

Manitoba Health Research Council
Grants and Awards 2004-2005



Introduction



Manitoba Health Research Council Grants And Awards 2004-2005

The Manitoba Health Research Council is pleased to recognise the recipients of Grants and Awards from the 2004-2005 competition. Council approved funding of 7 Establishment Grants, 5 Operating Grants, 8 Post Doctoral Fellowships, 25 Graduate Studentships and 2 Dissertation Awards. Establishment Grants provide funding for 3-year terms and the Operating Grants are for 2 years. Fellowships and Studentships are for one-year terms with the opportunity for renewal for a second year. The total value of new awards in the fiscal year 2004-05 was \$1,295,064. Together with the renewals of grants and awards from previous competitions the total amount awarded in 2004-05 was \$2,125,436. These funds were provided by the Government of Manitoba through the Department of Energy, Science and Technology.

NEW Post-doctoral Fellowships

- Dr. Ka Wai Au Yeung**, Department of Physiology, (Dr. Karmin O)
Dr. Shaohong Cheng, Manitoba Institute of Cell Biology, (Dr. David D. Eisenstat)
Dr. Florent Hube, Department of Pathology, (Drs. Yvonne Myal & Etienne Leygue)
Dr. Tanguy Marqueste, Department of Physiology, (Dr. Phillip Gardiner)
Dr. Treena Orchard, Department of Anthropology, (Dr. James Blanchard)
Dr. Joelle Ruthig, Department of Psychology, (Dr. Judy Chipperfield)
Dr. George Skliris, Manitoba Institute of Cell Biology, (Dr. Leigh C. Murphy)
Dr. Zhengfeng Zhang, Department of Human Anatomy & Cell Science, (Dr. Jiming Kong)

NEW Studentships

- Aimee Betker**, Department of Electrical Engineering/Med. Rehab. (Drs Z. Moussavi & Szturm)
Tracy Cherlet, Department of Biochemistry & Medical Genetics, (Dr. L.C. Murphy).
Shilpa Chooniedass-Kothari, Department of Biochemistry & Medical Genetics, (Dr. Etienne Leygue)
Melissa Dent, Institute of Cardiovascular Sciences, (Dr. Paramjit S. Tappia)
Alison Elliott, Department of Biochemistry & Medical Genetics, (Dr. Jane Evans)
Patrick Frosk, Department of Biochemistry & Medical Genetics, (Dr. Klaus Wrogemann)
Tara Haynes, Department of Psychology, (Dr. Raymond P. Perry)
Aynsle Hinds, Department of Community Health Sciences, (Dr. Lisa Lix)
Rosemarie Howie, Department of Medical Microbiology, (Dr. Michelle Alfa)
Hezhao Ji, Department of Medical Microbiology, (Dr. Francis A. Plummer)
Osaama Khan, Department of Pathology, (Dr. Marc Del Bigio)
Warren Law, Department of Biochemistry & Medical Genetics, (Dr. Geoff Hicks)
Jun Liu, Department of Physiology, (Dr. Larry M. Jordan)
Dianna Martin, Department of Biochemistry & Medical Genetics, (Dr. B. Triggs-Raine)
Tracie Olfrey, Department of Community Health Sciences, (Dr. Brian Cox)
Carl Olson, Department of Physiology, (Dr. James I. Nagy)
Julius Oyugi, Department of Medical Microbiology, (Dr. Keith R. Fowke)
Jason Peeler, Department of Human Anatomy & Cell Science, (Dr. Judy Anderson)
Hongyu Qiu, Department of Medical Microbiology, (Dr. Xi Yang)
Deepa Sankaran, Department of Human Nutritional Sciences, (Dr. Harold M. Aukema)
David Safronetz, Department of Medical Microbiology, (Dr. Michael Drobot)
Nicole Taylor, Department of Psychology, (Dr. L. Jakobson)
Genevieve Thompson, Department of Community Health Sciences, (Dr. Verena Menec)
Krista Wilkins, Faculty of Nursing, (Dr. Roberta Woodgate)
Xiaoyang Yang, Department of Physiology, (Dr. Peter A. Cattini)

