Research at The Royal ...

University of Ottawa
Institute of Mental Health Research

Annual Report 2009-2010

Services de santé
RoyalOttawa
Health Care Group

University of Ottawa
Institute of Mental
Health Research

IMHR at a Glance

The University of Ottawa Institute of Mental Health Research (IMHR) was established in 1990 by the Royal Ottawa Health Care Group (The Royal) and the University of Ottawa. In helping to fulfill the role of The Royal as a tertiary diagnostic, treatment, and education centre, the IMHR continually strives to promote, support, integrate, and disseminate basic and clinical research knowledge through collaborative efforts and networks. With The Royal, the IMHR is developing leading-edge multidisciplinary research programs with the ultimate goal of fostering innovative ways of treating mental illness.

Mission

To create scientific knowledge to improve mental health and well-being locally and globally.

Vision

To be a premier research institute with national and international centre of excellence status that continuously improves mental health and well-being through leadership, collaborative discoveries and innovation in research, patient care and education.

Values

Excellence, collaboration, integrity, respect, compassion, wellness and equity.

Table of Contents

Message from the President and CEO of IMHR and the Chair of the Board of Directors

The University of Ottawa Institute of Mental Health Research (IMHR) is one of Canada's largest mental health research centres. As an integral part of the Royal Ottawa Health Care Group (The Royal), a psychiatric teaching hospital, the IMHR is well positioned to generate new knowledge and to translate it into improved patient care. More than 90 research scientists, clinicians and volunteers work alongside our key partners to better understand the causes of mental illness and to find better ways of detecting and treating it.

As this annual report reveals, IMHR scientists continue to break ground in several key research and knowledge areas, particularly in the area of depression. Our researchers are sharing their discoveries through the publication of 156 peer-reviewed scientific papers and book chapters, and by participating in the Canadian Mental Health Research Network (CMHRN), our annual Open Minds Symposium, public lectures and various media activities. They have the means to participate in and lead novel mental illness research projects in Canada and in international research collaborations. These are very inspiring times.

This year has been an exciting and productive one. We have seen considerable progress in Phase II of our strategic plan. This included laying the groundwork for the development of a new multidisciplinary Depression Research Centre which will encompass several leading-edge scientific research platforms that specialize in basic and clinical mental illness research. It will comprise some of the world's most accomplished and promising minds in mental health research – several of whom hold prestigious Government of Canada Research Chairs (CRCs). This centre will systematically tackle depression which is one of the leading causes of social and economic burden locally and globally.

The Depression Research Centre will also include an important knowledge transfer and uptake component which will take the research findings from the laboratory (bench) to the clinic (bedside and neighbourhood) where this new knowledge can be used to improve the quality of life for patients and their families.

In addition, this year we worked on over 82 clinical and 45 basic research projects. Our scientists are serving as teachers and mentors to more than 85 graduate students, post doctoral fellows, medical interns and residents. In 2009-10, IMHR received funding of over $5.5 million through grants and contracts.

We are also proud to acknowledge the recipients of this year's IMHR Young Investigator Awards—Ms. Natalia Jaworska and Mr. Niall Duncan. The awards recognize talented young researchers in the field of mental health research and acknowledge the best presentation in clinical and basic science research. We are looking forward to working with them and their cohorts in the years to come.

As the research arm of The Royal, our strategic plan is closely aligned with the strategic directions of The Royal. One of The Royal's five strategic directions is "Advancing Discovery" in the quest of becoming a world-renowned academic health sciences centre. This important strategic direction supports and enhances opportunities for the integration of research, education, clinical care and partnerships.

In the past year, we made a substantial commitment to work collaboratively with the University of Ottawa and the Royal Ottawa Foundation for Mental Health to help raise funds to support the best possible patient care and leading edge research. The Foundation is committed to supporting our strategic plan and is dedicated to working with key stakeholders, volunteers, donors, patients and their families to make a difference. We are proud to be part of this endeavour.

We thank our Board of Directors, scientists, students, dedicated staff and volunteers for their hard work. Together, with our loyal supporters and our government partners in mental health care, we look forward to achieving our vision of continuously improving mental health and well-being and of becoming a premier mental health research institute in Canada and the world, through excellence, collaboration, integrity, respect, compassion, wellness and equity.

Dr. Zul Merali
President & Chief Executive Officer

Shirley Westeinde
Chair of the Board of Directors

Meeting our Objectives

The overarching objective of the IMHR is to generate scientific knowledge and translate that knowledge into clinical practice to ultimately improve mental health and well-being. We are supporting this objective by providing a First Friday Lecture Series and Public Lectures. The aim of the lectures is to help inform and educate clinicians, scientists and the public of the research being conducted to improve and advance the understanding and treatment of mental illness. These lectures include:

First Friday Lecture Series – April 1, 2009 to March 31, 2010

November 6, 2009	**How is Informed Consent Related to Emotions and Empathy? An Exploratory Neuroethical Explanation** Dr. Georg Northoff
November 20, 2009	**Advances in Psychological Treatment of Psychosis** Dr. David Kingdon
February 5, 2010	**PTSD: Neurology and the Impact of Co-Morbidity** Dr. Alexander Neumeister
March 12, 2010	**Forgiveness and Letting Go** Dr. Leslie Greenberg

