Division of

Basic Medical Sciences

Faculty of Medicine

Memorial University of Newfoundland

Research

Education

Training

Annual Report

2003-2004

Compiled and edited by
Karen Mearow, Madonna Hawco and Janice Petten

Acknowledgements: Thanks to Sharon Gray, HSIMS, for permission to use her submissions from the Gazette and MUNMED in this Annual Report.

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Memorial University of Newfoundland

Faculty of Medicine

Division of Basic Medical Sciences

Annual Report

Academic Year 2003-2004

December 2004

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Introduction

Mission of the Faculty of Medicine

- to enhance the health of the people of Newfoundland and Labrador by educating physicians and health scientists; by conducting research in clinical and basic medical sciences and applied health sciences and by promoting the skills and attitudes of lifelong learning

Goals and objectives of the Division of Basic Medical Sciences

- To conduct and promote research and associated scholarly activities in the area of biomedical sciences.
- To promote and deliver a high-quality, science-based medical education to undergraduate and post-graduate medical students, and to foster programs of excellence for the training of graduate students in Basic Medical Sciences.
- To serve as a primary resource for biomedical sciences for the Faculty of Medicine, other Faculties and Schools, national and international scientific and educational organizations and for the Community at large.

The Division of Basic Medical Sciences is the home to many of the basic biomedical researchers and educators within the Faculty of Medicine. Our faculty members have a diversity of interests as illustrated by the contents of this report. While the major focus of many of our members is research, and providing excellent research and training opportunities for our graduate students and promising undergraduate science students, we also have a commitment to education. As part of this commitment, our faculty instruct in the undergraduate medical curriculum with the aim of providing a solid foundation in the basic sciences for medical students. In addition to the MD program, we also provide instruction at the undergraduate level in the School of Pharmacy and Faculty of Science courses. At the graduate level, many of our faculty are members of research programs which provide the basis for the graduate programs administered by the School of Graduate Studies and the Office of Research and Graduate Studies within the Faculty of Medicine. Each graduate program has courses coordinated and taught by divisional members.

The last few years have been ones of change for the Division. We have welcomed 7 new faculty members since September 2001. This period has been one of growth and renewal – our new faculty members have provided the Division with obvious energy and enthusiasm, and have quickly become integrated into the Division and the Faculty as a whole. In the coming year, we hope to build upon this recruitment and energy with appointments in the area of Immunology, Neurosciences and a Tier 2 Canada Research Chair in Cell Signaling in Health and Disease

Our web site was finally launched this year and you can find us at
http://www.med.mun.ca/basic

K.M. Mearow,
Associate Dean

Research Programs

Research Groups

There are 31 full time and 5 jointly-appointed faculty members in the Division of Basic Medical Sciences. The majority of faculty in the Division are members of Research Groups. These include the Cancer, Cardiovascular Sciences, Immunology and Neuroscience research groups, which form the basis of the graduate programs in these areas.

Cancer

Key areas of research: angiogenesis, apoptosis, cancer genetics, growth factors, viral oncogenesis

There are currently 8 Basic Sciences faculty in the Cancer Research Group. The Cancer Research Group's interests span the breadth of cancer research. These researchers pursue fundamental cell and molecular biological questions, studying viral oncogenesis, growth factors and oncogenes in developmental models, programmed cell death, drug resistance and cancer genetics. Other researchers, including colleagues from the Division of Community Health and clinicians from the Newfoundland Cancer Treatment and Research Foundation (NCTRF) and the clinical disciplines, bring a great deal of clinical experience and interest in clinical trials, pediatric oncology, epidemiology and cancer imaging/screening and diagnosis to the group. Funding for this research comes from external operating and personnel awards from CIHR, NCI and NSERC.

Cardiovascular Sciences

Key areas of research: Investigation of cardiovascular regulation and pathology in preparations ranging from the conscious animal to isolated tissues.

This is one of the smaller research groups with 5 members, but has a well-funded and active research program. The cardiovascular/renal group is actively involved in a range of research including hypertension, stroke, salt-sensitivity of blood pressure, cerebral blood flow regulation, vascular remodeling, venous circulation, blood pressure variability, role of aldehydes and oxidative stress in hypertension and hypertensive damage, heart failure; physiology and pharmacology of blood vessels. Funding for this research comes from CIHR, NSERC, Heart and Stroke Foundation, as well as partnerships with pharmaceutical companies.

Immunology

Key areas of research: Hepatitis B and C, HIV, HLA genes and T cell receptors, virus induced cell injury, autoimmunity, tumor immunity

The Immunology research group has seven members from the Division of Basic Medical Sciences involved in studies of the immune system and infectious disease. Research interests include immune regulation in HIV infection, virus induced cell injury and persistence, dietary nutrients in regulation of immune responses and susceptibility to infection, understanding the mechanisms of susceptibility to rheumatoid arthritis, how HLA alleles influence the immune response in breast cancer patients, development of hepatitis vaccines and antivirals. Funding for this research comes from CIHR, Canadian Breast Cancer Alliance and several pharmaceutical partners. One of the

faculty members, Dr. Thomas Michalak is the recent recipient of a CRC Senior Chair in Viral Hepatitis.

Neuroscience
***Key areas of research*:** learning and memory, neural plasticity, neuropharmacology, neuroprotection, stroke, neurotrophins, signal transduction

The Neuroscience group consists of seven faculty members from the Division of Basic Medical Sciences. Research interests include both central and peripheral nervous system with strengths in cerebrovascular disease, neuropharmacology, memory, neural regeneration, autonomic control mechanisms and cellular signal transduction mechanisms. Research models range from in vitro cellular studies to whole animal behavioural studies. Funding for this research comes from CIHR, NSERC, Newfoundland and Labrador Neurotrauma Initiative, Heart and Stroke Foundation. One of the faculty members, Dr. Dale Corbett, is the recent recipient of a CRC Senior Chair in Stroke and Neural Plasticity.

In addition to Basic Science faculty members, these research groups also include colleagues from various clinical disciplines (Oncology, Genetics, Medicine) and other University departments (Biochemistry, Psychology). This provides for a collaborative approach to research and education. The graduate programs in each of these areas are very active with students at both the M.Sc. and Ph.D. levels.

Faculty and Staff

Core Faculty

***Carayanniotis, George** (Toronto), professor of medicine (endocrinology)
Chandra, Shakti (New Delhi), associate professor of anatomy
***Chen, Xihua** (Cambridge), associate professor of neuroscience (biological psychiatry)
Church, Jon (Toronto), professor of oncology
Corbett, Dale (Concordia), professor of physiology (neurosciences), *Senior Canada Research Chair in Stroke and Neuroplasticity*
Dore, Jules (Tennessee), assistant professor of cell biology
Drover, Sheila (Memorial), associate professor of immunology
Gendron, Robert (McGill), assistant professor of cancer/cardiovascular biology
Gillespie, Laura (Ottawa), professor of oncology
***Grant, Michael** (McMaster), associate professor of immunology
***Green Roger** (Birmingham), associate professor of cell sciences
Hirasawa, Kensuke (Tokyo), assistant professor of immunology
Hirasawa, Michiru (Tokyo), assistant professor of neurosciences
Hansen, Penny A. (Memorial), professor of physiology
Harris, June A. (Memorial), associate professor of anatomy, *Director of MedCAREERS*
Hoekman, Theodore (Illinois), professor of medical informatics
Kao, Ken (Toronto), professor of oncology
Kirouac, Gilbert (Manitoba), associate professor of neurosciences (cardiovascular)
Larsen, Bodil (Bergen), associate professor of immunology
Lodge, Stuart (Bradford) associate professor of physiology
MacPhee, Daniel (Western Ontario), assistant professor of reproductive and cell
McGuire, John (Queen's), assistant professor of cardiovascular sciences

