P., **Kaspi, V. M.**, McLaughlin, M. A., Lyutikov, M., Kramer, M., Stairs, I. H., Ransom, S. M., Ferdman, R. D., Camilo, F., Possenti, A. “The Double Pulsar Eclipses. I. Phenomenology and Multi-frequency Analysis,” *Astrophys. J.*, 747, 89, 2012.
58. * Livingstone, M. A., Scholz, P., **Kaspi, V. M.**, Ng, C.-Y., Gavriil, F. P. “The Spin-down of Swift J1822.3–1606: A New Galactic Magnetar,” *Astrophys. J.*, 743, 38-, 2011.
59. Parent, D. et al. “Observations of Energetic High Magnetic Field Pulsars with the Fermi Large Area Telescope,” *Astrophys. J.*, 743, 170-, 2011 (30 authors).
60. * Bogdanov, S., Archibald, A. M., Hessels, J. W. T., **Kaspi, V. M.**, Lorimer, D., McLaughlin, M. A., Ransom, S. M., Stairs, I. H. “A Chandra X-Ray Observation of the Binary Millisecond Pulsar PSR J1023+0038,” *Astrophys. J.*, 742, 97-, 2011.
61. * Livingstone, M. A., **Kaspi, V. M.** “Long-term X-Ray Monitoring of the Young Pulsar PSR B1509–58,” *Astrophys. J.*, 742, 31-, 2011.

62. * Olausen, S. A., **Kaspi, V. M.**, Ng, C.-Y., Zhu, W. W., Dib, R., Gavriil, F. P., Woods, P. M. “On the Extended Emission around the Anomalous X-Ray Pulsar 1E 1547.0–5408,” *Astrophys. J.*, 742, 4, 2011.
63. Espinoza, C. M., Lyne, A. G., Kramer, M., Manchester, R. N., **Kaspi, V. M.** “The Braking Index of PSR J1734–3333 and the Magnetar Population,” *Astrophys. J.*, 741, L13, 2011.
64. * Scholz, P., **Kaspi, V. M.** “The 2009 Outburst of Magnetar 1E 1547–5408: Persistent Radiative and Burst Properties,” *Astrophys. J.*, 739, 94, 2011.
65. Lin, L. et al. “Fermi/Gamma-Ray Burst Monitor Observations of SGR J0501+4516 Bursts,” *Astrophys. J.*, 739, 87-, 2011 (30 authors).
66. Gavriil, F. P., Dib, R., **Kaspi, V. M.** “The 2006-2007 Active Phase of Anomalous X-ray Pulsar 4U 0142+61: Radiative and Timing Changes, Bursts, and Burst Spectral Features,” *Astrophys. J.*, 736, 138-, 2011.
67. * Zhu, W. W., **Kaspi, V. M.**, McLaughlin, M. A., Pavlov, G. G., Ng, C.-Y., Manchester, R. N., Gaensler, B. M. Woods, P. M. “Chandra Observations of the High-magnetic-field Radio Pulsar J1718-3718,” *Astrophys. J.*, 734, 44-, 2011.
68. Knispel, B. et al. “Arecibo PALFA Survey and Einstein@Home: Binary Pulsar Discovery by Volunteer Computing,” *Astrophys. J.*, 732, 2011 (38 authors).
69. Freire, P. C. et al. “On the nature and evolution of the unique binary pulsar J1903+0327,” *MNRAS*, 412, 2763-2780, 2011.
70. * Livingstone, M. A., Ng, C. Y., **Kaspi, V. M.**, Gavriil, F. P., Gotthelf, E. V. “Post-outburst Observations of the Magnetically Active Pulsar J1846-0258: a new braking index, increased timing noise, and radiative recovery,” *Astrophys. J.*, 730, 2011.
71. * Ng, C.-Y., **Kaspi, V. M.**, Dib, R., Olausen, S. A., Scholz, P., Güver, T., Özel, F., Gavriil, F. P., Woods, P. M. “Chandra and RXTE Observations of 1E 1547.0-5408: Comparing the 2008 and 2009 Outbursts,” *Astrophys. J.*, 729, 2011.
72. Woods, P. M., **Kaspi, V. M.**, Gavriil, F. P., Airhart, C. “The 2006 Outburst of the Magnetar CXOU J164710.2–455216”, *Astrophys. J.*, 726, 37-45, 2011.
73. Abdo, A. A. et al. “Search for Gamma-ray Emission from Magnetars with the Fermi Large Area Telescope”, *Astrophys. J.*, 725, L73-L78, 2010 (139 authors).
74. * Olausen, S. A., **Kaspi, V. M.**, Lyne, A. G., Kramer, M. “XMM-Newton X-ray Observation of the High-Magnetic-Field Radio Pulsar PSR J1734–3333,” *Astrophys. J.*, 725, 985-989, 2010.
75. * Archibald, A. M., **Kaspi, V. M.**, Bogdanov, S., Hessels, J. W. T., Stairs, I. H., Ransom, S. M., McLaughlin, M. A., “X-ray Variability and Evidence for Pulsations from the Unique Radio Pulsar/X-ray Binary Transition Object FIRST J102347.6+003841,” *Astrophys. J.*, 722, 88-95, 2010.
76. Knispel, B. et al. “Pulsar Discovery by Global Volunteer Computing,” *Science*, 329, 1305, 2010 (41 authors).

77. Harrison, F. A. et al. “The Nuclear Spectroscopic Telescope Array (*NuSTAR*),” *SPIE*, 7732, 77320S-77320S-8, 2010 (33 authors).
78. * Zhu, W., **Kaspi, V. M.**, “Searching for X-ray Variability in the Glitching Anomalous X-ray Pulsar 1E 1841–045 in Kes 73,” *Astrophys. J.*, 719, 351-356, 2010.
79. * Gonzalez, M. E., Dib, R., **Kaspi, V. M.**, Woods, P. M., Tam, C. R., Gavriil, F. P., “Long-term X-ray Changes in the emission from the Anomalous X-ray Pulsar 4U 0142+61,” *Astrophys. J.*, 716, 1345-1355, 2010.
80. **Kaspi, V. M.**, “Grand Unification of Neutron Stars,” *Proc. Nat. Acad. Sci.*, 107, 7147-7152, 2010.
81. Hobbs, G. et al., “The International Pulsar Timing Array project: using pulsars as a gravitational wave detector,” *Classical and Quantum Gravity*, 27, 084013-, 2010 (49 authors).
82. Abdo, A. A. et al., “The First Fermi Large Area Telescope Catalog of Gamma-ray Pulsars,” *Astrophys. J. Supp. Ser.*, 187, 460-494, 2010 (220 authors).
83. **Kaspi, V. M.**, Boydston, K., “On the X-Ray Spectra of Anomalous X-Ray Pulsars and Soft Gamma Repeaters,” *Astrophys. J.*, 710, L115-L120, 2010.
84. * Livingstone, M. A., **Kaspi, V. M.**, Gavriil, F. P., “Timing behavior of the Magnetically Active Rotation-Powered Pulsar in the Supernova Remnant Kestevan 75,” *Astrophys. J.*, 710, 1710-1717, 2010.
85. * Livingstone, M. A., Ransom, S. M., Camilo, F., **Kaspi, V. M.**, Lyne, A. G., Kramer, M., Stairs, I. H. “X-ray and Radio Timing of the Pulsar in 3C 58,” *Astrophys. J.*, 706, 1163-1173, 2009.
86. * Zhu, W., **Kaspi, V. M.**, Gonzalez, M. E., Lyne, A. G. “XMM-Newton X-Ray Detection of the High-Magnetic-Field Radio Pulsar PSR B1916+14,” *Astrophys. J.*, 704, 1321-1326, 2009.
87. Deneva, J. S. et al. “Arecibo Pulsar Survey Using ALFA: Probing Radio Pulsar Intermittency And Transients,” *Astrophys. J.*, 703, 2259-2274, 2009 (26 authors).
88. * Wang, Z., Archibald, A. M. Thorstensen, J. R., **Kaspi, V. M.**, Lorimer, D. R., Stairs, I., Ransom, S. M. “SDSS J102347.6+003841: A Millisecond Radio Pulsar Binary That Had a Hot Disk During 2000-2001,” *Astrophys. J.*, 703, 2017-2023, 2009.
89. * Dib, R., **Kaspi, V. M.**, Gavriil, F. P. “Rossi X-Ray Timing Explorer Monitoring of the Anomalous X-ray Pulsar 1E 1048.1 - 5937: Long-term Variability and the 2007 March Event,” *Astrophys. J.*, 702, 614-630, 2009.
90. Abdo, A. A. et al. “Discovery of Pulsations from the Pulsar J0205+6449 in SNR 3C 58 with the Fermi Gamma-Ray Space Telescope,” *Astrophys. J.*, 699, L102-L107, 2009 (235 authors).
91. * Archibald, A. et al. “A Radio Pulsar/X-ray Binary Link,” *Science*, 324, 1411-1414, 2009 (18 authors).

92. Abdo, A. A. et al. “Fermi Large Area Telescope Observations of the Vela Pulsar,” *Astrophys. J.*, 696, 1084-1093, 2009 (235 authors).
93. * Wang, Z., Bassa, C., Cumming, A., **Kaspi, V. M.** “An Accurate Determination of the Optical Periodic Modulation in the X-ray Binary SAX J1808.4–3658,” *Astrophys. J.*, 694, 1115-1120, 2009.
94. Dhillon, V. S., Marsh, T. R., Littlefair, S. P., Copperwheat, C. M., Kerry, P., Dib, R., Durant, M., **Kaspi, V. M.**, Mignani, R. P., Shearer, A. “Optical Pulsations from the Anomalous X-ray Pulsar 1E 1048.1–5937,” *Mon. Not. Roy. Astron. Soc.*, 394, L112-L116, 2009.
95. Johnston, S. et al. “Science with ASKAP: THE Australian Square-Kilometre-Array Pathfinder,” *Experimental Astronomy*, 22, 151-273, 2008 (50 authors).
96. Smith, D. A. et al. “Pulsar timing for the Fermi gamma-ray space telescope,” *Astron. Astrophys.*, 492, 923-931, 2008. (28 authors).
97. * Archibald, A., **Kaspi, V. M.**, Livingstone, M. A., McLaughlin, M. A., “No detectable radio emission from the magnetar-like pulsar in Kes 75,” *Astrophys. J.*, 688, 550-554, 2008.
98. * Zhu, W., **Kaspi, V. M.**, Woods, P. M., Gavriil, F. P., Dib, R. “The Long-term Radiative Evolution of Anomalous X-ray Pulsar 1E 2259+586 after its 2002 Outburst,” *Astrophys. J.*, 686, 520-527, 2008.
99. den Hartog, P., Kuiper, L., Hermsen, W., **Kaspi, V. M.**, Dib, R., Knoediser, J., Gavriil, F. P., “Detailed high-energy characteristics of AXP 4U 0142+61 - Multi-year observations with INTEGRAL, RXTE, XMM-Newton and ASCA,” *Astron. Astrophys.*, 489, 245-261, 2008.
100. * Breton, R., **Kaspi, V. M.**, Kramer, M., McLaughlin, M. A., Lyutikov, M., Ransom, S. M., Stairs, I. H., Ferdman, R. D., Camilo, F., Possenti, A., “Relativistic Spin Precession in the Double Pulsar,” *Science*, 321, 104-107, 2008.
101. Hessels, J. W. T. et al. “PSR J1856+0245: Arecibo Discovery of a Young, Energetic Pulsar Coincident with the TeV Gamma-Ray Source HESS J1857+026,” *Astrophys. J.*, 632, L41-44, 2008. (24 co-authors)
102. * Champion, D. et al., “An Eccentric Binary Millisecond Pulsar in the Galactic Plane,” *Science*, 320, 1309-1312, 2008. (31 authors).
103. Gavriil, F. P., Gonzalez, M. E., Gotthelf, E. V., **Kaspi, V. M.**, Livingstone, M. A., Woods, P. M. “Magnetar-like Emission from the Young Pulsar in Kes 75,” *Science*, 319, 1802-1805, 2008.
104. * Wang, Z., Bassa, C., **Kaspi, V. M.**, Bryant, J. B., Morrell, N. “Optical/Infrared Observations of the Anomalous X-ray Pulsar 1E 1048.1–5937 During Its 2007 X-Ray Flare,” *Astrophys. J.*, 679, 1443-1446, 2008.
105. * Tam, C. R., Gavriil, F. P., Dib, R., **Kaspi, V. M.**, Woods, P. M., Bassa, C. “X-ray and Near-IR Variability of the Anomalous X-ray Pulsar 1E 1048.1–5937: From Quiescence Back to Activity,” *Astrophys. J.*, 677, 503-514, 2008.
106. * Wang, Z., **Kaspi, V. M.**, “Search for Mid-IR Flux Variations from The Anomalous X-ray Pulsar 4U 0142+61,” *Astrophys. J.*, 675, 695-697, 2008.

107. * Dib, R., **Kaspi, V. M.**, Gavriil, F. P., “Glitches in Anomalous X-ray Pulsars,” *Astrophys. J.*, 673, 1044-1061, 2008.
108. Johnston, S. et al., “Science with the Australian Square Kilometre Array Pathfinder,” *Proc. Astro. Soc. Aus.*, 24, 174-188, 2007. (50 co-authors)
109. * Hessels, J. W. T., Ransom, S. M., Stairs, I. H., **Kaspi, V. M.**, Freire, P. C. C., “A 1.4-GHz Arecibo Survey for Pulsars in Globular Clusters,” *Astrophys. J.*, 670, 363-378, 2007.
110. * Dib, R., **Kaspi, V. M.**, Gavriil, F. P., “10 Years of *RXTE* Monitoring of Anomalous X-ray Pulsar 4U 0142+61: Long-Term Variability,” *Astrophys. J.*, 666, 1152-1164, 2007.
111. * Wang, Z., **Kaspi, V. M.**, Higdon, S. J. U. “Spitzer Mid-infrared Upper Limits on Anomalous X-Ray Pulsars 1E 1048.1–5937, 1RXS J170849–400910, and XTE J1810–197,” *Astrophys. J.*, 665, 1292-1296, 2007.
112. Crawford, F., Hessels, J. H., **Kaspi, V. M.**, “Deep Searches for Radio Pulsations and Bursts from Four Southern Anomalous X-ray Pulsars,” *Astrophys. J.*, 662, 1183-1187, 2007.
113. * Breton, R. P., Roberts, M. S. E., Ransom, S. M., **Kaspi, V. M.**, Durant, M., Bergeron, P., Faulkner, A. J., “The Unusual Binary Pulsar PSR J1744-3922: Radio Flux Variability, Near-infrared Observation and Evolution,” *Astrophys. J.*, 661, 1073-1083, 2007.
114. * Livingstone, M. A., **Kaspi, V. M.**, Gavriil, F. P., Manchester, R. N., Gotthelf, E. V., Kuiper, L. “New phase-coherent measurements of pulsar braking indices,” *Astrophys. & Space Sci.*, 308, 317-323, 2007.
115. **Kaspi, V. M.**, “Recent Progress on Anomalous X-ray Pulsars,” *Astrophys. & Space Sci.*, 308, 1-11, 2007.
116. * Gonzalez, M. E., **Kaspi, V. M.**, Pivovarov, M. J., Gaensler, B. M., “PSR J1119-6127 and the X-ray Emission from High Magnetic Field Radio Pulsars,” *Astrophys. & Space Sci.*, 308, 89-94, 2007.
117. * Tam, C. R., **Kaspi, V. M.**, Gaensler, B. M., Gotthelf, E. V., “Chandra Monitoring of the Candidate Anomalous X-ray Pulsar AX J1845.0-0258,” *Astrophys. & Space Sci.*, 308, 519-523, 2007.
118. * Dib, R., **Kaspi, V. M.**, Gavriil, F. P., “10 Years of *RXTE* Monitoring of Anomalous X-ray Pulsar 4U 0142+61: Long-Term Variability,” *Astrophys. & Space Sci.*, 308, 487-491, 2007.
119. den Hartog, P. R., Kuiper, L., Hermsen, W., Rea, N., Durant, M., Stappers, B., **Kaspi, V. M.**, Dib, R. “The first multi-wavelength campaign of AXP 4U 0142+61 from radio to hard X-rays,” *Astrophys. & Space Sci.*, 308, 647-653, 2007.
120. Crawford, F., Roberts, M. S. E., Hessels, J. W. T., Ransom, S. M., Livingstone, M., Tam, C. R., **Kaspi, V. M.**, “A Survey of 56 Mid-latitude EGRET Error Boxes for Radio Pulsars,” *Astrophys. J.*, 652, 1499-1507, 2006.

121. * Gonzalez, M. E., **Kaspi, V. M.**, Pivovarov, M. J., Gaensler, B. M. “Chandra and XMM-Newton Observations of the Vela-Like Pulsar B1046–58,” *Astrophys. J.*, 652, 569-575, 2006.
122. * Tam, C. R., **Kaspi, V. M.**, Gaensler, B. M., Gotthelf, E. V., “Chandra Observations of the Transient 7-s X-ray Pulsar AX J1845.0–0258,” *Astrophys. J.*, 652, 548-553, 2006.
123. Manchester, R. N., Fan, G., Lyne, A. G., **Kaspi, V. M.**, Crawford, F. “Discovery of 14 radio pulsars in a survey of the Magellanic Clouds,” *Astrophys. J.*, 649, 235-242, 2006.
124. * Livingstone, M. A., **Kaspi, V. M.**, Gavriil, F. P., Kuiper, L., “Braking Index for the Young Pulsar at the Center of the Supernova Remnant Kes 75,” *Astrophys. J.*, 647, 1286-1292, 2006.
125. * Faucher-Giguere, C. A., **Kaspi, V. M.** “Birth and Evolution of Isolated Radio Pulsars,” *Astrophys. J.*, 643, 332-355, 2006.
126. * Gavriil, F. P., **Kaspi, V. M.**, “A Burst and Simultaneous Short-Term Pulsed Flux Enhancement from the Magnetar Candidate 1E 1048.1-5937,” *Astrophys. J.*, 641, 418-426, 2006.
127. * Hessels, J. W. T., Ransom, S. M, Stairs, I. H., Freire, P. C. C., **Kaspi, V. M.**, Camilo, F. “A Radio Pulsar Spinning at 716 Hz,” *Science*, 311, 1901-1904, 2006.
128. Lorimer, D. R. et al. “The young, highly relativistic binary pulsar J1906+0746,” *Astrophys. J.*, 640, 428-434, 2006 (36 co-authors).
129. Cordes, J. M. et al. “Arecibo Pulsar Survey Using ALFA. I. Survey Strategy and First Discoveries,” *Astrophys. J.*, 637, 446-455, 2006 (24 co-authors).
130. * Livingstone, M. A., **Kaspi, V. M.**, Gavriil, F. P. “Long-Term Phase-coherent X-Ray Timing of PSR B0540-69,” *Astrophys. J.*, 633, 1095-1100, 2005.
131. Dhillon, V. S., Marsh, T. R., Hulleman, F., van Kerkwijk, M. H., Shearer, A., Littlefair, S. P., Gavriil, F. P., **Kaspi, V. M.** “High-speed, multicolour optical photometry of the anomalous X-ray pulsar 4U 0142+61 with ULTRACAM,” *Mon. Not. Roy. Astro. Soc.*, 363, 609-614, 2005.
132. * Gonzalez, M. E., **Kaspi, V. M.**, Camilo, F., Gaensler, B. M., Pivovarov, M. J. “Unusual Pulsed X-ray Emission from the Young, High Magnetic Field Pulsar PSR J1119-6127,” *Astrophys. J.*, 630, 489-494, 2005.
133. Woods, P. M., Kouveliotou, C., Gavriil, F. P., **Kaspi, V. M.**, Roberts, M. S. E., Ibrahim, A., Markwardt, M., Swank, J. H., Finger, M. H. “X-ray Bursts from the Transient Magnetar Candidate XTE J1810-197,” *Astrophys. J.*, 629, 985-997, 2005.
134. McGarry, M. B., Gaensler, B. M., Ransom, S. M., **Kaspi, V. M.**, Veljkovic, S, “X-Ray Timing, Spectroscopy and Photometry of the Anomalous X-Ray Pulsar Candidate CXOU J010043.1-721134,” *Astrophys. J.*, 627, L137-L140, 2005.
135. * Dib, R., Ransom, S. M., Ray, P. S., **Kaspi, V. M.**, Archibald, A. M. “An RXTE Archival Search for Coherent X-Ray Pulsations in the Low-Mass X-Ray Binary 4U 1820-30,” *Astrophys. J.*, 626, 333-342, 2005.