Public Lectures

October 8, 2009	**UNTANGLING THE MIND II: Post-Traumatic Stress Disorder – New Research Shows Promises for a Cure** Dr. Roger Pitman Dr. Alain Brunet Ms. Victoria Maxwell Dr. Jakov Shlik Guest Speakers: Steven Lively and Michel Estey
November 7, 2009	**Open Minds Across Canada Mental Health Symposium** Dr. Georg Northoff Dr. Pierre Blier Dr. Paul Albert
March 26, 2010	**PATHWAYS TO RECOVERY: New Generation, New Break throughs, New Hope** 2ND Annual Young Researchers' Conference (conducted in association with the IMHR)

The Year in Numbers

Research Staff:	Researchers	27
	Affiliate Scientists & Visiting Scholars	30
	Trainees	117
	Support Staff	32
	Volunteers	34
Peer Reviewed Publications:	Total	127
Books and Chapters:		29
Research Grants and Contracts:		71
Research Space:		22,714 sq. ft.

The Royal Ottawa Mental Health Centre

Advancing the Understanding and Treatment of Depression

"The Depression Research Centre represents the best strategy for bridging the laboratory bench and the patient's bedside, while providing an ideal environment for establishing new avenues for successful diagnosis, prevention, treatment and management of depression."

– Dr. Pierre Blier

Depression currently affects almost 3.4 million Canadians and occurs in persons of all genders, ages, and backgrounds. It carries the largest burden among all medical disorders in middle and high income countries, and is the third largest medical illness burden world-wide. Depression and other mental illnesses have an enormous impact on societal well-being and cost Canada an estimated $51B for health care, criminal justice, child abuse and neglect, addictions, lost income and productivity, and institutional stresses.

Despite these startling statistics, more than two-thirds of people do not seek appropriate help and treatment for depression and fewer than 25 percent of those affected with depression have access to effective treatments. For those who are fortunate to have access to treatments, the treatments work well only one third of the time.

The IMHR is establishing a unique multidisciplinary Depression Research Centre (hereinafter the Centre) to transform the way we diagnose, prevent and treat depression.

"We are very excited about how uniquely positioned IMHR is to create a Centre like this," says Dr. Pierre Blier, Director of IMHR's Mood Disorders Research Unit. "The Centre represents the best strategy for bridging the laboratory bench and the patient's bedside, while providing an ideal environment for establishing new avenues for successful diagnosis, prevention, treatment and management of depression."

Dr. Blier says the Centre will enable clinicians to diagnose depression quickly and accurately, using state of the art diagnostic tools based on brain scans, electrical brain activity and blood tests that identify key genetic, environmental and/or biological markers of depression. In other words, clinicians will be able to develop new, personalized treatments based on the etiology of disease and more precise monitoring than has been imagined in the past.

"One of the key elements to the Centre will be the importance of a follow-up evaluation with patients every two weeks," says Dr. Blier. "If we see no improvement within two weeks, we will be able to adjust the treatment or accelerate new and more effective drug combinations and treatments."

Dr. Blier has established an innovative dual-medication approach which increases depression remission rates from about 30 percent to a remarkable 50 to 60 per cent in the first six weeks. "We treat patients who have failed to see results with three, four, five antidepressants—one after the other. One of our major priorities is to clarify through research, how the medications are working and make them work quickly."

Dr. Blier also adds that the Centre will be able to advance the understanding of the high prevalence of co-occurrence between depression and other psychiatric illnesses (such as psychosis, post-traumatic stress disorder (PTSD), addictions, anxiety) and physical illnesses (such as obesity, diabetes, Parkinson's and heart disease). The Centre will encompass several key basic and clinical mental illness scientific research approaches including:

- Depression and Co-Morbidities Clinic – where the patient is treated for all conditions concurrently
- Biomarker Discovery – where we will develop new blood tests for depression
- Brain Imaging – where brain scans will become diagnostic tools like they are for cancer and heart disease
- Clinical Electrophysiology – where brain activity will be used as a signature for diagnosis and treatment
- Genetic and Epigenetic Factors – where the role of genes and the environment will be factored into diagnosis and treatment
- Proteomics – where signature proteins in blood will be used to diagnose illness and follow treatment outcomes
- Preclinical and Translational Research - where research in the laboratory will be translated into promising new therapies
- Sleep Disorders and Depression – where changes in sleep architecture will be used in diagnosis and treatment selection
- Psychosocial Research – where the role of the social environment will be characterized and factored into treatment interventions
- Knowledge Transfer and Uptake – where the knowledge will be transferred from the bench to the bedside and clinics

"Antidepressants are the number one class of prescription drugs on our campus."

– Allan Rock
President and
Vice-Chancellor,
University of Ottawa

"IMHR is unique in Canada," says Dr. Zul Merali, President and CEO. "We have attracted a core team of some of the world's most accomplished and promising minds in mental health research. Having dedicated scientists and clinicians with comprehensive multidisciplinary expertise working together to enhance and significantly advance the understanding and treatment of depression is crucial to reducing one of the world's largest health burdens."