McKay, Donald W. (Michigan State), professor of physiology, *Director, Faculty Development*
McLean, John (Dalhousie), professor of anatomy
Mearow, Karen (McMaster), professor of neuro/molecular biology, ***Associate Dean, Division of Basic Medical Sciences***
Michalak, Thomas I. (Warsaw), professor of molecular virology and medicine, *Senior Canada Research Chair in Viral Hepatitis and Immunology*
Michalski. Chet J. (North Carolina), professor of molecular biology
Moody-Corbett, Penny (McGill), professor of physiology, ***Assistant Dean, Research and Graduate Studies***
Neuman, Richard (Alberta), professor of pharmacology, *Co-Chair, Human Investigation Committee*
Paradis, Helene (Montreal), associate professor of vascular molecular biology
Paterno, Gary (Ottawa), professor of oncology
Pater, Alan (McMaster), professor of molecular biology and microbiology (on leave)
***Richardson, Vernon** (Sheffield), associate professor of surgery (oncology)
Scott, Thomas M. (Edinburgh), professor of anatomy
Smeda, John (McMaster), professor of cardiovascular/renal physiology
Tabrizchi, Reza (British Columbia), professor of pharmacology (cardiovascular)
Van Vliet, Bruce (Saskatchewan), professor of cardiovascular/renal physiology
***Vasdev, Sudesh** (Punjab) professor of medicine (biochemistry)

* Joint Appointed

Affiliated faculty

Adamec. Robert (McGill), professor of psychology
Brosnan, John (Oxon), professor of biochemistry
Brosnan, Margaret (Toronto), professor of biochemistry
***Harley, Caroline**. (Oregon), professor of physiology (neurosciences)
Kovacs, Christopher (Queen's), associate professor of medicine (endocrinology)
Loomis, Christopher. (Queen's), professor of pharmacology, ***Vice President (Research and International Relations)***
Malsbury, Charles (McGill), professor of psychology
***Young, Terry-Lynn** (Memorial), assistant professor of genetics

* Cross-appointed

Adjunct Faculty

Mandal, S (Calcutta)
Mansour, A (Cairo), Scientist, DFO

Professors Emeriti

Allderdice, P. (Montana)
Bieger, Detlef (Kiel), professor of pharmacology
Orr, J.C. (Glasgow)
Roberts, K.B. (Oxon)
Tomlinson, J.D.W. (Cambridge)

Staff

Administrative and Secretarial

Judy Blundon
Shirley Atkins
Madonna Hawco
Janice Petten

Research Support Staff

Christian Alberto
Tina Blackmore
Krista Butt
Matthew Cameron
Linda Chafe
Garry Chernenko
Norma Churchill
Dianne Codner
Andrea Darby- King
Anita Davis
Catherine Ducey
Sue Evans
Carol Ann Ford
Rebecca Ford
Maureen Gallant
Nicole Garrett
Shirley Granter-Button
Sarah Halfyard
Jim Hansen
Karina LeBlanc
Sa Li
Kathy McKay
Sonya MacParland
Corinne Mercer
Ewa Miskiewicz
Judy Neuman
Ingrid Pardoe
Tram Pham
Masuma Rahimtula
Paula Ryan
Colleen Trelegan
Jieying Xiong

Educational Responsibilties

Undergraduate Teaching

Faculty in the Division of Basic Medical Sciences contributed to teaching in a variety of undergraduate courses in the Faculty of Medicine, the School of Pharmacy and the Faculty of Science in the academic year 2003-2004.

M.D. Curriculum

MED 5600 – Basic Science of Medicine I. This is an integrated course with components including anatomy, biochemistry, physiology, cell biology, pathology. The course is intended to provide an introduction to the basic science of medicine.
Course section chairs:
Anatomy – S. Chandra; Histology – K. Kao, Physiology – B. Van Vliet
Instructors – S. Chandra, J. Church, J. Harris, T. Hoekman, R. Gendron, L. Gillespie, K. Kao, S. Lodge, D. MacPhee, D. McKay, J. McLean, P. Moody-Corbett, H. Paradis, G. Paterno, J. Smeda, R. Tabrizchi, B. Van Vliet.

MED 6600 – Basic Science of Medicine II; BSM ll is a continuation of BSMI, with subject areas including immunology, and genetics.
Course section chair:
Immunology – S. Drover
Instructors – S. Drover, M. Grant, B. Larsen

MED 5650 – Integrated Study of Disease I. This course provides an introduction to the clinical science and pathology of major organ systems. Major components taught by Basic Science faculty include Cardiovascular physiology.
Course section chair:
Cardiovascular physiology – J. Smeda (co-chair).
Instructors – J. Dore, R. Gendron, L. Gillespie, D. MacPhee, R. Neuman, J. Smeda, R. Tabrizchi, B.Van Vliet.

MED 6650 – Integrated Study of Disease II. This is a continuation of ISD I and components taught by faculty in Basic Sciences include Neurosciences/Neurology, Endocrinology, Women's Health.
Course section chair:
Neuroscience/Neurology – J. McLean, co-chair; G.Kirouac – lab section coordinator
Instructors – D Corbett, G. Kirouac, D. MacPhee, D. W. McKay, J. McLean, K. Mearow, G. Paterno.

MED 7280 – Integrated Basic, Community Health and Clinical Sciences. This course is also known as "Back to Basics" and is coordinated by Dr. R. Tabrizchi. Instructors include – J. Harris.

Courses offered for non-medical students
MED 310A, 310B (aka BIOC 311A/B) – Human Physiology
Course chair – S. Lodge

Instructors – T. Hoekman, S. Lodge, D. McKay, V. Richardson

MED 4300 – Introduction to General and Autonomic Pharmacology
Course chair – J. Church
Instructors – X. Chen, D. Corbett, J. Church, M. Grant, T. Hoekman, R. Neuman, R. Tabrizchi

PHARM 4105/BIOCH4105 - Immunology
Course Chair – V. Richardson
Instructors – M. Grant, B. Larsen, V. Richardson

Graduate Teaching

Graduate teaching and courses in the Faculty of Medicine are administered by the School of Graduate Studies, co-ordinated through the Office of Research and Graduate Studies. Four of the graduate programs in the Faculty of Medicine are primarily associated with the research programs in the Division of Basic Medical Sciences. These programs are Cancer, Cardiovascular/Renal Physiology, Immunology and Neurosciences. The Program Coordinators and the courses offered through each program are noted below.

Cancer

Co-ordinator – G. Paterno
Participating Faculty – J. Church, J. Dore, R. Gendron, L. Gillespie, K. Kao, D. MacPhee, H. Paradis, G. Paterno
Courses
MED 6580 – Molecular biology of cancer
MED 6590 – Molecular biology I
MED 6591 – Molecular biology II
MED 6400 – Cancer seminars

Cardiovascular/Renal Physiology

Co-ordinator – J. Smeda
Participating Faculty – J. Smeda, J. McGuire, R. Tabrizchi, B. Van Vliet, S. Vasdev
Courses
MED 6140 – Basic cardiovascular and renal physiology
MED 6141 – Cardiovascular/Renal techniques
MED 6142 – Special Topics in cardiovascular/renal physiology

Immunology

Co-ordinator - B. Larsen
Participating Faculty – G. Carayanniotis, S. Drover, M. Grant, K. Hirasawa, B. Larsen, T. Michalak, V. Richardson
Courses
MED 6127 – Immunology I
MED 6128 – Immunology II

MED 6130 – Advanced Immunological Methods
MED 6100-6114 – Immunology Seminars

Neurosciences

Co-ordinator – G. Kirouac
Participating Faculty – X. Chen, D. Corbett, C. Harley, M. Hirasawa, G. Kirouac, J. McLean, K. Mearow, P. Moody-Corbett, R. Neuman
Courses
MED 6193 – Advanced Topics in neuroscience
MED 6196 – Systems neuroscience
MED 6197 – Cellular neuroscience

Graduate Research Integrity Program (GRIP)

Coordinator for Medicine - P. Moody-Corbett
Facilitator - D.W. McKay

PostGraduate Education

Faculty also provided instruction in postgraduate (MD) education:
Anatomy electives – S. Chandra, J. Harris
Psychiatry lectures – X. Chen, G. Kirouac

Medical College Canada Examinations
Deputy Registrar MCCQE Part II Examination, Faculty of Memorial University – S. Chandra

Visiting Speakers

Sept 2003 – Dr. Bruce Aronow, Cincinnati Childrens Hospital Research Foundation Mining Published Cancer Microarray Databases for Tumor-Specific Genes, Pathways, and Regulatory Mechanisms".

