# Interactions

Health Research in BC

Michael Smith Foundation for
**Health Research**

*MSFHR Scholar Dr. Kalina Christoff*

## Inside



## Focus on mental health & addictions

Mental illness and substance dependence rob British Columbians of their health and quality of life. BC researchers are tackling these issues head on.

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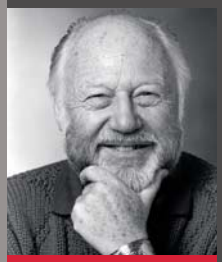
**Fall/Winter 07 | Issue 2**

# Interactions





Dr. Michael Smith

## About MSFHR

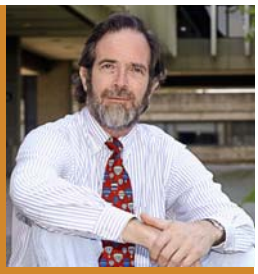
The Michael Smith Foundation for Health Research (MSFHR) is the provincial support agency for health research in British Columbia. Established by the BC government in 2001, MSFHR is an independent, third-party organization that works to develop BC as a leading force in health research, supporting improvements to health, health care and economic opportunity. We focus on:

- Supporting people with awards to attract the best and create an environment where they can excel.
- Working across academic, health and government systems to foster collaborations that enhance health research productivity, competitiveness, and impact.
- Building partnerships within BC and across Canada to leverage BC's health research potential and create better returns on research investment.
- Demonstrating fairness, accountability and transparency in all our activities.

MSFHR was named to honour Nobel Laureate Dr. Michael Smith (1932–2000), a pre-eminent BC scientist with a long-standing personal commitment to ensuring support for researchers throughout their careers, and who believed that BC could and should be a leading centre for health research.

# Taking stock, looking forward

MSFHR's new Board Chair reflects on the year ahead



**Dr. Bruce P. Clayman,**
*Chair, MSFHR Board of Directors*

**By Dr. Bruce P. Clayman**

In September, I succeeded Dr. Simon Sutcliffe as Chair of the Board of Directors of the Michael Smith Foundation for Health Research. I am very pleased to be in this role at this exciting time for the organization, when we are evaluating MSFHR's activities to date and planning for even greater impact within BC's health research community.

MSFHR is currently mid-way through an external review of all its funding programs, with an eye to future directions. Last year's Review of Infrastructure Programs has set a course for MSFHR to refine and integrate its infrastructure funding offerings. With the Review of Personnel Programs now underway, we anticipate further recommendations to improve current programs and guide us toward enhanced support for BC researchers and trainees.

**"Moving forward, we see tremendous opportunity nationally in bringing together like-minded organizations to further align our efforts."**

— Dr. Bruce P. Clayman

We've also come a long way in working with partners on the broader issues in BC health research. MSFHR's unique role as a third-party facilitator within BC has helped bring different interests and perspectives to the table, spurring changes that benefit the entire province. Our new provincial technology and methodology platforms and our joint effort with key stakeholders to explore ways of improving ethics review processes in BC are just two examples of this provincial, collaborative approach.

Moving forward, we see tremendous opportunity nationally for bringing together like-minded organizations to further align our efforts. Health authorities, provincial and national agencies, universities, non-profit organizations, industry and government can all profit from sharing strategies and pooling information, methodologies and resources.

Our own Board reflects this collaborative approach. In addition to representation from government, universities, health care agencies and industry, we recently welcomed to our ranks Cathy Ulrich, CEO of the Northern Health Authority, and Sue Paish, CEO of Pharmasave Drugs (National) Limited. I know that each will bring unique and valuable perspectives to our Board.

As you may know, MSFHR's founding President and CEO Dr. Aubrey Tingle recently announced his intention to retire in June 2008. Aubrey's strategic vision has been the strongest driving force in the revitalization of BC's health research community, setting the stage for our ever-increasing provincial achievements in health research. As we reflect on and celebrate Aubrey's contributions, our Board looks forward to maintaining this positive trajectory as we secure new leadership for the organization.

We will soon hold a Board retreat to consider key trends and set high-level directions for the Foundation. On behalf of our Board, I look forward to sharing our vision with you in the coming months. ■