Dr. Pierre Blier, Director of IMHR's Mood Disorders Research Unit, University of Ottawa Canada Research Chair in Psychopharmacology and Endowed Chair in Mood Disorders Research at the University of Ottawa.

Brain Imaging Tools that Look at How our Mind and Brain Works

"By using brain imaging techniques and biochemical measures, our research provides innovative insights into the causes of psychiatric disorders and into the development of new treatments."

– Dr. Georg Northoff

Despite rapid scientific progress, the brain still remains the most intricate biological structure known to man. Our brain gives us the power to think, plan, speak and imagine. How does the brain accomplish this? What are the underpinnings of self and consciousness? How do these contribute to psychiatric disorders? Dr. Georg Northoff, IMHR's Director of its recently established Mind, Brain Imaging and Neuroethics Research Unit, plans to address these questions.

To answer these important scientific questions involving the brain, Dr. Northoff has adopted an innovative trans-disciplinary approach to his work, combining neuroscience, philosophy and psychology.

"The goal of our research program is to investigate the link between mental and neural states, as well as how our brain constitutes the experience of a self," says Dr. Northoff. "A key component to our program will be the study of psychiatric conditions such as depression and schizophrenia."

His multidisciplinary research team, comprised of more than 15 scientists from as far as Japan, China and India, is using innovative combinations of brain imaging tools and biochemical measures to study changes in certain brain regions known to be involved in psychiatric disorders.

"By using brain imaging and biochemical measures, we are already able to determine what treatment modalities may work best for a particular patient. In the near future, our ongoing research will provide new insights not only into the etiology of the disease but also early diagnosis and more effective treatment interventions," says Dr. Northoff.

For example, in a recent research study looking at the brain's resting state activity and its biochemical make-up in depression, Dr. Northoff's team demonstrated that the brain's resting state activity is abnormally elevated in acute depression.

"The biochemical mechanisms causing this abnormal elevation, as well as their relationship to the acute depressive symptoms, remain unclear," says Dr. Northoff. "Therefore we are currently conducting a study in healthy and depressed subjects where we combine different imaging techniques (functional MRI, PET, MRS) in an innovative and ingenious way to better understand why this is happening, including what biochemical changes in certain neurotransmitters such as GABA and Glutamate (agents which relay signals between brain cells) cause the abnormal elevation of the resting state activity in depression."

Dr. Northoff believes the findings of studies of this kind will eventually provide researchers with the ability to devise more specific and better diagnostic tools and therapies for treating depression.

In addition to its impact on depression and other psychiatric disorders like schizophrenia, the transdisciplinary approach will provide novel insights into old and lingering problems like the mind-brain relationship and ultimately into human nature.

Dr. Georg Northoff, Director IMHR's Mind, Brain Imaging and Neuroethics Research Unit and his international research team.

Providing a Foundation for the Development of New Medications to Treat Depression

"By assessing electrical brain activity, we are able to show that there is a link between depression and smoking."

– Dr. Verner Knott

Very often depression is accompanied by substance abuse problems. Cigarette smoking has long been associated with depression. Research shows that between 40 - 50 percent of people diagnosed with depression smoke cigarettes. There is also a growing body of research evidence that suggests that nicotine, the highly addictive ingredient found in cigarettes, alters brain functions of those diagnosed with depression. Some researchers believe that people who suffer from depression smoke cigarettes as a means to "self treat" their depressive symptoms. In other words, smoking is a way to self-medicate abnormal brain systems that underlie symptoms of depression.

A recent research study on the impact of nicotine on brain electrical activity and mood levels by Dr. Verner Knott, Co-Director of IMHR's Clinical Neuroelectrophysiology Laboratory, suggests that there may indeed be some truth to this assumption.

The study looked at the impact of nicotine on individuals genetically prone to developing depression (based on a family history of depression). Study participants were administered a treatment (five hours) to temporarily reduce serotonin levels (serotonin, a neurotransmitter that regulates the extent or intensity of moods). The participants were divided into two groups. One group received nicotine (through a patch) and the other group wore a placebo patch without a trace of nicotine.

"What we found was that the group wearing the placebo patch with no nicotine experienced low mood and showed reduced electrical activity in frontal brain regions," says Dr. Knott. "The group who received the nicotine patch had normal electrical brain activity (and presumably restored brain serotonin levels) and relatively no change in mood."

Dr. Knott's research findings support the notion that there is a link between smoking and depression and that nicotine may have some anti-depressant-like effects. It also supports the theory that smoking can be an attempt to self-medicate symptoms of depression by manipulating brain functions with nicotine.

"These findings are very relevant to clinicians treating individuals suffering from depression," says Dr. Knott. "By assessing the electrical brain activity, we have shown that there is a link between depression and smoking. We are going to be testing whether nicotine can actually augment the effects of current antidepressant drugs. We are also working towards developing brain activity monitoring as an early "signature" of depression and as an early predictor of treatment responses in patients at The Royal."