September 2003 – Dr. John McGuire, University of Calgary
Mechanisms of vascular smooth muscle relaxation by activation of endothelial Proteinase-Activated Receptor 2 (PAR2)

October 2003 – Dr. Samuel B. Lehrer, Tulane University of Health Sciences Center
Genetically Modified Foods and Allergy: Risks and Benefits

October 2003 – Dr. Yu Tian Wang, University of British Columbia
AMPA receptor trafficking and synaptic plasticity

November 2003 – Dr. Colin Nurse, McMaster University
Chemosensory signalling in the rat carotid body: A tale of multiple neurotransmitters

November 2003 – Dr. Keith Fowke, University of Manitoba
The Immunology of Resistance to HIV Infection

December 2003 - Dr. Jukka Jolkkonen, University of Kuopio Finland
Pharmacological Strategies for Stroke Recovery

February 2004 – Dr. Isabella Caniggia, Mt. Sinai Hospital, Toronto, Ontario
Molecular Regulation of Placentation

March 2004 - Dr. Jane Roskams, University of British Columbia
Cellular Plasticity, Degeneration and Regeneration: Lessons from the Mouse Olfactory System

April 2004 - Drs. Wolfgang Banzhaf and Todd Wareham, Department of ComputerScience, Memorial University
Symposium for Bioinformatics at Memorial University: Roundtable Discussion

May 2004 – Dr. Philippe Poussier, University of Toronto
Immunogenetics of type 1 diabetes in the BB rat

May 2004 - Dr. Albert Descoteaux, University of Quebec
Phagosome remodelling by the parasite *Leishmania donovani*

June 2004 - Dr. Alastair Ferguson, Queens University
Orexins/Hypocretins: Neurotransmitter roles in central autonomic control

June 2004 - Dr. Alan Hudson, Bristol University
Imidazoline receptors and their role in the brain

June 2004 – Dr. Alastair Ferguson, Queens University
Orexins/Hypocretins: Neurotransmitter roles in central autonomic control

July 2004 – Dr. Jeffrey Whitsett, Cincinnati Children's Hospital Medical Center
Genetic networks regulating lung formation and function

August 2004 – Dr. Ilona Skerjanc, University of Western Ontario Myogenesis: Regulation of Commitment and Differentiation

Graduate Students

The following students are supervised by Basic Sciences faculty members and were enrolled in the Faculty of Medicine graduate programs associated with the Division of Basic Medical Sciences research groups in 2003-2004.

Last Name	First Name	Degree	Program	Supervisor(s) Last	Supervisor (s) First
Andrews	Philip	MSc	Cancer	Kao	Ken
Andrews	Joseph	MSc	Immunology	Drover	Sheila
Barrett	Lisa	MD/PhD	Immunology	Grant	Michael
Brazil	Aiden	MSc	Immunology	Grant	Michael
Butler	Gregory	MSc	Immunology	Drover	Sheila
Clarke	Jared	MSc	Neuroscience	Corbett	Dale
Collier	Thaddeus	MSc	Immunology	Hirasawa	Kensuke
Cui	Wen	PhD	Neuroscience	McLean	John
Davis	Laura Anne	MSc	Cardiovascular	Smeda	John
Dodge	Elaine	PhD	Neuroscience	Mearow	Karen
Downton	Kelly	PhD	Cancer	Kao	Ken
Elustondo	Pia	MSc	Cancer	MacPhee	Daniel
Giles	Corey	PhD	Neuroscience	Neuman	Richard
Green	Adam	PhD	Cancer	Gendron/Paradis	Robert/Helene
Gujar	Shashi	PhD	Immunology	Michalak	Thomas
Guo	Liang	MSc	Cardiovascular	Tabrizchi	Reza
Guy	Clifford	PhD	Immunology	Michalak	Thomas
Halfyard	Sarah	MSc	Neuroscience	McKay	Don
Hefferan	Michael	PhD	Neuroscience	Loomis	Chris
Hough	Christopher	MSc	Cancer	Dore	Jules
Huang	Y.H. Ivy	MSc	Cancer	Gillespie	Laura
Jiang	Hong	MSc	Immunology	Carayanniotis	George
Kennedy	Mark	MSc	Cancer	Kao	Ken
Kielley	Danielle	MSc	Cancer	Dore	Jules
Laidley	David	MSc	Neuroscience	Corbett	Dale
Leonard	Allision	MSc	Cardiovascular	Van Vliet	Bruce
Li	Haiyan	PhD	Immunology	Carayanniotis	George
Licursi	Maria	MSc	Immunology	Hirasawa	Kensuke
Liu	Yudan	MSc	Neuroscience	Chen	Xihua
MacParland	Sonya	PhD	Immunology	Michalak	Thomas
Martin	Darryl	PhD	Cancer	Gendron/Paradis	Robert/Helen
Mason	Rosemarie	MSc	Immunology	Grant	Michael
Mulrooney	Patricia	PhD	Immunology	Michalak	Thomas
Muthukrishnan	Anoo	MSc	Immunology	Michalak	Thomas
Oldford	Sharon	PhD	Immunology	Drover	Sheila
O'Rielly	Darren	PhD	Neuroscience	Loomis	Chris
Parsons	Matthew	MSc	Neuroscience	Kirouac	Gilbert

Last Name	First Name	Degree	Program	Supervisor(s) Last	Supervisor (s) First
Piercey	Karen	MSc	Immunology	Larsen	Bodil
Ploughman	Michelle	PhD	Neuroscience	Corbett	Dale
Rankin	Sherri	MSc	Neuroscience	Mearow	Karen
Rose	Jessica	MSc	Immunology	Grant	Michael
Skhirtladze	Olga	MSc	Cancer	Kao	Ken
Spurrell	David	PhD	Immunology	Drover	Sheila
Thorne	Leanne	MSc	Cancer	Gillespie	Laura
Trask	Robert	MSc	Neuroscience	Hirasawa	Michiru
Tucker	Budd	PhD	Neuroscience	Mearow	Karen
Verginis	Panayotis	PhD	Immunology	Carayanniotis	George
Wang	Jinguo	PhD	Immunology	Michalak	Thomas
Wells	Malcolm	MSc	Cancer	Kao	Ken
White	Bryan	MSc	Cancer	MacPhee	Daniel
Williams	Kristy	MSc	Neuroscience	Mearow	Karen
Williams	Selena	PhD	Cancer	MacPhee	Daniel
Windle	Victoria	PhD	Neuroscience	Corbett	Dale
Winter	Nicole Joan	MSc	Immunology	Drover	Sheila

The preceding list is of graduate students in Medicine who are supervised by Divisional (FT) faculty members. Faculty also supervised or co-supervised students in other graduate programs (eg, the Cognitive and Behavioural Ecology (CABE) Program, D.W. McKay; School of Pharmacy, V. Richardson). Divisional members also serve on supervisory committees of students in the School of Pharmacy, Departments of Biology and Biochemistry.

Postdoctoral Fellows

Dr. Tram N.Q. Pham with Dr. Thomas I. Michalak;
Project title: “Mechanisms of Pathogenesis of Hepatitis C Persistence”

Faculty News and Awards

Promotions and Appointments

(effective September 2004)

Professor: Dr. Jon Church
Dr. Ken Kao
Dr. Reza Tabrizchi

Associate Professor: Dr. Xihua Chen
Dr. Gilbert Kirouac
Dr. Hélène Paradis

Faculty/University Recognition

Harris J
Honorary Order of the Killick Award for outstanding contribution to the class of 2004

McKay D
University Orator – 2004

Neuman R
Recognition by Dean for HIC contributions, September 2003

Funding Awards

CIHR New Investigators

Dr. **Michiru Hirasawa** received a CIHR New Investigator award and **Dr. Ken Hirasawa** received a CIHR/RPP New Investigator award in the 2003 CIHR competition.

CIHR Awards

Dr. Dale Corbett and co-investigators (**C. Harley, P. Moody-Corbett** and J. Peeling) received a 3 yr award from the Vascular Dementia program (HSF/CIHR/Alzheimer Soc/Pfizer) for a project entitled, Exercise, aging and cognitive impairment.
Dr. Michael Grant received a 3 yr operating grant for his research on the impact of human immunodeficiency virus type-1 infection on the immune response against hepatitis C virus. This funding is under the operating competition of the Health Canada/CIHR Research Initiative on Hepatitis C.
Dr. Ken Hirasawa received a CIHR/RPP 3 yr award for his investigations of virus replication and cellular signalling environment
Dr. Michiru Hirasawa received a 3 yr operating grant for her research on central control of energy homeostasis**.**
Dr. Gilbert Kirouac received a 3 yr operating grant for his research on the regulation of orexin (hypocretin) neurons by monoaminergic and cholinergic sytems

Dr. John McGuire received a CIHR/RPP 3 yr award for his work on PAR2 and cardiovascular disease. Dr. McGuire also received a Canadian Stroke Network – CIHR Institute of Circulatory and Respiratory Health Research Young Investigator Forum Travel Award.
Drs. John McLean and **Carolyn Harley** were awarded 5 yr operating grant (renewal) for their investigations of memory (A window on promoting memory, see story below).
Dr. Thomas Michalak, Senior Canada Research Chair in Viral Hepatitis/Immunology, was awarded a 5 yr grant (renewal) for his work on hepadnavirus pathogenicity in woodchuck model of hepatitis B.