### In this issue: Mental health and addictions

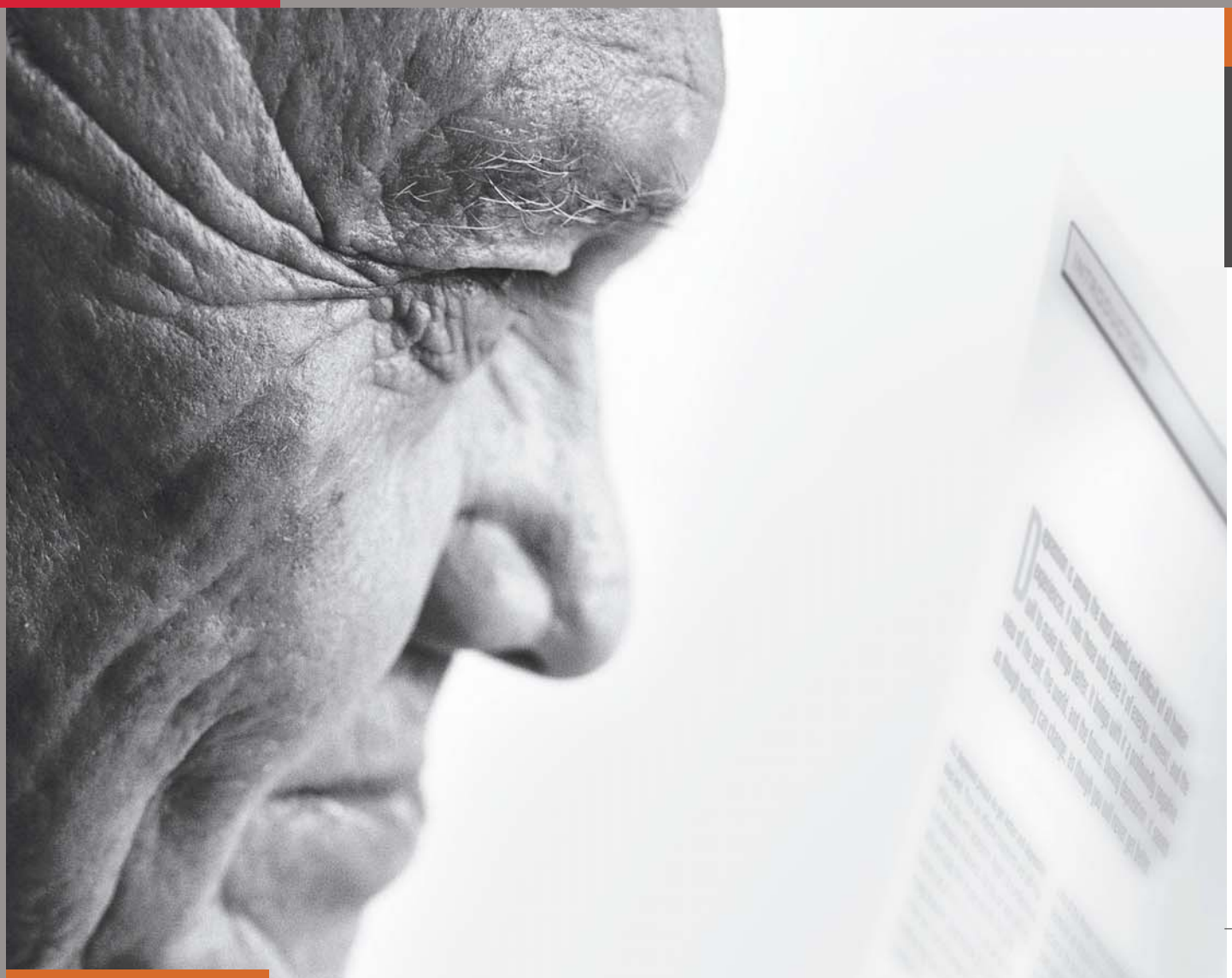
One in 10 Canadians—about 2.6 million people—has experienced a major mental disorder or substance dependence.*

Worldwide, mental health is predicted to become a leading cause of disability and death by 2020, accounting for 15 per cent of the global burden of disease.

Through our personnel and infrastructure funding programs, MSFHR is supporting BC-based research that addresses this important health and social issue. The MSFHR-funded BC Mental Health and Addictions Research Network brings together a diverse range of BC researchers working collaboratively to better understand and treat mental illness and addiction. We are supporting research teams to describe, study and address key aspects of mental health. We are also providing salary support and establishment grants for BC's most accomplished and promising mental health and addictions researchers and trainees.

*To learn more about BC-based mental health and addictions research, see pages 4-7.*

*Source: Canadian Community Health Survey: Mental health and well-being, 2002



# Focus on mental health and addictions

The connection between mental health and addictions is clear: it's estimated that between 40 and 60 per cent of people with severe mental health problems will also have a substance use disorder, such as alcohol or drug abuse, in their lifetime.*

"People often start using alcohol and drugs long before experiencing mental illness, and developing an addiction may predispose people to new-onset mental illness," says Dr. Bill Honer, a UBC/Vancouver Coastal Health Research Institute researcher who co-leads the MSFHR-funded BC Mental Health and Addictions Research Network. "We also know that for people with mental illness, continued use or abuse of addictive substances is associated with more frequent relapse and poorer outcomes."

* Source: Canadian Community Health Survey: Mental health and well-being, 2002

**Primary care of people with depression**

- Number of individuals diagnosed with depression by BC physicians in 2000/01: 384,484
- Percentage of BC patients diagnosed with minor depression who will receive care only from their primary care physician: 92%

Source: Health Service Patterns Indicate Potential Benefit of Supported Self Management for Depression in Primary Care, 2007, Dan Bilsker, Elliot Goldner, Wayne Jones

# Helping patients help themselves

BC study assesses a new approach to mental health and addictions

Evidence increasingly suggests that gaining skills – not taking pills – may be the most helpful approach for people with mild to moderate depression or risky drinking behaviours.

Known as supported self-management, this approach involves family doctors helping their patients by applying proven techniques already used in cognitive behavioural therapy. During a regular patient visit, the physician provides self-care resources and acts as a coach.

"It appears that supported self-management may be highly successful for a significant portion of the population," says Dr. Elliot Goldner, an MD and professor in Simon Fraser University's Centre for Applied Research in Mental Health and Addictions (CARMHA). "It also requires minimal time from the physician, making it practical for the family practice setting."

Evaluating supported self-management is a key focus for the Mental Health and Addiction Services and Policy Investigative Team, funded by MSFHR's Health Services and Policy Research Support Network (HSPRSN). The team is led by Goldner and includes Dr. Dan Bilsker, who helped to create a new self-management tool for people with depression. This integrated group of researchers and policy and program decision-makers work together to develop and apply new knowledge to improve mental health and addictions services and policy.

"We're looking for the 'best buys' in addressing mental health and addiction at the system level, where there is an opportunity to do a lot without a big health care investment," explains Goldner.

The team has used HSPRSN funding to develop the Brief Interventions for Depression and Hazardous Drinking project, and evaluate all aspects of supported self-management within the BC context, from determining the best way to train physicians to studying outcomes for patients.

A recent study conducted by the team measured the level at which physicians who were trained in supported self-management would offer these resources and guidance to at-risk patients, and the rate at which patients would seek out the resources offered.

Following a one-hour training session, 84 Lower Mainland family physicians were encouraged to offer at-risk patients an envelope they could mail in to receive a free Antidepressant Skills Workbook or a DrinkWise booklet.