Examining our Brain's Activity to Help Combat Depression

There is a growing body of evidence on brain wave research that suggests abnormal sleep accompanies many psychiatric conditions such as depression. Co-Director of IMHR's Clinical Neuroelectrophysiology Laboratory and Director of the Sleep Disorders Clinic, Dr. Alan Douglass, and co-researcher Dr. Elliott Lee, are now beginning to characterize some of the consequences of disrupted sleep in patients suffering from chronic non-responsive depression.

"It is possible that a sleep study could eventually become psychiatry's "first line laboratory test"."

– Dr. Alan Douglass

"Although the precise function of sleep is not known, it is known that disrupted sleep is important in several psychiatric disorders," says Dr. Douglass. "In the next year or two, sleep research will have a great impact on our understanding and treatment of chronic non-responsive depression. Diagnosing unrecognized clinical sleep disorders such as sleep apnea will contribute to better treatments and help patients respond to their current antidepressant drug."

Using polysomnography—a technical term for a sleep study that involves recording brain waves that are used for assessing the quality of sleep and airflow at the nose and mouth—Dr. Douglass and his team are conducting a research study on identifying sleep patterns in depressed patients to help in the classification of depression and to inform animal and neurochemical research in this area.

While this research is still in its infancy, Dr. Douglass is optimistic about the possibilities.

"Of course many more patients need to be studied in uniform protocols to confirm that REM density is diagnostic of depression, but it is possible that a sleep study could eventually become psychiatry's "first line lab test", i.e., a physiological measure closely tied to subjective mood symptoms that can identify persons at risk for depression before it occurs," says Dr. Douglass. "We are confident that sleep patterns and characteristics will help us identify patients at risk to develop depression, diagnose depression and also guide the customization of therapeutic interventions."

(left to right) Dr. Verner Knott, Co-Director of IMHR's Clinical Neuroelectrophysiology Laboratory, Dr. Alan Douglass, Co-Director of IMHR's Clinical Neuroelectrophysiology Laboratory and Director of the Sleep Disorders Clinic and Dr. Elliott Lee, Sleep Disorders Clinical Investigator.

Ms. Natalia Jaworska and Mr. Niall Duncan

Recognizing Talented Mental Health Researchers

Two IMHR Young Investigator Awards are presented annually to recognize talented young researchers in the field of mental health research: one award for best presentation in clinical research and one award for best presentation in basic science research bearing on mental health. The awards provide a cash prize of $1,000 each to be used to attend a scientific meeting of their choice, encouraging and facilitating his/her lifelong commitment to the field of mental health research.

The recipients of this year's Awards are Ms. Natalia Jaworska and Mr. Niall Duncan.

Ms. Jaworska received the Young Investigator's Award for her research work at assessing electrophysiological markers in individuals who are susceptible to the development of depression or who are actively depressed.

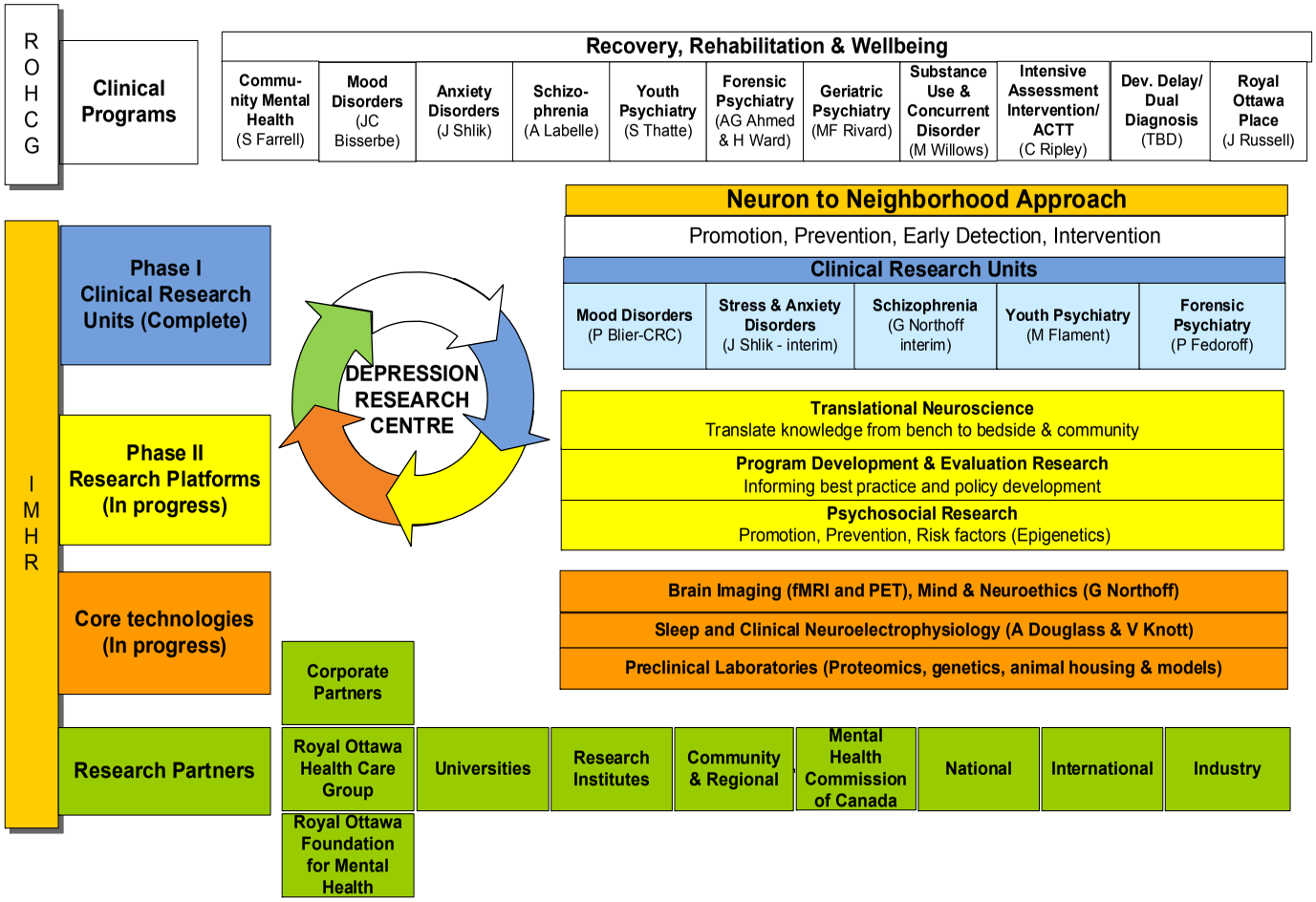
Working under the supervision of IMHR researcher Dr. Verner Knott, Ms. Jaworska's research is aimed at gaining greater insight into the brain correlates of depression. Such insight may be especially useful for earlier switching of antidepressant medications that are ineffective in particular individuals. Ms. Jaworska's research goal is to help to develop tools that clinicians can use to minimize the trial and error factor when prescribing a drug to a patient.