NSERC Awards
Dr. Michiru Hirasawa also received an NSERC discovery grant over five years for investigations on synaptic activity from supraoptic nucleus neurons (SON) in the adult brain.

Canadian Foundation for Innovation Awards
Dr. Michiru Hirasawa, Faculty of Medicine, was awarded $133,931 by CFI for cellular electrophysiology and photostimulation system for investigation of central mechanism of body weight control.

Drs. Gary Paterno and **Robert Gendron** have been awarded $531,988 for a QStar tandem mass spectrometer for the analysis of molecular structures and interactions (see story below).

Atlantic Canada Opportunities Agency
Funding of $279,609 from the Atlantic Canada Opportunities Agency's Business Development Program will help Memorial install a pathogen-free mouse vivarium module. The "mouse house" will create increased research capacity, particularly in the areas of cancer, cardiovascular and renal physiology, genetics, immunology and virology, and neuroscience. The business development proposal was put forward by **Drs. Helene Paradis** and **Robert Gendron** (see story below).

Graduate Student Awards

Colman Graduate Student Award
2004 **- Sharon Oldford**, supervised by Dr. Sheila Drover

Cardiovascular & Renal Physiology Program Prize
2004 - **Allison Leonard**, supervised by Dr. Bruce Van Vliet

Golden Synapse Award in Neuroscience
MSc Award – Best Presentation - **Sherri Rankin**, supervised by Dr. Karen Mearow
PhD Award – Best Presentation - **Elaine Dodge**, supervised by Dr. Karen Mearow
Participation Prizes -
Jared Clarke, MSc Student, supervised by Dr. Dale Corbett

Yudan Liu, MSc Student, supervised by Dr. Xihua Chen
Kristy Williams, MSc Student, supervised by Dr. Karen Mearow
David Laidley, MSc Student (Medical School, Sept. 04), supervised by Dr. Dale Corbett
Wen Cui, MSc Student (PhD Student, Sept. 04), supervised by Dr. John McLean
Michelle Ploughman, PhD Student, supervised by Dr. Dale Corbett
Victoria Windle, PhD Student, supervised by Dr. Dale Corbett

Immunology Graduate Program Prize, (Based on seminar presentations.),
PhD Award
Clifford Guy, PhD Student, supervised by Dr. Thomas Michalak
MSc Award
Joseph Andrews, MSc Student, supervised by Sheila Drover

Governor General's Gold Medal
Blue Lake, PhD student, supervised by Dr. Ken Kao

Special Mention of the Following Awards:

Zetta Tsaltas Immunology Award
Jessica Rose, MSc Student, supervised by Dr. Michael Grant

Distinction of "Fellow of the School of Graduate Studies" Awards:
These awards are made in recognition of academic excellence**.**

Rosemarie Mason, MSc Student, supervised by Dr. Michael Grant
Sharon Oldford, PhD Student, supervised by Dr. Shelia Drover
Kakoli Parai, PhD Student, supervised by Dr. Reza Tabrizchi
Tram Pham, PhD Student, supervised by Dr. Vernon Richardson
Jinguo Wang, PhD Student, supervised by Dr. Thomas Michalak
Nicole White, PhD Student, supervised by Dr. Desmond Robb

Graduate Fellowships Awarded September 2004
MSc Fellowships
Leanne Thorne, MSc Student, supervised by Dr. Laura Gillespie
Hong Jiang, MSc Student, supervised by Dr. George Carayanniotis

NSERC PGS Award/Centennial Scholarship
Budd Tucker, PhD Student, supervised by Dr. Karen Mearow

Heart and Stroke Foundation of Canada – Doctoral Research Award
Michelle Ploughman, PhD Student, supervised by Dr. Dale Corbett

NSERC Canada Graduate Scholarship Award
Matthew Parsons, MSc Student, supervised by Dr. Gilbert Kirouac

Postdoctoral Fellowships
The National Canadian Research Training Program in Hepatitis C.
Dr. Tram N.Q. Pham with Dr. Thomas Michalak

Notable

Jeff Biernaskie, who completed his PhD at Memorial under the supervision of Dr. Dale Corbett, was named in the May 24, 2004, edition of *MacLeans* magazine as one of "The best and brightest" in Canada. At age 28, Dr. Biernaskie has made a mark in stroke research in recent years, focusing on the functional recovery of rats following a stroke.

Scientific Days showcase medical research

A heightened interest in research was reflected in the turnout for this year's Scientific Days Symposium, held Oct. 20-21 in the Faculty of Medicine. A variety of events, including prestigious lectures, poster sessions and oral presentations, were held during the Celebrate Memorial events to showcase the wide range of health research that is carried out by faculty, staff and students.

As part of the Scientific Days events, the prestigious **Gairdner Foundation Lecture** was delivered by **Dr. Albert Aguayo**, Gairdner Award recipient 1988, and director of the Center for Research in Neuroscience at McGill University and Montreal General Hospital Research. Dr. Aguayo's lecture presented an overview of the advances in the study of regeneration and repair of the central nervous system. His research has contributed substantially to the current understanding of how damaged nerves can regrow and his lecture was well attended by faculty, staff and students from across the university.

A number of Basic Sciences faculty and graduate students presented their research as posters or oral presentations.

Good News ***(by Sharon Gray)***

A window on promoting memory

There are cellular pathways that may be able to be manipulated in order to improve learning and even provide ways of enhancing memory. It's quite a tall order, but **Dr. John McLean, Basic Medical Science**, and Dr. Carolyn Harley, Psychology, are excited about a new collaborative project to examine the critical events underlying learning.

The key to their research is smell. Dr. McLean has spent most of his career researching the olfactory bulb, a part of the brain that receives input from receptors in the nose and relays it to the olfactory nerve and then into the brain. Most importantly, the olfactory

bulb is connected to feeling and memory. That connection is central to the research taking place at Memorial, recently funded by the Canadian Institutes of Health Research for the next five years. “We’re just putting the finishing touches on a set of data that shows a new kind of signaling that has never been shown before to be critical to memory,” explained Dr. Harley. Dr. McLean added, “When you are learning something for the first time this signaling path is important.”

Using rat pups, the researchers have found that changing the time the pup is exposed to a smell changes how long it remembers the smell. “In one trial we found that by linking a smell with mother care or a drug substitute for mother care you get a memory in the young rat that lasts 24 hours,” said Dr. Harley. “If you repeat that over several days you get a memory that lasts a lifetime. This is a window on memory – once you understand what signals start memory, next you can understand how the brain changes to make memory.”

The key to studying this behavioural learning model is to investigate how certain brain neurotransmitters interact to produce learning. Specifically, Drs. McLean and Harley will be looking at norepinephrine, which they believe to be the reward signal for the learning, and serotonin, which makes it easier for the learning to occur. Dr. McLean has already shown there is a specific cellular protein, pCREB, which is critically important in causing memories to form. “In this project we will determine what cellular mechanisms lead to pCREB production and determine how these pathways within cells may actually be manipulated to improve learning.”

Dr. Harley is excited about the long-term implications of their research. “Our studies may lead to developments in treating developmental learning disorders or lead to an understanding of memory which could provide memory enhancement approaches in young and aged adults.” She added that it has already been shown that smell influences memory formation in humans. “I was recently at a conference on newborn human babies where research was presented showing that if a baby is given a pad of lemon smell next to the breast when nursing, that child, at two years of age, will prefer to take a bottle of water that has a lemon smell on the cover versus one that doesn’t.”

New barrier facility critical to research growth

A new Specific Pathogen Free (SPF) Barrier Facility, funded this year by a $279,609 business development grant from the Atlantic Canada Opportunities Agency, is now up and running at Memorial University in the Health Sciences Centre.

“This facility is critical because it allows state-of-the-art disease-free housing of experimental animals used in key aspects of medical biotechnology research,” said **Dr. Hélène Paradis**, Basic Medical Sciences. She was responsible for designing and coordinating the installation of the barrier and currently oversees and coordinates its operation as well as training staff and students who require access to the barrier. “Without the SPF barrier, we can’t perform fundamental basic science research in transgenic animals since the health of our transgenic animals could be compromised by

the threat of exogenous pathogens," she said. "Diseases caused by these pathogens could interfere with the interpretation of our basic science research and could invalidate our results."