136. Ransom, S. M., Hessels, J. W. T., Stairs, I. H., Freire, P. C. C., Camilo, F., **Kaspi, V. M.**, Kaplan, D. L. “Twenty-One Millisecond Pulsars in Terzan 5 Using the Green Bank Telescope,” *Science*, 307, 892–896, 2005.
137. * Livingstone, M. A., **Kaspi, V. M.**, Gavriil, F. P., Manchester, R. N. “21 Years of Timing PSR B1509–58,” *Astrophys. J.*, 619, 1046-1053, 2005.
138. **Kaspi, V. M.**, McLaughlin, M. A. “Chandra X-Ray Detection of the High Magnetic Field Radio Pulsar PSR J1718-3718,” *Astrophys. J.*, 618, L41-L44, 2005.
139. Vranesevic, N. et al. “Pulsar Birthrates from the Parkes Multibeam Survey,” *Astrophys. J.*, 617, L139-L142, 2004. (14 authors)
140. * Tam, C. R., **Kaspi, V. M.**, van Kerkwijk, M. H., Durant, M. “Correlated Infrared and X-Ray Flux Changes Following the 2002 June Outburst of the Anomalous X-Ray Pulsar 1E 2259+586,” *Astrophys. J.*, 617, L53-L56, 2004.
141. Gaensler, B. M., van der Swaluw, E., Camilo, F., **Kaspi, V. M.**, Baganoff, F. K., Yusef-Zadeh, F., Manchester, R. N. “The Mouse That Soared: High Resolution X-ray Imaging of the Pulsar-Powered Bow Shock G359.23-0.82,” *Astrophys. J.*, 616, 383-402, 2004.
142. Demorest, P., Ramachandran, R., Backer, D., Ransom, S., **Kaspi, V.**, Arons, J., Spitkovsky, A. “Orientations of Spin and Magnetic Dipole Axes of Pulsars in the J0737-3039 Binary Based on Polarimetry Observations at the Green Bank Telescope,” *Astrophys. J.*, 615, L137-L140, 2004.
143. **Kaspi, V. M.**, Ransom, S. M., Backer, D. C., Ramachandran, R., Demorest, P., Arons, J., Spitkovsky, A., “Green Bank Telescope Observations of the Eclipse of Pulsar “A” in the Double Pulsar Binary PSR J0737-3039,” *Astrophys. J. Letters*, 613, L137-L140, 2004.
144. * Hessels, J. W. T., Roberts, M. S. E., Ransom, S. M., **Kaspi, V. M.**, Romani, R. W., Ng, C. Y., Freire, P. C. C., Gaensler, B. M. “Observations of PSR J2021+3651 and its X-ray Pulsar Wind Nebula G75.2+0.1,” *Astrophys. J.*, 612, 389-397, 2004.
145. Hobbs, G. et al. “The Parkes multibeam pulsar survey: IV. Discovery of 180 pulsars and parameters for 281 previously known pulsars,” *MNRAS*, 352, 1439-1472, 2004. (15 authors)
146. * Gonzalez, M. E., **Kaspi, V. M.**, Lyne, A. G., Pivovarov, M. J., “An XMM-Newton Observation of the High Magnetic Field Radio Pulsar PSR B0154+61,” *Astrophys. J. Letters*, 610, L37-L40, 2004.
147. * Ransom, S. M., **Kaspi, V. M.**, Ramachandran, R., Demorest, P., Backer, D. C., Pfahl, E. D., Ghigo, F. D., Kaplan, D. L. “Green Bank Telescope Measurement of the Systemic Velocity of the Double Pulsar Binary J0737-3039 and Implications for its Formation,” *Astrophys. J. Letters*, 609, L71-L74, 2004.
148. * Gavriil, F. P., **Kaspi, V. M.** “Anomalous X-ray Pulsar 1E 1048.1-5937: Pulsed Flux Flares and Large Torque Variations,” *Astrophys. J. Letters*, 609, L67-L70, 2004.
149. Bassa, C. et al. “X-ray Sources and their Optical Counterparts in the Globular Cluster M4,” *Astrophys. J.*, 609, 755-765, 2004. (10 authors)

150. Ibrahim, A. I. et al. “Discovery of a New Transient Magnetar Candidate: XTE J1810–197,” *Astrophys. J. (Letters)*, 609, L21-L24, 2004. (13 authors)
151. * Gavriil, F. P., **Kaspi, V. M.**, Woods, P. M. “A Comprehensive Study of the X-ray Bursts from the Magnetar Candidate 1E 2259+586,” *Astrophys. J.*, 607, 959-969, 2004.
152. * Gavriil, F. P., **Kaspi, V. M.**, Woods, P. M. “Anomalous X-ray pulsars: long-term monitoring and soft-gamma repeater like X-ray bursts,” *Ad. Space Res.*, 33, 654-662, 2004.
153. * Gavriil, F. P., **Kaspi, V. M.**, Roberts, M. S. E. “Phase-coherent timing of PSR J1811-1925: the pulsar at the heart of G11.2-0.3,” *Ad. Space Res.*, 33, 592-596, 2004.
154. * Roberts, M. S. E., Hessels, J. W. T., Ransom, S. M., **Kaspi, V. M.**, Freire, P. C. C., Crawford, F., Lorimer, D. R. “PSR J2021+3651: a new γ -ray pulsar candidate,” *Ad. Space Res.*, 33, 577-580, 2004.
155. Woods, P. M., **Kaspi, V. M.**, Thompson, C., Gavriil, F. P., Marshall, H. L., Chakrabarty, D., Flanagan, K., Heyl, J., Hernquist, L. “Changes in the X-ray Emission from the Magnetar Candidate 1E 2259+586 during its 2002 Outburst,” *Astrophys. J.*, 605, 378-399, 2004.
156. * Ransom, S. M., Stairs, I. H., Backer, D. C., Greenhill, L. J., Hessels, J. W. T., **Kaspi, V. M.** “GBT Discovery of Two Binary Millisecond Pulsars in the Globular Cluster M30,” *Astrophys. J.*, 604, 328-338, 2004.
157. **Kaspi, V. M.**, Gavriil, F. P. “A Second Glitch from the “Anomalous” X-Ray Pulsar 1RXS J170849.0–4000910,” *Astrophys. J. (Letters)*, 596, L71-L74, 2003.
158. McLaughlin, M. A. et al. “PSR J1847-0130: A Radio Pulsar with Magnetar Spin Characteristics,” *Astrophys. J. (Letters)*, 591, L135-L138, 2003. (12 authors)
159. Pooley, D. et al. “Dynamical Formation of Close Binary Systems in Globular Clusters,” *Astrophys. J. (Letters)*, 591, L131-L134, 2003. (14 authors)
160. Kramer, M. et al. “The Parkes multibeam pulsar survey: III. Young pulsars & the discovery and timing of 200 pulsars,” *MNRAS*, 342, 1299-1324, 2003. (16 authors)
161. Gaensler, B. M., Schulz, N., **Kaspi, V. M.**, Pivovarov, M. J., Becker, W. “XMM-Newton observations of PSR B1823-13: An asymmetric synchrotron nebula around a Vela-like pulsar,” *Astrophys. J.*, 588, 441–451, 2003.
162. * Roberts, M. S. E., Tam, C. R., **Kaspi, V. M.**, Lyutikov, M., Vasisht, G., Pivovarov, M., Gotthelf, E. V., Kawai, N. “The pulsar wind nebula in G11.2-0.3,” *Astrophys. J.*, 588, 992–1002, 2003.
163. **Kaspi, V. M.**, Gavriil, F. P., Woods, P. M., Jensen, J. B., Roberts, M. S. E., Chakrabarty, D. “A Major Outburst and Rotational Glitch from the No-Longer-So-Anomalous X-ray Pulsar 1E 2259+586,” *Astrophys. J. (Letters)*, 588, L93–L96, 2003.
164. Stappers, B. W., Gaensler, B. M., **Kaspi, V. M.**, van der Klis, M., Lewin, W. H. G. “An X-ray nebula associated with the millisecond pulsar B1957+20,” *Science*, 299, 1372–1374, 2003.

165. * Gavriil, F. P., **Kaspi, V. M.**, Woods, P. “Magnetar-like X-ray Bursts from an Anomalous X-ray Pulsar,” *Nature*, 419, 142-144, 2002.
166. * Roberts, M. S. E., Hessels, J. W. T., Ransom, S. M., **Kaspi, V. M.**, Freire, P. C. C., Crawford, F., Lorimer, D. R. “PSR J2021+3651: A Young Radio Pulsar Coincident with an Unidentified EGRET Gamma-Ray Source,” *Astrophys. J. (Letters)*, 577, L19–L22, 2002.
167. Morris, D. J. et al., “The Parkes Multibeam Survey: II Discovery and Timing of 120 Pulsars,” *Mon. Not. Roy. Astron. Soc.*, 335, 275–290, 2002. (13 authors)
168. Pooley, D. et al. “Chandra Observations of the Globular Cluster NGC 6440 and the Nature of Cluster X-ray Luminosity Functions,” *Astrophys. J.*, 573, 184–190, 2002. (10 authors)
169. * Tam, C., Roberts, M. S. E., **Kaspi, V. M.**, “Spectral Components of the Radio Composite Supernova Remnant G11.2–0.3,” *Astrophys. J.*, 572, 202–208, 2002.
170. Hobbs, G., Lyne, A. G., Joshi, B. C., Kramer, M., Stairs, I. H., Camilo, F., Manchester, R. N., D’Amico, N., Possenti, A., **Kaspi, V. M.**, “A Very Large Glitch in PSR J1806–2125,” *Mon. Not. Roy. Astron. Soc.*, 333, L7–L10, 2002.
171. Pooley, D. et al. “Optical Identification of Multiple Faint X-ray Sources in Globular Cluster NGC 6752: Evidence for Numerous Cataclysmic Variables,” *Astrophys. J.*, 569, 405–417, 2002. (11 authors)
172. * Gaensler, B. M., Arons, J., **Kaspi, V. M.**, Pivovarov, M. J., Kawai, N., Tamura, K. “Chandra Imaging of the X-ray Nebula Powered by PSR B1509–58,” *Astrophys. J.*, 569, 878–893, 2002.
173. * Gavriil, F. P., **Kaspi, V. M.** “Long-term Rossi X-ray Timing Explorer Monitoring of Anomalous X-ray Pulsars,” *Astrophys. J.*, 567, 1067–1076, 2002.
174. Gotthelf, E. V., Gavriil, F. P., **Kaspi, V. M.**, Vasisht, G., Chakrabarty, D. “A Phase-coherent Timing Solution for Magnetar Candidate 1E 1841–045,” *Astrophys. J. (Letters)*, 564, L31–L34, 2002.
175. **Kaspi, V. M.**, Gotthelf, E. V., Gaensler, B. M., Lyutikov, M. “X-Ray Detection of Pulsar PSR B1757–24 and its Nebular Tail,” *Astrophys. J. (Letters)*, 562, L163–L166, 2001.
176. Özel, F., Psaltis, D, **Kaspi, V. M.**, “ Constraints on Thermal Emission Models of Anomalous X-ray Pulsars,” *Astrophys. J.*, 563, 255-266, 2001.
177. * Crawford, F., Manchester, R. N., **Kaspi, V. M.**, “Polarization Properties of Nine Southern Radio Pulsars,” *Astron. J.*, 122, 2001–2007, 2001.
178. Manchester, R. N., Lyne, A. G., Camilo, F., Bell, J. F., **Kaspi, V. M.**, D’Amico, N., McKay, N. P. F., Crawford, F., Stairs, I. H., Possenti, A., Kramer, M., Sheppard, D. C., “The Parkes Multibeam Pulsar Survey: I. Observing and Data Analysis Systems, Discovery and Timing of 100 Pulsars,” *Mon. Not. R. Astro. Soc.*, 328, 17–35, 2001.
179. **Kaspi, V. M.**, Roberts, M. E., Vasisht, G., Gotthelf, E. V., Pivovarov, M. J., Kawai, N., “Chandra Observations of G11.2-0.3: Implications for Pulsar Ages,” *Astrophys. J.*, 560, 371–377, 2001.

180. **Kaspi, V. M.**, Gavriil, F. P., Chakrabarty, D., Lackey, J. R., Muno, M., “RXTE Monitoring of the Anomalous X-ray Pulsar 1E 1048.1-5937,” *Astrophys. J.*, 558, 253–262, 2001.
181. Camilo, F., Bell, J. F., Manchester, R. N., Lyne, A. G., Possenti, A., Kramer, M., **Kaspi, V. M.**, Stairs, I. H., D’Amico, N., Hobbs, G., Gotthelf, E. V., Gaensler, B. M., “PSR J1016-5857: a young radio pulsar with possible supernova remnant, X-ray, and gamma-ray associations,” *Astrophys. J.*, 557, L51–L55, 2001.
182. Stairs, I. H. et al. “PSR J1740–3052: a pulsar with a massive companion,” *Mon. Not. R. Astro. Soc.*, 325, 979–988, 2001. (17 authors)
183. * Pivovarov, M. J., **Kaspi, V. M.**, Camilo, F., Gaensler, B. M., Crawford, F. “X-Ray Observations of the New Pulsar-Supernova Remnant System PSR J1119–6127 and Supernova Remnant G292.2-0.5,” *Astrophys. J.*, 554, 161–172, 2001.
184. * Crawford, F., Gaensler, B. M., **Kaspi, V. M.**, Manchester, R. N., Camilo, F., Lyne, A. G., Pivovarov, M. J. “A Radio Supernova Remnant Associated with the Young Pulsar J1119–6127,” *Astrophys. J.*, 554, 152–160, 2001.
185. * Crawford, F., **Kaspi, V. M.**, Manchester, R. N., Lyne, A. G., Camilo, F., D’Amico, N. “Radio Pulsars in the Magellanic Clouds,” *Astrophys. J.*, 553, 367–374, 2001.
186. D’Amico, N., **Kaspi, V. M.**, Manchester, R. N., Camilo, F., Lyne, A. G., Possenti, A., Stairs, I. H., Kramer, M. Crawford, F., Bell, J. F., McKay, N. P. F., Gaensler, B. M., Roberts, M. S. E., “Two Young Radio Pulsars Coincident with EGRET Sources,” *Astrophys. J. (Letters)*, 552, L45–L48, 2001.
187. Camilo, F., Lyne, A. G., Manchester, R. N., Bell, J. F., Stairs, I. H., D’Amico, N., **Kaspi, V. M.**, Possenti, A., Crawford, F., McKay, N. P. F., “Discovery of Five Binary Radio Pulsars,” *Astrophys. J. (Letters)*, 548, L187–L191, 2001.
188. McLaughlin, M. A., Cordes, J. M., Deshpande, A. A., Gaensler, B. M., Hankins, T. H., **Kaspi, V. M.**, Kern, J. S. “Upper Limits on Periodic, Pulsed Radio Emission from the X-Ray Point Source in Cassiopeia A,” *Astrophys. J. (Letters)*, 547, L41–L44, 2001.
189. **Kaspi, V. M.**, Lyne, A. G., Manchester, R. N., Crawford, F., Camilo, F., Bell, J. F., D’Amico, N., Stairs, I. H., McKay, N. P. F., Morris, D. J., Possenti, A. “Discovery of a Young Radio Pulsar in a Relativistic Binary Orbit,” *Astrophys. J.*, 543, 321–327, 2000.
190. Wang, N., Manchester, R. N., Pace, R. T., Bailes, M., **Kaspi, V. M.**, Stappers, B. W., Lyne, A. G., “Glitches in Southern Pulsars,” *Mon. Not. R. Astro. Soc.*, 317, 843–850, 2000.
191. Camilo, F., **Kaspi, V. M.**, Lyne, A. G., Manchester, R. N., Bell, J. F., D’Amico, N., McKay, N. P. F., Crawford, F. “Discovery of Two High Magnetic Field Radio Pulsars,” *Astrophys. J.*, 541, 367–373, 2000.
192. Stinebring, D. R., Smirnova, T. V., Hankins, T. H., Hovis, J. S., **Kaspi, V. M.**, Kempner, J. C., Myers, E., Nice, D. J. “Five Years of Pulsar Flux Density

- Monitoring: Refractive Scintillation and the Interstellar Medium,” *Astrophys. J.*, 539, 300–316, 2000.
193. **Kaspi, V. M.**, Lackey, J. R., Chakrabarty, D. “A Glitch in an Anomalous X-Ray Pulsar,” *Astrophys. J.*, 537, L31–L34, 2000.
194. * Pivovarov, M. J., **Kaspi, V. M.**, Camilo, F. “X-ray observations of the high magnetic field radio pulsar PSR J1814–1744,” *Astrophys. J.*, 535, 379–384, 2000.
195. * Crawford, F., **Kaspi, V. M.**, Bell, F. J. “A Search for Sub-Millisecond Pulsations in Unidentified FIRST and NVSS Radio Sources,” *Astron. J.*, 119, 2376–2381, 2000.
196. van Kerkwijk, M. H., Bell, J. F., **Kaspi, V. M.**, Kulkarni, S. R. “The Temperature and Cooling Age of the White Dwarf Companion to the Millisecond Pulsar PSR B1855+09,” *Astrophys. J.*, 530, L37–L40, 2000.
197. Lyne, A. G., Camilo, F., Manchester, R. N., Bell, J. F., **Kaspi, V. M.**, D’Amico, N., McKay, N. P. F., Crawford, F., Morris, D. J., Sheppard, D. C., Stairs, I. H. “The Parkes Multibeam Pulsar Survey. PSR J1811–1736 – A Pulsar in a Highly Eccentric Binary System,” *Mon. Not. R. Astr. Soc.*, 312, 698–702, 2000.
198. * Pivovarov, M. J., **Kaspi, V. M.**, Gotthelf, E. V. “ASCA Observations of the Young Rotation-Powered Pulsars PSR B1046–58 and PSR B1610–50,” *Astrophys. J.*, 528, 436–444, 2000.
199. **Kaspi, V. M.**, Lackey, J. R., Mattox, J., Manchester, R. N., Bailes, M., Pace, R. “Evidence for Gamma-Ray Pulsations from PSR B1046–58,” *Astrophys. J.*, 528, 445–453, 2000.
200. van Kerkwijk, M. H., **Kaspi, V. M.**, Klemola, A. R., Kulkarni, S. R., Lyne, A. G., Van Buren, D. “Optical Observations of the Binary Pulsar System PSR B1718–19: Implications for Tidal Circularization,” *Astrophys. J.*, 529, 428–434, 2000.
201. **Kaspi, V. M.**, Chakrabarty, D., Steinberger, J. S. “High-Precision Timing of Two Anomalous X-ray Pulsars,” *Astrophys. J. Letters*, 525, L33–L36, 1999.
202. Hirayama, M., Cominsky, L. R., **Kaspi, V. M.**, Nagase, F., Tavani, M., Kawai, N., Grove, J. E. “X-Ray/Gamma-Ray Observations of the PSR B1259–63/SS 2883 System near Apsastron,” *Astrophys. J.*, 521, 718–722, 1999.
203. Thompson, D. J. et al. “Gamma Radiation from PSR B1055-52,” *Astrophys. J.*, 516, 297–306, 1999. (27 authors)
204. **Kaspi, V. M.**, Crawford, F., Manchester, R. N., Lyne, A. G., Camilo, F., D’Amico, N., Gaensler, B. M. “The 69 ms Radio Pulsar Near the Supernova Remnant RCW 103,” *Astrophys. J. (Letters)*, 503, L161–L165, 1998.
205. Rots, A. H., Jahoda, K., Macomb, D. J., Kawai, N., Siadio, Y., **Kaspi, V. M.**, Lyne, A. G., Manchester, R. N., Marsden, D., Rothschild, R. E. “RXTE Absolute Timing Results for the Pulsars B1821–24 and B1509–58,” *Astrophys. J.*, 501, 749–757, 1998.
206. Chakrabarty, D., **Kaspi, V. M.**, “A Search for Optical Pulsations from Two Young Southern Pulsars,” *Astrophys. J. (Letters)*, 498, L37–L40, 1998.

207. Gotthelf, E., **Kaspi, V. M.**, “X-ray Emission from the Radio Pulsar PSR J1105–6107,” *Astrophys. J. (Letters)*, 497, L23–L32, 1998.
208. Jenet, F. A., Anderson, S. B., **Kaspi, V. M.**, Prince, T. A., Unwin, S. C. “Radio Pulse Properties of the Millisecond Pulsar PSR J0437–4715 I. Observations at 20 cm,” *Astrophys. J.*, 498, 365–372, 1998.
209. **Kaspi, V. M.** “Radio Pulsar/Supernova Remnant Associations,” *Advances in Space Research*, 21, 167–176, 1998.
210. **Kaspi, V. M.**, Hirayama, M., Nagase, F. Cominsky, L., Tavani, M. “ASCA Observations of PSR B1259–63 at Periastron,” *Advances in Space Research*, 21, 223–226, 1998.
211. **Kaspi, V. M.**, Bailes, M., Manchester, R. N., Stappers, B. W., Sandhu, J. S., Navarro, J., D’Amico, N. “Discovery of the Young, Energetic Radio Pulsar PSR J1105–6107,” *Astrophys. J.*, 485, 820–825, 1997.
212. Nel, H. I. et al. “EGRET pulsar upper limits,” *Astron. & Astrophys. Suppl.*, 120, 89–93, 1996 (26 authors).
213. Hirayama, M., Nagase, F., Tavani, M., **Kaspi, V. M.**, Kawai, N., Arons, J. “Post-Periastron ASCA Observations of the PSR B1259–63 System,” *Proc. Astron. Soc. Japan*, 48, 833–840, 1996.
214. **Kaspi, V. M.**, Bailes, M., Manchester, R. N., Stappers, B. W., Bell, J. F. “Evidence for a Neutron Star Birth Kick from a Precessing Pulsar Orbit,” *Nature*, 381, 584–586, 1996.
215. Lyne, A. G., **Kaspi, V. M.**, Bailes, M., Manchester, R. N., Taylor, H., Arzoumanian, Z. “A Giant Glitch in PSR B1757–24,” *Mon. Not. R. Astr. Soc.*, 281, L14–L16, 1996.
216. **Kaspi, V. M.**, Manchester, R. N., Johnston, S., Lyne, A. G., D’Amico, N. “A Search for Pulsars in Southern Supernova Remnants,” *Astron. J.*, 111, 2028–2037, 1996.
217. Thompson, D. J., et al. “EGRET Observations of High-Energy Gamma Radiation from PSR B1706–44,” *Astrophys. J.*, 465, 385–392, 1996 (24 authors).
218. Nel, H. I. et al. “EGRET High Energy Gamma-Ray Pulsar Studies III: A Survey,” *Astrophys. J.*, 465, 898–906, 1996 (31 authors).
219. Sayer, R., Nice, D. J., **Kaspi, V. M.** “A Search for Pulsar Companions to OB Runaway Stars,” *Astrophys. J.*, 461, 357–361, 1996.
220. **Kaspi, V. M.**, Tauris, T., Manchester, R. N. “On the Wind from the B1V Companion to PSR J0045–7319,” *Astrophys. J.*, 459, 717–720, 1996.
221. **Kaspi, V. M.**, Tavani, M., Nagase, F., Hoshino, M., Aoki, T., Hirayama, M., Kawai, N., Arons, J. “X-Ray Detection of PSR B1259–63 at Periastron,” *Astrophys. J.*, 453, 424–432, 1995.
222. Lai, D., Bildsten, L., **Kaspi, V. M.** “Spin-Orbit Interaction in Neutron Star/Main Sequence Binaries and Implications for Pulsar Timing.” *Astrophys. J.*, 452, 819–824, 1995.

