THE NEWSLETTER OF THE **BRAIN REPAIR CENTRE**

brainwaves

July 2011

In this issue...

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LONG-AWAITED LIFE SCIENCES RESEARCH INSTITUTE OPENS

Launch of LSRI creates "nutrition for the mind" for BRC researchers

The Brain Repair Centre has moved into a space that holds a world of promise for the future of neuroscience research in Atlantic Canada.

Members of the BRC are housed on two and a half floors of the new of the new $70 million Life Sciences Research Institute — a facility that officially opened last month.

It's a setup that BRC Chair **Ivar Mendez** calls "*nutrition for the mind*" because it provides a central location for BRC researchers to come together.

The facility houses state-of-the-art laboratories for both basic and clinical BRC researchers, who have been scattered in several locations, including at various locations at Dalhousie University and in the surrounding hospitals. It also contains the BRC administrative offices and provides meeting space for all BRC members.

"*What we've created here is an environment that provides nutrition to researchers' minds because this is a place where individuals can collaborate. We have state-of-the-art equipment and world class facilities*," says Dr. Mendez.

"*This space will lead to collaborations that will advance knowledge. We want to translate these into something practical for the patient that is suffering from disease.*"

STORY CONT'D. ON PAGE 2

Networking event creates a place where BRC members make successful research connections

The Brain Repair Centre's move to the Life Sciences Research Institute (LSRI) means it has many new neighbours and many potential research collaborators. That's providing a great opportunity for a second speed networking event.

While in the very early planning stages, the second event would take place this fall and follow on the heels of a very successful one in March.

The networking opportunities are the initiative of the BRC's Research and Education Committee. They allow attendees to meet more people, make more contacts and generate more ideas in one short time span than would be possible under other circumstances.

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The Brain Repair Centre is a collaboration of Dalhousie University, Capital District Health Authority and IWK Health Centre.

BRAIN REPAIR CENTRE

DALHOUSIE UNIVERSITY
Inspiring Minds
Faculty of Medicine

Capital Health

IWK Health Centre

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Welcome New Members

The BRC welcomes the following new members:

Kim Good, PhD (Psychiatry)
Dalhousie

Gordon Gubitz, MD, FRCPC, (Neurology)
Dalhousie

Thomas Hajek, PhD, MD (Psychiatry)
Dalhousie

Shannon Johnson, PhD (Psychology)
Dalhousie

Phil Tibbo, MD, FRCPC (Psychiatry)
Dalhousie

For a complete listing of BRC members, see

http://www.brainrepair.ca/research_researchers.htm

Did you miss the March edition of brainwaves...

read it here

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Opening of LSRI creates "nutrition for the mind" for BRC researchers

Dr. Mendez points out that scientists and clinicians rarely get the opportunity to consult with each other. That can lead to an isolation of theory from practical applications.

"*With the BRC, we have now put the two together because we do the research and the science that advances knowledge. People will be working together and interacting together. New ideas will be generated and, in turn, this will lead to new treatments, new cures and innovation in the way we look at diseases of the brain.*"

The new LSRI building is a partnership among the Capital District Health Authority, the IWK Health Centre and Dalhousie University. It is located on the corner of Summer Street and University Avenue on the Dalhousie campus.

The south tower is home to Innovacorp and a host of other groups and companies, including Dalhousie's office of Industry Liaison and Innovation, the Nova Scotia Research and Innovation Trust, Genome Atlantic, BioNova, and several small incubator companies. In fact, the two towers will house more than 100 life science researchers and research groups.

At the official opening on June 21, officials noted that the LSRI is unique to Halifax — a beautiful, light-filled facility that they called a business incubation centre and a life science discovery centre — a place where science and technology transfer can occur.

Nova Scotia Premier **Darrell Dexter** said the LSRI holds a lot of promise for the province because it has the capacity to produce leading-edge research while providing enhanced clinical, educational and training space.

That's always been the dream of many in Halifax and, while construction of the LSRI was announced in 2007, the history of building a life sciences "cluster" goes back nearly two decades.

A complete history of the LSRI is documented on the BRC website CLICK HERE to view the story.