Mr. Niall Duncan received the Young Investigator's Award for his research work on a combined functional MRI and magnetic resonance spectroscopy study. It is one of the first studies to combine these two techniques in this way.

Working under the supervision of Dr. Georg Northoff, Mr. Duncan's research is aimed at developing an accurate understanding of how the brain functions to advance the treatment of mental illnesses. His work looks at the communication between different regions of the brain and its relation to glutamate, an important neurotransmitter. The functioning of the glutamate system has been seen to be different in people suffering from major depressive disorder. Understanding this system could allow for the development of new, more effective treatments for this condition.

Research at the Royal: Strategic Directions (2009-2012)

University of Ottawa Institute of Mental Health Research (IMHR)



IMHR's Strategic Directions — Phase II

The last five years have marked a period of unprecedented growth at the IMHR. Our first phase resulted in the creation of five illness-or population-based Clinical Research Units (CRUs; depicted in light blue in the diagram on page 14). These include:

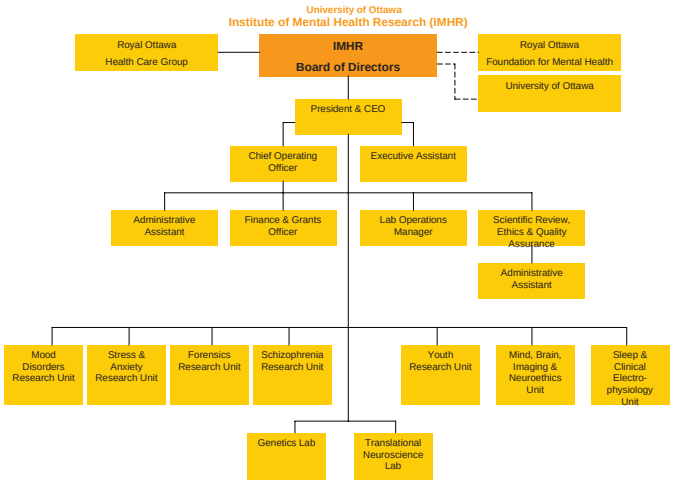
- Mood disorders
- Stress and anxiety disorders
- Schizophrenia
- Youth psychiatry
- Forensic psychiatry

IMHR is now embarking on establishing Phase II of its strategic directions—the creation of new research platforms and core technologies (depicted in yellow and orange in the diagram on page 14). Together with our partners, IMHR is poised to play an expanded role in research to chart newer and more effective mental health discoveries through its newly created Depression Research Centre (depicted in a white, blue, yellow, orange and green circle on page 14). The new research platforms and core technologies include:

- Program Development and Evaluation Research
- Brain Imaging
- Integrated Population, Community and Psychosocial Research
- Translational Molecular and Behavioural Neuroscience
- Sleep and Clinical Electrophysiology

IMHR's Phase II strategic directions will support not only research at the IMHR and Royal Ottawa Health Care Group (The Royal), but will also enhance the regional and national research capacity of our stakeholders and partners (depicted in green in the diagram on page 14).

Governance and Accountability



Our Partners

At the University of Ottawa Institute of Mental Health Research (IMHR) we value our strong partnerships. Engaging our partners in leading-edge multidisciplinary research programs helps us work toward our goal of fostering innovative ways of diagnosing and treating mental illness.