After eight weeks, the physicians had provided patients with 743 mail-in envelopes for the depression workbook and 221 envelopes for the risky drinking booklet. About 55 per cent of depressed patients sent away for their booklet, which is similar to the percentage of depressed patients who fill their doctor's prescription for antidepressant medication. Approximately 47 per cent of high-risk drinkers sent away for the risky drinking booklet.

These results reveal both opportunities and barriers for supported self-management. While physicians and patients appear ready to adopt this approach for managing depression, its effectiveness with hazardous drinking appears less certain. "Compared to depression, both physicians and patients seem more reluctant to talk openly about alcohol problems," says Goldner. ■

**Dr. Elliot Goldner, egoldner@sfu.ca**

- Professor, Centre for Applied Research in Mental Health and Addictions, SFU, www.carmha.ca
- Leader, Mental Health and Addiction Services and Policy Investigative Team, funded through the Health Services and Policy Research Support Network (HSPRSN) of MSFHR. With funding from BC's Ministry of Health, HSPRSN develops, funds and evaluates strategies to build BC's capacity to undertake health services and policy research focused on health system evaluation, redesign and innovation.
- Chair, Advisory Committee on Science, Mental Health Commission of Canada
- Qualified Health Researcher, MSFHR-funded Centre for Complex Disorders
- Member, MSFHR Research Advisory Council

# Substance surveillance

BC pilots Canada's first integrated monitoring system for alcohol and other drugs

Almost every drop of alcohol bought in BC is recorded and tracked by the province's government-regulated liquor distribution system. When this information is linked to other alcohol and drug data – substance use surveys, addictions treatment data, mortality and morbidity data, and emergency department and police statistics – policy makers and researchers gain a much clearer picture of how substance regulation and geographic factors can affect health outcomes.

This is the premise behind BC's Alcohol and Other Drug Monitoring project, which is supported by BC health authorities and the provincial and federal government. It's a resource that promises to serve the needs of both health researchers and policy makers, providing access to basic information on emerging trends in different geographic areas and supporting in-depth analyses of underlying factors and relationships.

The initial planning and development of the monitoring project was made possible with funding from Health Canada, the Provincial Health Services Authority (PHSA), the MSFHR-funded BC Mental Health and Addictions Research Network, and other BC government sources. One of eight Health of Population Networks funded by MSFHR since 2005, the network has focused significant effort on the creation of Research and Knowledge Transfer hubs, which provide expertise and shared access to data platforms and research tools.

The Alcohol and Other Drug Monitoring project was the first hub funded by the network. "The network provides very practical resources and infrastructure for researchers," says network Co-Leader Dr. Tim Stockwell. "Providing epidemiological data in BC – describing patterns of use for alcohol and other drugs, and their related harms – is a fundamental resource for our members."

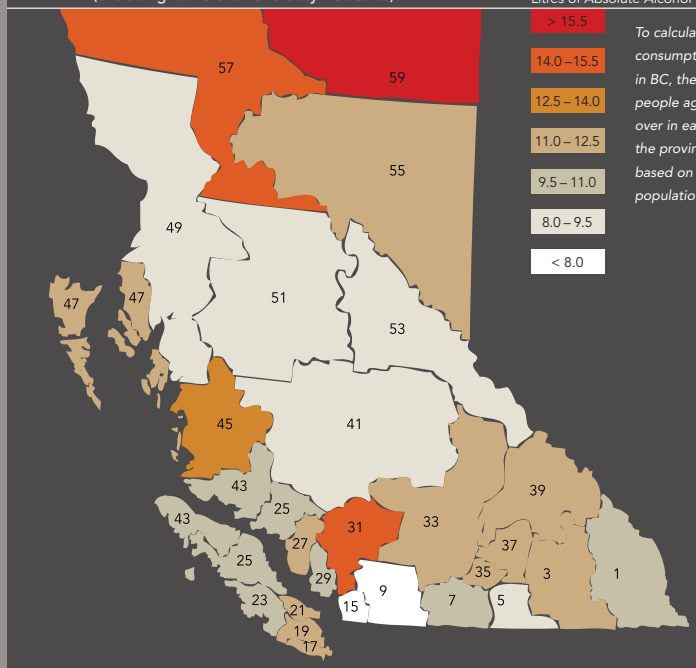
Stockwell is Director of the University of Victoria's Centre for Addictions Research of British Columbia (CARBC), which is conducting the pilot project. Since receiving the initial start-up funding, the project has attracted collaborators from five BC research centres and raised $400,000 in additional funding. Other funding partners include the BC Ministry of Health, PHSA, Vancouver Coastal Health, Vancouver Island Health Authority, Fraser Health, BC's Crystal Meth Secretariat, and Health Canada. The network continues to provide ongoing funding to support the hub's provincial coordinator.

Already, the project has revealed new information about patterns of use. "The per capita consumption of alcohol is increasing in BC, especially in rural and remote areas," says Stockwell. "This increase will result in more deaths, more mental health complications, and a whole range of other problems."

Ultimately, it is anticipated that this BC-piloted monitoring system will be rolled out throughout Canada, creating a standardized resource for identifying and analyzing emerging trends in substance use to inform Canada's Drug Strategy. ■

Litres of absolute alcohol consumption per adult in BC in 2005

(excluding home brew and duty free sales)




*To calculate alcohol consumption per adult in BC, the number of people aged 15 and over in each region of the province was used, based on provincial population estimates.*

| | | | | | |
|---|---|---|---|---|---|
| 23 | *Alberni-Clayoquot* | 1 | *East Kootenay* | 59 | *Northern Rockies* |
| 51 | *Bulkley-Nechako* | 9 | *Fraser Valley* | 7 | *Okanagan - Similkameen* |
| 17 | *Capital* | 53 | *Fraser Fort George* | 55 | *Peace River* |
| 41 | *Cariboo* | 15 | *Greater Vancouver* | 27 | *Powell River* |
| 3 | *Central Coast* | 49 | *Kitimat - Stikine* | 47 | *Skeena - Queen Charlotte* |
| 35 | *Central Kootenay* | 5 | *Kootenay Boundary* | 31 | *Squamish - Lillooet* |
| 39 | *Columbia - Shuswap* | 43 | *Mount Waddington* | 57 | *Stikine* |
| 25 | *Comox - Strathcona* | 21 | *Nanaimo* | 29 | *Sunshine Coast* |
| 19 | *Cowichan - Valley* | 37 | *North Okanagan* | 33 | *Thompson - Nicola* |