NEW PhD Dissertation Awards

- Jennifer Bodnarchuk**, Department of Psychology, (Dr. Warren Eaton)
Jason Peeler, Department of Human Anatomy & Cell Science, (Dr. Judy Anderson)

NEW Operating and Establishment

Dr. Hao Ding was recruited to the Department of Biochemistry and Medical Genetics, University of Manitoba as a Canadian Research Chairs tier II chair in 2004. Dr. Ding obtained his bachelor of medicine and masters degree at the Shanghai Medical University and was awarded a PhD from the University of Leuven, Belgium. Dr. Ding then undertook post-doctoral training at the Samuel Lunenfeld Research Institute at the Mount Sinai Hospital in Toronto. During the course of these studies Dr. Ding contributed to the discovery of two new proteins; RTEL, a novel DNA helicase involved in telomere regulation and PDGF-C, a new member of the platelet derived growth factor (PDGF) family. **MHRC has awarded Dr. Ding a two-year Operating Grant to investigate**



the role of RTEL in the formation of astrocytomas (a cancer derived from specific cells found in the brain). In addition Dr. Ding has been awarded a three year Establishment Grant to assist him in establishing his overall research program utilizing transgenic mice, derived using embryonic stem cell technology, to address the in vivo function of a number of genes. These studies have implications for a broad variety of disease states and inherited disorders including a variety of tumours, limb girdle muscular dystrophy and cleft palate to name but a few.

Dr. Brent Fedirchuk of the Spinal Cord Research Centre (SCRC) in the Department of Physiology, University of Manitoba is investigating how the activity of nerve cells in the spinal cord is controlled during movements. In recent years, scientists at the SCRC made the breakthrough discovery that motor behaviours such as locomotion facilitate motoneuron activity by a lowering of the voltage threshold for action potential production in these cells. Dr. Fedirchuk has extended these findings to demonstrate that similar effects can be produced by certain signaling molecules, known collectively as monoamines, which are involved in motor activity. **A two-year Operating Grant from the MHRC will allow Dr. Fedirchuk to investigate the mechanisms responsible for this**



newly discovered regulation of neural electrical properties. These studies provide an exciting opportunity to explore a fundamental issue in neuroscience - how are neurons activated to contribute to a motor output? Understanding these processes have profound implications for understanding the events that contribute to motor impairment resulting from trauma, stroke or disease states (e.g. ALS). An understanding of the mechanisms facilitating recruitment of neurons in the motor system could provide novel targets for therapeutic interventions for motor dysfunctions.

Dr. Fedirchuk undertook undergraduate and post graduate studies at the University of Manitoba and then was recruited back to the U of M following post doctoral training at the University of Copenhagen, Denmark and at the National Institutes of Health, United States.

Neurodegenerative disorders affect 1 in 8 Canadians and the incidence is rising as the population ages. At present there are no effective therapies for any of these disorders. Development of such therapies is critically dependent on a better understanding of the mechanisms of these disease states. **Dr. Jiming Kong** is investigating the involvement of various pathways for cell death, including apoptosis, necrosis and alternative (or so called atypical) pathways in neuronal cell death. In particular, Dr. Kong is attempting to elucidate the involvement of a protein known as BNIP3 in atypical pathways of apoptosis. The goal of the research is to fully define the BNIP3 activated neuronal cell death pathway and ultimately develop strategies to protect neurons from cell death by



inhibiting BNIP3 expression. Such therapies may have major implications for future treatment of a variety of diseases including amyotrophic lateral sclerosis (ALS or Lou Gherig's disease), Alzheimer's disease and brain ischemia (stroke). **MHRC is supporting Dr. Kong's research by means of a three-year Establishment Grant.**

Dr. Kong was recruited to the Department of Human Anatomy and Cell Science, University of Manitoba in 2002. He holds an MD degree from Luzhou Medical College and MSc and PhD degrees from The First Medical College of PLA, China. Dr. Kong undertook post-doctoral training at Baylor College of Medicine, Houston, Texas and at the University of Massachusetts Medical Centre.