223. Bell, J. F., Bessell, M. S., Stappers, B. W., Bailes, M., **Kaspi, V. M.** “PSR J0045–7319: A Dual-line Binary Radio Pulsar,” *Astrophys. J. (Letters)*, 447, L117–L119, 1995.
224. Fierro, J. M. et al. “EGRET High-Energy Gamma-Ray Pulsar Studies 2. Individual Millisecond Pulsars,” *Astrophys. J.*, 447, 807–812, 1995 (31 authors).
225. Johnston, S., **Kaspi, V. M.**, Manchester, R. N., Lyne, A. G., D’Amico, N. “Timing Measurements for 45 Pulsars,” *Astron. Astrophys.*, 293, 795–802, 1995.
226. Thompson, D. J. et al. “EGRET High-Energy Gamma-Ray Pulsar Studies. I. Young Spin-Powered Pulsars,” *Astrophys. J.*, 436, 229–238, 1994 (31 authors).
227. Tavani, M., Arons, J., **Kaspi, V. M.** “Regimes of High-Energy Shock Emission from the Be star pulsar system PSR B1259–63,” *Astrophys. J. (Letters)*, 433, L37–L40, 1994.
228. **Kaspi, V. M.**, Taylor, J. H., Ryba, M. F. “High-Precision Timing of Millisecond Pulsars. III. Long-Term Monitoring of PSRs B1855+09 and B1937+21,” *Astrophys. J.*, 428, 713–728, 1994.
229. **Kaspi, V. M.**, Johnston, S., Bell, J., , Manchester R. N., Bailes, M., Bessell, M., Lyne, A. G., D’Amico, N. “A Massive Radio Pulsar Binary in the Small Magellanic Cloud,” *Astrophys. J. (Letters)*, 423, L43–L45, 1994.
230. **Kaspi, V. M.**, Manchester, R. N., Seigman, B. Johnston, S. Lyne, A. G. “On the Spin-Down of PSR B1509–58,” *Astrophys. J. (Letters)*, 422, L83–L86, 1994.
231. Fierro, J. M., et al. “Pulsed High-Energy Gamma-Rays from PSR 1055–52,” *Astrophys. J. (Letters)*, 413, L27–L30, 1993 (22 authors).
232. **Kaspi, V. M.**, Lyne, A. G., Manchester, R. N., Johnston, S., D’Amico, N. “A Young Pulsar Near the Direction of W28,” *Astrophys. J. (Letters)*, 409, L57–L60, 1993.
233. Ulmer, M. P., et al. “Gamma-Ray and Radio Observations of PSR 1509–58,” *Astrophys. J.*, 417, 738–741, 1993 (17 authors).
234. Johnston, S., Lorimer, D. R., Harrison, P. A., Bailes, M., Lyne, A. G., Bell, J. F., **Kaspi, V. M.**, Manchester, R. N., D’Amico, N., Nicastro, L., Jin, Shengzhen “Discovery of a Very Bright, Nearby Binary Millisecond Pulsar,” *Nature*, 361, 613–615, 1993.
235. Manchester, R. N., Mar, D. P., Lyne, A. G., **Kaspi, V. M.**, Johnston, S. “Radio Detection of PSR B0540–69,” *Astrophys. J. (Letters)*, 403, L29–L31, 1993.
236. **Kaspi, V. M.**, Manchester, R. N., Johnston, S., Lyne, A. G., D’Amico, N. “PSR J1341–6220: A Young Pulsar in a Supernova Remnant,” *Astrophys. J. (Letters)*, 399, L155–L157, 1992.
237. Thompson, D. J., et al. “Pulsed High Energy Gamma Radiation from PSR 1706–44,” *Nature*, 359, 615–616, 1992 (29 authors).
238. **Kaspi, V. M.**, Stinebring, D. R. “Long-Term Pulsar Flux Monitoring and Refractive Interstellar Scintillation,” *Astrophys. J.*, 392, 530–542, 1992.

239. Stinebring, D. R., **Kaspi, V. M.**, Nice, D. J., Ryba, M. F., Taylor, J. H., Thorsett, S. E., Hankins, T. H. “A Flexible Data Acquisition System for Timing Pulsars,” *Rev. Sci. Instr.*, 63, 3551–3555, 1992.
240. Johnston, S., Manchester, R. N., Lyne, A. G., Bailes, M., **Kaspi, V. M.**, Guojun, Q., D’Amico, N. “PSR 1259–63: A Binary Radio Pulsar With a Be Star Companion,” *Astrophys. J. (Letters)*, 387, L37–L41, 1992.
241. Manchester, R. N., **Kaspi, V. M.**, Johnston, S., Lyne, A. G., D’Amico, N., “A Remarkable Pulsar–Supernova Remnant Association,” *Mon. Not. R. Astr. Soc.*, 253, P7–P10, 1991.

Book Contributions:

- **Kaspi, V. M.**, Roberts, M. S. E., Harding, A. K. “Isolated Neutron Stars,” Chapter 8 in “Compact Stellar X-ray Sources,” eds. W. H. G. Lewin and M. van der Klis, Cambridge University Press, 2006.
- Co-author of “Priorities in Space Science Enabled by Nuclear Power and Propulsion,” U.S. National Academies Press, 2006.

Other Publications:

- **Kaspi, V. M.** “Astro Confidential: Getting to know Victoria M. Kaspi,” *Astronomy Magazine*, April 2012 issue.
- **Kaspi, V. M.** Answer on neutron star magnetism in “Ask Astro,” *Astronomy Magazine*, October 2011 issue.
- **Kaspi, V. M.** “Explore the Pulsar Menagerie,” *Astronomy Magazine*, October 2010 issue.
- **Kaspi, V. M.** “Review of *Rotation and Accretion Powered Pulsars* by Pranab Ghosh,” *Classical & Quantum Gravity*, 25, 059001, 2008.
- **Kaspi, V. M.** “Stardom and honours first eluded astrology (SIC) student,” Op-Ed article, Montreal Gazette, July 23, 2007.
- **Kaspi, V. M.** “Millisecond Pulsars: Time-Keepers of the Cosmos,” *Sky & Telescope*, April issue, 18–23, 1995.
- **Kaspi, V. M.** “Is *Fundamentals of Physics* Too Violent?” *Physics Today*, March issue, 128–131, 1995.

Teaching:

2014	McGill	Lecturer	PHYS 214: Introduction to Astrophysics
2013	McGill	Lecturer	PHYS 214: Introduction to Astrophysics
2013	McGill	Seminar Leader	PHYS 632: Compact Objects & Gravitational Waves
2012	McGill	Team Lecturer	PHYS 641: Modern Observational Astrophysics
2012	McGill	Lecturer	PHYS 214: Introduction to Astrophysics
2012	McGill	Lecturer	PHYS 645: High Energy Astrophysics
2010	McGill	Team Lecturer	PHYS 641: Modern Observational Astrophysics
2009	McGill	Lecturer	PHYS 521: Astrophysics Text: <i>An Introduction to Modern Astrophysics</i> by B. W. Carroll & D. A. Ostlie
2009	McGill	Lecturer	PHYS 242: Electricity & Magnetism Text: <i>Introduction to Electrodynamics</i> by D. J. Griffiths
2008	McGill	Team Lecturer	PHYS 641: Modern Observational Astrophysics
2008	McGill	Team Lecturer	PHYS 645: High Energy Astrophysics
2008	McGill	Lecturer	PHYS 242: Electricity & Magnetism Text: <i>Introduction to Electrodynamics</i> by D. J. Griffiths
2007	McGill	Team Lecturer	PHYS 641: Modern Observational Astrophysics
2007	McGill	Lecturer	PHYS 242: Electricity & Magnetism Text: <i>Electricity and Magnetism</i> by W. J. Duffin
2006	McGill	Lecturer	PHYS 242: Electricity & Magnetism Text: <i>Electricity and Magnetism</i> by W. J. Duffin
2005	McGill	Seminar Co-Leader	PHYS 614: Topics in Astrophysics Review articles on black holes
2003	McGill	Seminar Leader	198-614B: Topics in Astrophysics Review articles, recent papers
2002	McGill	Seminar Leader	198-607B: Topics in Astrophysics Review articles, recent papers
2001-3	McGill	Lecturer	198-204B: Planets, Stars & Galaxies Text: <i>The Universe Revealed</i> by Impey & Hartmann
2001	McGill	Lecturer	198-521A: Astrophysics Text: <i>Astrophysics I</i> by Bowers & Deeming
2000	MIT	Instructor	Physics 8.02: Electricity and Magnetism
1998,9	MIT	Lecturer	Physics 8.03: Waves and Oscillations Texts: <i>Vibrations and Waves</i> by French, <i>Electromagnetic Vibrations, Waves,</i> <i>and Radiation</i> by Bekefi & Barrett
1999	MIT	Instructor	Physics 8.02: Electricity and Magnetism
1998	MIT	Instructor	Physics 8.02X: Electricity and Magnetism
1997	MIT	Instructor	Physics 8.03: Waves and Oscillations
1994	Princeton	Instructor	Physics 103: Electricity & Magnetism

Text: *Fundamentals of Physics*
by Halliday, Resnick & Walker

(Note: An “Instructor” leads recitations at MIT. A “Lecturer” is the leader of the course who gives main lectures to the entire class.)

Student and Postdoctoral Fellow Supervision:

Undergraduate Student Supervision:

2014-15	McGill	Ge Chen, U3 Honours Physics Research Project <i>XMM Observations of a High-B Pulsar</i>
2014	McGill	Kelly Gourdji, U3 Undergraduate Research Project <i>Comparing RRAT Bursts and Radio Pulsar Pulses</i>
2014	McGill	Ge Chen, Summer Student <i>NuSTAR Observations of Pulsars</i>
2013,14	McGill	Kelly Gourdji, Summer Student <i>Characterizing Bursts from Rotating Radio Transients</i>
2013	McGill	Felix Dumont, Summer Student <i>Detecting Rotating Radio Transients in GBNCC Data</i>
2013	McGill	Jacob Lambert, Summer Student <i>Testing Simple Astrophysics Lab Projects</i>
2012	McGill	Pericles Philippopoulos, Summer Student <i>XMM-Newton Observations of PSR B1937+21</i>
2012	McGill	Alina Chen He, Summer Student <i>Search for Correlation between Pulsar DM and N_H</i>
2011-12	McGill	Alina Chen He, U3 Honours Physics Research Project <i>Search for Correlation between Pulsar DM and N_H</i>
2011	McGill	Hugo Ferretti, Summer Student <i>Simulations of Extragalactic Pulsar Populations</i>
2011	McGill	Robert Archibald, Summer Student <i>Searching for HESS TeV Counterparts in RXTE Data</i>
2011	McGill	Chen Karako, Summer Student <i>Searching for RRATs in GBT Driftscan Data</i>
2011	McGill	Alina Chen He, Summer Student <i>Searching for ‘Anti-Magnetars’ in Old Pulsars with Chandra</i>
2010	McGill	Pierre Hans Corcoran, U3 489 Special Research Project <i>Preparation and Examination of the McGill Small Radio Telescope</i>
2010	McGill	Chen Karako, U3 Honours Physics Research Project <i>Searching for RRATs in Green Bank Driftscan Survey Data</i>
2010	McGill	Paul Scholz, Summer Student <i>Observations of Magnetars with NASA’s Swift Telescope</i>
2009	McGill	Julian Haw Far Chin, NSERC Summer Student <i>Searching for Pulses from an Isolated Neutron Star</i>
2009	McGill	Abel Beyene, Workstudy Summer Student <i>Studies of Anomalous X-ray Pulsar Bursts</i>
2008,9	McGill	Kristen Boydston, Summer Student <i>Observations of Neutron Stars with NuSTAR</i>

2008	McGill	(Currently graduate student in Astrophysics at Caltech) Morgane Fortin, Research Exchange Student (from France) <i>Searching for Radio Pulsars</i>
2007-8	McGill	Jamie Gardner, Research Undergraduate <i>The Green Bank Telescope Driftscan Survey</i> (Currently graduate student in Physics at McGill)
2006	McGill	Patrick Lazarus, U3 Honours Physics Research Project <i>The Arecibo L-Band Feed Array Pulsar Survey</i>
2006-8	McGill	Patrick Lazarus, NSERC Summer Student <i>The Arecibo L-Band Feed Array Pulsar Survey</i>
2004,5	McGill	Aude Wilhelm, Summer Student <i>Periodic Transients in RXTE Data</i> (Subsequently graduate student in medical physics at McGill)
2004	McGill	Aaron Balaster, Jesse Gantz, U3 Research Project <i>Pulsar Search in two Galactic PWNe using the GBT Spigot Backend</i>
2004	McGill	Allison Curtis, Aude Wilhelme, U3 Research Project <i>Searching for Overlooked 'Hidden' Pulsars in RXTE Data</i>
2003-5	McGill	Claude-Andre Faucher-Giguere, NSERC Summer Student <i>Modelling Radio Pulsar Surveys</i> (Currently Miller Postdoctoral Fellow at UC Berkeley)
2003	McGill	Natasha Maddox, Summer Student <i>A Radio Interferometric Study of Pulsar Wind Nebulae</i>
2002	McGill	Margaret Livingstone U3 Honours Research Project <i>The Spin-down of PSR B1509-58</i>
2001-2	McGill	Josianne Lefebvre, Karin Menendez-Delmestre, U3 Honours Research Project <i>Long-Term Pulse Profile Changes in Radio Pulsars</i> (Lefebvre: Currently graduate student in Physics at McGill; Menendez-Delmestre: Currently tenure-track Physics faculty, Brazil)
2000-1	McGill	Ben Hunt, Graham Gauthier, U3 Research Project <i>Searching for a Variable Anomalous X-ray Pulsar</i>
1997-2000	MIT	Jessica Lu (nee Lackey), BSc in Physics Thesis: <i>Monitoring Anomalous X-ray Pulsars with RXTE</i> (Best Astrophysics Undergraduate Thesis at MIT in 2000); also <i>EGRET/γ-ray observations of PSRs J1105-6107 and B1046-58</i> (Currently Millikan Postdoctoral Fellow at Caltech, US)
1999	MIT	Richard Chen, Summer Student <i>ASCA pulsar data analysis</i>
1999	MIT	Jacqueline Wong, Summer Student <i>Analysis of Archival EGRET data</i>
1998	MIT	Gabe Weinberg, Sophomore Physics Major <i>Study of Sensitivity of Parkes Multibeam Survey</i>
1997	MIT	Ahren Lembke-Windler, Sophomore Physics Major <i>Summary of optical observations of radio pulsars</i>

Graduate Student Supervision:

2014-	McGill	Chitrang Patel, Candidate for MSc in Physics <i>Radio Observations of Pulsars</i>
2013-14	McGill	Chengwei Yang, Exchange PhD in Physics <i>X-ray Observations of Millisecond Pulsars</i>
2013-	McGill	Erik Madsen, Candidate for PhD in Physics <i>Radio Observations of Pulsars</i>
2013-	McGill	Robert Archibald, Candidate for PhD in Physics <i>Swift Monitoring of Magnetars</i>
2012-14	McGill	Chen Karako, Candidate for MSc in Physics <i>Searching for RRATs in Green Bank Driftscan Survey Data</i>
2011-13	McGill	Robert Archibald, Candidate for MSc in Physics <i>Swift Monitoring of Magnetars</i>
2010-	McGill	Paul Scholz, Candidate for PhD in Physics <i>Observations of Magnetars with NASA's Swift Telescope</i>
2009-13	McGill	François Dufour, Candidate for MSc in Physics <i>Searching for ^{44}Ti in NuSTAR data</i>
2008-14	McGill	Scott Olausen, Candidate for PhD in Physics <i>The X-ray Emission and Population of Highly Magnetized Neutron Stars</i>
2008-10	McGill	Patrick Lazarus, Candidate for MSc in Physics <i>The Arecibo L-Band Feed Array Pulsar Survey</i> (Currently Research Assistant in my group)
2007-13	McGill	Anne Archibald, Candidate for PhD in Physics <i>Sensitive Searches for Radio Pulsars</i>
2006-11	McGill	Weiwei Zhu, Candidate for PhD in Physics <i>X-ray Observations of Magnetars</i>
2005-10	McGill	Margaret Livingstone, Candidate for PhD in Physics <i>Timing Observations of Young Rotation-Powered Pulsars</i> (Currently on maternity leave)
2003-8	McGill	Marjorie Gonzalez, Candidate for PhD in Physics <i>X-ray Observations of Young Neutron Stars</i> (Currently Medical Physicist, UBC)
2003-9	McGill	Rene Breton, Candidate for PhD in Physics <i>Studies of Binary Pulsars</i> (Currently postdoc at University of Leicester)
2003-9	McGill	Rim Dib, Candidate for PhD in Physics <i>RXTE Monitoring of 5 Anomalous X-ray Pulsars</i> (Currently Physics Instructor, Dawson College; Part-time Postdoc)
2003-5	McGill	Margaret Livingstone, Candidate for MSc in Physics <i>Effects of Timing Noise on Radio Pulsar Spin Parameters</i>
2002-3	McGill	Rim Dib, Masters in Physics (Awarded December 2003) <i>Search for Millisecond X-ray Pulsations in 4U 1820-11</i>
2002-4	McGill	Cindy Tam, Candidate for Masters in Physics <i>Radio Imaging of the Historic Supernova Remnant G11.2-0.3</i> and <i>Infrared Observations of Anomalous X-ray Pulsars</i> (Currently graduate student in medical physics at UBC)
2001-6	McGill	Jason Hessels, Candidate for PhD in Physics

		<i>Searches for Radio Pulsars in Globular Clusters</i> <i>Won Canadian Association for Graduate Studies Dissertation Award</i> <i>(Currently tenured research scientist,</i> <i>Westerbork Observatory, The Netherlands)</i>
2001–6	McGill	Fotis Gavriil, Candidate for PhD in Physics <i>Magnetar-Like X-ray Bursts from Anomalous X-ray Pulsars</i> <i>(Currently staff scientist at NASA/Goddard Space Flight Center)</i>
2000–1	McGill	Fotis Gavriil, Masters in Physics (Awarded June 2001) Masters Thesis: <i>Rossi X-ray Timing Explorer Monitoring of Anomalous X-ray Pulsars</i>
1997–2000	MIT	Fronefield Crawford, PhD in Physics (Awarded June 2000) Thesis: <i>Searches for and Follow-up Studies of Southern Radio Pulsars</i> <i>(Currently tenure-track faculty at Franklin & Marshall College, US)</i>
1997–2000	MIT	Mike Pivovarov, PhD in Physics (Awarded June 2000) (co-supervised with Dr. G. Ricker) Thesis: <i>X-ray Astronomy with CCDs: Calibration of the Advanced CCD Spectrometer and Observations of Rotation-powered Pulsars</i> <i>(Currently research scientist, Lawrence Livermore National Labs, US)</i>
1997–1999	MIT	Julia Steinberger, Physics Graduate Student <i>Search for Anomalous X-ray Pulsars, Long-term Timing of Anomalous X-Ray Pulsars, RXTE Observations of PSR J1105–6107</i>

Postdoctoral Fellow Supervision:

2012-	McGill	Dr. David Tsang, Postdoc (co-supervised with A. Cumming) <i>Theoretical Problems in Astrophysics</i>
2012-	McGill	Dr. Kostas Gourgouliatos, Postdoc (co-supervised with A. Cumming) <i>Theoretical Problems in Astrophysics</i>
2012-	McGill	Dr. Robert Ferdman, Postdoc <i>Radio Pulsar Searching and Timing</i>
2011-14	McGill	Dr. Hongjun An, Postdoc <i>NuSTAR Observations of Magnetars and Pulsars</i>
2011-14	McGill	Dr. Ryan Lynch, Postdoc <i>PALFA and GBNCC Radio Pulsar Searches</i>
2010-13	McGill	Dr. Antoine Bouchard, Postdoc <i>Pulsar Searches with the Australia Square Kilometer Array Pathfinder</i>
2010-11	McGill	Dr. Margaret Livingstone, Postdoc <i>Timing Observations of High-B Neutron Stars</i>
2009-12	McGill	Dr. Stephen Ng, Tomlinson and CRAQ Postdoctoral Fellow <i>X-ray and Radio Imaging Observations of Young Neutron Stars</i> <i>Currently tenure-track professor at University of Hong Kong</i>
2009-12	McGill	Dr. Rim Dib, Part-time Postdoc <i>RXTE Monitoring of Anomalous X-ray Pulsars</i>
2008-11	McGill	Dr. Slavko Bogdanov, CIFAR Junior Postdoctoral Fellow <i>PALFA Pulsar Survey</i>
2007-8	McGill	Dr. Cees Bassa, Postdoc <i>Optical and Infrared Observations of Neutron Stars</i>

		<i>(Currently postdoc at University of Manchester)</i>
2006–9	McGill	Dr. Zhongxiang Wang, Postdoc <i>Optical and Infrared Observations of Neutron Stars</i>
		<i>(Currently tenure-track research faculty at Beijing Observatory)</i>
2005–7	McGill	Dr. David Champion, Postdoc <i>The Arecibo L-Band Feed Array Pulsar Survey</i>
		<i>(Currently research associate at Max Planck Institute in Germany)</i>
2001–4	McGill	Dr. Scott Ransom, Tomlinson Postdoctoral Fellow <i>Searches for Radio Pulsars in Globular Clusters</i>
		<i>(Currently tenured research scientist, National Radio Astronomy Observatory, US)</i>
2000–5	McGill	Dr. Mallory Roberts, Quebec Merit Postdoctoral Fellow <i>Radio and X-ray Imaging of Rotation-Powered Pulsars</i>
		<i>(Currently Lecturer at Ithaca College, Ithaca, NY)</i>
2000–3	McGill	Dr. Maxim Lyutikov, CITA National Postdoctoral Fellow <i>Rotation-Powered Pulsars, Pulsar Wind Nebulae, Magnetars, Gamma Ray Bursts (Theory)</i>
		<i>(Currently tenure-track faculty at Purdue University, US)</i>
1997–2000	MIT	Dr. Bryan Gaensler, Hubble Postdoctoral Fellow <i>Radio and X-ray Imaging of Rotation-Powered Pulsars</i>
		<i>(Currently tenured faculty in Astrophysics, University of Sydney, Australia)</i>

Research Grants (for Co-I grant percentage applicable is indicated):