The SPF barrier project was initially spearheaded by a group of researchers from Basic Medical Sciences and Pharmacy. With the assistance of Margaret Miller, marketing manager for the Faculty of Medicine, a proposal was put together and submitted to ACOA by Dr. Christopher Loomis, vice-president of research for Memorial, **and Drs. Paradis** and **Robert Gendron** of Basic Medical Sciences.

Dr. Gendron said the SPF barrier is greatly facilitating the university's research capacity. "It has already attracted new faculty and will benefit our ability to train and retain high quality personnel and students."

The barrier also has important economic benefits. Without it, researchers like Drs. Gendron and Paradis could not perform key studies that facilitate partnerships with the pharmaceutical industry. For example, portions of their work on the role of Tubedown-1 protein in blindness is patented to facilitate the development of drugs based upon the biological mechanism of action of Tubedown-1. "The SPF barrier is critical to allow us to perform key proof-of-principal research and pre-clinical trials of Tubedown-1 based drugs in disease models in mice," said Dr. Gendron. "It provides disease-free housing of our experimental animals so that our research is not compromised by diseases that would be present in the same animals in standard non-barrier housing conditions "

Dr. Gendron said that the whole province benefits from the SPF barrier. "Funding from industry will allow marketing of our locally-developed technologies as preventative and therapeutic treatments, clinical diagnostic kits, medical devices and new drugs for treating debilitating and life threatening diseases. Marketing of our technologies will generate revenues, portions of which would be channeled back through formal licensing agreements to Memorial University and the province of Newfoundland and Labrador to support the local and provincial economy."

The SPF barrier works through a system of environmental and air isolation and filtering which ensures that the space within the barrier is maintained free of airborne debris and pathogens such as dust particles, bacteria, viruses, fungi, pollens and yeasts, all of which can cause diseases in research animals. The space consists of a series of clear vinyl walled sealed rooms each containing high capacity HEPA filter units that replace the air with sterile air about 100 times every hour.

"The rooms remain differentially pressurized in order to control what air enters and exits the rooms," explained Dr. Paradis. "A barrier room looks like a portable military hospital surgical suite and contains air that is as pure as a hospital operating room."

Like an operating room, those who work in the SPF barrier must be intensively trained and wear sterilized gowns, face masks, bonnets, shoe covers and latex gloves. "An 'aseptic' standard operating technique must be rigorously followed at all times when

working in the barrier," she said. "This involves a series of steps during all procedures to minimize contamination of workspace and animals."

Inside the barrier, one highly-specialized room is designated and configured as the quarantine room. Researchers often receive mice from other labs and collaborators, and they use the quarantine area to ensure that the mice they receive are pathogen-free. "The quarantine room consists of a negative pressure workspace enclosed within a larger positive pressure space to ensure that any possible contaminants from suspect animals are not spread to the rest of the barrier," said Dr. Gendron. "The negative space has a specialized workstation which allows the isolated handling of any animals and caging materials that are suspected of being contaminated. When animals in the quarantine area are verified to be pathogen free by testing, they are transferred to other housing areas within the barrier. " The SPF barrier is operated by a newly-recruited and highly-trained animal care technician, Bobbie Whalen, and animal care pathologist Jennifer Edwards.

Drs. Gendron and Paradis say that getting the funding for the SPF barrier and designing and implementing it was a lot of work, but the payoffs are very large. "We now have a barrier facility which is similar to others at centres like Toronto, Montreal or Vancouver," said Dr. Paradis. "This barrier facility places MUN on the map in terms of state-of-the-art housing facilities for transgenic research animals."

The two researchers stressed that in addition to ACOA, many people at Memorial were key to supporting the success of the barrier project, among them research vice-president Dr. Loomis, Drs. Karen Mearow and Bodil Larsen (present and past associate deans of Basic Medical Sciences), the overall and continuing support of the Faculty of Medicine, the staff of Animal Care Services, and the staff of Facilities Management. "This project and its success reflects that good things can happen when people work together as a coordinated group," said Dr. Gendron.

Research capability enhanced by CFI grant for mass spectrometer

The Canadian Foundation for Innovation (CFI) has awarded $531,988 to Memorial researchers for a QStar tandem mass spectrometer for the analysis of molecular structures and interactions. This machine will profoundly enhance the research capabilities of Memorial University's researchers to perform innovative research, which will impact the health, welfare, economic development and quality of life of Canadians and the global population.

Dr. Gary Paterno, is named as the principal investigator but he said the grant application was done in partnership with **Dr. Robert Gendron**, "This grant would not have been successful without the cooperation and input of researchers form across the university including Basic Medical Sciences, clinical medicine, chemistry, biochemistry, biology and the Ocean Sciences Centre. A significant amount of the equipment which is needed to feed into the mass spectrometer is in place thanks to the CFI New

Opportunities grant to **Drs. Robert Gendron, Jules Doré, Hélène Paradis and Daniel MacPhee** in a previous competition."

The mass spectrometer will have its own room in the C-CART (Centre for Chemical Analysis, Research and Training) core facility in the chemistry building. "It is the last piece of the puzzle which will enable us to have a state-of-the-art core facility for molecular analysis and proteomics at Memorial," said Dr. Paterno. "This machine, and others, can by operated, the data acquired and then analyzed by a work station that that is already operating in the Faculty of Medicine.

The tandem mass spectrometer is an instrument that is used in many diverse research fields to identify and characterize molecules with exquisite accuracy and from small amounts of material. This field is now beginning to exploit the tremendous advances and information in the area of genomics, including the complete DNA sequence of humans and many other organisms to address many problems in biology, biochemistry, health and disease.

New Faculty

Dr. John McGuire**,** Assistant Professor, Cardiovascular Sciences brings expertise in cardiovascular pharmacology to the Division of Basic Medical Sciences. His research is on the cell surface receptor PAR-2 as a target in blood vessels for the pharmaceutical design of therapeutics for cardiovascular diseases including high blood pressure and stroke. Currently, he wants to determine what function this target serves for blood pressure control and whether it would be beneficial to activate or block this target in hypertension. He has started this work in animal models with the help of his colleagues, including Drs. Bruce Van Vliet and John Smeda in the Cardiovascular Research Group at Memorial.

In addition, Dr. McGuire has set up his own specialized laboratory in the medical school to characterize the contractile and electrical mechanisms involved with activation of this receptor in isolated blood vessels. These mechanisms could be important to understanding the role of PAR-2 (Proteinase-Activated Receptor 2) in conditions that involve blood vessel injury or diseases, including arteriosclerosis and diabetes.

Other events

Brain Awareness Week 2004

The **Brain Storm 2004** Championship was held March 18, 2004, at Holy Heart of Mary High School in St. John's. It was an afternoon well spent for the 19 students from four local schools who prepared for the competition by studying facts about the human brain. All students who competed received a prize, thanks to donations from many local

businesses. The top three won cash prizes donated by Janssen Ortho and a special draw was held for a stereo system donated by Futureshop. Brian Fox of Janssen Ortho was on hand to present prizes to Sara Messervey, Bishops College (first place), John-Paul Murphy, Holy Heart of Mary High School (second place), and Aimee Letto, Holy Spirit High School, C.B.S. (third place).

Students' knowledge of the brain was tested with questions such as "Broca's area is important for what brain function?" (vocal expression) and "If your hippocampus and adjacent brain areas are destroyed, what can't you do?" (create long-term memories). These questions and many more were posed to the competitors in a quiz show format by celebrity guests, Deborah Fry, deputy minister of Health and Community Services, Pamela Anstey, information officer, Epilepsy Newfoundland and Labrador, and Brian Fox, regional director, Provincial Health Care Relations, Atlantic Canada, Janssen Ortho/Ortho Biotech. The judges were **David Laidley**, MSc student and **Dr. Xihua Chen**, associate professor of biological psychiatry in the Faculty of Medicine.