Dr. Michelle Lobchuk earned her RN diploma from the Health Sciences Centre, Winnipeg and went on to complete bachelor and masters degrees in nursing at the University of Manitoba. Dr. Lobchuk received her PhD from the University of Manitoba followed by post-doctoral training in evidence based nursing practice. Dr. Lobchuk was appointed as assistant professor in the faculty of nursing in 2003. **MHRC is pleased to support Dr. Lobchuk with a three-year Establishment Grant. It is especially noteworthy that Dr. Lobchuk was also recognised by being awarded a National Cancer Institute of Canada Research Scientist award this year.** Dr. Lobchuk's research focuses on the role of family caregivers and their increasing role in relating to health care providers



around the symptomatic comfort of their loved ones whose advanced ill health makes it hard for them to speak for themselves. Specifically, the main focus of the research program is the design of an intervention that will help health care providers to prompt such caregivers to take a perspective that will most accurately reflect the actual symptom experience of people with advanced lung cancer. At present there exists a startling dyscongruence between caregiver's and patient's account of symptomatic comfort. It is anticipated that these studies will contribute greatly to improving pain control and other symptoms in cancer patients. The outcomes of these studies will also be implemented for disease states beyond the field of cancer e.g. chronic diseases such as multiple sclerosis.

Despite great advances in the diagnosis and treatment of cancer, this disease continues to inflict a devastating burden on society in terms of mortality, morbidity and economic cost. Although there has been significant progress in cancer therapy, the outcome of the treatment is often unfavourable even if initial remission is achieved. Successful therapy for one patient may fail for another or may lead to intolerable adverse effects. **Dr. Marek Los'** research program comprises three main research thrusts designed to address these issues. In the first of these projects Dr. Los will investigate the potential for Apoptin, a viral protein, to selectively target cancer cells. A second area of research will investigate the pathway of apoptotic cell death and its place in cancer therapy.



A third research project involves the development of a "real time" monitor of therapy progress. The availability of such a diagnostic procedure would increase the effectiveness of cancer treatment while helping to minimise the adverse effects. **MHRC is supporting this research by means of a three-year Establishment Grant.**

Dr. Los was awarded MD and PhD degrees by the University of Heidelberg, Germany. Following initial post doctoral work at the German Cancer Research Centre in Heidelberg, Dr. Los undertook further post doctoral training at the University of Tuebingen and the University of Muenster, both in Germany. Dr. Los was awarded his "Habitation" by the University of Muenster in 2002. Dr. Los was recruited as a Canada Research Chairs tier II chair by the Department of Biochemistry and Medical Genetics in 2003 and was also appointed a Senior Investigator at the Manitoba Institute of Cell Biology (Cancer Care Manitoba), where his laboratories are located.

The potential health related benefits to be gained from specific components of our diet has been emphasized by the increasing importance placed on research into nutraceuticals and functional foods. **Dr. Mohammed Moghadasian** is an expert on the beneficial of phytosterols (substances with a structure similar to cholesterol and found in plants) on atherosclerosis and related diseases. Dr. Moghadasian received his DVM from Shiraz, Iran and MSc and PhD degrees from the University of British Columbia. Following post doctoral training at UBC and a brief stint in industry, Dr. Moghadasian held a position as Clinical Assistant Professor at UBC, a position he held when he was recruited to the Department of Human Nutritional