2014–15	PI, NSERC Research Tools & Infrastructure “Pulsar Processor for the CHIME Telescope,” (\$128,776K)
2013–16	PI, NSERC Accelerator Supplement “Observations of Neutron Stars,” (\$40K per year)
2013–18	PI, NSERC Discovery Grant “Observations of Neutron Stars,” (\$100K per year)
2011–13	PI, NSERC John C. Polanyi Award “Observations of Neutron Stars,” (\$250K)
2009–11	Co-I, CANARIE Network-Enabled Platforms Program “Designing and Creating Cyber-SKA Canada,” (\$2058K, 11%)
2008–11	Co-I, NSERC Special Research Opportunity Grant “Canadian Participation in the Square Kilometer Array,” (\$414K per year, 15%)
2008–13	PI, NSERC Discovery Grant “Pulsars Young and Old: The Physics of Neutron Stars,” (\$78K per year)
2008–13	Co-I, FQRNT Regroupement Strategique: “Centre de Recherche Astrophysique du Quebec,” (\$370K per year, ~5%) (with Universite de Montreal and Universite Laval)
2007–9	PI, CSA Disciplinary Working Group “Disciplinary Working Group in High Energy Astrophysics,” (\$10K per year)
2004–5	PI, CFI Career Award “Searching for Pulsars with the Arecibo L-Band Feed Array,” (\$439K total)
2004–5	PI, NSERC Steacie Supplement

- 2004–8 “Searching for Pulsars with the Arecibo L-Band Feed Array,” (\$112K per year)
PI, NSERC Discovery Grant
- 2002–7 “Observations of Neutron Stars,” (\$80K per year)
Co-I, FQRNT Regroupement Strategique:
Observatoire du Mont Megantic (\$370K per year, ~10%)
(with Universite de Montreal and Universite Laval)
- 2001 PI, Canadian Foundation for Innovation Grant
“A Multi-Purpose Pulsar Processor,” (\$334K total)
- 2001–4 Co-I, FCAR Team Grant
“The study of high-energy processes in the Universe
through radio, X-ray and gamma-ray observations,” (\$30K per year)
- 2000–3 PI, NSERC Research Grant
“Astrophysics of Young Neutron Stars,” (\$49K per year)
- 2000–2 PI, *Chandra X-Ray Observatory* Research Grant
“The Young, Energetic Radio Pulsar PSR B1509–58,” (USD \$44.7K)
- 2000–2 PI, *Chandra X-Ray Observatory* Research Grant
“The Historic Supernova Remnant System G11.2–0.3,” (USD \$53.5K)
- 2000–2 PI, *Chandra X-Ray Observatory* Research Grant
“Chandra Observations of the Duck Pulsar,” (USD \$41K)
- 1999–2003 PI, US National Science Foundation CAREER Award
“Astrophysics and Radio Pulsars:
“From the Forefront to the Classroom,” (USD \$78K per year)
- 1998–2004 PI, NASA/*Long-Term Space Astrophysics Program*
“Pulsar Wind Nebulae, Space Velocities,
and Supernova Remnant Associations,” (USD \$48K per year)
- 1998–2002 Alfred P. Sloan Research Fellowship (USD \$35K)
- 1998 Ernest F. Fullam Award of the Dudley Observatory (USD \$10K)
- 1998 Co-I, NASA/*Rossi X-ray Timing Explorer* Research Grant
“XTE Observations of PSR B1259–63 Near Apastron,” (USD \$3K)
- 1997 PI, NASA/*Compton Gamma-Ray Observatory* Research Grant
“Pulsars in the Eta Carina Region,” (USD \$35K)
- 1997 Co-I, NASA/*Compton Gamma-Ray Observatory* Research Grant
“EGRET Observations of Rotation Powered Pulsars,” (USD \$11K)
- 1997 PI, NASA/*Rossi X-ray Timing Explorer* Research Grant
“The 63-ms Pulsar PSR J1105–6107,” (USD \$16K)
- 1997 Co-I, NASA/*Rossi X-Ray Timing Explorer* Research Grant
“A Test of Spin Orbit Coupling in the 4U 0115+63 System,” (USD \$3K)
- 1996 PI, NASA/*Compton Gamma-Ray Observatory* Research Grant
“Pulsars in the Eta Carina Region,” (USD \$16.5K)
- 1996 PI, NASA/*ASCA* Research Grant
“The 63 ms Pulsar PSR J1105–6107,” (USD \$35.3K)
- 1996 PI, STScI/*Hubble Space Telescope* Research Grant
“PSR B1718–19: A Clean RScVn System?” (USD \$24K)
- 1995 NSF-NRAO U.S.–Australia Collaborative Research Grant (USD \$1K)
- 1994 NSF-NRAO U.S.–Australia Collaborative Research Grant (USD \$1K)
- 1993 NSF-NRAO U.S.–Australia Collaborative Research Grant (USD \$1K)

Institutional Academic Activities:

- Associate Dean of Research and Graduate Education, Faculty of Science, 2013-2015
- Member, Task Force on International Academies, 2014-
- Member, Prizes and Awards Coordination Committee, 2013-
- Member, University Prizes and Awards Steering Committee, 2013-
- Organizer, *Telescopes of the Future: A Symposium in Honour of Lorne Trottier*, Apr 18, 2013
- Co-Chair, Department of Physics Mentoring and Employee Equity Committee, 2012-13
- Chair, Department of Physics Outreach Committee, 2012-13
- McGill Physics Department Tenure Committee, 2006-
- Co-Organizer, *McGill Space Day*, Mar 1, 2012
- McGill Academic Renewal, Hiring, Retention and Leadership Development Work Group, 2011-2012
- Invited presenter, Principal's International Advisory Board, Feb 7, 2012
- McGill CFI Internal Proposal Review, 2011
- McGill Faculty of Science Internal Steacie Nomination Review Committee, 2007, 2008, 2009, 2010, 2011, 2012
- Judge, McGill Undergraduate Physics Research Poster Competition, 2011
- Pro-Dean, PhD Thesis Defense, Department of Political Science, McGill University, October 6, 2011
- Invited Panelist, Roundtable Discussion on "Confronting Pseudoscience," Host Dr. Joe Schwartz, Oct 17, 2010
- McGill Physics Condensed Matter Hiring Committee, 2009-10
- Organizer, "Black Holes, New Worlds and the Universe: a 3-part Public Lecture Series in Honour of the International Year of Astronomy", 2009
- McGill Physics Undergraduate Curriculum Committee, 2009
- Ambassador, McGill Campus Community Campaign, 2009-2012
- Judge, McGill Undergraduate Physics Research Poster Competition, 2008
- McGill Faculty of Science Strategic Advisory Committee for CFI Round VI, 2008
- Mission to India, Trip to Bangalore organized by Office of VP Research, Nov 25-29, 2006
- Chair, McGill Physics Department Mentoring and Equity Committee, 2006-8
- McGill Physics Departmental Advisory Committee, 2002-8
- McGill University Ad Hoc Work Group on Women Professors' Academic Careers, 2005-6

- Co-organizer, Trottier Symposium on “A Cosmic Coincidence: Why is the universe just right for life?” scheduled for January 25, 2007
- Organizer, Lecture Series on “Strings, Black Holes and Dark Energy: A Public Lecture Series on Cosmology and the High Energy Universe,” 2005-2006
- McGill Physics Equity Committee, 2000–2005
- McGill Physics Departmental Astrophysics Faculty Search Committee, 2001, 2002, 2003, 2004
- McGill University Leo Yaffe Award Committee, 2002, 2003, 2004
- Faculty of Sciences Convocation Host, Honorary PhD Recipient David H. Levy, June 5, 2003
- McGill Physics Department Preliminary Exam Committee, 2003
- Invited Panelist, *McGill in Space*, 2002
- McGill Physics Undergraduate Curriculum Committee, 2000–2003
- Co-organizer, Joint McGill/Université de Montréal Astrophysics Seminars, 2000–2003
- MIT Physics Department Colloquium Committee, 1997–1999
- MIT Astrophysics Tea and Journal Club Organizer, 1997–1999
- MIT Undergraduate Physics Advisor, 1997–9
- MIT Physics Junior Faculty Dinners Co-Organizer, 1997–1998
- MIT Physics Graduate Brochure Committee, 1997

Community Academic Activities:

- Reviewer, *Hubble* Space Telescope Director’s Discretionary Time request, October 2014
- Co-Chair, National Academy of Sciences Astronomy Nominating Committee, 2014
- Member, NANOGrav Management Team, 2013-
- Selection Committee, U.S. National Academy of Sciences Watson Medal, 2013
- Member, LIGO Directorate Program Advisory Committee, 2013-2014
- Principal Investigator, Arecibo L-Band Feed Array Pulsar Survey Consortium, 2012-
- Chair, *NuSTAR* Magnetar/Rotation-Powered Pulsar Working Group, 2012-
- Selection Committee, International Union of Pure and Applied Physics Young Scientist Call, 2012, 2013
- Selection Committee, U.S. National Academy of Sciences Draper Prize, 2012
- Reviewer, Council of Canadian Academies Assessment “Strengthening Canada’s Research Capacity: The Gender Dimension”, 2012

- Reviewer, The Netherlands Organisation for Scientific Research (NWO), 2012
- Chair, Arecibo L-Band Feed Array Pulsar Survey Executive Committee, 2007-2013
- *NuSTAR* Central Science Team, 2008-
- *NuSTAR* Galactic Science Team Leader, 2008-12
- Selection Committee, Canadian Space Agency Competition for Canadian Astro-H Science Working Group, 2011
- Selection Committee, Prix du Québec, 2011
- Member, International Advisory Board for the Publications of the Astronomical Society of Australia, 2011-
- Selection Committee for CIFAR Junior Fellow Program, 2010, 2011, 2012
- Committee for Long Range Plan for Astronomy in Canada, 2009-11
- Grant Review Committee for NSERC Discovery Grants (Physics), 2009-10
- Selection committee for Fellowship candidates of the Royal Society of Canada, Natural Sciences, 2009
- Research Advisory Panel for Science Media Centre of Canada, 2009-
- ACURA Institutional Representative, 2009-
- Co-Chair, Maimonides Society Montreal, 2008-
- Friends of the Weizmann Institute, Science Advisory Board, 2005–
- US/NRAO Visiting Committee, 2006–10
- Selection committee for NASA Einstein Postdoctoral Fellowships, 2009
- Nominating Committee, High Energy Astrophysics Division of the American Astronomical Society Executive Committee, 2008
- NSERC International Discovery Grant Review Committee, 2007-8
- Chair, High Energy Astrophysics Canadian Space Agency Disciplinary Working Group, 2007-9
- Editorial Board Member, Astrophysics and Space Science Library Series, Springer Publishing, 2006-
- Nominating Committee, High Energy Astrophysics Division of the American Astronomical Society Executive Committee, 2006
- Canadian SKA Consortium Board of Management, 2006-
- Canadian SKA Science Advisory Committee, 2006-8
- Canada Foundation for Innovation Multidisciplinary Assessment Committee, 2006
- Conseil de la Science et de la Technologie du Québec, 2006–8
- Canadian Square Kilometer Array Steering Committee, 2003–6
- Reviewer, Italian Ministry for Education University and Research, 2002–8

- US National Academy of Sciences Panel on “Priorities in Space Science Enabled by Nuclear Power and Propulsion”
- Canadian Long-Range Plan for Astrophysics Mid-Term Review Committee, 2004
- NASA Senior Review, Washington, DC, Apr 27-30, 2004
- PAGSE Leadership Symposium, Ottawa, ON, Oct 7, 2003
- NSERC 3rd Circle, Montreal, QC Oct 2-3, 2003
- NSERC Review Committee, NSERC-Canadian Space Agency Grants, Ottawa, ON Sep 30, 2003
- Reviewer, Canada Research Chairs, 2003
- US National Astronomy and Ionosphere Center (NAIC) Director Search, Committee Member, 2002
- NASA Senior Review, Committee Member, 2002
- NASA Expert Panelist, “Space Science Update,” 2002
- NSERC Review Committee, Canadian Institute for Theoretical Astrophysics, 2002
- Canadian Astronomical Society Committee on Radio Astronomy, 2001–2003
- US/NRC Committee on Radio Frequency (CORF) Allocation, 2001–2002
- Reviewer, Canada Research Chairs, 2001
- Arecibo Users and Scientific Advisory Committee (AUSAC), 1999–2003
- AAS High Energy Astrophysics Division (HEAD) Executive Committee, 1999–2002
- NASA Gamma Ray Astrophysics Program Working Group, 1998–9
- Committee Peer Review (Telescope Observing and Funding): *Chandra X-ray Observatory Guest Observer Program (three times), NASA ASTRO-E Guest Observer Program, NASA Astrophysics Data Program, NASA Compton Gamma Ray Observatory Observing Program, NASA Rossi X-ray Timing Explorer Guest Investigator Program, NRAO Guest Observer Program, California Space Institute Grant Program, National Science Foundation*
- Journal Review (average 5 articles per year): *Advances in Space Research, Astronomy & Astrophysics, Astrophysical Journal, Astrophysical Journal Letters, Astrophysical Journal Supplement Series, Astrophysics & Space Science, Monthly Notices of the Royal Astronomical Society, Nature, Nature Communications, Science, Turkish Journal of Physics*
- Conference Organization:
 - Scientific Organizing Committee, *COSPAR 2014, Highly Magnetized Neutron Stars*, Moscow, Russia, August 2–10, 2014
 - Local Organizing Committee, *International Pulsar Timing Array 2014*, Banff, AL, June 23–27, 2014
 - Scientific Organizing Committee, *Texas Symposium on Relativistic Astrophysics*, Dallas, TX, December 8–13, 2013

- Scientific Organizing Committee, *The Fast and the Furious: Energetic Phenomena in Isolated Neutron Stars, Pulsar Wind Nebulae and Supernova Remnants*, Madrid, Spain, May 22-24, 2013
- Scientific Organizing Committee, *Latest Results from the Neutron Star Laboratory*, Amsterdam, The Netherlands, May 6–10, 2013
- Organizer, *Workshop on CHIME and Pulsars*, McGill University, April 3-4, 2013
- Scientific Organizing Committee, *Texas Symposium on Relativistic Astrophysics*, Sao Paulo, Brazil, December 16–20, 2012
- Scientific Organizing Committee, *Neutron Stars and Pulsars: Challenges and Opportunities after 80 years*, IAU Symposium 291, Beijing, China, 20-24 August, 2012
- Scientific Organizing Committee, *Magnetars: The Extremes of Nature*, COSPAR 2012, Event E1.12, Mysore, India, 14-22 July, 2012
- Scientific Organizing Committee, *Physics of Neutron Stars*, St. Petersburg, Russia, July 11-15, 2011
- Scientific Organizing Committee, *SKA 2011 International Meeting*, Banff, AL, July 4-7, 2011
- Scientific Organizing Committee, *Astrophysics of Neutron Stars 2010*, Cesme, Izmir, Turkey, August 2–6, 2010
- Organizer, *NuSTAR Galactic Workshop*, Montreal, Canada, June 15-16, 2010
- Scientific Organizing Committee, *Probing Strong Gravity with Gravitational and Electromagnetic Waves*, COSPAR 38th Scientific Assembly, Bremen, Germany, July 18-25, 2010
- Scientific Organizing Committee, *10 Years of Science with Chandra*, Boston, MA, September 22-25, 2009
- Scientific Organizing Committee, *Neutron Stars: Timing in Extreme Environments*, Sao Paulo, Brazil, August 3-5, 2009
- Organizer, *NuSTAR Galactic Workshop*, Pasadena, CA, August 10-13, 2009
- Scientific Organizing Committee, *Neutron Stars and Gamma-Ray Bursts*, Alexandria, Egypt, March 30 – April 4, 2009
- Main Scientific Organizer, *CIFAR Gravity & Cosmology Annual General Meeting*, Mt Tremblant, QC, March 5-8, 2009
- Scientific Organizing Committee, *Texas Symposium on Relativistic Astrophysics*, Vancouver, Canada, December 2008
- Main Scientific Organizer, COSPAR Symposium, *Multiwavelength Observations of Neutron Stars*, Montreal, Canada, July 2008
- Scientific Organizing Committee, *Eight Years of Science with Chandra*, Huntsville, AL, October 2007
- Scientific Organizing Committee, *From Planets to Dark Energy: The Modern Radio Universe*, Manchester, UK, October, 2007

- Co-Chair, Scientific Organizing Committee, *40 Years of Pulsars*, Montreal, Canada, August 2007
- Scientific Organizing Committee, XMM-Newton: The Next Decade, Madrid, Spain, June 2007
- Scientific Organizing Committee, *Gemini Science 2007*, Foz do Iguacu, Brazil, June 2007
- Scientific Organizing Committee, *Isolated Neutron Stars: from the Interior to the Surface*, Royal Astronomical Society, London, UK, April 24-28, 2006
- Scientific Organizing Committee, *Neutron Stars at the Crossroads of Fundamental Physics*, University of British Columbia, Vancouver, BC, August 9-13, 2005
- Scientific Organizing Committee, *Texas Symposium on Relativistic Astrophysics*, Stanford University, Palo Alto, CA, December 2004
- Hosted Pulsar Surveys with the Arecibo L-Band Feed Array Workshop, McGill University, May 19-21, 2004
- Scientific Organizing Committee, *Young Neutron Stars and their Environments*, International Astronomical Union Symposium 218, Sydney, Australia, July 2003
- Chair, Local Organizing Committee, 2003 High Energy Division of American Astronomical Society, Mt Tremblant, Quebec, March 2003
- Convener, Session on *Neutron Stars and SN Remnants*, at the *XXI Texas Symposium on Relativistic Astrophysics*, Florence, Italy, December, 2002
- Scientific Organizing Committee, *Radio Pulsars: Crete 2002*, Chania, Crete, August 2002
- Co-organizer, Joint HEAD/APS Meeting, Special Session on *Pulsars and Supernova Remnants at High Energies*, Albuquerque, New Mexico, April 2002
- Scientific Organizing Committee, *XX Texas Symposium on Relativistic Astrophysics*, Austin, Texas, December 2000
- Co-Organizer, *Spin and Magnetism in Young Neutron Stars*, Institute for Theoretical Physics, University of California at Santa Barbara, July – December 2000
- Organizing Committee, *Physical Applications of Radio Pulsar Timing*, Aspen Center for Physics, Aspen, Colorado, May/June 1998
- Scientific Organizing Committee, *31st Scientific Assembly of COSPAR: E1.5 Satellite and Ground Based Studies of Radiopulsars*, Birmingham, England, July 1996

Lectures, Colloquia and Symposia:

Note: All talks listed were invited, except those in parentheses which were contributed.

1. “The Hunt for Millisecond Pulsars,” Physics Colloquium, University of Chicago, Chicago, IL, Nov 6, 2014.

2. “The Cosmic Gift of Neutron Stars,” Vanier Celebrates Women in Science, Vanier College, Montreal, Oct 15, 2014.
3. “Neutron Stars,” *Rapporteur Talk*, 26th Solvay Conference, Brussels, Belgium, Oct 10, 2014.
4. “NuSTAR Observations of Magnetars and Rotation-Powered Pulsars,” Special Session on “*NuSTAR* First Science,” 40th COSPAR Scientific Assembly, Moscow, Russia, Aug 7, 2014.
5. “Magnetars in Perspective,” 40th COSPAR Scientific Assembly, Special Session on “Highly Magnetized Neutron Stars,” Moscow, Russia, Aug 5, 2014.
6. (“Current Radio Pulsar Surveys: PALFA and Friends,” 40th COSPAR Scientific Assembly, Special Session on “Rotation-Powered Pulsars from Radio to the Highest Energies,” Moscow, Russia, Aug 3, 2014.)
7. (“CHIME and Timing Millisecond Pulsars,” International Pulsar Timing Array Meeting, Banff Centre, Banff, AL, June 26, 2014.)
8. “Magnetars and Their ilk,” The Unquiet Universe, Cefalu, Italy, June 12, 2014.
9. “Neutron Star Populations,” Advancing Astrophysics with the Square Kilometer Array, Giardini Naxos, Italy, June 10, 2014.
10. “Magnetars and Their ilk,” Frontiers of Neutron Stars, Cornell University, Ithaca, NY, May 29, 2014.
11. (“NANOGrav, CHIME, and Fast Radio Bursts,” CIFAR Annual General Meeting, Quebec City, QC, May 25, 2014.
12. “The Hunt for Millisecond Pulsars,” Jesse Greenstein Lectureship, Caltech, Pasadena, CA, May 14, 2014.
13. “The Hunt for Millisecond Pulsars,” Physics Colloquium, Queen’s University, Kingston, ON, March 7, 2014.
14. “Observations of Isolated Neutron Stars,” Look and Listen Astrophysics School, Playa del Carmen, Mexico, January 13, 14, 15, 2014. (Series of 3 invited lectures)
15. “Magnetars: An Observational Overview,” 27th Texas Symposium on Relativistic Astrophysics, Dallas, TX, December 9, 2013.
16. (“A Millisecond Pulsar in a Stellar Triple System,” (On behalf of Scott Ransom) 27th Texas Symposium on Relativistic Astrophysics, Dallas, TX, December 9, 2013.)
17. “*Swift*-XRT Observations of Magnetars,” *Swift* Science Planning Workshop, Pennsylvania State University, State College, PA, October 29, 2013.
18. “The Cosmic Gift of Neutron Stars,” MIT Pappalardo Distinguished Lecture, MIT, Cambridge, MA, October 3, 2013.
19. “Grand Unification in Neutron Stars,” Canadian Astronomical Society Annual Meeting, University of British Columbia, Vancouver, BC, May 30, 2013.
20. “Magnetars,” Canadian Association of Physicists Congress, University of Montreal, Montreal, QC, May 28, 2013.