**Dr. Tim Stockwell, timstock@uvic.ca**

- Professor, Department of Psychology, UVic
- Director, Centre for Addictions Research of BC, www.carbc.uvic.ca
- Co-Leader, BC Mental Health and Addictions Research Network, an MSFHR-funded Health of Population Network, www.mhanet.ca



**For more information:** www.mhanet.ca or www.carbc.ca

## Can you train your brain to ward off depression?

MSFHR Scholar studies the potential for teaching people to regulate cognition and reduce the risk of depression

MSFHR Scholar Dr. Kalina Christoff

In a first for Canada, MSFHR Scholar Dr. Kalina Christoff and her research team are investigating the potential for using real-time functional magnetic resonance imaging (fMRI) to manage and prevent depression.

Christoff is a principal investigator at the UBC Cognitive Neuroscience of Thought Lab. She explains that depression is a brain disorder that is related to either disrupted organic (biochemical) processes, or to disrupted cognitive (thought) patterns — or a combination of both. "The organic component can be treated with medication," she says. "Cognitive therapy, where a patient explores and learns to regulate thoughts, is particularly beneficial when it comes to recurrent depression, where multiple episodes are experienced." However, cognitive therapy can be a slow process, often requiring years of treatment.

Christoff and her team are exploring a new clinical approach that may offer a faster alternative. Their focus is the prefrontal cortex, an area of the brain that controls introspection, or metacognition. When people think about their own thought processes, the prefrontal cortex becomes more active.

Research has documented reduced activity in the prefrontal cortex during a depressive episode, and increased activity when the episode subsides. Treatments that increase a patient's metacognition are also known to reduce the risk of depressive relapse, suggesting that patients may be trained to guard against depression by consciously engaging in metacognitive thinking.

Christoff is testing the effectiveness of fMRI as a training tool to help people learn to modulate prefrontal cortex activity. fMRI is a sophisticated imaging tool that can show in real-time how the prefrontal cortex responds as a person experiences specific thoughts.

During an imaging session, subjects watch an image of their brain as they are asked to think about their own thoughts. "The instant feedback teaches people to be more aware of their negative and positive thought processes, and teaches them how to regulate their cognition," says Christoff.

Ultimately, the use of fMRI could offer a viable alternative to treating depression with medications and long-term therapy. ■

**Dr. Kalina Christoff,**
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- Assistant Professor, Arts/Psychology, UBC
- Principal Investigator, Cognitive Neuroscience of Thought Lab, UBC
- 2006 MSFHR Scholar Award

## Genetic perspectives on psychiatric disease

Genomics, the study of genes and their function, has increased understanding of many diseases and conditions, leading to better detection methods, treatments and improved quality of life. The study of psychiatric disorders using a genomics approach is an emerging area of research.

MSFHR Scholar Dr. Robert Holt is leading a program at Canada's Michael Smith Genome Sciences Centre, at the BC Cancer Agency, investigating genetic implications in schizophrenia and bipolar disorder.

"Schizophrenia and bipolar disease are complex disorders," Holt explains. "There is no single gene mutation or environmental effect necessary or sufficient for either condition to develop."

Using highly specialized equipment and techniques, Holt and his team scanned the entire genomes of people with schizophrenia and bipolar disease, looking for DNA copy number variations. By comparing these genome results with a control group, the team found alterations among several genes with neuronal function.

"These are intriguing findings, but still preliminary," says Holt. "We are now exploring the idea that a network of interacting genes is involved, likely genes that regulate how signals pass from brain cell to brain cell via the synapse."

The team will investigate which gene products (proteins) interact with each other in the synapse. Their goal is to determine if there are mutations in these interacting genes and if one or more of these mutations could indicate an increased risk for schizophrenia.

Holt's team collaborates with psychiatrists and researchers focused on basic research to understand the disease process at the molecular level. "Understanding genetic or molecular causes will bring new knowledge, helping us develop more effective treatments and more accurate diagnostic techniques." ■

**Dr. Robert Holt,**
**rholt@bcgsc.ca**

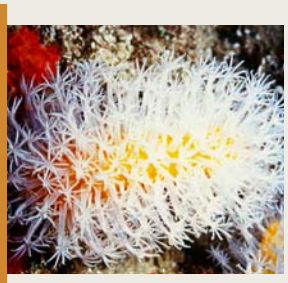
- Head, Sequencing, Canada's Michael Smith Genome Sciences Centre at the BC Cancer Agency
- 2004 MSFHR Scholar Award

# Research Snippets

### Rare corals contain cancer-fighting compound

Rare soft corals found off the coast of Western Australia and in the Caribbean produce Eleutherobin, a potentially powerful cancer-fighting compound. Due to the scarcity of the corals, a team of researchers at Simon Fraser University, including MSFHR trainee Jeffrey Mowat, are developing ways to synthesize Eleutherobin in sufficient quantities to fully investigate its biological properties.