Sciences, University of Manitoba in 2003. Dr. Moghadasian is also a principal investigator at the National Centre for Agri-Food Research in Medicine at the St Boniface Hospital Research Centre where his laboratory is located. **MHRC has awarded Dr. Moghadasian a three-year Establishment Grant to further his research into the protective effects of phytosterols for cardiovascular health.** One particularly novel, and exciting, area of research that Dr. Moghadasian is pursuing is the potential for phytosterols and other dietary components to mitigate the coronary atherosclerosis that occurs following heart transplantation. This condition may be difficult to control by conventional drug therapies due to the potential for interaction of these compounds with anti-rejection drugs. Inclusion of certain dietary agents may enhance safety and efficacy of the drugs.

Asthma is the most common chronic disease in children affecting approximately 10% of the pediatric population. Although many therapeutic approaches have been developed, the incidence and cost of asthma to society continues to increase. Future development of successful therapies is critically dependent on a better understanding of the basic mechanisms responsible for the disease. **Dr. Abdelilah Soussi-Gounni of the Department of Immunology, University of Manitoba has been awarded a two-year Operating Grant to investigate a novel immunoregulatory role of airway smooth muscle cells in asthma.** Specifically, Dr. Soussi-Gounni is investigating the novel hypothesis that Interleukin 9 activation of airway smooth muscle cells is a critical



determinant of airway inflammation and hyperresponsiveness through release of various mediators and ultimately regulation of muscle contraction and relaxation.

Dr. Soussi-Gounni received his PhD from the Pasteur Institute at Lille University, Lille, France and following post doctoral training at the University of Basel, Switzerland and McGill University, Montreal was recruited to the University of Manitoba in 2001.

Dr. Jude Uzonna was recruited as an assistant professor to the Department of Immunology, University of Manitoba in 2004. Dr. Uzonna graduated with a DVM from the University of Nigeria, followed by a PhD from the University of Saskatchewan. Following 2 years of post-doctoral training at the University of Saskatchewan, Dr. Uzonna undertook a further period of post doctoral training at the University of Pennsylvania. **MHRC is pleased to assist Dr. Uzonna in establishing his research program at the University of Manitoba by means of a three-year Establishment Grant.**

The importance of Dr. Uzonna's area of research is emphasised by the following facts; Over 350 million people in 88 countries are at risk of developing leishmaniasis (infection with a protozoan



parasite), with 2 million new cases reported annually and a worldwide prevalence of 12 million. Recently, outbreaks of leishmaniasis have been reported in Iran, Iraq and Afghanistan, and several gulf war veterans including peacekeepers in Afghanistan (where Canada has personnel currently) have contracted the disease. Various forms of pentavalent antimonial compounds are used for the treatment of human leishmaniasis but treatment failures and drug resistances are common. Therefore, the development of new therapeutic measures, including vaccines is highly desirable. Dr. Uzonna has already made groundbreaking contributions to this field, particularly his observation that maintenance of resistance to Leishmania following resolution of disease is completely dependent on the presence of a low number of parasites. When parasites are no longer present, resistance is lost. These results have great implications with respect to development of vaccines. Dr. Uzonna's research will seek to broaden our understanding of the factors required for inducing and maintaining effective anti-Leishmania immunity.

The lymphatic vessels form a low pressure circulatory system that functions to re-absorb fluid from the extracellular space and to serve as a conduit for immune cells. Lymphatic disorders (lymphedemas) can arise from both genetic and non genetic reasons (e.g. surgery or radiation therapy). Patients with lymphedema suffer from the accumulation of extracellular fluid resulting in tissue swelling, chronic inflammation and loss of limb function. The lymphatic system may also play a role in the spread of tumours within the body. Compared to the development of blood vessels, very little is known about by the development of the lymphatic system, largely because of a lack of suitable markers. Previous research by **Dr. Jeffrey Wigle**, during his post doctoral training, has made a significant advance



in this field of research by demonstrating that the gene Prox 1 is critically involved in lymphatic development. **A two-year Operating Grant from MHRC will allow Dr. Wigle to investigate the mechanisms by which Prox 1 helps determine lymphatic vessel development.** It is anticipated that such knowledge will contribute to our understanding of how new lymphatic growth is regulated and subsequently be better able to design approaches to either inhibit (for cancer therapy) or stimulate (to treat lymphedemas) the growth of new lymphatic vessels.