21. "Some Thoughts on Being Female in Physics," Canadian Association of Physicists Congress, University of Montreal, Montreal, QC, May 28, 2013.
22. "When do we know we have achieved gender equality in physics?" Invited Panelist, Panel Discussion, Canadian Association of Physicists Congress, University of Montreal, Montreal, QC, May 28, 2013.
23. "Radio Pulsar Basics: Searching, Timing and Populations," Locating Astrophysical Transients, Lorentz Center, Leiden, The Netherlands, May 13, 2013.
24. ("Delayed spin-down rate variability following flux flares in magnetar 1E 1048.1-5937," Latest Results from the Neutron Star Laboratory, Amsterdam, The Netherlands, May 9, 2013.)
25. "The Hunt for Millisecond Pulsars," Astrophysics Colloquium, Institute for Advanced Study, Princeton, NJ, April 30, 2013.
26. "Upcoming X-ray Missions," Symposium "Telescopes of the Future and Astrophysics of Today," McGill University, Montreal, QC, April 18, 2013.
27. "Magnetars Storm the Earth," Invited Session, American Physical Society Meeting, Denver, CO, April 16, 2013.
28. ("Searching for Millisecond Pulsars in Support of Pulsar Timing Arrays," CIFAR Gravity and Cosmology Annual General Meeting, Banff, AB, Feb 16, 2013.)
29. "The Cosmic Gift of Neutron Stars," Dawson First Choice Seminar, Dawson College, Montreal, QC, Jan 30, 2013.
30. "On Being Female in Science," Invited Panelist, Roundtable Discussion sponsored by the Royal Society of London, the Royal Society of Canada, and the British Consul General, McGill University, Montreal, QC, Jan 24, 2013.
31. "Searching for Radio Pulsars: Big Data for Big Payoff," Canadian Institute for Theoretical Astrophysics Seminar, University of Toronto, Toronto, ON, Sept 13, 2012.
32. "The NuSTAR X-ray Telescope," IAU Symposium 291: Neutron Stars and Pulsars: Challenges and Opportunities after 80 Years, International Astronomical Union General Assembly, Beijing, China, Aug 24, 2012.
33. "Grand Unification in Neutron Stars," Astrophysics Seminar, Weizmann Institute, Rehovoth, Israel, June 27, 2012.
34. "Long-term Monitoring of High-B Neutron Stars," Magnetic Fields in Neutron Stars: Origin, Evolution and Decay, University of Amsterdam, Amsterdam, The Netherlands, June 13, 2012.
35. "Searching for Radio Pulsars: Big Data for Big Payoff," Canadian Astronomical Society Plenary Lecture, University of Calgary, Calgary, AB, June 5, 2012.
36. "Testing General Relativity with Pulsars: New Tests and the Future," Seventh Harvard-Smithsonian Conference on Theoretical Astrophysics: Identifying Tests of General Relativity (GR) in Astrophysical Systems, Harvard University, Cambridge, MA, May 14, 2012.

37. "Grand Unification In Neutron Stars: The High-B Connection," LIGO Scientific Collaboration/Virgo Astrophysics Colloquium, done via Enabling Virtual Organizations (EVO), April 18, 2012.
38. ("Radio Pulsar Surveys and a New System for Constraining Gravity," CIFAR Gravity and Cosmology Annual General Meeting, Whistler, BC, April 5, 2012.)
39. "Diversity In Neutron Stars: The High-B Connection," Helen Sawyer Hogg Memorial Astrophysics Colloquium, University of Toronto, Toronto, March 16, 2012.
40. "The Cosmic Gift of Pulsars," Helen Sawyer Hogg Memorial Public Lecture, University of Toronto, March 15, 2012.
41. "Diversity In Neutron Stars: The High-B Connection" Big Apple Colloquium, Columbia University, New York, February 17, 2012.
42. "Anomalous X-ray Pulsars and Soft Gamma Repeaters: The RXTE Legacy," American Astronomical Society Meeting, Special Session on *The Rossi X-ray Timing Explorer: Taking the Pulse of the Universe*, Austin, TX, January 10, 2012
43. "Monitoring Magnetars with LOFT," LOFT Science Meeting, Science Park, Amsterdam, The Netherlands, October 27, 2011
44. "Who Should Fund Research? Who Should Profit?" Presentation and Panel Discussion, Science & Policy Exchange, McGill University, September 23, 2011
45. "Pulsar Astrophysics and Data Management," 2011 Canadian Research Data Summit, Ottawa, ON, September 15, 2011
46. ("Diversity in Neutron Stars: X-ray Observations of High-Magnetic-Field Radio Pulsars," High Energy Astrophysics Division 12th Divisional Meeting, Newport, RI, USA, September 8, 2011)
47. ("Gamma Ray Binaries and NuSTAR," NuSTAR Science Team Meeting, Caltech, Pasadena, CA, July 27, 2011)
48. "Neutron Stars and Fundamental Physics," Women in Physics Canada, Perimeter Institute, Waterloo, ON, July 19, 2011
49. ("The Radio Pulsar/Magnetar Connection," Neutron Stars 2011, St. Petersburg, Russia, July 14, 2011)
50. ("The Arecibo PALFA Survey," SKA 2011 Science and Frontiers of Astronomy, Banff, AL, July 5, 2011)
51. "The Cosmic Gift of Neutron Stars," James McGill Society Lecture, McGill University, May 9, 2011
52. "Women in Science," Workshop on Survival Skills for Scientists," McGill University, May 4, 2011
53. "A Career in Astrophysics," Keynote Speaker, The Study Career Day, Montreal, Canada, Apr 6, 2011.
54. ("The Hunt for Millisecond Pulsars," CIFAR Gravity and Cosmology Annual General Meeting, Whistler, BC, April 1, 2011.)

55. "Tenure Criteria for the Faculty of Science," MAUT Tenure Workshop, Faculty Club, Mar 28, 2011.
56. "The Cosmic Gift of Neutron Stars," Rutherford Lecture, Royal Society of London, London, UK, Nov 29, 2010.
57. "The Cosmic Gift of Neutron Stars," Concordia University Science College Public Lecture, Concordia University, Oct 28, 2010.
58. "Grand Unification in Neutron Stars," *Radio Pulsars: An Astrophysical Key*, Chia Laguna, Italy, Oct 13, 2010.
59. "A Tribute to Don Backer (1943–2010)," *Radio Pulsars: An Astrophysical Key*, Chia Laguna, Italy, Oct 11, 2010.
60. "X-ray Astronomy in the Near Future," *Less is More* Workshop, Weizmann Institute, Rehovoth, Israel, June 7, 2010.
61. "Grand Unification in Neutron Stars," Columbia University Astrophysics Colloquium, New York, NY, Feb 24, 2010.
62. ("Grand Unification in Neutron Stars," CIFAR Gravity and Cosmology Annual General Meeting, Lake Louise, AL, Feb 20, 2010.)
63. "The Violent High Energy Universe," McGill MAUT Lecture, Faculty Club, Nov 13, 2009.
64. "*Chandra's* Contribution toward 'Grand Unification': Unravelling the Surprising Diversity in Neutron Stars," *Chandra's* First Decade Symposium, Boston, MA, Sept 24, 2009
65. "The Violent High Energy Universe," 'Bacon and Eggheads' Breakfast, Parliament Hill, Ottawa, ON, June 4, 2009
66. "The Violent High Energy Universe," NSERC Head Office, Ottawa, ON, June 3, 2009
67. "Canadian Space Agency Discipline Working Group in High-Energy Astrophysics: Report," Canadian Astronomical Society Meeting, Toronto, ON, May 27, 2009
68. "Status and Future of Canadian Astrophysics," Panel Presentation (Leader R. Carlberg, U. Toronto), Canadian Astronomical Society Meeting, Toronto, ON, May 27, 2009
69. "Anomalous X-ray Pulsars," Defining the Neutron Star Crust 2009, Santa Fe, NM, May 21, 2009
70. ("Nanogravity and a Missing Link," CIFAR Gravity and Cosmology Annual General Meeting, Mt. Tremblant, QC, March 6, 2009)
71. "The Violent High Energy Universe," Science Colloquium, Canadian Space Agency, St. Hubert, QC, May 1, 2009
72. "Neutron Stars: Physics in the Extreme," Physics Colloquium, Montana State University, Bozeman, MO, April 29, 2009
73. "High-Magnetic Field Neutron Stars," Sackler Lecture, Harvard University, Cambridge, MA, April 2, 2009

74. (“Nanogravity and a Missing Link,” Canadian Institute for Advanced Research Gravity & Cosmology Annual General Meeting, Mont Tremblant, QC, March 6, 2009)
75. (“NuSTAR and Galactic Science,” NuSTAR Science Workshop, Caltech, Pasadena, CA, February 19, 2009)
76. (“The High-B Radio Pulsar/Magnetar Connection,” 30 Years of Magnetars: New Frontiers, Aspen, CO, February 2, 2009)
77. (“High Drama in AXPs: Glitches, Outbursts and Flares and their Relationships,” Texas Symposium for Relativistic Astrophysics, Vancouver, BC, December 12, 2008)
78. “High-Magnetic Field Neutron Stars,” Astrophysics Colloquium, Institute for Advanced Study, Princeton, NJ December 2, 2008
79. “Magnetars,” 17th Kingston Meeting: Compact Stars in the Rockies, Banff, AL, May 27, 2008
80. “High Energy Astrophysics and the CSA Disciplinary Working Group,” Canadian Astronomical Society Meeting, Victoria, BC, May 21, 2008
81. “Multi-wavelength Observations of Neutron Stars,” Canadian Astronomical Society Meeting, Victoria, BC, May 21, 2008
82. “NuSTAR and Pulsars,” High Energy Astrophysics Division Meeting, Los Angeles, CA, April 3, 2008
83. (“Relativistic Spin Precession in the Double Pulsar,” Canadian Institute for Advanced Research Gravity & Cosmology Annual General Meeting, Stanford University, Palo Alto, CA, Mar 5, 2008)
84. (“Chandra ToO observations of Anomalous X-ray Pulsars,” 8 Years of Chandra Workshop, Huntsville, AL, Oct 24, 2007)
85. (“Pulsars and Astrosat,” Astrosat Workshop, Canadian Space Agency, St. Hubert, QC, Oct 19, 2007)
86. “Neutron Stars: Physics in the Extreme,” Steacie Prize Lecture, National Research Council, Ottawa, ON, May 4, 2007
87. “Magnetars,” Astrophysics Colloquium, California Institute of Technology, Pasadena, CA, Mar 14, 2007
88. “Magnetars,” Physics Colloquium, Michigan State University, Lansing, MI Feb 1, 2007
89. “Magnetars,” Astrophysics Colloquium, University of Michigan, Ann Arbor, MI Jan 31, 2007
90. “Diversity Among Young Neutron Stars: The High Magnetic Field Puzzle,” Astrophysics Seminar, Raman Research Institute, Bangalore, India, Nov 29, 2006
91. “Diversity Among Young Neutron Stars: The High Magnetic Field Puzzle,” Colloquium, Perimeter Institute, Waterloo, ON, Nov 8, 2006

92. "Magnetars," Physics Colloquium, Louisiana State University, Baton Rouge, LA, Oct 26, 2006
93. ("Long-term Variability in Anomalous X-ray Pulsar 4U 0142+61 and Recent Activity," High Energy Astrophysics Division of the American Astronomical Society Meeting, San Francisco, CA, Oct 4, 2006)
94. "Magnetars," Symposium in Honor of Joseph H. Taylor Jr., Princeton University, Princeton, NJ, Sept 30, 2006
95. "Magnetars," Keynote Lecture, "CITA Kingston in Kingston" Meeting, Queen's University, Kingston ON, July 18, 2006
96. "Magnetars," Massive Stars: From Pop III and GRBs to the Milky Way, Space Telescope Science Institute, Baltimore, MD, May 10, 2006
97. "Diversity in Young Neutron Stars: The High-Magnetic-Field Puzzle," University of Alberta, Edmonton, AL, Mar 21, 2006
98. "Diversity in Young Neutron Stars: The High-Magnetic-Field Puzzle," Institute for Theory and Computation Colloquium, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, Mar 9, 2006
99. "Magnetars," Department of Physics Seminar, University of Guelph, Guelph, ON, Jan 31, 2006
100. "Anomalous X-ray Pulsars," RXTE 10th Birthday Party Mini-Conference, NASA/Goddard, Greenbelt, MD, Jan 13, 2006
101. "Diversity in Young Neutron Stars: The High Magnetic Field Puzzle," Astrophysics Seminar, Northwestern University, Evanston, IL, Nov 22, 2005
102. "Diversity in Young Neutron Stars: The High Magnetic Field Puzzle," Institute for Advanced Study Astrophysics Seminar, Princeton, NJ, Nov 8, 2005
103. "Observational Properties of Magnetars," Neutron Stars at the Crossroads of Fundamental Physics, UBC, Vancouver, BC, Aug 11, 2005
104. "The Hunt for the Missing Link: High Magnetic Field Radio Pulsars," Cornell University, Astronomy Colloquium (part of the Salpeter Lectureship), May 5, 2005
105. "Magnetars," Cornell University, Physics Colloquium (part of Salpeter Lectureship), May 2, 2005
106. "Magnetars," MIT Physics Colloquium, February 10, 2005
107. "Observational Properties of the Double Pulsar System PSR J1718-3718", Double Pulsar Workshop, Canadian Institute for Theoretical Astrophysics, Toronto, January 26, 2005
108. "(Anomalous) X-ray Pulsars," Invited Review, Texas Symposium on Relativistic Astrophysics, Stanford University, December 16, 2004
109. "Strong Field Tests of General Relativity Using Pulsars and Black Holes," (with J. Cordes and M. Kramer), Square Kilometer Array 2004, Penticton, July 2004
110. "Revolutions in Neutron-Star Astrophysics," Canadian Association of Physicists Herzberg Medal Lecture, Winnipeg, MB, June 15, 2004

111. "Anomalous X-ray Pulsars," Astrophysics Seminar, Harvard Smithsonian Center for Astrophysics, Cambridge, MA, May 4, 2004
112. "Diversity in Young Neutron Stars," Marianopolis College, Montreal, QC, Mar 30, 2004
113. "Diversity in Young Neutron Stars," Physics Colloquium, Carleton University, Ottawa, ON, Mar 22, 2004
114. ("A Double Binary Pulsar," CIAR Gravity and Cosmology Meeting, Banff, AL, Mar 5, 2004)
115. ("A Double Binary Pulsar," Observatoire Mont Megantique Meeting, Esterel, QC, Mar 12, 2004)
116. "Anomalous X-ray Pulsars," Astrophysics Colloquium, Princeton University, Feb 24, 2004
117. "Neutron Stars and the Canadian Large Adaptive Reflector," Herzberg Institute of Astrophysics Advisory Board, AMEC, Vancouver, BC Jan 30, 2004
118. "Pulsar/Main-Sequence Star Binaries," Invited Review, *Aspen Winter Conference on Binary Radio Pulsars*, Aspen Center for Physics, Aspen, CO Jan 13, 2004
119. ("Measuring Neutron-Star Temperatures," Particle Theory Pizza Seminar, McGill University, Montreal, QC Nov 18, 2003)
120. "Anomalous X-ray Pulsars," Invited Review, *X-ray Timing: Rossi & Beyond!*, Cambridge, MA, Nov 3, 2003
121. "Anomalous X-ray Pulsars," Astrophysics Colloquium, University of Colorado, Boulder, CO, Oct 27, 2003
122. "Anomalous X-ray Pulsars," Astrophysics Colloquium, Pennsylvania State University, College Station, PA Sept 9, 2003
123. "Magnetars," Invited Review, *Young Neutron Stars and their Environments, IAU Symp. 218*, Sydney, Australia July 14, 2003
124. "Anomalous X-ray Pulsars," The Restless High-Energy Universe, Amsterdam, The Netherlands, May 8, 2003
125. ("Anomalous X-ray Pulsars," CIAR Gravity and Cosmology Program Meeting, Mt Tremblant, QC Mar 14-18, 2003)
126. "Neutron Stars and Supernova Remnants," XXI Texas Symposium on Relativistic Astrophysics, Florence, Italy Dec 9-11, 2002
127. "Diversity in Young Neutron Stars," Physics Colloquium, Concordia University, Montreal, QC, Nov 13, 2002
128. ("ALFA Computing Resources," Arecibo L-Band Feed Array (ALFA) Pulsar Consortium Meeting, Arecibo, Puerto Rico, Nov 1-2, 2002)
129. ("Opportunities for ALFA Support," Arecibo L-Band Feed Array (ALFA) Pulsar Consortium Meeting, Arecibo, Puerto Rico, Nov 1-2, 2002)

130. "Anomalous X-ray Pulsars," 34th COSPAR Scientific Assembly, High Energy Studies of Supernova Remnants and Neutron Stars, Houston, TX Oct 10-12, 2002
131. "Magnetars," Invited Review, Radio Pulsars: Crete 2002, Chania, Greece, August 27, 2002.
132. "Anomalous X-ray Pulsars," Invited Review, Gamma Ray Bursts: The Biggest Explosions in the Universe, Harvard University, Cambridge, MA, May 23, 2002.
133. "Anomalous X-ray Pulsars," Astronomy Colloquium, University of Texas, Austin, TX, April 30, 2002.
134. "Anomalous X-ray Pulsars," Invited Review, Joint American Physical Society/High Energy Astrophysics Division Conference, Albuquerque, NM, April 22, 2002.
135. "Anomalous X-ray Pulsars," Astrophysics Colloquium, Institute for Advanced Study, Princeton, NJ, April 9, 2002.
136. ("Anomalous X-ray Pulsars," Conference Talk, Centre de L'Observatoire OMM Rencontre, Val David, QC, March 14, 2002.)
137. "Anomalous X-ray Pulsars," Astrophysics Colloquium, Ohio State University, Columbus, OH, March 7, 2002.
138. "Diversity Among Young Neutron Stars," Physics Colloquium (CAP Lecture), Trent University, Peterborough, ON, February 27, 2002.
139. "Diversity Among Young Neutron Stars," Physics Colloquium (CAP Lecture), Acadia University, Wolfville, NS, February 14, 2002.
140. "Diversity Among Young Neutron Stars," Physics Colloquium (CAP Lecture), Dalhousie University, Halifax, NS, February 13, 2002.
141. "Parkes Multibeam Survey Pulsars and EGRET Sources," Invited Talk, Workshop on Pulsar Studies in the GLAST Era, University of California, Santa Cruz, CA, December 11, 2001.
142. "Anomalous X-ray Pulsars," Astrophysics Colloquium, Canadian Institute for Theoretical Astrophysics, Toronto, ON, November 27, 2001.
143. "Diversity Among Young Neutron Stars," Astrophysics Colloquium, Université Laval, Quebec City, QC, November 12, 2001.
144. "Pulsars and Supernova Remnants," Invited Review, Conference on Low Frequency Array (LOFAR), MIT Haystack Observatory, Westford, MA, October 15, 2001.
145. "Pulsar/Supernova Remnant Associations," Invited Review, Neutron Stars in Supernova Remnants (II), Boston, MA, August 14, 2001.
146. "Diversity in Young Neutron Stars," Invited Review, Canadian Astronomical Society, Hamilton, ON, May 27, 2001.
147. "Diversity in Young Neutron Stars," Astrophysics Colloquium, California Institute of Technology, Pasadena, CA, May 23, 2001.
148. "Diversity in Young Neutron Stars," Physics Colloquium, York University, Toronto, ON, March 6, 2001.

149. "Diversity in Young Neutron Stars," Physics Colloquium, Queen's University, Kingston, ON, February 27, 2001.
150. "High-Precision Timing of Millisecond Pulsars," Invited Talk, part of "Astrophysical Ages and Timescales" conference, Hilo, Hawaii, February 5, 2001.
151. "Diversity in Young Neutron Stars," Physics Colloquium, University of Waterloo, Waterloo, ON, December 7, 2000.
152. "Diversity in Young Neutron Stars," Physics Colloquium, McMaster University, Hamilton, ON, December 6, 2000.
153. "Diversity in Young Neutron Stars," Physics Colloquium, University of Vermont, Burlington, VT, November 29, 2001.
154. "Anomalous X-ray Pulsars," Invited Review, part of Institute for Theoretical Physics Conference in "Spin and Magnetism in Young Neutron Stars," Santa Barbara, CA (via videoconference from ICC at McGill, as I was 9 months pregnant), October 5, 2001.
155. "Discovery of a Young Radio Pulsar in a Relativistic Binary Orbit," Astrophysics Seminar, Université de Montréal, Montreal, QC, September 21, 2000.
156. "Diversity in Young Neutron Stars," Physics Colloquium, Université de Montréal, Montreal, QC, September 15, 2000.
157. "Young Neutron Stars," Invited Talk, Institute for Theoretical Physics, University of California at Santa Barbara, Santa Barbara, CA, August 4, 2000.
158. "Diversity in Young Neutron Stars," Physics Seminar, Physics Department, Ben Gurion University, Israel, April 30, 2000.
159. "Anomalous X-ray Pulsars," Invited Talk, Rossi 2000 Symposium, Goddard Space Flight Center, Greenbelt, MD, March 22, 2000.
160. "Diversity in Young Neutron Stars," Physics Colloquium, Princeton University, Princeton, NJ, March 9, 2000.
161. "Diversity in Young Neutron Stars," Astrophysics Colloquium, Cornell University, Ithaca, NY, February 24, 2000 (pm).
162. "Discovery of a Young Radio Pulsar in a Relativistic Binary Orbit," Seminar on General Relativity, Cornell University, Ithaca, NY, February 24, 2000 (am).
163. "Diversity in Young Neutron Stars," Invited Talk, Brown University, Providence, RI, December 1, 1999.
164. "High-Precision Timing of Anomalous X-ray Pulsars," Astrophysics Seminar, Harvard University, Cambridge, MA, November 17, 1999.
165. "Diversity in Young Neutron Stars," Physics Colloquium, MIT, Cambridge, MA, October 21, 1999.
166. "Diversity in Young Neutron Stars," Astronomy Colloquium, Boston University, Boston, MA, October 18, 1999.
167. "Neutron Star/Supernova Remnant Associations," Invited Review, IAU Symposium on Pulsars, Bonn, August, 1999.