This year also marked the second year for the Brain Art Competition in which students were given the chance to develop artwork that recreates the brain of any person in any context. First prize went to Clarissa Smallwood, O'Donel High School, for her untitled piece; second place went to Bethany Keating, Prince of Wales Collegiate, for her piece Complicated; and third place went to Danielle Putt, Holy Spirit High School, for Draining your Brain. Honourable mention was given to Steve Renouf, O'Donel High School for his untitled submission. The Brain Art competition was judged by PhD student and artist **Budd Tucker**, artist and clinical specialist Dr. Christopher Kovacs, art collector and clinical psychologist Dr. Gerry Mugford and well known local artist Barbara Pratt. The top three received cash prizes donated by Janssen Ortho. All entries receive a certificate of merit and will remain on exhibit in the Health Sciences Centre.

The Brain Storm and Brain Art Competitions are organized to celebrate Brain Awareness Week by the local chapter of the Society for Neuroscience, comprised of researchers and graduate students in the neuroscience program at the Faculty of Medicine. **Dr. John McLean** has spearheaded the event since its inception five years ago as part of the International Brain Bee which involves local competitions in cities throughout the United States and Canada. According to Dr. McLean, "The Brain Storm competition is a successful way to motivate our youth to learn about the brain, capture their imagination, and inspire them to pursue careers in biomedical brain research. At Memorial University we have already seen one of our former competitors go on to study neuroscience."

MiniMed School

More than 90 participants attended the Faculty of Medicine's first Mini Med School, held during winter semester, coordinated by Diana Deacon from the Centre for Collaborative Health Professional Education (CCHPE).

Starting Feb. 18, the Mini Med School offered six evening presentations for members of the public who've always wanted to learn more about the science and practice of medicine. Several Basic Sciences faculty were involved in the venture including **Dr. Karen Mearow** (organizing committee), **Dr. Shakti Chandra** (presentation of Body of knowledge: Human anatomy, medical studies, and art) and **Dr. John Smeda** who explored the links between diet and hypertension

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Van Vliet BN, Montani JP. Circulation and Fluid Volume Control. *Integrative Physiology.* Humana Press (in press).

Verginis P, **Carayananniotis G** . Experimental autoimmune thyroiditis (EAT) induced by the thyroglobulin peptide (2596-2608): Influences of H-2 and non-H-2 genes *Autoimmunity* (in press).

Wall DS, **Gendron RL,** Good W., Miskiewicz E, Woodland M, Leblanc K, **Paradis H**. (2004) Conditional knockdown of Tubedown-1 in endothelial cells leads to neovascular retinopathy. *Invest Opthalmol Vis Sci* 45:3704-3712.

Ward, NL, Putoczki T, **Mearow K**, Ivanco TL, Dumont DJ. (2004) Vascular-specific growth factor angiopoietin 1 is involved in the organization of neuronal processes. *J Comp Neurol*. 482:244-256

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White BG, Williams SJ, Highmore K, **MacPhee DJ**. (2004) Small heat shock protein 27 (Hsp27) is highly induced in rat myometrium during late pregnancy and labour. *Reproduction* (in press).

Williams, SJ, White BG, **MacPhee DJ.** (2004) Expression of □5 integrin is elevated in the rat myometrium during late pregnancy and labour: Implications for development of a mechanical syncytium. *Biology of Reproduction*. (in press).

Wu X, Zhu D, Jiang X, Okagaki P, **Mearow K**, Zhu G, McCall S, Banaudha K, Lipsky RH, Marini AM. (2004) AMPA protects cultured neurons against glutamate excitotoxicity through a phosphatidylinositol 3-kinase-dependent activation in extracellular signal-regulated kinase to upregulate BDNF gene expression. *J Neurochem*. 90:807-18

Xiao W, **Scott TM**, Feng L, Yu Z, Wang L, Hughes J, Liu H. (2003) Acetylated low-density lipoprotein encapsulated cholesteryl 1,3-diiopanoate glycerol ether for the detection of atherosclerotic lesions in rabbits. *J Nucl Med* 44:770-773.

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Yuan Q, Harley CW, **McLean JH**. (2003) Mitral cell beta(1) and 5-HT(2A) receptor colocalization and cAMP coregulation: A new model of norepinephrine-induced learning in the olfactory bulb. *Learn Mem* 10:5-15.

Zhu D, Jiang X, Wu X, Tian F, **Mearow K**, Lipsky RH, Marini AM. (2004) Inhibition of protein kinase C promotes neuronal survival in low potassium through an Akt-dependent pathway. *Neurotox Res*. 6(4):281-9.

Invited Presentations

Carayanniotis G (July 18-23, 2004) Moledular mimicry in autoimmune disease: current issues and closing remarks" Co-chair, session HR16 on Mimicry and Autoimmunity, 12th International Congress of Immunology (Montreal).

Corbett D. Gave presentation for Kathy Dunderdale, Minister of Trade, Technology and Rural Development on his research and research in the Faculty of Medicine. The target group was the Provincial Government and it was requested by University Relations.at Arts and Culture.

Corbett D. (April 2004) Promoting functional recovery after experimental stroke: implications for stroke rehabilitation, Brain Research Centre, U.B.C., Vancouver, BC.

Corbett D. (May 21, 2004) Rewiring the brain after experimental stroke: implications for stroke rehabilitation, keynote address, Prince Edward Island Health Research Forum Keynote Address, Charlottetown, PEI.

Corbett D. (June 2004) Stem cells for stroke, Brain Repair Centre, Dalhousie University, NS.

Drover S .(October 2003) Invited Speaker. Reasons for Hope 2003, CBCRA, Ottawa, and HLA-class II Genes: Prognosis and Outcome in Breast Cancer Carcinoma.

Gendron RL. (2004) Colloquium, Smith Kettlewell Eye Research Institute, San Francisco, CA.

Gendron RL. (2003) The Bascom Palmer Eye Institute, University of Miami, Miami, FL.

Gendron RL. (2003) Regulation of Tubedown-1 by TGF-beta and extracellular matrix. The Bascom Palmer Eye Institute, University of Miami, Miami, FL.

Grant M. (February 2004) Exploring the Interface between Antiretroviral Therapy and Anti-HIV Immunity. Lady Davis Institute, McGill AIDS Center, Montreal, QU, Canada.

Grant M. (September 2003) Antiretroviral Drug Resistance and the Immune System. Third Atlantic Collaboration for HIV Education Meeting. St. Andrews, NB, Canada

MacPhee D. (February 2004) Integrins and Heat Shock Proteins: Major Players in Uterine Contraction During Pregnancy and Labour? Department of Biochemistry Seminar Series. Department of Biochemistry, Memorial University of Newfoundland, St. John's, NL, A1B 3V6.

MacPhee D. (April 2004) Key Signalling Enzymes for Early Placental Development. Obstetrics and Gynaecology Grand Rounds. Health Sciences Centre, Memorial University of Newfoundland, St. John's, NL, A1B 3V6.

MacPhee D. (January 2004) Two Research Themes, One Question: What Regulates Uterine Smooth Muscle Contraction During Labour? Faculty of Medicine Lunchtime Seminar Series. Health Sciences Centre, Memorial University of Newfoundland, St. John's, NL, A1B 3V6.

Michalak T. (March 2004) Persistence of HCV genome in patients clinically recovered from hepatitis C. Presentaiton at the Session: "Current Research in Hepatitis C" at the Second Canadian Conference on Hepatitis C (Vancouver).

Michalak T. (March 2004) Effect of liver-specific humoral immunoresponse against asialoglycoprotein receptor on the outcome and severity of viral hepatitis in the woodchuck model of hepatitis B. Presentation in the Plenary Session at the Biennial Scientific Meeting of the International Association for the Study of the Liver (Salvador, Bahia, Brazil).

Michalak T. (April 2004) Low doses of hepadnavirus induce infection of the lymphatic system that does not engage the liver. Presentation in the Plenary Session at the Thirty-Nineth Annual Meeting of the European Assoc. for the Study of the Liver (Berlin).

Michalak T. (July 2004) Long-Term Persistence and Replication of HCV and Hepadnaviruses in the Lymphatic System. PTC Therapeutics (South Plainfield, New

Jersey).

Paradis H. (2003) The role of Tubedown-1 in different cellular context, from retinal vessels to pediatric cancers. The Bascom Palmer Eye Institute, University of Miami, Miami, FL.

Paradis H. (2003) Tubedown-1, a key player in diabetic retinopathy and pediatric cancers. Biochemistry Seminars, Memorial University of Newfoundland, St.John's, NL.

Paradis H. (2003) The role of Tubedown-1 in different cellular context, from retinal vessels to pediatric cancers. The Bascom Palmer Eye Institute, University of Miami, Miami, FL.