"It's extremely exciting to be involved in research that could have such a meaningful impact for cancer patients," says Mowat, who is jointly funded by MSFHR and the Lotte & John Hecht Memorial Foundation. ■



### Trainee's work attracts major media coverage

*Dr. Whitney Weikum*

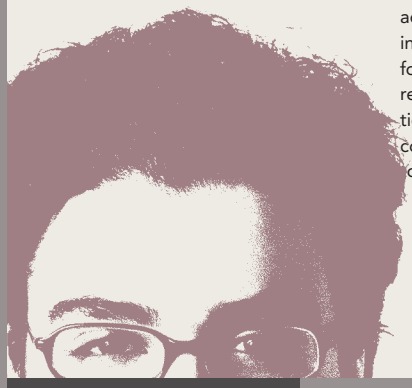
The publication of her PhD research on infant language recognition in *Science* last May propelled MSFHR Post Doctoral Fellow Dr. Whitney Weikum into the international media spotlight. Weikum and her co-authors, including her UBC supervisor Dr. Janet Werker, made an unprecedented discovery: babies as young as four months can tell whether a speaker has switched language solely from visual cues.

The *New York Times, Time Magazine, the Globe and Mail* and *CBC Television* were among the major media that reported on the study and interviewed Weikum, who was surprised the research attracted so much attention. "It was overwhelming to see that people from around the world have heard of the research I have been living and breathing for the past four years," she says. ■

### Studying hair follicles not just about hair loss

MSFHR Scholar Dr. Kevin McElwee is a rare commodity — he's one of only 10 or so people worldwide who hold a PhD in hair biology. Recruited to UBC from Germany, Dr. McElwee now leads the UBC and Vancouver Coastal Health Research Institute Hair Research Laboratory.

While hair biology is a very specialized focus, McElwee believes work in this area has broader implications. "Hair follicles do much more than just grow and shed hair," explains McElwee. "They are involved in many aspects of skin health and disease." Hair follicles play a role in the immune system, and are actively involved in wound healing, angiogenesis (blood vessel formation), and tissue regeneration. "All these properties make hair follicles a very complex and fascinating organ to study," says McElwee. ■



### Online directories of researchers

Trying to find a health researcher? MSFHR and other health research organizations have launched online, searchable directories of researchers:

- **Michael Smith Foundation for Health Research**
  BC Directory of Health Research and Trainees:
  www.*bchealthresearchers.org*
- **Fonds de la recherche en santé du Québec and the Michael Smith Foundation for Health Research**
  Interprovincial Directory of Researchers:
  www.*researchersdirectory.ca*
- **BC Environmental and Occupational Health Research Network**
  Members' Database: www.*bceohrn.ca/search*
- **BC Mental Health and Addictions Research Network**
  Network Database of BC Researchers: www.*mhanet.ca/search*

*MSFHR Scholar Dr. Delbert Dorscheid in his lab at the iCAPTURE Centre in Vancouver.*

# A fine balance

A clinician-scientist brings research knowledge and practice together


**Dr. Delbert Dorscheid, ddorscheid@mrl.ubc.ca**

- Associate Professor, UBC, Medicine/ Medicine (Critical Care Medicine)
- Investigator, James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research
- Intensivist, Intensive Care Unit, St. Paul's Hospital (Providence Health Care)
- 2002 MSFHR Scholar Award


Many researchers with both an MD and a PhD find they must choose between patient care and research. A rare few – including MSFHR Scholar Dr. Delbert Dorscheid – are able to successfully balance the intense demands of both roles, thriving in both clinical and academic worlds.

Dorscheid works as an asthma researcher at the James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research, located on the St. Paul's Hospital site. A few minutes' stroll down hospital corridors takes him to the St. Paul's Intensive Care Unit, where he also practices as a critical care specialist. For Dorscheid, the two roles are intertwined, creating a synergy that informs his research focus and enhances his work with patients. "Starting with a clinical question is what drives me to study disease processes."

Dorscheid's research focuses on the use of corticosteroids, which are commonly prescribed to asthmatics to reduce inflammation in the airways. His studies have demonstrated that while these medications provide immediate relief from breathing difficulties, they also destroy epithelial cells lining the airway.

Based on these findings and other clinical studies, pediatricians now recommend intermittent corticosteroid therapy for children with asthma. Dorscheid is now researching the mechanisms by which these drugs cause cell death, and to what extent they may cause permanent damage to airways and lead to chronic shortness of breath for asthmatics.

As a clinician-scientist, Dorscheid feels compelled to continually ask critical questions about whether better treatment options exist or if long-standing medical procedures can be improved. "Rather than working in two separate silos, clinician-scientists have a foot in both environments – we bridge the gap between the two realms and allow knowledge translation to occur," he explains. "This results in improved patient care and better health."

Although there are fewer clinician-scientists than in the past, Dorscheid believes that those who take on both roles make a substantial impact, through their own research and through mentorship of physicians in training. "If the physicians we've mentored complete their residency with the ability to think critically and to question established methods and principles, patient care will continue to evolve and improve."


He acknowledges MSFHR for the funding support that enables him to embrace the dual challenges of the clinician-scientist role. ■

## Youth sexual health at risk in BC's boom towns

Researchers examine the issues behind high rates of sexually transmitted infections among Fort St. John youth

With its large resource base of oil and natural gas, the city of Fort St. John in Northeastern BC is a magnet for young people. Both young families and "riggers"—single men attracted to the premium wages earned in remote oil and gas camps—flock to the city. Between 2000 and 2005, the region's population of residents aged 15 to 29 increased at a rate three times the provincial average.

But similar to other resource-rich towns, there are downsides to this explosive growth. Among them is a disturbing increase in sexually transmitted infections (STIs) such as Chlamydia and Gonorrhea, with local rates two to three times the provincial average. Although STIs are largely preventable and treatable, many youth remain untested and untreated.

Alarmed by the troubling STI rates in the region, MSFHR Senior Scholar Jean Shoveller and MSFHR-funded Master's student Shira Goldenberg began working with Northern Health and others to investigate the impact of the oil and gas boom on STIs among youth. With funding from the BC Medical Services Foundation

**"The public health structure in Fort St. John is understaffed and overwhelmed by the need for STI services both in town and on the rigs."**

— Dr. Jean Shoveller

(administered by Vancouver Foundation), Shoveller and Goldenberg (along with co-investigators Dr. Mieke Kooehorn and Dr. Aleck Ostry, both MSFHR Senior Scholars) conducted extensive fieldwork in the region and completed in-depth interviews with youth as well as health and social service providers. "We looked at the issue from many perspectives," says Goldenberg. "We observed youth's social interactions, examined accessibility issues, talked with youth who live in town and those who work on the rigs, and examined the public health sector's perceptions about their capacity to respond effectively."