Funding to build the LSRI came from Industry Canada, the Province of Nova Scotia, the Canada Foundation for Innovation, the Atlantic Canada Opportunities Agency, the Dalhousie Medical Research Foundation and other private benefactors. ■

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Research Feature

An inexpensive and easy smell test could help detect the onset of Parkinson's disease

A simple scratch and smell test and a breakthrough in the imaging of the olfactory tract could have major implications for the early treatment of Parkinson's disease.

Research groups that include Dalhousie BRC members **Harold Robertson** (Pharmacology), **Kim Good** (Psychiatry) and **Ron Leslie** (Anatomy & Neurobiology) have published two papersthat could lead to an earlier identification of the debilitating disease that affects 8,500 people in the Maritimes alone.

Dr. Robertson, a leading world expert in the disease, says people who develop Parkinson's gradually lose their sense of smell. This loss can happen two to five years or longer before an actual diagnosis.

Diagnosis only comes when patients are showing movement-related symptoms, such as a trembling of limbs and head. Brain damage may already be irreparable.

The research team began to ask whether an earlier diagnosis is possible, before motor symptoms appear and the brain has not suffered extensive damage.

The study used a simple test for smell, developed by the University of Pennsylvania. The Smell Identification Test consists of four booklets of microencapsulated odours. Fourteen study participants with very early Parkinson's disease were asked to "scratch and sniff" the odour and pick one of four options that best represented it, regardless of whether they could smell the odour.

The scratch and sniff test was then followed with magnetic resonance imaging (MRI) scans of the olfactory tract and the substantia nigra area of the brain, where dopamine-producing cells are lost in Parkinson's disease.

Dr. Robertson says the study showed significant impairment of smell. The imaging confirmed changes in the brain in Parkinson's disease, meaning a combination of the two tests could hold promise for earlier diagnosis.

The scratch and sniff test is especially promising because it is non-invasive and easy to administer.

"*The test is cheap — probably less than $10,*" says Dr. Robertson. "*It's easy to do and we could even mail it out. A person could take the test, mail it back to us and we can score it. That would be followed with an MRI to identify early stages of Parkinson's disease.*"

The study, "Diffusion Tensor Imaging and Olfactory Identification testing in Early-Stage Parkinson Disease," is published in the *Journal of Neurology*.

It was supported by the Parkinson Society of Canada, Dalhousie University (Departments of Psychiatry and Medicine) and the Canadian Institutes of Health Research.

The second research paper, "Diffusion tensor fiber tractography of the olfactory tract" is published in *Magnetic Resonance Imaging* and available online at ScienceDirect (www.sciencedirect/com). It grew out of another study and the research was done with colleagues in Sweden.

Dr. Robertson says one of the major difficulties in determining whether the olfactory tract, or our pathway for our sense of smell, is affected by Parkinson's disease is getting a picture of it.

Dr. Harold Robertson

MRI studies of the tract involve two different types of imaging — standard anatomical and diffusion tensor imaging, which measures the movement of water in the brain. Both can indicate where there could be an abnormality. Researchers then try to co-register the two images so they know they are looking at the tract.

"*Until we did this study, we didn't have any way of testing whether we had managed to do this successfully,*" says Dr. Roberson. The breakthrough came because one of the subjects didn't have an olfactory tract and so his imaging profile didn't have one. The other subjects did have olfactory tracts and the researchers could then compare, measure and "see" them, using the missing one for comparison.

The two studies serve as companion pieces to the advancement of using a simple smell test and sophisticated imaging techniques to look for the early stages of Parkinson's disease.

"*What we are really interested in is whether the combination of the sniff test with the MRI test can be used to detect Parkinson's disease in subjects who don't yet show motor symptoms – that's crucial for diagnosis of Parkinson's,*" says Dr. Robertson."*If so, we can start treating them much, much earlier and slow the disease down.*" ■

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Research News

Funding Alert: SPOR

A Maritime-wide initiative could lead to a collaborative application to a new funding strategy from the Canadian Institutes for Health Research (CIHR), termed *Strategy on Patient Oriented Research (SPOR).*

David Anderson, Chief of the Department of Medicine at Dalhousie, is spearheading the Maritime-wide initiative.

An initial roundtable information session was held in Halifax last fall and a broad representation of researchers and levels of government from the three provinces attended.