168. "The Parkes Multibeam Pulsar Survey," Invited Talk, XXVIth URSI General Assembly, Toronto, Canada, August 17, 1999.
169. "Binary Pulsars and Relativistic Gravity," 8th Canadian Conference on GR and Relativistic Astrophysics, McGill U., Montreal, June 1999.
170. "The Neutron Star/Supernova Remnant Connection," Invited Talk, American Astronomical Society, Austin TX, January 8, 1999.
171. "The Neutron Star/Supernova Remnant Connection," Yale Astronomy Colloquium, New Haven, Connecticut, November 12, 1998.
172. "Fundamental Limits to Millisecond Pulsar Timing Accuracy," Invited Talk, Aspen Center for Physics, Aspen, Colorado, June 10, 1998.
173. ("HST detection of the companion to the Unusual Eclipsing Binary Pulsar PSR B1718-19 and implications for Binary Evolution," Aspen Center for Physics, Aspen, Colorado, June 8, 1998.)
174. ("Associations or Superpositions? The cases of PSR J1105-6107/MSH 11-1A and PSR J1617-55/RCW 103," Workshop on the Relationship Between Neutron Stars and Supernova Remnants, Maciana Marina, Elba Island, Italy, June 2, 1998.)
175. "Neutron Stars Get Their Kicks!" Astronomy Colloquium, University of Michigan, Ann Arbor, Michigan, April 20, 1998.
176. "Neutron Stars Get Their Kicks!" Physics Colloquium, Carleton University, Ottawa, Ontario, Canada, March 30, 1998.
177. "Neutron Stars Get Their Kicks!" Space Telescope Science Institute Colloquium, Baltimore, Maryland, March 25, 1998.
178. "Pulsar/Supernova Remnant Associations," Invited Review, Symposium on "Neutron Stars and Pulsars," Rikkyo University, Tokyo, Japan, November 19, 1997.
179. "Neutron Stars Get Their Kicks," Astrophysics Colloquium, Harvard Center for Astrophysics, Cambridge, Massachusetts, October 30, 1997.
180. "Neutron Stars Get Their Kicks," Astrophysics Colloquium, Haystack Observatory, September 26, 1997.
181. "Timing Observations of Millisecond Pulsars on Timescales of 10 ns to 10 Years," Astrophysics Colloquium, Columbia University, March 27, 1997.
182. "Timing Observations of Millisecond Pulsars on Timescales of 10 ns to 10 Years," Astrophysics Colloquium, University of Chicago, Chicago, Illinois, Feb 5, 1997.
183. "Millisecond Pulsar Timing on Timescales of 10 ns to 10 Years," Invited Talk, Wise Observatory 25th Anniversary Symposium: "Astronomical Time Series," Tel Aviv University, Tel Aviv, Israel, December 31, 1996.
184. "Neutron Stars Get Their Kicks," Astrophysics Colloquium, USRA/Goddard Space Flight Center, Greenbelt, Maryland, November 12, 1996.
185. "Neutron Stars Get Their Kicks," Astrophysics Seminar, University of California at Santa Barbara, Santa Barbara, California, October 30, 1996.

186. (“Observations of the SMC Binary Pulsar PSR J0045–7319,” at the Academy Colloquium *Pulsar Timing, General Relativity and the Internal Structure of Neutron Stars*, Amsterdam, The Netherlands, September 25, 1996.)
187. (“ASCA Observations of the Be/Pulsar Binary PSR B1259–63,” COSPAR Symposium E1.5: Satellite and Ground Based Studies of Radio Pulsars, Birmingham, England, July 19, 1996.)
188. “Pulsar/Supernova Remnant Associations: A Review,” Invited Review, COSPAR Symposium E1.5: Satellite and Ground Based Studies of Radio Pulsars, Birmingham, England, July 18, 1996.
189. “Astrophysics with Radio Pulsar/B Star Binaries,” Astronomy Colloquium, University of California at Los Angeles, Los Angeles, California, June 4, 1996.
190. “A New Class of Binary Radio Pulsars,” Invited Talk, High Energy Astrophysics Division Meeting (AAS), San Diego, California, May 3, 1996.
191. “Pulsar/Supernova Associations: Facts and Fancy,” Invited Review, IAU Colloquium 160, Sydney, Australia, January 8, 1996.
192. “A New Class of Binary Pulsars,” Astronomy Colloquium, University of Toronto, December 6, 1995.
193. “A New Class of Binary Pulsars,” Astronomy Colloquium, Massachusetts Institute of Technology, December 5, 1995.
194. “Detecting a Stochastic Gravitational Wave Background with Millisecond Pulsar Timing,” LIGO Seminar, Massachusetts Institute of Technology, December 4, 1995.
195. “A New Class of Binary Pulsars,” Astronomy Seminar, Stanford University, November 2, 1995.
196. “How Much Can You Learn from One Binary Pulsar?” Astronomy Colloquium, California Institute of Technology, October 25, 1995.
197. “A New Class of Binary Pulsars,” Astronomy Seminar, Jodrell Bank, United Kingdom, May 31, 1995.
198. “A New Class of Binary Pulsars,” Astrophysics Seminar, Astronomy Department, Institute for Advanced Study, Princeton, April 25, 1995.
199. “A New Class of Binary Pulsars,” Physics Colloquium, Physics Department, McGill University, Montreal, April 24, 1995.
200. “A New Class of Binary Pulsars,” Astrophysics Colloquium, Astronomy Department, University of California at San Diego, February 7, 1995.
201. “A New Class of Binary Pulsars,” Astrophysics Colloquium, Astronomy Department, University of California at Berkeley, February 2, 1995.
202. “A New Class of Binary Pulsars,” Astrophysics Colloquium, Astronomy Department, University of California at Santa Cruz, February 1, 1995.
203. “A New Class of Binary Pulsars,” Astrophysics Seminar, Physics Department, University of California at Santa Barbara, December 7, 1994.

204. “A New Class of Binary Pulsars,” Astrophysics Seminar, Astronomy Department, University of British Columbia, November 28, 1994.
205. “Millisecond Pulsar Timing Results from Arecibo,” IAU Joint Session on Time and Frequency Standards, The Hague, August 20, 1994.
206. (“PSR J0045–7319: A Massive Pulsar Binary in the Small Magellanic Cloud,” IAU Symposium 165, The Hague, August 16, 1994.)
207. “High-Precision Timing of Millisecond Pulsars and Precision Astrometry,” Invited Review, IAU Symposium 166, The Hague, August 16, 1994.
208. “High Energy Emission from PSR B1259–63,” Astrophysics Seminar, Centre for Theoretical Astrophysics, Sydney University, July 29, 1994.
209. “Millisecond Pulsars: It’s All in the Timing,” Astrophysics Seminar, Department of Physics and Astronomy, Rutgers University, May 2, 1994.
210. “Millisecond Pulsars: It’s All in the Timing,” Physics Colloquium, Physics Department, Princeton University, March 24, 1994.
211. “Millisecond Pulsars: It’s All in the Timing,” Physics Colloquium, Physics Department, McGill University, January 21, 1994.
212. “Recent Advances in High-Precision Timing of Millisecond Pulsars,” Invited Talk, Aspen Winter Meeting on Astrophysics, January 7, 1994.
213. “Millisecond Pulsar Timing at Arecibo Observatory,” Invited Review, XXIVth URSI-GA, Kyoto, Japan, August 27, 1993.
214. “Binary Pulsars: An Astrophysical Potpourri,” Astrophysical Seminar, Physics Department, New York University, February 5, 1993.
215. “Binary Pulsars: An Astrophysical Potpourri,” Physics Colloquium, Physics Department, McGill University, December 4, 1992.

Popular or General Audience Lectures and Interviews (Selected)

- “The Cosmic Gift of Neutron Stars,” Brinson Lecture, University of Chicago, Chicago, IL, Nov 5, 2014.
- Featured in French magazine Québec Science, Fall, 2014
- Interview on Fast Radio bursts for McGill Radio Station CKUT,
- Interview on Fast Radio Bursts for 580 CFRA News Talk Radio in Ottawa, ON, July 11, 2014
- Interview on Fast Radio Bursts for 1290 CJBK Newstalk Radio in London, ON, July 11, 2014
- Interview on Fast Radio Bursts for CBC Radio Homerun Show, July 10, 2014
- “The Cosmic Gift of Neutron Stars,” Banff Centre Public Lecture, Banff Centre, Banff AL, June 23, 2014
- “Inflation, the Big Bang, Gravitational Waves: A Panel Discussion”, Public Astronomy Night, McGill University, April 24, 2014

- “An Anti-Glitch in a Neutron Star,” National Public Radio Academic Moment, aired April 16, 2014
- “McGill Pulsar Research,” address to Physics Majors from University of Syracuse, McGill University, Mar 10, 2014
- “Energy and the Universe,” McGill Let’s Talk Science, Feb 18, 2014
- Interview for “Gazette des Femmes” Magazine, Oct 11, 2013
- “Our Universe is Big!” Akiva School Grade 4 Class, Westmount, QC, Oct 10, 2013
- “Stargazing for Fun and Profit: What we learn by studying stars,” Congregation Shaar Hashomayim Sunday Lectures, April 14, 2013
- “Can a Moon Have a Moon?” CBC Radio “Quirks & Quarks,” May 4, 2013
- “The Cosmic X-ray Sky,” Public Astro Night, McGill University, July 19, 2012
- External Commentary on “Fermi Finds Youngest Millisecond Pulsar, 100 Pulsars To Date,” NASA Press TeleConference, Nov 3, 2011
- “Inspired Hands on Science: Where Science, Technology and Math Come to Life! An Inside Glimpse into 3 Scientists Doing Cutting Edge Innovative Research,” Bronfman Jewish Education Centre Professional Day, Bialik High School, Cote St. Luc, QC, Nov 2, 2011
- Interview for CBC Television documentary on Marie Curie, Nov 1, 2011 (to air Dec 3, 2011)
- Interview for Technophilic Magazine, September 20, 2011 (for Fall 2011 issue)
- Interview on “Pulsars and CLUMEQ,” CBC Radio Noon, June 14, 2011
- “Our Solar System,” Presentation for Grade 1 at Akiva School, Westmount, QC, Mar 8, 2011
- Panel discussion on for BBC Radio live show “Start of the Week,” Nov 29, 2010
- Interview on “Magnetars,” for *Popular Mechanics*, Russian Edition, Sept 15, 2010
- Selected by Chatelaine Magazine as one of 50 “Femmes de Parole,” 2010
- “Comets,” Grade 4 Project, Science Night, Akiva School, Westmount, QC, Nov 24, 2009
- Invited speaker, “Neutron Stars: Lighthouses of the Cosmos,” MAUT Retirees Luncheon, McGill University Faculty Club, November 13, 2009
- Invited speaker at “The Universe and Our Place in it” Royal Society of Canada Symposium, Ottawa, ON, October 16, 2009
- Invited speaker at “Women In Science” Spring Study Day at the Women’s League for Conservative Judaism, Montreal area, April 23, 2009
- Invited speaker at Bois Briand Astronomy Club, “La Physique dans L’Extreme: Les Etoiles de Neutrons,” March 18, 2009
- Invited speaker at Dawson College, “Neutron Stars: Physics in the Extreme,” Montreal, QC, March 11, 2009

- Panel Speaker for “Women without Borders,” Rutherford Physics, McGill University, Montreal, QC, March 4, 2009
- Judge, Salhaveth Feier Physics Tournament, Bialik High School, Cote St. Luc, QC, Feb 23, 2009
- Interview on the Square Kilometer Array, CBC National News and Radio, Feb 10, 2009
- Edinburgh Elementary School Alumni Day “Planets, Stars and Galaxies,” January 12, 2008
- Interview on Effects of a Nearby Gamma-ray Burst on the Earth, CBC Radio *Quirks and Quarks* Special Radio Show “The End of the Earth”, Nov 6, 2008
- Akiva Elementary School Green Day: The Greenhouse Effect, Montreal, QC, Jan 29, 2008
- CIFAR 25th Anniversary: What is the Next Big Question? Calgary, AL, Nov 7, 2007
- CIFAR 25th Anniversary: What is the Next Big Question? Calgary, AL, Nov 8, 2007
- Vogel Lecture: Neutron Stars: Physics in the Extreme, McGill University, Montreal, QC, Oct 30, 2007
- CIFAR 25th Anniversary: What is the Next Big Question? Montreal, QC, Oct 15, 2007
- CIFAR 25th Anniversary: What is the Next Big Question? Montreal, QC, Oct 16, 2007
- Weizmann Women in Science: On Being a Woman in Physics, Montreal, QC, Oct 16, 2007
- Homer’s Physics Talk: Neutron Stars - Physics in the Extreme, McGill University, Montreal, QC Sept 21, 2007
- Molly Fripp Lecture at Miss Edgars and Miss Cramps School: Always Looking Up: A Career in Astrophysics, May 3, 2007
- McGill Alumni Association Lecture, National Research Council, Ottawa, ON, Apr 19, 2007 “The Violent High Energy Universe”
- “Neutron Stars: Physics in the Extreme,” Musee de la Science et Nature, Sherbrooke, QC, Mar 8, 2007
- Interview on Anthropic Principle, CBC Radio Noon, aired Jan 25, 2007
- Moderator, Trottier Public Symposium, “A Cosmic Coincidence” with panelists D. Gross, L. Susskind, P. Davies, G. Efstathiou, McGill University, Jan 25, 2007
- “Neutron Stars: Physics in the Extreme”, 2006 Science Highlights, Royal Society of Canada Annual General Meeting, Ottawa, ON, Nov 19, 2006
- Interview about Pluto being demoted as a planet, CTV News, aired Aug 24, 2006

- Interview about Pluto being demoted as a planet, CBC Newsworld National News, aired Aug 24, 2006
- Interview about Pluto being demoted as a planet, CBC Radio Noon, aired Aug 15, 2006
- Keynote Speaker, CIAR Annual Spring Dinner “The Life and Times of a Neutron Star”, Four Seasons Hotel, Toronto, ON, April 11, 2006
- Interview about pulsars, CBC Radio Noon, aired Jan 25, 2006
- “Une Étoile Étourdissante,” Les Années Lumière, CBC Radio Canada, aired Jan 15, 2006
- “Discovery of the Fastest Known Pulsar,” CBC National Radio Quirks and Quarks, aired Jan 14, 2006
- “Neutron Stars: Physics in the Extreme,” CIAR “Spirit of Discovery” Symposium, Montreal, QC, May 10, 2005
- “The Violent High Energy Universe,” McGill “Food for Thought” Lecture Series, McDonald College, Ste Anne de Bellevue, Nov 30, 2004
- “The Violent High Energy Universe,” part of the Aspen Center for Physics Lecture Series, Opera House, Aspen, CO Jan 14, 2004
- “What is the Temperature of Outer Space?” CBC National Radio Quirks and Quarks, aired Dec 27, 2003
- “The Violent High Energy Universe,” part of the Royal Society Lecture Series in Science, Redpath Museum, McGill University, Montreal, QC Dec 11, 2003
- “Diversity in Young Neutron Stars,” Sigma-Xi Society, McGill University, Montreal, QC Sept 22, 2003
- “Being an Astrophysicist,” The Study Career Day, The Study, Montreal, QC, Apr 15, 2003.
- “Why is Snow White?” CBC National Radio Quirks and Quarks, aired Dec 28, 2002
- “Pursuing a Peculiar Pulsar,” CBC National Radio Quirks and Quarks, aired Sept 14, 2002
- “Diversity Among Young Neutron Stars,” Invited Talk, Starseekers Network, Domtar Forrestry Centre, Apple Hill, ON, August 26, 2001.
- “Waves, Particles, and Quantum Mechanics,” Association of Princeton Alumni, Princeton University, June 3, 1994.
- “Unraveling the Cosmos: Tiniest Particles to the Big Bang,” Association of Princeton Graduate Alumni Symposium, Princeton University, June 5, 1993.

Andrew Cumming

Department of Physics,
McGill University,
3600 rue University,
Montreal, QC
H3A 2T8 Canada

Tel: (514) 398 6494
Fax: (514) 398 8434
email: andrew.cumming@mcgill.ca
www: <http://www.physics.mcgill.ca/~cumming>

Research Interests

high energy astrophysics, stellar and planetary astrophysics, nuclear astrophysics, exoplanets, compact objects, astrophysical fluids, statistical methods in astrophysics

Education

- PhD in Physics, University of California, Berkeley, December 2000 (thesis advisor: Lars Bildsten)
- Certificate of Advanced Study in Mathematics (Part III Distinction), University of Cambridge, 1996
- BA Hons in Physics (First Class), University of Cambridge, 1995

Employment

2009- Associate Professor, Department of Physics, McGill University
2004-2009 Assistant Professor, Department of Physics, McGill University
2001-2004 Hubble Fellow, University of California, Santa Cruz
2000-2001 Postdoctoral Researcher, Kavli Institute for Theoretical Physics,
University of California, Santa Barbara
1996-2000 Graduate Student Instructor and Researcher, University of California, Berkeley
1995 Research Experience for Undergraduates, University of Washington, Seattle

Awards

2012 Kevin Westfold Distinguished Visitor, Monash University (July 1st-August 15th 2012)
2009 John David Jackson Award for Excellence in Teaching
2006 Alfred P. Sloan Research Fellowship
2004 Canadian Institute for Advanced Research (CIFAR) Cosmology and Gravity Program Scholar
2001 Hubble Fellowship
1998 Victor F. Lenzen Memorial Scholarship, University of California, Berkeley
1997 Charles Fish Scholarship, University of California, Berkeley
1993 Junior, Senior, and Research Scholar, Trinity College, Cambridge

Research Grants

2008-2013 Co-I, FQRNT Regroupement Strategique with Universite Laval and Universite de Montreal
"Recherche Astrophysique du Quebec", \$370K per year (~1/3 to McGill Astrophysics group)
2012-2017 PI, NSERC Discovery Grant
"Physics of Neutron Stars and Giant Planets", \$25K per year
2007-2012 PI, NSERC Discovery Grant
"Neutron Star Astrophysics", \$42K per year
2005-2007 PI, FQRNT Nouveau Chercheur Grant
"The Magnetic Fields of X-ray Bursting Neutron Stars", \$15K per year
2005-2006 PI, NSERC Discovery Grant
"Spin, Magnetism, and Nuclear Burning in Neutron Stars", \$27K per year
2005 Alfred P. Sloan Research Fellowship, US\$45K

National and International Community activities

- Member of the Joint Committee on Space Astronomy (JCSA), 2013-2016
- CITA Council 2012-2016: Secretary (2013-2014), Chair (2014-)
- Member of CanTAC (Canadian Time Allocation Committee for Gemini, JCMT and CFHT telescopes), 2012-2015
- Member of the Canadian Science Team for SPIRou instrument
- Member of the “Observatory Science” Working Group, ESA LOFT mission
- Team leader, International Team in Space Science on “Thermonuclear Bursts: Probing Neutron Stars and their Accretion Environments”, program of the International Space Science Institute in Bern Switzerland, 2012-2014
- Member of an International Team in Space Science on “Neutron Star Crusts”, program of the International Space Science Institute in Bern Switzerland, 2013-2015
- Team leader, International Team in Space Science on “Mapping Neutron Stars with Type I X-ray Bursts”, program of the International Space Science Institute in Bern Switzerland, 2010-2012
- Member, Canadian Space Agency Discipline Working Group on High Energy Astrophysics, 2007-2009

Conference organization

- Scientific Organizing Committee, “40 Years of X-ray Bursts”, Madrid, June 2015
- Convener of session on nuclear astrophysics at CAP meeting in Montreal, May 2013
- Co-convener of sessions on nuclear astrophysics at the International Nuclear Physics Conference (INPC 2010), July 2010, Vancouver
- SOC, Lorenz Center workshop on Thermonuclear X-ray bursts, Leiden, July 2010
- Co-organizer, CIFAR Cosmology and Gravity Program AGM, Mont Tremblant March 2009
- Member of the Scientific Organizing Committee for the session “Multiwavelength Studies of Neutron Stars” at the COSPAR Scientific Assembly, Montreal, July 2008
- Co-chair of the Scientific and Local Organizing Committees for the “40 Years of Pulsars: Millisecond Pulsars, Magnetars, and More” conference held at McGill University, August 12-17, 2007
- Member of the Scientific and Local Organizing Committees for the conference “In Heaven and on Earth: the Nuclear Equation of State in Astrophysics” Montreal, July 2006
- Session chair at conferences including: “A Decade of Accreting Millisecond Pulsars”, Amsterdam, April 14-18, 2008; “Multiwavelength Studies of Neutron Stars” at the COSPAR Scientific Assembly, Montreal, July 2008; “In Heaven and on Earth: the Nuclear Equation of State in Astrophysics” Montreal, July 2006; “The Multicoloured Landscape of Compact Objects and their Explosive Origins”, Cefalu, Sicily, June 2006

Peer Reviewing

- January 2015, Austrian funding agency, reviewer
- Fall 2014 Polish granting agency, reviewer
- Fall 2014 Panel chair, NASA ATP program review
- Fall 2013 Panel chair, NASA ATP program review
- Summer 2013 CRC external reviewer
- Fall 2012 Panel review for NASA ATP program
- April 2012 External reviewer for Netherlands Organisation for Scientific Research, Free Competition
- April 2012 Member of reading committee for PhD thesis of Guobao Zhang, University of Groningen (advisor Mariano Mendez)
- 2011 Reviewer for NSERC Discovery Grants Program
- 2009 Panel review for NASA ATP program
- 2008 Panel reviewer at the Chandra X-ray Telescope proposal review
- 2007 Reviewer for SHARCNET Fellowships, Nov 2007
- 2006 External reviewer, PPARC rolling grants
- 2006 Requested as NSERC reviewer; declined due to conflict of interest

- 2006 Technical reviewer for Brooks/Cole-Thompson publishers, reviewed chapter of Mike Seeds Foundation of Astronomy
- 2003 External reviewer, NASA Origins program
- 2000-present Referee for Astrophysical Journal / Astrophysical Journal Letters; Astronomical Journal Astronomy & Astrophysics (including Letters section); Astrophysics and Space Science; Classical and Quantum Gravity; Monthly Notices of the Royal Astronomical Society; Nuclear Physics A; Physical Review, including Physical Review Letters; Computer Physics Communications