The team's findings reveal a range of issues that make it difficult for youth to get the STI testing they need. These include restricted clinic hours, geographic and other barriers to access, and limited opportunities to learn about STIs and STI testing services in the region. Also at play are entrenched social and cultural dynamics that create barriers to youth getting tested, including the ultra masculine rigger culture, sexual stereotypes, and privacy concerns in a relatively small town.

In addition, it appears that the need for service currently outstrips the capacity to address this growing public health problem. "The public health structure in Fort St. John is understaffed and overwhelmed by the need for STI services both in town and on the rigs," says Shoveller, a population health researcher at the University of British Columbia. She notes that the city is not alone in struggling with the health and social effects of rapid economic growth. "Fort St. John's problems are magnified and unique, but they're also relevant to many resource towns that are booming all over Canada and around the globe."

To address the problems uncovered by this study, Goldenberg is now completing a Knowledge Translation Internship in Fort St. John (funded jointly by Northern Health, OPTions for Sexual Health, and MITACS/ACCELERATE BC). Working together, they are developing new intervention strategies to provide sexual health services and supports to youth living and working in the region.

The Fort St. John study is part of a larger program of research on the determinants of youth sexual health disparities, funded through Shoveller's Canadian Institutes of Health Research Interdisciplinary Capacity Enhancement Team Grant. Since 2001, she has conducted numerous studies across rural and northern BC communities, focusing on youth sexual health. "This is an important area of research," she says. "We need to learn more about how to deliver appropriate interventions in these contexts." ■


**Dr. Jean Shoveller,**
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- Associate Professor, Medicine/Health Care and Epidemiology, UBC
- 2007 MSFHR Senior Scholar Award, 2002 MSFHR Scholar Award
- Member of two MSFHR-funded Research Units: NEXUS: Researching the Social Contexts of Health Behaviour, and the Centre for Health and Environment Research
- 2007 CIHR Public Health Chair in Improving Youth Sexual Health

**Shira Goldenberg,**
**shiragol@interchange.ubc.ca**

- 2006 MSFHR Trainee Award
- 2007 CPHA Public Health Student Award


*MSFHR Senior Scholar Dr. Jean Shoveller (left) and MSFHR Trainee Shira Goldenberg.*

## Barriers to testing

Research by Dr. Jean Shoveller and her team has revealed a number of barriers that interfere with youth getting tested for sexually transmitted infections (STIs).

- Limited weekday-only clinic hours, overcrowded drop-in clinics, and the 'invisibility' of the public health unit inhibit youth's access to STI testing
- STI testing is inaccessible for youth working long hours at remote work camps, and limited access to transportation in town makes it difficult for local youth to access testing
- STI testing is a highly stigmatized behaviour, especially for youth who are exposed to stereotypes related to gender and class
- Youth lack information about STIs and testing options in Fort St. John, and oil and gas workplaces do not provide sexual health information, services or resources
- Youth want more opportunities to discuss STIs with their health service providers and want input into the development of new interventions to promote sexual health

*MSFHR Scholar Dr. Elizabeth Conibear (centre), with MSFHR Trainees (from left to right): Dr. Benjamen Montpetit, Dr. Leslie Grad, Karen Lam, Dr. Chris Tam, Helen Burston and Nicole Quenneville.*

# Researcher on the rise

## Research success grows fast for BC scientist

**Dr. Elizabeth Conibear,**
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- Assistant Professor, Medicine/ Medical Genetics, UBC, Centre for Molecular Medicine and Therapeutics, Child & Family Research Institute, Children's & Women's Health Centre of British Columbia
- 2004 MSFHR Scholar Award

Dr. Elizabeth Conibear laughs as she describes how she regularly bursts into the lab to hear the latest research results or share news with her trainees. "I get really excited about things, and I tend to interrupt them a lot," she says. These interruptions often lead to spontaneous meetings where the MSFHR Scholar will brainstorm with her lab members about new approaches to their research.

It seems light years away from 2002, when Conibear first arrived at the Centre for Molecular Medicine and Therapeutics (CMMT) on the Children's & Women's Health Centre site in Vancouver. "My lab was an empty room," she remembers. Although somewhat daunted, she welcomed her first opportunities as an independent investigator, ordering equipment, recruiting her first personnel, and writing grant applications.

To get started, Conibear relied on the rich environment of expertise and support offered by the University of British Columbia, the CMMT, and the Child & Family Research Institute. A real boost of confidence and funding came with her MSFHR Scholar Award and establishment grant in 2004.

She credits these supports for jump-starting her research on fundamental cellular functions. "At the beginning, we were a very small lab with young women trainees all in their twenties. It was so exciting to be able to make discoveries and do research that was recognized."

Along the way, Conibear's growing success and positive attitude have helped her attract emerging research talent. Today, her lab group comprises three post doctoral fellows, three graduate students and two technicians, as well as a number of undergraduate students. "Liz is so keenly interested in science," says Dr. Benjamen Montpetit, an MSFHR-funded Post Doctoral Fellow who joined the lab this spring. "It's a fun environment to be in."