Since then, Dr. Anderson and **Adrian Levy**, Head of Community Health & Epidemiology (Faculty of Medicine), and **Patrick McGrath**, Vice-President Research at the IWK, have met with groups of researchers in both Prince Edward Island and New Brunswick.

One aspect of the Maritime initiative includes the development of new research infrastructure for clinical research in the new *Research Methods Unit (RMU)*, a collaboration among Capital Health, IWK Health Centre and Dalhousie University (for more information on the RMU, see http://www.cdha.nshealth.ca/discovery-innovation/research-centres-and facilities/research-methods-unit).

The goal of **SPOR** is to translate research results into improved health outcomes for Canadians.

According to CIHR, this will result in benefits for patients, health care practitioners, hospitals and other health care institutions, as well as for governments. For scientists, this strategy could deliver enhanced resources for clinical research, ranging from initial studies of a new therapy to research evaluating the implementation of new health policy into the heath care system.

SPOR is not a single initiative, but is an overall strategy to enhance research support units as well as research networks. Some initiatives have already been launched (e.g. the Medical Imaging Clinical Trials Network RFA and the Network Catalyst RFA, launched in the summer of 2010) and priority areas are being identified (e.g. mental health). CIHR is currently updating the strategy, but more details can be found in the discussion paper on the CIHR website athttp://www.cihr-irsc.gc.ca/e/41232.html ■

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BRC EVENTS

Speed Networking A Huge Success

It works like this: attendees divide into pairs and each person has two minutes to tell the other person about their background. Then a bell rings and everyone shift seats. The new pairs begin the process again. It's a lot like speed dating, but with a new twist.

"*The BRC acts as a catalyst for research among the research and industry communities across Atlantic Canada*," says **Gail Eskes**, (Psychiatry, Neurology and Psychology), BRC Director of Research and Education.

"*Networking events create a place where members of the BRC can get a chance to speak with their colleagues in the BRC and with other members of the research, industry, government and other communities.*"

The first speed networking gathering attracted 50 people. They included BRC members, researchers and trainees from several faculties at Dalhousie, the hospitals, research funding agencies, the National Research Council of Canada, the Atlantic Canada Opportunities Agency, Innovacorp, BioNova, students and even some venture capitalists, interested in investing in research startup companies.

The lead organizer of the first event, BRC member **Shaun Boe** (Physiotherapy and Physical Medicine and Rehabilitation), of Dalhousie University, says that researchers have a tendency to be somewhat insulated.

"*The plan for the BRC event was to bring people together more. Translational research is really multidisciplinary. It takes a number of specialists to do this type of research.*"

Dr. Boe says it's often difficult to just walk up to someone and tell them what research you are doing.

"*It's easier when you have a two-minute pitch*," he says. "*You realize you've been looking for someone to collaborate with who does a certain type of work because you don't have that expertise. I think networking is the key to jump-starting these collaborations.*"

Evaluations show that 100 per cent of the respondents felt that the first event met their expectations and they would attend another one. Eighty-seven per cent said they had made a connection that could lead to new research and 97 per cent said the event increased their knowledge about neuroscience research in the BRC, at Dalhousie and other organizations.

Attendees at the event were eligible for prizes to support research activities. **Gordon Gubitz**, Neurologist and Director of the CDHA Neurovascular Clinic, won a $6,000 summer studentship. It allowed him to hire a student to work on a research project.

PhD Student **Florentin Wilfart** of the School of Biomedical Engineering at Dalhousie, won a $2,000 student travel award to present a paper at a scientific meeting.

The second speed networking event will have a special focus on nearby tenants of the new LSRI. It will be a "meet the neighbours" gathering so that all the tenants of both towers of the LSRI can get to know each other better and find out what type of research is being done.

"*The idea of fostering collaborative research is the reason the LSRI was built*," says Dr. Eskes, "*and the BRC wants to be front and centre in making that happen.*" ■



A SHORT HISTORY OF THE LIFE SCIENCES RESEARCH INSTITUTE

BRC Was Catalyst For LSRI

Although it has only been open for a short while, the Life Sciences Research Institute is heralded as a business and incubation centre, a one-stop life sciences shop, a district of discovery and a place that provides nutrition to researchers' minds. (*See LSRI opens Page 1.*)

The LSRI really does hold the promise to be all of those things and marks the culmination of more than a decade of work on the part of many, including BRC Chairman Ivar Mendez, who worked tirelessly to build a world-class research facility for the centre.