We believe that by working together, we are able to integrate our basic and clinical research knowledge with clinical services, education, teaching and advocacy and awareness, ultimately providing patients suffering from mental illness with the very highest quality care.

Our partners include:

The Royal Ottawa Health Care Group (The Royal)

The Royal is comprised of the Royal Ottawa Mental Health Centre, the Brockville Mental Health Centre, the University of Ottawa Institute of Mental Health Research, Royal Ottawa Place and the Royal Ottawa Foundation for Mental Health. The Royal provides specialized mental health services for residents across Eastern Ontario with complex and serious mental illnesses. The Royal's clinicians work with community partners to ensure patients/clients have timely access to services including inpatient, outpatient, partial hospitalization, day hospital, assertive community treatment, outreach and consultation models of treatment.

The Royal Ottawa Foundation for Mental Health (ROFMH)

The Royal Ottawa Foundation for Mental Health raises funds to support the best possible patient care and leading edge research provided by the Royal Ottawa Mental Health Centre, the Brockville Mental Health Centre, and the University of Ottawa Institute of Mental Health Research. The Foundation's funds provide support for the purchase of Hospital equipment, capital projects and research that contributes to the improvement of patient care, now and for the future.

The University of Ottawa

The University of Ottawa is one of Canada's top research-intensive universities which facilitates continual collaboration and fosters leading-edge research training. It is committed to building a health research enterprise that fosters excellence and encourages an interdisciplinary approach to knowledge creation, which attracts the best academic talent from across Canada and around the world.

The Mental Health Commission of Canada (MHCC)

The MHCC is a non-profit organization created to focus national attention on mental health issues. It is funded by the federal government but operates at arm's length from all levels of government. The Commission's objective is to enhance the health and social outcomes for Canadians living with mental health problems and illnesses. In addition to producing a mental health strategy, the Commission is currently pursuing four other strategic initiatives: a ten-year effort to combat stigma and discrimination; building a pan-Canadian mental health knowledge exchange infrastructure; creating a broadly-based organization of mental health volunteers; and conducting research demonstration projects on homelessness and mental illness in five cities.

Board of Directors

Shirley Westeinde, C.M. (Chair)
Recent recipient of the Order of Canada and Chair of the Westeinde Group of Companies specializing in development, property management, leasing and green building design and development.

James Morrisey (Vice-Chair and Treasurer)
James Morrisey is a National Partner, Tax Knowledge, with Ernst & Young Canada and an elected Fellow of the Institute of Chartered Accountants (FCA).

Myrna Barwin (Past-Chair)
Myrna Barwin is a consultant specializing in the management and operations of organizations. She has held senior management positions in government and the private sector.

Dr. Zul Merali (Secretary)
Dr. Merali is President and CEO of the University of Ottawa Institute of Mental Health Research and Professor in the faculties of Medicine and Social Sciences at the University of Ottawa.

Roxanne Anderson
Roxanne Anderson is a Partner with PricewaterhouseCoopers LLP, Ottawa.

Dr. David Armstrong
Dr. Armstrong is Chief, Corporate Development for a not-for-profit entity, CRI Critical Care Education Network.

Dr. Raj Bhatla
Dr. Bhatla is Psychiatrist-in-Chief/Chief of Staff of the Royal Ottawa Health Care Group.

Elizabeth (Lisa) Cogan
For 30 years, Elizabeth Cogan has been actively involved in both Ottawa community issues and in national issues as they have pertained to her board committees.

Wendy Cohen
Wendy Cohen is Director of Chartwell Communications Consultants Inc.

Janet Cosier
Janet Cosier is the Chair of the Board of Trustees of the Royal Ottawa Health Care Group (The Royal) and is the Adviser, Strategic Planning and Risk Management at the Bank of Canada and the Chair of the Board of Directors of the Canadian Payments Association.

Board of Directors (continued)

Dr. Paul Fedoroff
Dr. Fedoroff is Director of the IMHR Forensic Psychiatry Research Unit and Director of the Sexual Behaviors Clinic of the Integrated Forensic Program of The Royal.

Pamela Fralick
Pamela Fralick is the President and CEO of the Canadian Healthcare Association.

Watson Gale
Watson Gale is Vice-President, General Counsel and Corporate Secretary of Canadian Blood Services.

Dr. Katharine Gillis
Dr. Katharine Gillis is Chair of the Department of Psychiatry, University of Ottawa.

Dr. Bernard Jasmin
Dr. Jasmin is Professor and Vice-Dean of Research, Faculty of Medicine, University of Ottawa.

Tim Kluke
Timothy J. Kluke is President and CEO of the Royal Ottawa Foundation for Mental Health.

Dr. Verner Knott
Dr. Verner J. Knott is a Co-Director of the IMHR Clinical Neuroelectrophysiology Research Laboratory, Clinical Associate Professor in the Department of Psychiatry and Adjunct Professor in the Department of Graduate and Postdoctoral Studies and School of Psychology and Neuroscience Program at the University of Ottawa.