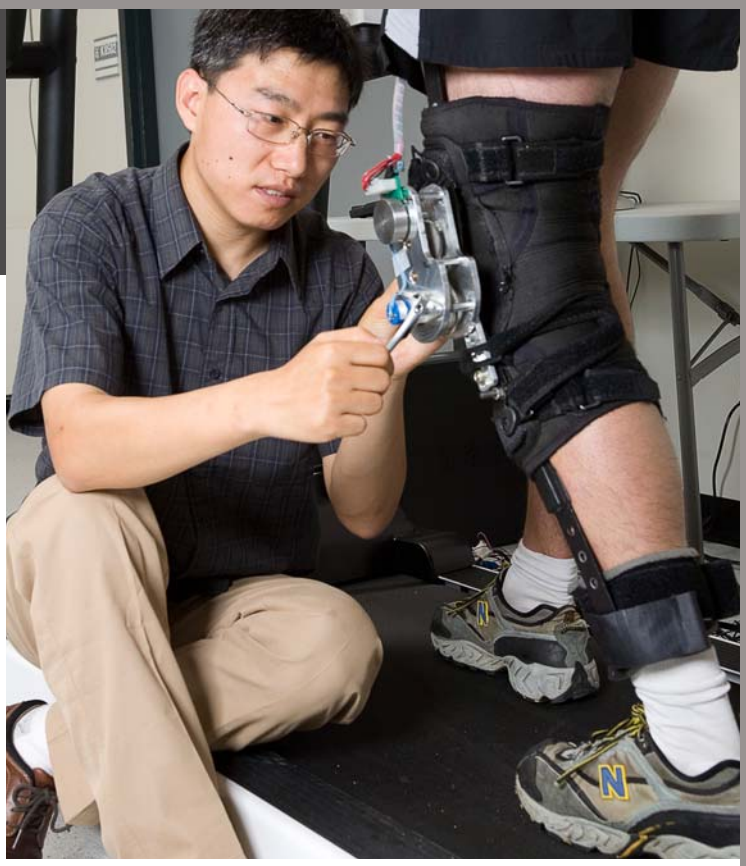
This year, five more of her lab members were awarded MSFHR Research Trainee awards. Conibear is thrilled by the funding success of her team. "MSFHR training awards are seen as very prestigious awards," she notes. "That kind of recognition means so much, and really motivates them." ■

### Fundamental cell functions

Vesicle trafficking — the movement of proteins and other molecules within cells to allow normal function — is the focus of Dr. Elizabeth Conibear's research. She explains: "Imagine a single nerve cell extending from your spinal cord to the tip of your finger. Molecules have to be transported efficiently along this length to transmit signals that keep the cell alive and functioning. We're interested in the underlying mechanisms that control this transport in all cells."

When the trafficking system breaks down, the results can be catastrophic. Disorders of vesicle trafficking are implicated in a variety of human diseases, including Alzheimer's disease, Lou Gehrig's disease, Huntington disease, Down syndrome and several fatal childhood diseases that progressively destroy the brain and nervous system.

Because vesicle trafficking is such a fundamental process—required by all cells in all organisms—studies in Conibear's lab are performed with simple yeast cells, which share many of the same genes and mechanisms for cellular transport as humans. The research is decidedly high-tech, using tailored genomics and bioinformatics approaches that Conibear and her team have pioneered.



*MSFHR Post Doctoral Fellow Dr. Qingguo Li adjusts a biomedical energy harvester, which could improve the quality of life for people who rely on powered medical devices.*

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- 2007 MSFHR Post Doctoral Fellowship

# No batteries required

MSFHR Post Doctoral Fellow designing a biomechanical energy harvester that could power prosthetic limbs, pacemakers

Dr. Qingguo Li has come a long way in his research journey. In China, Li focused on mechanical and electrical engineering for aircraft systems. Now at Simon Fraser University, the MSFHR Post Doctoral Fellow is helping to design a biomechanical energy harvester that could greatly improve the quality of life for people who rely on pacemakers and other powered medical devices.

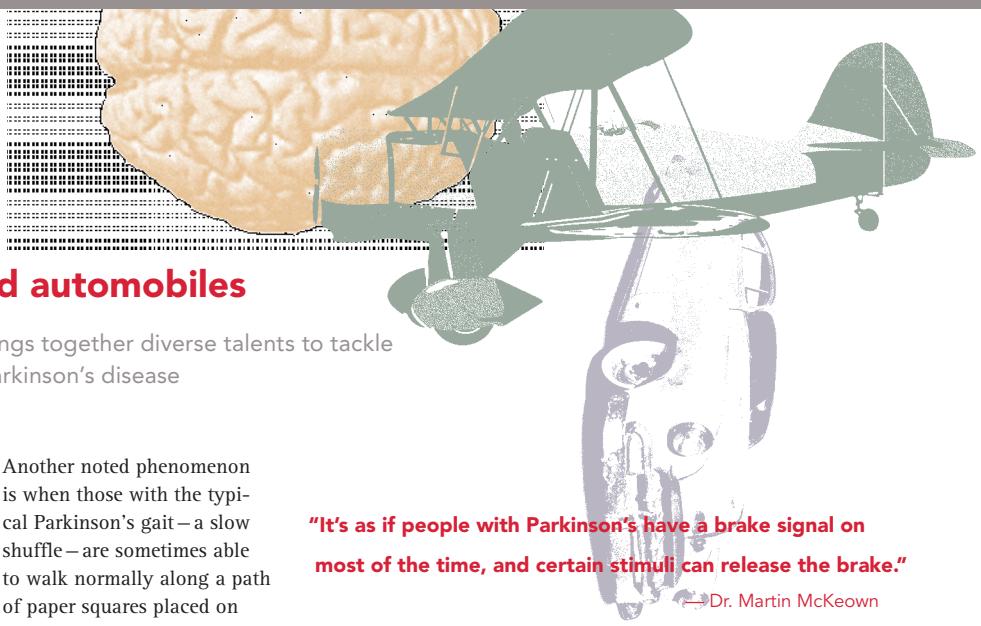
After he immigrated to Canada, Li pursued a PhD in engineering at SFU. Near the end of his PhD program, he became interested in applying his knowledge of mechanical and electrical engineering in a different way. "I wanted to find a project that could really benefit people," says Li.