"*The BRC was the catalyst*," says Dr. Mendez. "*We were really becoming quite successful as a group at getting resources and research grants, but we were dispersed in different buildings and areas. We needed a home to bring everyone together and that is how the BRC became the catalyst.*"

The LSRI also occupied the dreams of people in the community, the government, scientists, medical researchers and professionals in many organizations. They recognized that Atlantic Canada had become internationally recognized for its "cluster" of researchers in the life sciences. Through collaboration, they could grow the sector to benefit the region's health, social and economic well-being.

That drive to build a world class life sciences sector goes back as far as 1993. Over the years, it's involved a virtual who's who of health care, science and business in Halifax — representatives of the Faculty of Medicine, Capital Health, IWK, the Atlantic Canada Opportunities Agency (ACOA), Industry Canada, NRC, the Greater Halifax Partnership, NRC, Nova Scotia Business Inc., Innovacorp, the provincial ministry of Economic Development, Genome Atlantic, BioNova, Ocean Nutrition Canada, Dalhousie and the Brain Repair Centre.

It's a fascinating history which has been documented in a feature article on the BRC's web site (see – *in pdf format* – at **http://www.brainrepair.ca/newsroom.htm**)




The first meeting that actually talked about building a research "village" was in 1997. Among the people at that gathering was **Stan Kutcher** of the Department of Psychiatry at the Faculty of Medicine and a member of the BRC.

He remembers that this group refined the science village concept and sought initial funding, as well as corporate and institutional support for a new association – the Life Sciences Development Association (LSDA).

At about the same time, the **Brain Repair Centre** was under rapid development. Led by **Harry Robertson** (Pharmacology), **Dr. Mendez** (Neurosurgery) and **Dr. Kutcher** (Psychiatry), a comprehensive approach to advancing brain science research and clinical care was created. The BRC joined as a LSDA member.

Over the years, the LSDA did a great deal of foundation work. Among its achievements was an economic impact study that showed that biotechnology research in 2000 in the Halifax Regional Municipality accounted for spending of more than $86 million annually. It employed 2,300 professional researchers and technicians and it generated provincial tax revenues of $25 million.

However, the LSDA owned no land and many of the partners were too small to have the resources to drive the LSRI concept forward. So the idea sputtered and all but fizzled out.

But it didn't. In 2004, Dalhousie provided a piece of land at the corner of Summer and College Streets for the LSRI and the Brain Repair Centre was approved as the anchor tenant of the LSRI in 2005.

The BRC made the project "real" because people could relate to its research – the importance of researchers working towards the goal of finding treatments and cures and alleviating suffering.

"*The BRC became a tangible institution with people that were working towards a common goal*," says Dr. Mendez. "*They were able to relate to it and support it.*"

A pivotal moment came in 2007 when Dr. Mendez flew to St. John's and made a presentation to the Council of Atlantic Premiers. Dr. Mendez asked for the Atlantic premiers' support in their efforts to secure federal infrastructure funding for the LSRI. He got it. Funding was announced in the 2007 federal budget.

The federal contribution actually arrived with MP **Peter MacKay**, a big supporter of the project, and a Dalhousie Law School graduate, in October 2007 at a symbolic sod turning. MacKay, the Minister of National Defence, **Rodney MacDonald**, then premier of Nova Scotia, Dalhousie President **Tom Traves** and **Dr. Mendez** all lined up in front of a small black wooden box holding dirt and grass. A grassy chunk was turned over and the dream of the LSRI began to take shape.

"*It is wonderful to see it completed and to see what it will become*," says Dr. Mendez.

"*What we've created here is an environment that will provide nutrition to minds because we will bring together individuals who will collaborate. This type of research will lead to new discoveries and treatments. The people of Nova Scotia will have access to the latest treatments — right in their own backyards.*" ■

This condensed version of the LSRI history has been shortened from the complete version on the BRC website. CLICK HERE to read the full story.

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PLEASE NOTE

PUBLICATIONS

The Brain Repair Centre has compiled an online list of recent publications from members of the BRC community. To view, **CLICK HERE**.