Research Funding in the Division of Basic Medical Sciences

Carayanniotis G
CIHR-Immunoregulation of experimental autoimmune thyroiditis. Operating grant renewal, 2003-2008, $630,040.

Chen X
NSERC - Ionic basis for cholinergic activation of dopaminergic cells in the rat ventral tegmental area in vitro. Discovery Grant, 2003-2007, $120,000.

CIHR/RPP - Cellular mechanisms for dopamine-induced synaptic modulation in the parabrachial nucleus. Operating grant 2000-2003, $150,000; equipment, $22,500 Funding extended till March 2004.

GlaxoSmithKline (GSK) scholarship (formerly SmithKline Beecham scholarship) - salary award 1999-2004, $250,000.

Corbett D
CIHR/Canada Research Chairs Program - Stroke and Neuroplasticity, Senior (Tier1) Canada Research Chair , 2003-2010, $1,400,000.

Canada Foundation for Innovation - Stroke and Neuroplasticity. Infrastructure award associated with CRC program, 2003, $351,000.

NCE Canadian Stroke/Stem Cell Network - 1) Stem Cells to Treat Stroke, 2) Inflammation and stroke, 2003-2005, $260,000.

CIHR- Neuroprotection & Recovery of Function. Operating grant renewal, 2001-2006, $350,635.

NSERC - 2000-2004, Non-invasive MR & functional methods for studying brain disorders. P.I. with Dr. J. Peeling, Univ. of Manitoba, $60,000 .

Heart and Stroke/CIHR/Alzheimer's Society Vascular Dementia - 2004-2007, Exercise, aging and vascular dementia, $360,000.

Doré JJ
CIHR/RPP - Transforming growth factor-beta receptor intracellular trafficking regulates signaling, New Investigator Award/RPP, 2003-2008.

CIHR/RPP - Transforming growth factor-beta receptor intracellular trafficking regulates signaling. Operating Grant, 2002-2006, $237,980 , Equipment $74,020.

Canada Foundation for Innovation. New Opportunities Award (Project number 7411): "Cellular Signaling Mechanisms in Growth Development and Disease", Coinvestigators: Robert Gendron, Hélène Paradis, Daniel MacPhee. Period (07/01/03-06/30/07). Total project costs $1,257,358.

Drover S
CBCRI - The influence of HLA class II genes on the immune response in breast cancer. Operating grant, 2002-2005, $275,046**.**

CIHR/RPP - Investigation of MHC-peptide complexed on HLA-DR4 molecules. 2000-2003, $235,397.

Gendron RL
CIHR/RPP - Tubedown-1 in Blood Vessel Health and Disease. Investigator Award, 2002-2007, $350,000 salary support.

CIHR - Tubedown-1 in Blood Vessel Health and Disease. Co-Investigator Hélène Paradis. Operating grant, 2002-2005, $298,353; equipment, $40,255.

Foundation Fighting Blindess Canada - Tubedown-1 as a modulator of choroid-retinal angiogenesis, Co- Investigator Hélène Paradis. Operating grant, 2002-2004, $60,000.

CIHR – Tubedown-1 in cellular differentiation and cancer. Operating grant, 2002-2005, Total costs $308,665.

Foundation Fighting Blindness Canada – Tubedown-1 as a modulator of choroids-retinal angiogenesis. Operating Grant, 2002-2005. $90,000

Canada Foundation for Innovation. New Opportunities Award (Project number 7411): "Cellular Signaling Mechanisms in Growth Development and Disease", Project leader Robert Gendron. Co-Investigators Hélène Paradis; Daniel MacPhee; Jules Doré. Period (07/01/03-06/30/07). Total project costs $1,257,358.

ACOA – Pathogen free barrier project (mouse vivarium), Memorial University. Total project costs $367,690.

CFI – Qstar Tandem Mass Spectrometer for the analysis of molecular structures and interactions. 2003-2007, $1,329,971.

Gillespie LL
NSERC - Characterization of novel fibroblast growth factor early response genes and their role in *Xenopus* embryonic development" (co-awarded with Dr. G. Paterno) , Discovery grant, 2002-2006, $204,000.

Breast Cancer Society of Canada - A Novel Breast Tumour-Specific Gene Regulating Estrogen Receptor Activity. Operating award, 2003-2005, $60,000.

CIHR - Functional characterization of ER1: a novel tumour-associated transcription factor. Operating grant renewal, 2002-2005, $367,072; equipment, $13,890.

Grant M
CIHR (HIV/AIDS) - Generation and maintenance of HIV-specific memory T cells. Operating grant renewal, 2002-2005, $296,640.

CIHR/Health Canada initiative on HepC – The nature and role of hepatitis C virus-specific cellular immunity. Operating grant, 2000-2003, $187,926.

CIHR – Role of B1 B lymphocyte networks in the pathogenesis of chronic HCV infection. Planning and development grant for international collaboration 2004. $25,000.

CIHR – Impact of HIV infection on the immune response against HCV. 2004-2007. $292,199.

Harris JA
AdvisorTeam.com, Personality type and medical specialty match at the time of the match [CaRMS]: A review of Canadian students. In kind donation of $4,500.

Canadian Medical Association [CMA]. Physicians' Specialty Profiles Survey. In kind donation $15,000.

Canadian Millenium Scholarship Foundation Medicine research project involving all Canadian medical schools. Estimated in-kind donation to MUN ~$11,000

Hirasawa K
Banting Research Foundation - Picornavirus replication and cellular signalling pathways. 2003-2004, $20,000.

Newfoundland Cancer Treatment and Research Foundation - Comparison of oncolytic viruses for cancer therapy. 2004-2005, $10,000.

Breast Cancer Society of Canada - Oncolytic virotherapy for tamoxifen resistant breast cancer. 2004-2006, $60,000.

CHIR/RPP New Investigator award. Virus replication and cellular signalling environment. 2004-2009, $125,000.

Hirasawa M
CIHR New Investigator award. Central control of energy homeostasis. 2004-2009, $250,000

CIHR – Central control of energy homeostasis. 2004-2007, operating grant $229,558.

NSERC – Role of short-term potentiation of spontaneous excitatory transmission in the supraoptic nucleus. 2004-2009, discovery grant $147,550.

CFI. – Cellular electrophysiology and photostimulation system for investigation of central mechanism of body weight control. 2003-2006, New Opportunity Fund $334,827.

Kao K
CIHR - Regulation of embryonic medendoderm induction by a novel rel/NF-kB oncogene. Operating grant renewal, 2003-2008, $682,000.

CIHR/RPP – Chemoresistance in Ovarian Cancer. Operating grant, 2001-2003, $50,010.

Kirouac G
NSERC - Pain mechanisms in the cingulate cortex. Discovery Grant, 2003-2005, $36,000.

CIHR/RPP New Investigator award - Cardiovascular and antinociceptive systems in the periaqueductal grey matter: modulation by dopamine, 2001-2006.

CIHR – Regulation of orexin (hypocretin) neurons by monoaminergic and cholinergic systems. 2004-2007, $228,378.

MacPhee D
CIHR/RPP New Investigator award – The role of integrin-linked kinase in trophoblast differentiation. 2003-2008.

CIHR/RPP – The role of integrin linked kinase in human trophoblast differentiation. 2003-2006. Operating grant $210,072.

NSERC – The role of focal adhesion signaling in uterine smooth muscle during pregnancy. Discovery Grant 2002-2006, $128,000.

Canada Foundation for Innovation. New Opportunities Award (Project number 7411): "Cellular Signaling Mechanisms in Growth Development and Disease", Co-investigators:

Jules Dore, Robert Gendron, Hélène Paradis. Period (07/01/03-06/30/07). Total project costs $1,257,358.

McGuire J
CIHR/RPP (Department of Innovation, Trade and Rural Development, Government of Newfoundland and Labrador) – PAR2 and cardiovascular disease. 2004-2007. $332,832.

McLean J
CIHR/RPP - Making memories: Cellular correlates and circuit analysis in early olfactory learning. Operating grant 2004-2009, $480,000

McKay DW
Centre for Coastal Studies. Cost recovery. ~$2,800.00

Mearow KM
NSERC - Stress-mediated signaling. 2003-2007, Discovery Grant renewal, $118,000.

CIHR - Interactions of growth factor and integrin-mediated signaling. Operating grant, 2003-2006, $280, 000.

Michalak TI
MediVir AB, Sweden - Project: "Determination of treatment schedule of MIV-210 of chronic WHV hepatitis - Trial Sequence ll", November 2002 - March 2004, research contract, $39,926.