Patrick Lafferty
Patrick D. Lafferty is a retired partner of PricewaterhouseCoopers LLP and a Member of the Executive Committee of the Friends of Canadian Institutes of Health Research.

Richard Patten
Richard Patten currently works at Plasco Energy Group in Ottawa, Canada as a Special Advisor to the company in government relations and public affairs.

Dr. John Rutherford
Dr. Rutherford is a retired executive with more than 30 years of experience in the private, public and academic sectors.

George Weber
George Weber is President and CEO of the Royal Ottawa Health Care Group.

Scientific Advisory Board

The Scientific Advisory Board provides expert advice and guidance on the research orientation, performance, and strategic research directions of the Institute. Its members are leading figures in the national and international scientific communities, with outstanding clinical or basic science expertise in relevant areas to the IMHR.

Dr. Glen Baker

Dr. Baker is Professor and Director, Neurochemical Research Unit, Department of Psychiatry at the University of Alberta. Much of Dr. Baker's research has dealt with neurochemical studies on the etiology of psychiatric and neurologic disorders and the metabolism and mechanisms of action of drugs used to treat them. He has also been involved extensively in the development of novel techniques for analysis of biogenic amines, amino acids, drugs and their metabolites. His recent research has focused primarily on the development of neuroprotective drugs and the involvement of amino acids and neuroactive steroids in neuropsychiatric disorders.

Dr. Mark Bisby

Dr. Bisby holds an M.A. and D. Phil. from Oxford University and is a past-President of the Canadian Federation of Biological Societies and the Canadian Physiological Society. A professor, researcher and former Assistant Dean of Medical Sciences at the University of Calgary, Dr. Bisby was Head of the Department of Physiology at Queen's University before joining the Medical Research Council and subsequently CIHR. He retired in 2006 and now works as a consultant in research program design and evaluation, and serves as a Scientific Officer for the Canadian Health Services Research Foundation. He has published over 100 scientific articles in the area of neuroscience, most recently the inappropriate regenerative events that follow nerve injury which lead to chronic pain.

Dr. Kimberly Matheson

Dr. Matheson is Vice-President (Research and International) at Carleton University. She joined the Department of Psychology at Carleton University in 1990 as a SSHRC Canada Research Fellow, and was promoted to Full Professor in 2003. She received her Ph.D. in 1988 from the University of Waterloo and is a Carleton alumna (B.A. Hons/82, M.A./83). She is an accomplished researcher and graduate supervisor, is widely published, with more than 100 conference presentations and refereed papers. Her research spans a wide range of issues in the social and health sciences, as well as public policy. She is one of the few researchers to have been funded by all three major funding agencies: Social Sciences and Humanities Research Council (SSHRC), Natural Sciences and Engineering Research Council (NSERC), and the Canadian Institutes of Health Research (CIHR).

Scientific Advisory Board (continued)

Dr. Timothy Moran

Dr. Moran is the Paul R. McHugh Professor of Motivated Behavior and Vice Chair in the Department of Psychiatry and Behavioral Sciences at the Johns Hopkins University School of Medicine.

His research has focused on the neural systems underlying the controls of food intake and energy balance and how these may go awry in obesity and eating disorders. The work has identified and characterized multiple peptide signaling systems that play crucial roles in eating control. He has also been extensively involved in research on models of developmental and neuropsychiatric disorders including Down syndrome, autism, schizophrenia and depression. He has published over 200 scientific articles in the areas of neuroscience and physiology.

Dr. Stanley Kutcher

Dr. Kutcher is an internationally-renowned expert in the area of adolescent mental health and a national and international leader in mental health research, advocacy, training, policy, and health services innovation. Dr. Kutcher uses his considerable expertise to advance the work of the Sun Life Financial Chair in Adolescent Mental Health, building awareness and knowledge about mental health in young people through the development of a program that addresses adolescent mental health promotion, education and research, locally, nationally and internationally. Dr. Kutcher is a founding member of the Canadian Association for Mood and Anxiety Treatment, the Advisory Board for the Institute of Neuroscience, Mental Health and Addictions (Canadian Institutes of Health Research), the Science Advisory Committee of NeuroScience Canada, and the Canadian Coalition for Global Health Research.