Talks

Invited and review talks at conferences and workshops

1. "X-Ray Bursts and Neutron Star Crusts", invited talk at the APS April meeting, Denver, CO, Apr 14, 2013
2. "Nuclear Physics of Accreting Neutron Star Crusts", invited talk at the Nuclear Astrophysics Town Hall meeting, Detroit, Oct 9-10, 2012
3. "Thermal relaxation of magnetars", invited talk at "Magnetic Fields in Neutron Stars" conference, University of Amsterdam, June 11-15, 2012
4. "Accreting Neutron Star Crusts", invited talk at Workshop on Neutrino and Nuclear Astrophysics, Los Alamos National Laboratory, June 1-3, 2011
5. "Probing The Interior Physics of Accreting Neutron Stars", invited talk at the 218th AAS meeting in Boston, Meeting-in-a-Meeting "Laboratory Connections: Nuclear and Particle Astrophysics", May 25, 2011
6. "Nuclear Physics of Accreting Neutron Stars", Canadian Workshop on Nuclear Astrophysics, TRIUMF, Vancouver, Dec 9-10, 2010
7. "Type I X-ray Bursts: Where Are We?", invited talk at Leiden Lorenz Center workshop, July 2010
8. "Understanding Neutron Stars from the Outside-In", invited keynote talk at CASCA (Canadian Astronomical Society) Annual Meeting, Halifax, May 2010
9. "X-ray Bursts and Superbursts", invited talk at "Defining the Neutron Star Crust", Santa Fe, May 18-21, 2009
10. "New Results on Nuclear Burning on Accreting Neutron Stars", invited talk at "Nuclei in the Cosmos X" conference, Mackinac Island, Michigan, July 2008
11. "Evidence for a New Heat Source at Low Densities in Neutron Star Crusts", invited talk in the session on "Probing Dense Matter and Strong Gravity with X-rays" at the COSPAR Scientific Assembly, Montreal, July 2008
12. "Magnetic Field Evolution in Accreting Neutron Stars", invited talk at the conference "A Decade of Accreting Millisecond X-ray Pulsars", Amsterdam, April 14-18, 2008
13. "Magnetic Field Evolution in Accreting Neutron Stars", invited talk (invitation declined) at "Cool discs, hot flows: Varying faces of accreting compact objects", Funaesdalen, Sweden, March 25-29, 2008
14. "The Role of the rp-Process in Accreting Neutron Stars", invited talk (declined) at JINA Frontiers 2007 workshop, August 19-21, 2007, University of Notre Dame
15. "Studying the rp-process with Type I X-ray bursts", Canadian Association of Physicists 2007 meeting, Saskatoon, June 2007
16. "Nuclear Burning on Accreting Neutron Stars: Where are we?", invited review talk at "Nuclear Astrophysics: Beyond the First Fifty Years", Caltech, July 2007
17. "The Role of the rp-Process in Accreting Neutron Stars", APS/DNP workshop, "Exotic nuclei: from the laboratory to the cosmos", Nashville, Oct 25, 2006
18. "Long Type I X-ray Bursts as Probes of Neutron Star Interiors", APS/DNP mini-symposium, "From crust to core: QCD in neutron stars", Nashville, Oct 27, 2006
19. "Constraining Neutron Star Interiors in Low Mass X-ray Binaries", Marcel Grossman meeting, Berlin, July 2006
20. "Different Manifestations of Neutron Stars", COSPAR Scientific Assembly, 16-23 July 2006

21. "Type I X-ray Bursts and Neutron Star Interior Physics", invited talk at "The Multicoloured Landscape of Compact Objects and their Explosive Origins", Cefalu, Sicily, June 19, 2006
22. "The Role of the rp-Process in Thermonuclear Burning on Accreting Neutron Stars", at the RIA Theory Workshop, Argonne National Laboratory, April 2006
23. "What can we learn from long-term monitoring of X-ray bursters?", MIRAX workshop, Brazil, December 2005
24. "Probing the rp-Process with Thermonuclear X-ray Bursts", Nuclei in the Cosmos VIII, Vancouver, July 2004
25. "Theory of Type I Burst Oscillations", X-ray Timing 2003: Rossi and Beyond, CfA, Boston, November 2003
26. "X-Ray Bursts: Observational Consequences of Nuclear Physics", Nuclear Astrophysics Workshop, APS/DNP meeting, Tucson, Arizona, October 2003
27. "Superbursts", at Princeton Workshop on Type I X-ray Bursts, May 2003
28. "The Theory of Thermonuclear Flashes on Neutron Stars", The Restless High-Energy Universe (BeppoSAX meeting), Amsterdam, May 2003
29. "Magnetic Field Evolution in Accreting White Dwarfs", review talk at IAU colloq 190, Magnetic Cataclysmic Variables, Cape Town, South Africa, December 2002
30. "Superbursts: A New Regime of Nuclear Burning on Accreting Neutron Stars", joint HEAD/APS meeting, Albuquerque, New Mexico, April 2002
31. "Carbon Ignition in the Heavy Element Ocean of Accreting Neutron Stars", mini-symposium on High Temperature Nucleosynthesis, APS/JPS joint meeting, Hawaii, October 2001
32. "Observations of Millisecond Spins of Accreting Neutron Stars", Gravitational Radiation from r-Modes Workshop, Institute for Theoretical Physics, Santa Barbara, August 2000
33. "Rotational Evolution during Type I X-ray Bursts", Rossi 2000 meeting, NASA Goddard Space Flight Center, March 2000

Invited seminars and colloquia

34. "Magnetic Field Evolution in Neutron Stars", colloquium at Catolica University, Santiago Chile, October 8, 2014
35. "Understanding Neutron Stars from the Outside-In", Physics colloquium, University of New Brunswick, Fredericton, Mar 15, 2013
36. "Understanding Neutron Stars from the Outside-In", Physics colloquium, Michigan State University, Feb 28, 2013
37. "Understanding Neutron Stars from the Outside-In", Astronomy colloquium, University of Alberta, Edmonton, Oct 12, 2012
38. "Some Issues in the Evolution of Gas Giant Planets", seminar at CITA, Toronto, Oct 4, 2012
39. "Thermal Relaxation of Neutron Stars", colloquium at Swinburne University, Melbourne, Australia, July 26, 2012
40. "Thermal Relaxation of Neutron Stars", colloquium at Monash University, Melbourne, Australia, July 24, 2012
41. "Constraining the Physics of Neutron Star Crusts", colloquium at University of California, Santa Cruz, February 22nd 2012
42. "Compositionally-driven Convection in Accreting Neutron Stars", seminar at KIAA, Beijing, July 2011
43. "Understanding Neutron Stars From the Outside In", colloquium at University of Victoria, 23 March 2011
44. "Compositionally-driven Convection in Accreting Neutron Stars", seminar at University of California, Santa Cruz, Department of Applied Math and Statistics, 20 Jan 2011
45. "Star-Planet Magnetic Interactions and the Alignment of Hot Jupiter Orbits", seminar at Peking University, Astronomy Department, Beijing, 18 Nov 2010
46. "Mapping the neutron star crust in low mass X-ray binaries", colloquium at Kavli Institute for Astronomy and Astrophysics, Beijing, 21 September 2010
47. "Probing the depths of the neutron star ocean", astrophysics seminar at Los Alamos National Laboratory, 5th May 2010

48. "Mapping the Crust of Accreting Neutron Stars", colloquium at Catolica University, Santiago Chile, March 2010
49. "Mapping the Crust of Accreting Neutron Stars", colloquium at Saint Mary's University, February 13th, 2009
50. "Mapping the Crust of Accreting Neutron Stars", colloquium at Los Alamos National Laboratory, November 19th, 2008
51. "Mapping the Crust of Accreting Neutron Stars", colloquium at McMaster University, October 8th, 2008
52. "Mapping the Crust of Accreting Neutron Stars", colloquium at Queens University, October 20th, 2008
53. "Mapping the Crust of Accreting Neutron Stars", colloquium at Indiana University, October 29th, 2008
54. "New Regimes of Nuclear Burning on Accreting Neutron Stars", colloquium at Ohio State University, April 24th, 2008
55. "New Regimes of Nuclear Burning on Accreting Neutron Stars", colloquium at University of Ohio, April 22nd, 2008
56. Astronomy colloquium at University of Virginia, May 17 2007 (invitation declined)
57. "Neutron Stars on Fire", colloquium at the Institute of Astronomy, University of Cambridge, UK, 26 April 2007
58. "The Keck Planet Search: Detectability and the Mass Period Distribution of Extrasolar Planets", Canadian Institute for Theoretical Astrophysics, 9 April 2007
59. "Probing Neutron Stars with Thermonuclear Flashes", Fermilab theoretical astrophysics seminar, February 2006
60. "Probing Neutron Stars with Thermonuclear Flashes", Astronomy Colloquium at the University of Florida, Gainesville, March 2006
61. "Probing Neutron Stars with Thermonuclear Flashes", Astrophysics Colloquium, University of Utrecht, April 2006
62. "Probing Neutron Stars with Thermonuclear Flashes", Physics colloquium, Cornell University, October 2005
63. "Neutron Stars on Fire", Argonne National Laboratory Physics Division Colloquium, and introduction to "Surface Compositions of Accreting Neutron Stars Workshop", September 2003
64. "Superbursts", seminar at Los Alamos National Laboratory, July 2003
65. "New Thermonuclear Windows on Neutron Stars", APS colloquium, University of Colorado, Boulder, December 2002
66. "Superbursts: A New Regime of Nuclear Burning on Accreting Neutron Stars", CSSA seminar at Stanford University, October 2002
67. "Magnetic Field Evolution in Accreting White Dwarfs", Theoretical Astrophysics Seminar, University of California, Berkeley, February 2002
68. "Magnetic Field Evolution in Accreting White Dwarfs", Seminar at Lawrence Berkeley National Laboratory, February 2002
69. "Nuclear Burning on Accreting Neutron Stars: New Insights into Spin and Magnetism", Astronomy colloquium, University of California, Santa Cruz, January 2002
70. "Spin and Magnetism of Accreting Neutron Stars", JILA, University of Colorado, Boulder, April 2001

Summer and Winter Schools

71. Lecturer, MESA (Modules for Experiments in Stellar Astrophysics) Summer School, August 2015
72. Seminar speaker, INT Summer school "The nuclear physics of neutron stars and supernovae", June 22-July 10 2015
73. Lecturer at the Mexican Astrophysics School "Look and Listen", January 2014
74. Faculty participant at the International Summer Institute for Modeling in Astrophysics (ISIMA), organized by Pascale Garaud, held in Beijing, July 2011
75. Lectures on "Neutron Stars, X-ray Bursts, and Superbursts" at the TRIUMF Summer Institute, a summer school held at TRIUMF laboratory, Vancouver, August 2008
76. Lectures on "Thin Shell Flashes" at the TRIUMF Summer Institute, a summer school held at TRIUMF laboratory, Vancouver, July 2004

Media coverage

- “Neutron star magnetic fields: not so turbulent?”, McGill University press release, 6 May 2014
- “NASA's RXTE Captures Thermonuclear Behavior of Unique Neutron Star”, NASA press release, Mar 2012
- “Stellar Ticking Time Bomb Explodes on Cue”, NASA press release, April 30, 2008
- The paper on “Intermediate long X-ray bursts from SLX 1737-282” was an Editors’ highlighted paper in volume 484-1 of *Astronomy & Astrophysics*, May 2008
- “New Superburst Theory”, *Physics News Update*, February 2003
- “Ashes to Ashes”, by Robert Irion, *Science News Focus*, September 2002
- “Can Helium-3 Help the Solar Neutrino Problem?”, *American Institute of Physics Physics News Update*, November 1996

Outreach talks

- “The Physics of Neutron Stars”, introductory talk for the Undergraduate Society of Physics Students, February 10 2005
- Presentation at the “Astrophysics and Cosmology Information Session”, held in the Department of Physics, Nov 9 2005
- “Astrophysics 101”, a seminar for Department of Physics support staff (first in a new series “Homer’s Physics”), January 2006
- “Probing Neutron Stars with Thermonuclear Flashes”, Canadian Association of Physicists (CAP) Undergraduate Lecture at Bishop’s University, March 2006
- “The Physics of Neutron Stars”, Undergraduate Workshop at the Canadian Astronomical Society (CASCA) Annual Meeting, 2006, Calgary, June 1, 2006
- Organized visit to the Department of Physics of a Study Tour for undergraduates from Nijmegen University, The Netherlands, October 15, 2007
- Lecture on “Zero-temperature stars” for undergraduate students at University of California, Santa Barbara, May 2008
- Faculty of Science’s “Soup and Science” series (short lunch presentations to undergraduate students), September 8, 2008
- Public lecture “In Search of New Worlds: The Discovery and Characterization of Exoplanets” as part of Mini-science 2009 at McGill University, May 13, 2009
- Public lecture “In Search of New Worlds: The Discovery and Characterization of Exoplanets” as part of Mini-science 2009 at McGill University, May 13, 2009
- Public lecture “In Search of New Worlds”, Montreal Planetarium, Oct 21, 2009
- CAP lecture series 2010, “In Search of New Worlds: The Discovery and Characterization of Exoplanets”, Queen’s University (Mar 10 2010), Dalhousie University (Mar 25 2010), and University of PEI (March 26th 2010) and “Neutron Stars from the Outside In” at RMC, Kingston, Mar 9 2010
- Telescope nights for students, Fall 2011 (organized with Ryan Lynch, postdoc at McGill).
- Homer’s physics seminar for administrative staff, Feb 8, 2013
- Public Astro Night on “In Search of New Worlds”, McGill University, May 23, 2013
- Plenary talk on exoplanets at the Canadian Science Writers Association annual conference held at McGill University, June 7 2013, panel member on Space Astronomy
- Public talk on “In Search of New Worlds”, McGill University Astronomy Club, Nov 29, 2013
- Academia week lecture on “The Final Frontier: Exploration of Deep Space”, Jan 29, 2014
- Presentation at McGill Faculty of Science “Soup and Science” event Sep 10, 2014
- McGill University Homecoming Classes Without Quizzes “In Search of New Worlds: Discovery and Characterization of Exoplanets”, October 18, 2014

Publications

Summary: 68 refereed papers, 3060 citations (source:ADS), h-index 31.
Students and postdocs supervised by me are in boldface in the list below.

Refereed Publications

1. "Time-dependent Compositionally-driven Convection in the Oceans of Accreting Neutron Stars", **Z. Medin** and A. Cumming 2015, ApJ, in press
2. "Disordered nuclear pasta, magnetic field decay, and crust cooling in neutron stars", C.J. Horowitz et al. 2015 PRL 114, 031102
3. "Hall drift and the braking indices of young pulsars", **Kostas Gourgouliatos** and Andrew Cumming, 2015, MNRAS 446, 1121
4. "The Thermal Stability of Helium Burning on Accreting Neutron Stars", **M. Zamfir**, A. Cumming, and **C. Niquette** 2014, MNRAS, 445, 3278
5. "Carbon Synthesis in Steady State Hydrogen and Helium Burning on Accreting Neutron Stars", Jeremy Stevens, E. F. Brown, A. Cumming, R. Cyburt, H. Schatz, 2014, ApJ, 791, 106
6. "Probing the Crust of the Neutron Star in EXO 0748-676, Nathalie Degenaar et al. including **Z. Medin**, 2014, ApJ, 791, 47
7. "Physical and Orbital Properties of beta Pic b", Mickael Bonnefoy et al. including **G.-D. Marleau**, 2014, A&A, 567, L9
8. "A Hall Attractor in Axisymmetric Magnetic Fields", **Kostas Gourgouliatos** and Andrew Cumming, 2014, PRL, 112, 171101
9. "The long-term post-outburst spin down and flux relaxation of the magnetar Swift J1822.3-1606", Paul Scholz, Vicky Kaspi, Andrew Cumming 2014, ApJ, 786, 62
10. "The cooling rate of neutron stars after thermonuclear shell flashes", in 't Zand, J. J. M., Cumming, A., Triemstra, T. L., Mateijsen, R.A.D.A., Bagnoli, T. 2014, A&A, 562, 16
11. "Characterization of the gaseous companion kappa-Andromadae b", Bonnefoy et al. including **G.-D. Marleau** 2014, A&A, 562, 111
12. "A Signature of Chemical Separation in the Cooling Curves of Transiently Accreting Neutron Stars", **Zach Medin** and Andrew Cumming 2014, ApJL, 783, L3
13. "Shedding Light on the Eccentricity Valley: Gap Heating and Eccentricity Excitation of Giant Planets in Protoplanetary Disks", **David Tsang**, Neal J. Turner, and Andrew Cumming, 2014, ApJ, 782, 113
14. "Hall Effect in Neutron Star Crusts: Evolution, Endpoint, and Dependence on Initial Conditions", **Kostas Gourgouliatos** and Andrew Cumming, 2014, MNRAS, 438,1618
15. "Constraining the Initial Entropy of Directly-Detected Exoplanets", **Marleau, G.-D.**, and Cumming, A. 2014, MNRAS, 437, 1378
16. "A Change in the Quiescent X-ray Spectrum of the Neutron Star Low Mass X-ray Binary MXB 1659-29", Cackett, E. M., Brown, E. F., Cumming, A., Degenaar, N., Fridriksson, J. K., Homan, J., Miller, J. M., and Wijnands, R. 2013, ApJ, 774, 131
17. "Hall Equilibria with Toroidal and Poloidal Fields: Application to Neutron Stars", **K. N. Gourgouliatos**, A. Cumming, A. Reisenegger, C. Armaza, M. Lyutikov, J. A. Valdivia, 2013, MNRAS, 434, 2480
18. "Spectral and Timing Properties of the Magnetar CXOU J164710.2-455216", An, H., Kaspi, V. M., Archibald, R., and Cumming, A. 2013, ApJ, 763, 82
19. "Direct Molecular Dynamics Simulation of Liquid-Solid Phase Equilibria for Three-Component Plasma", Hughto, J., Horowitz, C. J., Schneider, A. S., Medin, Z., Cumming, A., and Berry, D. K. 2012, PRE, 86, 066413
20. "Post-outburst X-ray Flux and Timing Evolution of Swift J1822.3-1606", Scholz, P., Ng, C.-Y., Livingstone, M. A., Kaspi, V. M., Cumming, A., and Archibald, R. 2012, ApJ, 761, 66
21. "Chandra observations of SGR~1627-41 near quiescence", An, H., Kaspi, V., Tomsick, J., Cumming, A., Bodaghee, A., Gotthelf, E., and Rahoui, F. 2012, ApJ, 757, 68
22. "Ohmic Dissipation in the Interiors of Hot Jupiters", **Huang, X.**, and Cumming, A. 2012, ApJ, 757, 47

23. "A superburst candidate in EXO 1745-248 as a challenge to thermonuclear ignition models", Altamirano, D. et al. 2012, MNRAS, 426, 927
24. "Constraints on neutron star mass and radius in GS 1826-24 from sub-Eddington X-ray bursts", **Zamfir, M.**, Cumming, A., and Galloway, D. K. 2012, ApJ, 749, 69
25. "Millihertz quasi-periodic oscillations and thermonuclear bursts from Terzan 5: A showcase of burning regimes", M. Linares, D. Altamirano, D. Chakrabarty, A. Cumming, L. Keek, 2012, ApJ, 748, 82
26. "Compositionally-driven Convection in the Oceans of Accreting Neutron Stars", **Z. Medin** and A. Cumming, 2011, ApJ, 730, 97
27. "Continued Cooling of the Crust in the Neutron Star Low Mass X-ray Binary KS 1731-260", Cackett, E., Brown, E., Cumming, A., Degenaar, N., Miller, J., and Wijnands, R. 2010, ApJ, 722, L137
28. "Crystallization of a Classical Multicomponent Plasma", **Medin, Z.**, and Cumming, A. 2010, Phys Rev E, 81, 036107
29. "What Ignites on the Neutron Star of 4U 0614+091?", Kuulkers, E., et al. 2010, A&A, 514, A65
30. "Radiative Hydrodynamic Simulations of HD209458b: Temporal Variability", **Dobbs-Dixon, I.**, Cumming, A., and Lin, D.N.C 2010, ApJ, 710, 1395
31. "An Integrated Analysis of Radial Velocities in Planet Searches", Cumming, A., and **Dragomir, D.** 2009, MNRAS, 401, 1029
32. "Mapping Crustal Heating with the Cooling Lightcurves of Quasi-Persistent Transients", Brown, E., and Cumming, A. 2009, ApJ, 698, 1020
33. "An Accurate Determination of the Optical Periodic Modulation in the X-ray Binary SAX J1808.4-3658", Wang, Z., Bassa, C., Cumming, A., and Kaspi, V. 2009, ApJ, 694, 1115
34. "Long Tails on Thermonuclear X-Ray Bursts from Neutron Stars: a Signature of Inward Heating?", in 't Zand, J., Keek, L., Cumming, A., Heger, A., Homan, J., and Mendez, M. 2009, A&A, 497, 469
35. "The New Intermediate Long Bursting Source XTE J1701-406", Falanga, M., Cumming, A., Bozzo, E., and Chenevez, J. 2009, A&A, 496, 333
36. "Intermediate Long X-ray Bursts from the Ultra-compact Binary SLX 1737-282", Falanga, M., Chenevez, J., Cumming, A., Kuulkers, E., Trap, G., Goldwurm, A. 2008, A&A 484, 43
37. "The Keck Planet Search: Detectability and the Minimum Mass and Orbital Period Distribution of Extrasolar Planets", Cumming, A., Butler, R.P., Marcy, G. W., Vogt, S.S., Wright, J. T., & Fischer, D. A. 2008, PASP 120, 531
38. "First Superburst from a Classical Low Mass X-ray Binary Transient", Keek, L., in't Zand, J. J. M., Kuulkers, E., Cumming, A., Brown, E.F., & Suzuki, M. 2008, A&A, 479, 177
39. "Millihertz Oscillation Frequency Drift Predicts the Occurrence of Type I X-ray Bursts", Altamirano, D., van der Klis, M., Wijnands, R., & Cumming, A. 2008, ApJ, 673, L35
40. "Models of Type I X-ray Bursts from GS 1826-24: a Probe of rp-Process Hydrogen Burning", Heger, A., Cumming, A., Galloway, D. K., & Woosley, S. E. 2007, ApJ, 671, L141
41. "Millihertz Quasi-periodic Oscillations from Marginally Stable Nuclear Burning on an Accreting Neutron Star", Heger, A., Cumming, A., & Woosley, S.E. 2007, ApJ, 665, 1311
42. "Discovery of X-ray Burst Triplets in EXO 0748-676", Boirin, L., Keek, L., Mendez, M., Cumming, A., in 't Zand, J., Cottam, J., Paerels, F., & Lewin, W. 2007, A&A, 465, 559
43. "Helium-rich Thermonuclear X-ray Bursts and the Distance to the Accretion-Powered Millisecond Pulsar SAX J1808.4-3658", Galloway, D., & Cumming, A. 2006, ApJ, 652, 559
44. "The Superburst Recurrence Time in Luminous Persistent Low Mass X-ray Binaries", Keek, L., in 't Zand, J. J. M., & Cumming, A. 2006, A&A, 455, 1031
45. "Long Type I X-ray Bursts and Neutron Star Interior Physics", Cumming, A., **Macbeth, J.**, in't Zand, J. J. M., & Page, D. 2006, ApJ, 646, 429
46. "Superbursts from Strange Stars", Page, D., & Cumming, A. 2005, ApJ, 635, L157
47. "On the Possibility of a Helium White Dwarf Donor in the Presumed Ultracompact Binary 2S 0918-549", in't Zand, J. J. M., Cumming, A., Verbunt, F., van der Sluys, M., & Pols, O. 2005, A&A, 441, 675
48. "Latitudinal Shear Instabilities During Type I X-ray Bursts", Cumming, A. 2005, ApJ, 630, 441
49. "Radial Velocity Detectability of Low Mass Extrasolar Planets in Close Orbits", **Narayan, R.**, Cumming, A., & Lin, D. N. C. 2005, ApJ, 620, 1002