MediVir AB, Sweden - Project: "Evaluation of treatment of chronic WHV hepatitis". February 2003 - March 2004, research contract, $26,400.

National Research Council of Canada/Institute of Biodiagnostics - Proton and phosphorous imaging of infectious disease in woodchuck model of hepatitis B and hepatocellular carcinoma, July 2003 - June 2007, research contract (to provide animals, assays and expertise), $15,300.

CIHR (Hepatitis C Initiative) - Hepatitis C virus lymphotropism and persistence. Operating grant 2000 -2004, $289,374.

CIHR - Hepadnaviral pathogenicity in woodchuck model of hepatitis B. Operating grant renewal 2001-2004, $331,517.

CIHR - Hepadnaviral pathogenicity in woodchuck model of hepatitis B. Operating grant renewal 2004-2009, $687,475.

CIHR/CRC program - Senior (Tier1) Canada Research Chair in Viral Hepatitis/Immunology, Canada Research Chair Program 2001-2008, $1,400,000.

Canada Foundation for Innovation – Infrastructure component of the Canada Research Chair, 2001-2004, $321,500.

Medivir AB, Sweden, “MIV-219 (FLG prodrug) treatment of chronic WHV hepatitis”, August 2001 - March 2004, research contract, $251,865

Cancer Research Society of Canada and Faculty of Medicine, MUN. Molecular probes for evaluation of cellular genes as markers of hepatocellular carcinoma – faculty internal award - $6,000.

Moody-Corbett P
HSF/CIHR/Alzheimer Soc/Pfizer – Exercise, aging and cognitive impairment. Principal investigator - Dale Corbett; collaborators - J. Peeling (Manitoba), C. Harley 2004-2007. $360,000.

Paradis H
CIHR - Tubedown-1 in cellular differentiaton and cancer. Co-investigator RL Gendron. Operating grant 2002-2005, $308,665.

CIHR – Tubedown-1 in blood vessel health and disease. Co-investigator RL Gendron. 2002-2005, $338,608

Foundation Fighting Blindness Canada – Tubedown-1 as a modulator of choroids-retinal angiogenesis. Co-applicant RL Gendron. 2002-2004, $60,000.

Canada Foundation for Innovation. New Opportunities Award (Project number 7411): Cellular Signaling Mechanisms in Growth Development and Disease. Co-investigators: Jules Dore, Robert Gendron, Hélène Paradis. 2003-2007, total project costs $1,257,358.

ACOA, Business Development Program Award – Pathogen free barrier project (Mouse Vivarium). Applicant: Memorial University; project leader, H. Paradis, R.L. Gendron. 2004, $372,812.

Paterno G
CFI - Tandem mass spectrometer for the analysis of molecular structures and interactions. Innovation Award 2004, $1,400,000.

NSERC - Characterization of novel fibroblast growth factor early response genes and their role in *Xenopus* embryonic development. Co-awarded with Dr. L. Gillespie. Discovery grant 2002-2006, $204,000.

Breast Cancer Society of Canada - A novel breast tumour-specific gene regulating estrogen receptor activity. Operating award 2003-2005, $60,000.

CIHR - Functional characterization of ER1: a novel tumour-associated transcription factor. Operating grant co-awarded with L.L. Gillespie. 2002-2005, $367,072; equipment, $13,890.

Smeda J
CIHR - Cerebrovascular alterations associated with stroke. Operating grant 2003-2006; $230,500. $11,500 equipment.

Tabrizchi R
Heart and Stroke Foundation - Drugs and the venous system. Operating grant, 2003-2006, $96,000.

NSERC – Control of vascular smooth muscle. Discovery Grant 2002-2006, $116,000.

NSERC- Integrative Animal Biology. 2002-2006, $28,111.

HSF – Pharmacology. 2003-2006, $32,000.

Van Vliet B
CIHR - Hypertension, mechanisms of salt-sensitivity. Operating grant 2003-2006 $334,327.

University and Community Service

University Service

Faculty members from the Division of Basic Medical Sciences had significant administrative duties in 2003-2004 in terms of membership on numerous Divisional, Faculty, and University committees.

Committees include
Academic (Professional) Development Coordinating Committee
Academic Council, School of Pharmacy
Academic Council, School of Graduate Studies
Ad Hoc Committee of SCS
Ad Hoc Committee on Senate Reform
Ad hoc Committee to review Medicine 310A/B
Admissions Committee
Admissions Interview Panel
Animal Care Barrier Facility
Animal Care Committee
Animal Resources Committee advising the Vice-President of Research at MUN on matters related to AC Services
Basic Medical Sciences, UGMS Committee
Board member, Genesis Group Inc.
Board of Directors, Medical Research Foundation (MRF)

Calendar Review Committee
Canada Millennium Scholarship Foundation
Clerkship Committee
Committee on Allocation of Canada Research Chairs
Committee on Genomic/Proteomic Core Facility
Committee on Undergraduate Studies, School of Pharmacy
Communications Subcommittee of Planning and Budget Committee
Comprehensive Exam Committees (SGS)
CREAIT Advisory Board
Dean of Science Review Committee
Dean's Advisory Committee on Graduate Studies
Executive Committee, Faculty Council
FACS Users Group
Faculty Development Committee
Faculty of Medicine Space committee
Graduate Studies Committee, Faculty of Medicine
Human Investigation Committee
Medical Research Foundation Committee, Faculty of Medicine
Medical School Laboratories Advisory Committee
Medicine Management Advisory Committee
Memorial University Recreational Complex
MUN eMed School Portal, Review and Advisory Committee
MUNFA Executive
MUNFA, MUN Project Green
MUNFA/MUN Pension Committee
Pharmacy Curriculum Committee
Pharmacy Graduate Studies Committee
Pharmacy Undergraduate Studies Committee
Pre-accreditation (MD program) self-study, Academic Environment Committee
Pre-accreditation self-study Task Force
Planning Committee, Research Space Expansion (Fac Med- MUN-HCCSJ)
Planning Committee, new Science Building (MUN)
Professional Development Council
Provincial Advisory Committee on Human Health Research
Research and Development Committee, Faculty of Medicine
Resource Management Committee (Faculty of Medicine)
School of Graduate Studies, Awards and Medals Sub-Committee
Search Committee for Immunology position
Search Committee for Neuroscience position
Search Committee, Dean of Medicine
Search Committee for Tier II CRC in Proteomics
Search Committee for Tier II CRC in Signaling in Disease
Senate Committee on Research
Senate Committee on Undergraduate Scholarships and Financial Aid
Senate Working Group on Increased Support for Graduate Programs
Steering Committee, Regional Partnership Program, CIHR

Steering Committee, new Sciences Research Buildiing

Faculty also serve as members of committees or reviewers for NGO and Government funding agencies – Alzheimer's Society of Canada, Alzheimer's Association (US), CIHR (operating awards and salary awards), Genome Atlantic, Heart and Stroke Foundation, Multiple Sclerosis Society, National Cancer Institute, NCE Stroke Network, NSERC, NL Neurotrauma Initiative. In addition, many faculty serve as reviewers for scientific journals and several serve on journal editorial boards.

Community Service

Faculty members in the Division have taken part in many events or made presentations to groups in the Community over the past year. Some of these include:

Aventis Biotechnology Challenge Organizing Committee
Brain Storm Competition for Brain Awareness Week
BrainStorm Competition Judge
Canada-wide Science Fair
Community Mediation Services
Epilepsy Newfoundland and Labrador
Health Promotion Committee, H&SFNL
Newfoundland Neurotrauma Committee
Presentation on research in the Faculty of Medicine to Provincial Government at Arts and Culture Centre for Minister of Trade, Technology and Rural Development
Princeton Alumni Schools Committee
Provincial Health Research Ethics Board advising on legislation for a provincial Ethics board – part of PHREB Committee
Rainbow Riders
Scientific Evaluation Review Committee, Aventis Biotechnology Challenge

Our faculty also contribute their time and expertise acting as members of local, provincial and national boards – Medical Research Foundation, the Newfoundland and Labrador Neurotrauma Initiative, the Genesis Group, the Heart and Stroke Foundation of Newfoundland and Labrador, Provincial Advisory Committee on Human Health Research, Canadian Coalition for High Blood Pressure Prevention and Control, Community Mediation Services, Memorial University Recreation Complex (MURC), Genesis, MUN Botanical Gardens.