Dr. Jeffrey Wigle received his PhD from the University of Ottawa and then undertook post-doctoral training at St. Jude's Children's Research Hospital in Memphis, Tennessee. In 2001 Dr. Wigle was recruited to the department of Biochemistry and Medical Genetics, University of Manitoba and the Division of Stroke and Vascular Disease, St Boniface General Hospital Research Centre.

One of the surprises from the Human Genome Project was the finding of a relatively small number of human genes in comparison to the anticipated number required to code for the diverse functions of cells in whole organisms. At least part of the required diversity is achieved through alternate use of sections of coding sequences (exons) in generating the final protein product. **Dr. Jiuyong Xie** is one of only a handful of scientists in the world studying the gene-regulatory process called alternative splicing of precursor messenger RNAs (pre-mRNAs). This process is essential for cell's normal functions as well as being involved in human genetic diseases when the system goes awry. Dr. Xie is studying how this process is controlled with model genes and hopes to broaden our understanding



of the events that occur in normal as well as disease conditions. It is anticipated that these studies will provide insights into cell signal regulation of alternative splicing in general and help understand and develop potential therapeutic approaches to correct the splicing of misregulations in human genetic diseases. **MHRC is supporting Dr. Xie's research with a two-year Operating Grant and a three-year Establishment Grant.**

Dr. Xie was awarded his PhD in genetics by the Peking Union Medical College and proceeded to postdoctoral training at Cornell University in New York and at the University of California, Los Angeles. Dr. Xie was recruited to the Department of Physiology, University of Manitoba as an assistant professor in 2003.



Scientific Review Committees

Conducting a grants and awards programs would be impossible without the invaluable contribution of time and effort by our review committee members and external reviewers. Council is extremely grateful to the 30 researchers who volunteered their services to serve on the three review committees. Given the very high quality of the applications received this was no easy task. Most of the members of the review committees have previously received funding from MHRC either as students, fellows or independent investigators (or in some cases throughout many stages of their careers). It is truly gratifying to see them “pay back” to the system that supported them. Finally, Council owes a great debt to the large number of external reviewers from outside of the province, or in many cases outside of the country, who provided expert appraisal of the grant applications. It is readily apparent from the quality of the reviews, which provided constructive criticism to the newly independent investigators, that the reviewers took their task seriously dedicating significant time and effort to it.



Personnel Awards Scientific Review Committee

From left to right: Dr. Fiona Parkinson, Dr. Karmin O, Dr. Jim House, Dr. Alberto Civetta, Dr. Kathleen Gough, Dr. Gary Glavin (Chair), Dr. Kevin Coombs, Dr. David Merz, Dr. Peter Watson, Dr. Gunner Valdimarsson and Dr. David Eisenstat



Operating & Establishment Grants Scientific Review Committee

From left to right: Dr. Teresa Dekievit, Dr. Harold Aukema, Dr. Rachael Scarth, Dr. James Gilchrist, Dr. Jeff Wigle, Dr. Spencer Gibson (Chair), Dr. Etienne Leygue, Dr. David Moore, Dr. Grant Hatch, Dr. Steve Jones and Dr. Archie McNicol



Social/Population Health Scientific Review Committee

From left to right: Dr. Yoshi Iwasaki, Dr. Andrea Kilgour, Dr. Jeff Sisler, Dr. Anita Kozyrskij, Dr. Alan Katz, Dr. Sharon Bruce (Chair), Dr. Emily Etcheverry, Dr. Judy Chipperfield and Dr. Diana Clarke



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