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The **Brain Repair Centre** would love to hear from you. What stories and features would you like to read in Brainwaves? Please send us your comments and ideas at **brainrepair@dal.ca**

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BRAIN REPAIR CENTRE

The Brain Repair Centre is a collaboration of Dalhousie University, Capital District Health Authority and IWK Health Centre.

DALHOUSIE UNIVERSITY Inspiring Minds Faculty of Medicine · Capital Health · IWK Health Centre

2011 RESEARCH GRANTS & AWARDS

Congratulations to BRC members:

SHAUN BOE (Physiotherapy):

- **Capital Health Research Fund (New Investigator):** *Atlantic Canada modified constraint induced movement therapy trial: a pilot randomized controlled trial.* ***(BRC Co-investigators: Gail Eskes, Stephen Phillips.)***

DAVID CLARKE (Anatomy & Neurobiology):

- **NSERC Discovery Grant:** *NCAM influences RGC numbers: Mechanisms and implications for vision.*

GAIL ESKES (Psychiatry):

- **Capital Health Research Fund (co-investigator):** *Effects of an ankle-foot orthosis on gait while performing an attention demanding task in people with post-stroke hemiplegia* ***(PI: Kim Parker, Rehab & Supportive Care)***
- **Dalhousie Medical Research Foundation Equipment Grant (co-investigator):** *Equipment for rodent chronic sleep restriction studies* ***(PI: Kazue Semba, Anatomy & Neurobiology)***

RAY KLEIN (Psychology):

- **NSERC-CIHR Collaborative Health Research Grants:** *Novel techniques for cognitive repair* ***(BRC co-investigators: Gail Eskes, David Westwood)***
- **NSERC Discovery Grant:** *Attention: Selection in the domains of space, time and task*

AARON NEWMAN (Psychology):

- **NSERC CREATE (Collaborative Research and Training Experience):** *RADIANT: Rehabilitative and Diagnostic Innovations in Applied NeuroTechology* ***(BRC Co-investigators: Ryan D'Arcy, Gail Eskes, Shannon Johnson, Ray Klein)***
- **Capital Health Research Fund and IWK Health Centre Research Fund:** *Development of a patient friendly, multimodal neuroimaging protocol for the assessment of language abilities* ***(BRC Co-investigator: Ray Klein)***
- **Social Sciences and Humanities Research Council (SSHRC):** *The Building Blocks of Language: The Interplay between Speaker Differences and Non- idiomatic Multi-word Sequence Frequency Effects on Speech Production.*
- **Med-El Inc.:** *Predicting cochlear implant outcomes based on neuroplastic reorganization.*

GEORGE S. ROBERTSON (Pharmacology):

- **Multiple Sclerosis Society of Canada Operating Grant:** *Apoptosis modulation of B cell activity in experimental autoimmune encephalomyelitis*
- **Capital Health Research Fund and Department of Psychiatry Research Fund:** *Sleep regulation in rodent model of schizophrenia.* ***(BRC co-investigator: Ben Rusak).***

BEN RUSAK (Psychiatry & Psychology):

- **CIHR Team Grant (co-investigator):** *Better nights/better days: Improving psychosocial health outcomes in children with behavioural insomnia* ***(PI: Penny Corkum, Psychology)***
- **CIHR Operating Grant (co-investigator):** *Impact of poor sleep on children's emotional, attentional and behavioural functioning* ***(PI: Penny Corkum).***
- **Dalhousie Medical Research Foundation Equipment Grant (co-investigator):** *Equipment for rodent chronic sleep restriction studies* ***(PI: Kazue Semba, Anatomy & Neurobiology).***

2011 AWARDS

Dr. John Savage Memorial Award for Excellence in Global Health

Stan Kutcher, Department of Psychiatry, Sun Life Financial Chair in Adolescent Mental Health, received the Dr. John Savage Memorial Award for Faculty at the 2011 Global Health Awards, presented in May at the Global Health Research Forum. The award recognizes outstanding humanitarian contribution to international health by a Dalhousie Medical School faculty member.

Heart and Stroke Foundation of Nova Scotia Bright Red Graduate Research Awards

Christopher Cowper-Smith, PhD Student, Psychology/Neuroscience
(Supervisors: Gail Eskes, Psychiatry & David Westwood, Kinesiology)