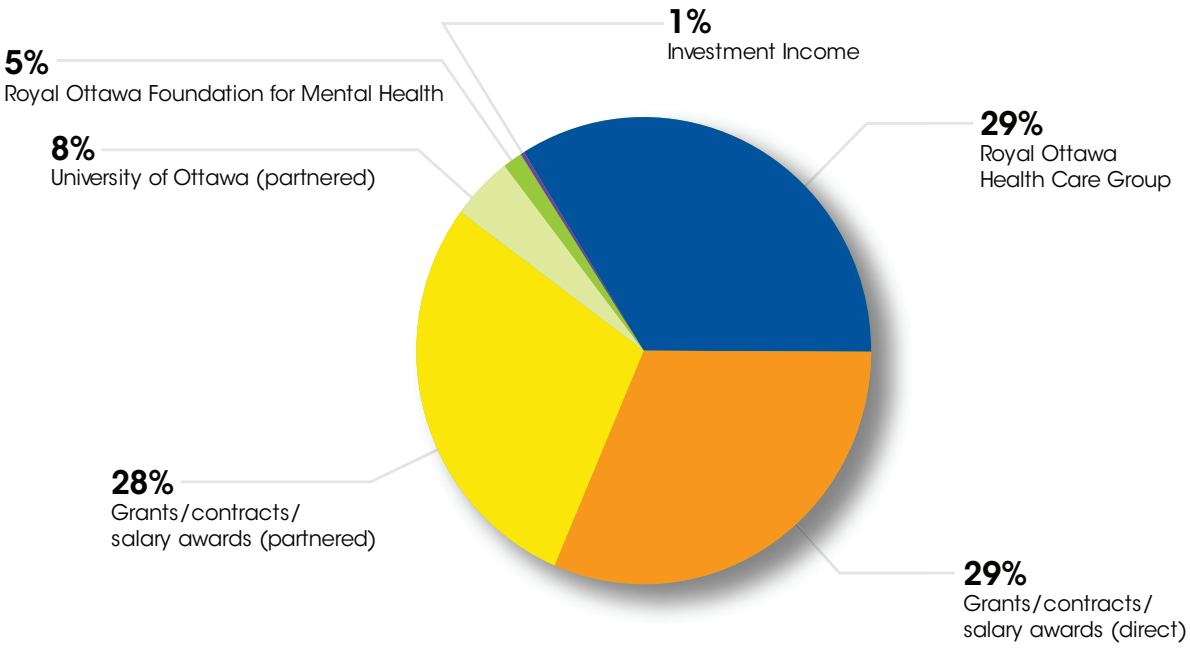
Dr. Franco Vaccarino

Dr. Vaccarino is the ninth Principal of University of Toronto Scarborough & Vice-President of University of Toronto. He is a distinguished scholar, educator and an accomplished academic administrator. Before assuming his leadership role at U of T Scarborough, Professor Vaccarino was chair of the Department of Psychology, University of Toronto. He is the past Head of the Neuroscience Program in the Department of Psychiatry at U of T, and past Executive Vice-President, Programs, and Vice President, Research at the Centre for Addiction and Mental Health (CAMH).

Professor Vaccarino has been a member of a number of Boards and Advisory groups linked to key organizations including: Neuroscience Canada, Scientific Advisory Council of the CCSA, and the National Institute of Health in the U.S.A.

Funding

Revenue Distribution ($8.1 million)



Sources

Astra Zeneca
Bristol-Myers Squibb
Canada Research Chairs
Canadian Foundation for Innovation
Canadian Institutes of Health Research
Canadian Psychiatric Research Foundation
CHEO-Provincial Centre of Excellence for Child and Youth Mental Health
Consortium national de formation en santé
EJLB Foundation
Eli Lilly Canada Inc.
Heart and Stroke Foundation of Canada
Hope for Depression Research Foundation
Labopharm
Lundbeck
Mental Health Commission of Canada
National Institute of Mental Health
Natural Sciences and Engineering Research Council
Ontario Mental Health Foundation
Ontario Ministry of Research and Innovation
Ontario Problem Gambling Research Centre
Ontario Research Fund
Organon Laboratories Ltd.
Royal Ottawa Foundation for Mental Health
Royal Ottawa Health Care Group
Schizophrenia Society of Ontario
Servier
University Medical Research Fund
University of Ottawa

Supporting Mental Health Research

Your support will make a difference

Contributions from our donors, supporters and corporate sponsors are helping us make incredible strides in understanding the causes of mental illness and finding better ways of detecting and treating it. Thanks to generous contributions to the Royal Ottawa Foundation for Mental Health, IMHR is able to focus on improving the health and lives of those living with mental illness. Donations help support our world-class researchers in our Depression Research Centre who are working to find the causes and the best treatments for depression.

If you are considering giving a charitable donation, consider this –1 in 5 Canadians will suffer from mental illness during their lifetime and by 2020 depression is projected to become the leading cause of disease burden.

By making a donation you will be helping us better understand the causes of mental illness, discover new treatments and improve the quality of care of patients. Call 613-722-6521 ext. 6747 or www.youknowwhoiam.com to find out how you can donate to IMHR.

Research Studies Seeking Volunteers

The IMHR has many research programs that are seeking volunteers to help conduct research on specific mental illness. Our research studies investigate many different aspects of mental illness, including:

- Forensic Psychiatry
- Mood Disorders
- Mind, Brain Imaging and Neuroethics
- Schizophrenia
- Stress and Anxiety Disorders
- Youth Psychiatry
- Clinical Neuroelectrophysiology
- Sleep Disorders

If you are interested in volunteering for our research studies and helping to contribute to the development of new treatments and better ways of detecting mental illness, our website lists studies registered by researchers who are currently seeking study participants. All inquiries are strictly confidential and a Research Ethics Board has approved each study. See the "Study Participation" section of our website at www.imhr.ca for more information.

Volunteers of the Royal Ottawa Foundation for Mental Health rallied together in 2009 to help raise funds for research at the University of Ottawa Institute of Mental Health Research (IMHR).

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