50. "Detectability of Extrasolar Planets in Radial Velocity Surveys", Cumming, A. 2004, MNRAS, 354, 1165
51. "Superbursts at Near-Eddington Mass Accretion Rates", in't Zand, J. J. M., Cornelisse, R., & Cumming, A. 2004, A&A, 426, 257
52. "Magnetic Field Evolution due to the Hall Effect and Ohmic Decay in Neutron Stars", Cumming, A., Arras, P., & Zweibel, E. G. 2004, ApJ, 609, 999
53. "Magnetars: Time Evolution, Superfluid Properties, and Mechanism of Magnetic Field Decay", Arras, P., Cumming, A., & Thompson, C. 2004, ApJ, 608, L49
54. "The Thermal Evolution following a Superburst on an Accreting Neutron Star", Cumming, A., & **Macbeth, J.** 2004, ApJ, 603, L37
55. "Models for Type I X-ray Bursts with Improved Nuclear Physics", Woosley, S. E., Heger, A., Cumming, A., Hoffman, R. D., Pruet, J., Rauscher, T., Schatz, H., Brown, B. A., & Wiescher, M. 2003, ApJS, 151, 75
56. "Periodic Thermonuclear X-ray Bursts from GS 1826-24 and the Fuel Composition as a Function of Accretion Rate", Galloway, D. K., Cumming, A., Kuulkers, E., Bildsten, L., Chakrabarty, D., & Rothschild, R. E. 2003, ApJ, 601, 466
57. "Models of Type I X-ray Bursts from 4U 1820-30", Cumming, A. 2003, ApJ, 595, 1077
58. "Photodisintegration-triggered Nuclear Energy Release in Superbursts", Schatz, H., Bildsten, L., & Cumming, A. 2003, ApJ, 583, L87
59. "Magnetic Field Evolution in Accreting White Dwarfs", Cumming, A. 2002, MNRAS, 333, 589
60. "Hydrostatic Expansion and Spin Changes During Type I X-ray Bursts", Cumming, A., Morsink, S. M., Bildsten, L., Friedman, J. L., & Holz, D. E. 2002, ApJ, 564, 343
61. "Carbon Flashes in the Heavy Element Ocean on Accreting Neutron Stars", Cumming, A., & Bildsten, L. 2001, ApJ, 559, L127
62. "Magnetic Screening in Accreting Neutron Stars", Cumming, A., Zweibel, E. G., & Bildsten, L. 2001, ApJ, 557, 958
63. "The Endpoint of the rp-Process on Accreting Neutron Stars", Schatz, H., Aprahamian, A., Barnard, V., Bildsten, L., Cumming, A., Ouellette, M., Rauscher, T., Thielemann, F.-K., & Wiescher, M. 2001, PRL, 86, 3471
64. "Rotational Evolution during Type I X-ray Bursts", Cumming, A., & Bildsten, L. 2000, ApJ, 544, 453
65. "The Lick Planet Search: Detectability and Mass Thresholds", Cumming, A., Marcy, G. W., & Butler, R. P. 1999, ApJ, 526, 890
66. "The rp-Process Ashes from Stable Nuclear Burning on an Accreting Neutron Star", Schatz, H., Bildsten, L., Cumming, A., & Wischer, M. 1999, ApJ, 524, 1014
67. "Hydrogen Electron Capture in Accreting Neutron Stars and the Resulting g-Mode Oscillation Spectrum", Bildsten, L., & Cumming, A. 1998, ApJ, 506, 842
68. "3-He Transport in the Sun and the Solar Neutrino Problem", Cumming, A., & Haxton, W. C. 1996, PRL, 77, 4286

Conference Proceedings

69. "The Large Observatory for X-ray Timing", M. Feroci et al. 2014, Proc. of SPIE 9144, 91442T
70. "Hall equilibria: Solutions with toroidal and poloidal magnetic fields in neutron star crusts", **K.N. Gourgouliatos**, A. Cumming, M. Lyutikov, A. Reisenegger 2013, proceedings of "Magnetic Fields in the Universe IV"
71. "LOFT: The Large Observatory for X-ray Timing", Feroci et al. 2012, Proceedings of SPIE 8443, Paper No. 8443-85
72. "Magnetic Field Evolution in Accreting Millisecond Pulsars", in the proceedings of "A Decade of Accreting Millisecond Pulsars", American Institute of Physics 2008
73. "The Importance of the rp-Process in Thermonuclear Burning on Accreting Neutron Stars", Cumming, A. 2006, in the proceedings of the 3rd ANL/MSU/INT/JINA RIA Theory Workshop
74. "What Can We Learn From Long-Term Monitoring of X-ray Bursters?", Cumming, A. 2006, in the proceedings of "The Transient Milky Way: a Perspective for MIRAX", eds. F. D'Amico, J. Braga, R. Rothschild (astro-ph/0603352)

75. "Superbursts: A New Probe of the rp-Process", Cumming, A. 2005, in the proceedings of Nuclei in the Cosmos VIII, Nucl Phys A, 758, 439
76. "Magnetic Field Evolution during Neutron Star Recycling", Cumming, A. 2004, in the proceedings of the Aspen Center for Physics conference on "Binary Radio Pulsars", eds. F. Rasio & I. Stairs (astro-ph/0404518)
77. "Thermonuclear Burst Physics with RXTE", Galloway, D. K., Chakrabarty, D., Cumming, A., Kuulkers, E., Bildsten, L., & Rothschild, R. E. 2004, in the proceedings of "X-Ray Timing 2003: Rossi and Beyond" (astro-ph/0404449)
78. "Thermonuclear X-ray Bursts: Theory vs. Observations", Cumming, A. 2003, in "The Restless High Energy Universe" eds. E. P. J. van den Heuvel, J. J. M. in't Zand, & R. A. M. J. Wijers, Nucl Phys B Proc Supp, 132, 435 (astro-ph/0309626)
79. "Nuclear Physics in Normal X-ray Bursts and Superbursts", Schatz, H., Bildsten, L., Cumming, A., & Ouellette, M. 2003, Nucl Phys A, 718, 247
80. "Magnetic Field Evolution in Accreting White Dwarfs", Cumming, A. 2003 in "Magnetic Cataclysmic Variables" IAU Col 190, Cape Town, eds. M. Cropper & S. Vrielmann
81. "Magnetic Field Evolution in Neutron Stars", Cumming, A. 2002, in "Radio Pulsars", ASP Conf Ser 302, eds M. Bailes, D. Nice, & S. E. Thorsett, p277
82. "Angular Momentum Transport during Type I X-ray Bursts", Cumming, A. 2002, in "3D Stellar Evolution", ASP Conf Ser 293, eds. S. Turcotte, S. C. Keller, & R. M. Cavallo, p298
83. "Investigations of Pointwise Ignition of Helium Deflagrations on Neutron Stars", Zingale, M. et al. 2002, in "3D Stellar Evolution", ASP Conf Ser 293, eds. S. Turcotte, S. C. Keller, & R. M. Cavallo, p329 (astro-ph/0211336)
84. "The Statistics of Extrasolar Planets: Results from the Keck Survey", Cumming, A., Marcy, G. W., Butler, R. P., & Vogt, S. S. 2002, in "Scientific Frontiers in Research on Extrasolar Planets" ASP Conf Ser 294, eds. D. Dreming & S. Seager, p27 (astro-ph/0209199)
85. "Magnetic Field Evolution in Accreting White Dwarfs", Cumming, A. 2002, in the proceedings of the 13th European Workshop on White Dwarfs, Kluwer Academic Publishers, eds. D. Martino, R. Silvotti, J.-E. Solheim, & R. Kalytis, p183 (astro-ph/0209198)
86. "Proton Captures in the Atmosphere of Accreting Neutron Stars", Schatz, H., Bildsten, L., Cumming, A., & Wiescher, M. 2000, in "Origin of Elements in the Solar System: Implications of Post-1957 Observations", Proc of the International Symposium, ed. O. Manuel (Boston/Dordrecht: Kluwer Academic/Plenum Publishers), p153
87. "Oceanography of Accreting Neutron Stars: Non-Radial Oscillations and Periodic X-ray Variability", Bildsten L., Cumming, A., Ushomirsky, G., & Cutler, C. 1998, in "A Half Century of Stellar Pulsation Interpretations", ed. P. A. Bradley, & J. A. Guzik (San Francisco: PASP), p437 (astro-ph/9712358)

Conference Proceedings Editor

88. "40 Years of Pulsars", AIP Conference Proceedings, Astronomy and Astrophysics Vol. 983, Eds. C. Bassa, Z. Wang, A. Cumming, & V. Kaspi, 2008 (Springer)

Book chapter

89. Chapter entitled "Statistical Distribution of Exoplanets", in the book "Exoplanets", University of Arizona Press Space Science Series, 2010, ed. Sara Seager. An introduction to statistical techniques used in exoplanet searches and an overview of the statistics of the known exoplanets.
90. Chapter entitled "X-ray Bursts", in "Timing Neutron Stars: Pulsations, Oscillations and Explosions", Springer, eds. Tomaso Belloni, Mariano Mendez, and Chengmin Zhang. This chapter is in preparation for submission late 2013. An overview of theory and observations of Type I X-ray bursts from accreting neutron stars, focussing on the constraints on the physics of dense matter.

Book review

91. "Astrophysical Flows by James E. Pringle and Andrew King" 2009, Geophysical and Astrophysical Fluid Dynamics, 103, 421

White papers

92. Coauthor, white paper for the Mid Term Review, "Wide-Field Infrared Survey Telescope (WFIRST)" Hudson et al. 2015
93. Coauthor, white paper "The LOFT perspective on neutron star thermonuclear bursts" in't Zand et al. 2014 arXiv:1501.02776
94. Coauthor of white paper "The astrophysics of ultra-compact binaries" for the U.S. Astronomy Decadal Review (lead author G. Nelemans, arxiv:0902.2923)
95. Coauthor of invited white paper "Accretion powered compact objects" for the Canadian Long Range Plan 2010

Teaching**Courses**

Courses taught at McGill University

- 2014/15 PHYS 446 Majors Quantum Physics (Fall term)
 PHYS 432 Physics of Fluids (Winter term)
 PHYS 645 High Energy Astrophysics (Winter term)
- 2013/14 PHYS 182 Our Evolving Universe (Fall term)
 PHYS 352 Electromagnetic Waves (Fall term)
- 2012/13 PHYS 182 Our Evolving Universe (Fall term)
 PHYS 352 Electromagnetic Waves (Fall term)
- 2011/12 PHYS 182 Our Evolving Universe (Fall term)
 PHYS 352 Electromagnetic Waves (Fall term)
 PHYS 643 Astrophysical Fluids (Winter term)
- 2010/11 Sabbatical year
- 2009/10 PHYS 332 Physics of Fluids (Winter term)
 PHYS 362 Statistical Mechanics (Winter term)
 PHYS 643 Astrophysical Fluids (Fall term)
- 2008/09 PHYS 362 Statistical Mechanics (Winter term)
 PHYS 332 Physics of Fluids (Winter term)
 PHYS 642 Radiative Processes in Astrophysics (Winter term)
- 2007/08 PHYS 362 Statistical Mechanics (Winter term)
 PHYS 645 High Energy Astrophysics (Winter term, with Profs. V. Kaspi and R. Rutledge)
 PHYS 643 Astrophysical Fluids (Fall term)
- 2006/07 PHYS 642 Radiative Processes in Astrophysics (Fall term)
 PHYS 350 Electromagnetism (Fall term)
 Astrophysics reading group for graduate students (Winter term, with Prof. Gil Holder)
- 2005/06 PHYS 614 Black Hole Astrophysics (Fall term, with Profs. Gil Holder, V. Kaspi, and R. Rutledge)
- PHYS 340 Electricity and Magnetism (Fall term)
- 2004/05 PHYS 340 Electricity and Magnetism (Fall term)

Previous teaching experience

- 2003/04 lectures in Stellar Structure and Evolution at the University of California, Santa Barbara
 2000/01 lectures in High Energy Astrophysics, Stellar Structure and Evolution at UC Santa Cruz
 1996/97 graduate student instructor for Physics 7A, Astronomy 7B, and Physics 7C at the University of California, Berkeley. Responsibilities: discussion sections, review sessions, and some lectures.
 1995/96 Undergraduate tutorials in quantum physics and electromagnetism at the University of Cambridge, UK.

Student and Postdoc supervision

Postdoctoral researchers

- 2012- David Tsang, Postdoctoral Fellow partially supported by the Lorne Trottier Chair in Astrophysics. Previously: PhD Cornell University, postdoc at Caltech.
 2012-2015 Kostas Gourgoulatos, CRAQ Fellow. Currently postdoctoral fellow at Leeds University, UK.
 2008-2011 Zach Medin, Postdoctoral Fellow partially supported by the Lorne Trottier Chair in Astrophysics, PhD Cornell University. Currently staff scientist at Los Alamos National Laboratory (LANL)
 2007-2009 Ian Dobbs-Dixon, CITA National Postdoctoral Fellow, PhD University of California, Santa Cruz. After McGill, Ian held a NASA Sagan Fellowship at University of Washington, and is now a Faculty member at NYU Abu Dhabi.

Graduate students

- 2008-2014 Michael Zamfir (MSc Fall 2010, PhD 2014)
 2010-2012 Gabriel-Dominique Marleau (MSc, graduated Fall 2012, now PhD student in Heidelberg)
 2006-2008 Diana Dragomir (MSc, graduated Fall 2008, currently postdoctoral fellow at Las Cumbres Observatory Global Telescope and the University of California Santa Barbara)
 2006-2008 Hugo Olivares (MSc, graduated Fall 2008)
 2005-2007 Joanne Kettner (MSc, graduated Fall 2007, NSERC Fellowship holder)
 2005-2007 Caroline Niquette (MSc, graduated Fall 2007, NSERC Fellowship holder)

Undergraduate students (* means continuing work from previous year)

- 2015 Mati Bocarsly PHYS 449 Research project Winter term 2015
 2015 Sara Issaoun PHYS 449 Research project Winter term 2015
 2015 Romain Ruhlmann PHYS 449 Research project Winter term 2015
 2014 Lisa Dang PHYS 459 Honors research project
 2014 Julien Refour Tannenbaum PHYS 459 Honors research project
 2014 Patrick Guay PHYS 449 Research project (Fall term)
 2014 Nate Tellis PHYS 489 (Winter term)
 2014 Alex May PHYS 396 (Winter term)
 2013 Aleksandar Rachkov, PHYS 396 (summer)
 2013 Gabriel Martine La Boissoniere, PHYS 459 (Winter term)
 2012 Bowen Gang, PHYS 396 (Winter term)
 2012 Stephanie Hay, PHYS 449 (Winter term)
 2012 Daniel Hogg, summer student
 2011-2012 Li Pan, summer student (Montreal CEGEP student)
 2010 *Kristen Boydsten, summer student
 2010 Alexandra Thomson, summer student
 2009/2010 *Gabriel Provencher Langlois, PHYS 459
 2009/2010 Gabriel-Dominique Marleau PHYS 459

2009/2010 Kristen Boydsten, PHYS 459
 2009/2010 Khadija El Berhoumi, PHYS 459
 2009 Gabriel Provencher Langlois, summer student
 2009 Keven Roy, summer student
 2007-2008 Michael Dascal, PHYS 459 Honors Research Project
 2007 *Michael Zamfir, summer student
 2007 Ting-kuei (Eric) Chou, summer student
 2006 William Witzcak-Krempa, NSERC USRA summer student
 2006 Michael Zamfir, summer student
 2006 Brandon Helfield, summer student
 2005-2006 Lynn Suter, undergraduate researcher
 2005 Tyler Dodds, NSERC USRA student from UBC
 2005 Mohammed Siam, NSERC USRA student
 2005 Alexei Halpin, PHYS 449 research project and summer student
 2005 Oliver Ali, PHYS 449 research project
 2003-2004 Jared Macbeth, senior thesis (University of California, Santa Cruz)
 2003-2004 Raman Narayan, senior thesis (University of California, Santa Cruz)

Department and University activities

2004/05 Undergraduate curriculum committee
 Faculty search committee for astrophysics
 2 PhD defense committees
 2005/06 Outreach committee
 Scholarships committee
 Astrophysics graduate curriculum development
 2 PhD defense committees
 2006/07 Colloquium committee (chair), including
 organization of a public lecture, "The Physics of Superheroes" by Jim Kakalios, Nov 9
 2006 and the annual McPherson lectures, given on Mar 1-2 2007 by Wolfgang Ketterle
 Graduate curriculum committee
 Outreach committee (ex officio)
 Judge at the Physics Department undergraduate poster competition
 Coordinated postdoc applications for astrophysics
 PhD defense committee
 2007/2008 Graduate curriculum committee
 coordinated updating the graduate studies part of the Department of Physics website
 coordinated astrophysics graduate applications
 U3 undergraduate advisor
 included attending university advising workshops on Aug 27, 2007 and Dec 10, 2007
 and meeting prospective students and parents at the open house on Jan 27, 2008
 Colloquium committee
 Coordinated postdoc applications for astrophysics
 2 PhD defense committees, external MSc examiner
 Judge at the Physics Department undergraduate poster competition, Sep 2007
 Organized visit of a group of undergraduates from the Netherlands, Oct 2007
 Presentation giving introduction to astrophysics at McGill for new graduate
 students, Sep 20 2007
 Pro-dean for thesis defense
 2008/2009 Undergraduate curriculum committee
 Advisory committee to the department chair
 CRAQ Postdoc selection committee (chair)

- Judge at the Physics Department undergraduate poster competition, Sep 2008
 Soup and Science presentation, Sep 2008
 Pro-dean for thesis defense, Oct 2008
 Research presentation at Faculty of Science meeting, Dec 2008
 MSc thesis external examiner
- 2009/2010 Undergraduate curriculum committee
 Observatory committee
 PhD Prelim exam committee
 Chair, Postdocs in Astrophysics Recruitment Committee
 Committee for the Recruitment of Astrophysics Graduate Students
 Coordinated meetings with job candidates Jan-Mar 2010
 John David Jackson Teaching Award Committee, August 2010
- 2010/2011 On sabbatical leave
- 2011/2012 PhD Preliminary exam committee chair
 Mentoring and Employment Equity Committee
 Observatory committee
 Internal examiner, Michael McCutcheon PhD thesis
 PhD committee member (Andrew McCann)
 University review committee for NSERC PGSM and PGSD fellowships
 Coordinator of astrophysics graduate courses
 Coordinator of astrophysics postdoc applications
- 2012/2013 Chair, Web and brochure committee
 Department Tenure committee (elected member until May 2014)
 PhD Preliminary exam committee
 Undergraduate curriculum committee
 Coordinator of astrophysics postdoc applications
- 2013/2014 Chair, web committee
 Undergraduate curriculum committee
 Department Tenure committee (elected member until May 2014)
 Chair, McGill NSERC PGS-D review committee
 McGill internal Banting Fellowship review committee
 Member of committee to rank Plaskett medal nominees, Jan 2014
- 2014/2015 Outreach committee
 Undergraduate curriculum committee
 NSERC PGS review committee
 McGill Internal Banting Fellowship review committee
 Department Search committee (Exoplanet)
 Department Search committee (TRIUMF)
 Steering committee, McGill Space Institute

Organization of advanced seminars and visiting researchers to McGill

- Organized Physical Society Colloquia (as chair or member of Department Colloquium committee), 2006/2007, 2014/2015
- Co-organizer, Astrophysics Colloquia at McGill (weekly Tuesday colloquium during each term, speaker selection and hosting)
- Organized visits of researchers in addition to the colloquium speakers: Anna Watts (NASA/GSFC) July 2005; Natasha Ivanova (CITA, Toronto) May 7, 2006; Duncan Galloway (University of Melbourne) Aug 14-15, 2006; Laurens Keek (SRON/Utrecht), Aug 8-29, 2006; Andrew Youdin (CITA) Nov 9, 2006; Martin Pessah (Arizona) Nov 13, 2006; Yoram Lithwick (CITA) Dec 7, 2006; Zach Medin (Cornell) April 10-12, 2008; Phil Gregory (UBC) Sep 10, 2008; Enrique Moreno-Mendez (Princeton), Dec 1st 2008; Manuel Olivares (Amsterdam), Jan 26th 2009; Jillian Henderson (UNAM, Mexico), Jan 7th 2010; Rebecca Martin (STScI), Nov 2011; Snezana Prodan (U of Toronto), Nov 2011; Chelsea Huang (Princeton), Dec 2011; Evan O'Connor (Caltech), Jan 2012; Ian Dobbs-Dixon (UW), June 2012; Daniele Vigano (Alicante), Feb 2013