At the same time, down the hall from Li in the Locomotion and Neurokinesiology labs, MSFHR Scholar Dr. Max Donelan and Dr. Andy Hoffer were looking for an engineer to round out their team of biomechanists and human physiologists – someone who could help them build the prototype for an innovative new device.

Donelan and Hoffer's team is exploring how to use the body's own energy to power a range of portable medical devices, including pacemakers and motorized prostheses. Currently, the sophistication and usability of these devices is limited by the strength and efficiency of batteries they use as a power source. By using technology similar to the regenerative braking system of a hybrid car, the team hoped to develop a biomechanical energy harvester (BEH) to power these devices efficiently without batteries. "Qingguo's engineering expertise made him a perfect fit for the team," says Donelan.

Resembling a leg brace, the BEH prototype works by capturing the mechanical power produced by muscles at the knee joint when the user is walking. As the user lifts the leg to walk, the device takes over the role of muscles that brake the movement of the leg to form a step. The mechanical energy produced by the leg muscle that would normally brake the leg is captured by the device and converted into electrical energy. The energy is produced without increasing the effort of the user, an important characteristic for biomedical applications. When worn by a user walking at a moderate pace, the device currently produces an average of five watts of power – enough to power 10 cell phones simultaneously.

Li is now setting his sights on increasing the BEH's efficiency and power output. He's also excited about the possible future applications of the harvester as a reliable, renewable power source for a wide range of medical devices. As for his own future, Li believes his career in biomedical engineering, and his decision to follow his passion for improving the quality of life for elderly and disabled people, looks just as promising. ■



# Brains, planes and automobiles

A unique research group brings together diverse talents to tackle disrupted brain activity in Parkinson's disease

Clinicians and engineers view the world and its challenges very differently. Yet increasingly, they are working together on innovative new approaches to improving patient care.

Dr. Martin McKeown has both a clinical and engineering background – he holds a degree in engineering physics from McMaster University and an MD from the University of Toronto. McKeown also completed a neurology residency at the University of Western Ontario and a research fellowship at the Salk Institute for Biological Studies in San Diego. He's a fitting leader for a unique group of physicians and engineers at UBC researching alternative approaches to traditional drug and surgical therapy for people with Parkinson's disease. This diverse team is investigating ways to identify disrupted brain activity in Parkinson's and develop visual stimuli to reduce or stop the disruptions.

The hallmarks of Parkinson's are muscle tremors, impaired motor skills and other symptoms. However, clinicians have noted that certain stimuli appear to "cut through" Parkinson's symptoms. The first – known as *kinesia paradoxica* – occurs when a dramatic stimulus prompts near-normal movement in those who usually have quite limited mobility. For example, yell "Fire!" and you could see a wheelchair-bound person with Parkinson's rise and run out of a room.

Another noted phenomenon is when those with the typical Parkinson's gait – a slow shuffle – are sometimes able to walk normally along a path of paper squares placed on the floor because the pattern provides visual cues for placing their feet.

While these phenomena have been known to clinicians for a long time, they are not very well understood, explains McKeown. "It's as if people with Parkinson's have a brake signal on most of the time, and certain stimuli can release the brake. We know that some visual inputs can prompt a change in muscle behaviour in Parkinson's. What we now want to learn – by monitoring brain waves – is how to create a system that will provide these cues in a safe, consistent and systematic way."

McKeown's team – funded through the MSFHR Team Start-up program – combines expertise in a range of specialties including machine learning, virtual reality systems, automotive micro-sensors and aviation safety systems. Their plan is to monitor brain activity of Parkinson's patients with highly advanced and sensitive equipment, and develop specific stimuli that can "lift the brake" and prompt increased muscle activity.

## The Research Team

McKeown credits recent technology advances for making it possible to develop this UBC-based team. "There have been incredible improvements in visual displays and creating virtual environments," he says. "Sidney Fels' Human Communication Technologies lab is on the cutting edge of this technology."

**"It's as if people with Parkinson's have a brake signal on most of the time, and certain stimuli can release the brake."**
—Dr. Martin McKeown

Edmond Cretu's work designing micro-sensors and nano-technology for automobiles in Europe will help the team develop highly-sensitive sensors to collect brain and muscle signals.

Jane Wang and Kevin Murphy's expertise in elaborate analysis methods will allow the subtle brake signal information to be extracted from the rest of the background brain activity. Wang also has expertise in how cell phones communicate with each other, which has similarities with how parts of the brain communicate with each other.

Control engineer Meeko Oishi can determine what inputs – in this case, visual stimuli – should be given to reduce the brake signal in Parkinson's. Her expertise in safety protocols for complex programs such as autopilot systems will help ensure that the developed system is safe for Parkinson's patients.

McKeown worked at Duke University in North Carolina for five years before coming to Vancouver at the urging of Pacific Parkinson's Research Centre Director Dr. Jon Stoessl. McKeown says the team is excited about the possibilities of their unique collaboration and grateful to MSFHR for its support.

"One of the challenges of obtaining peer-reviewed funding with a truly interdisciplinary team is, who are your peers?" asks McKeown. "Traditional engineering or medical research funding sources didn't appear to be available to us for this project. We are very grateful to the Foundation for its approach to funding research – it enabled us to create this unique team." ■

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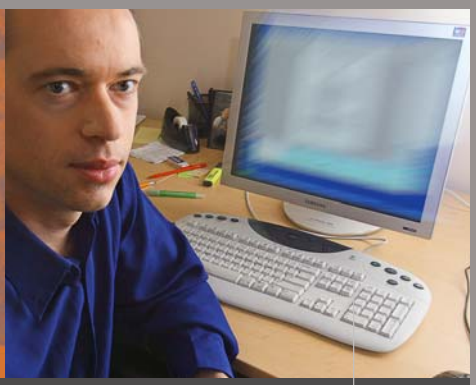

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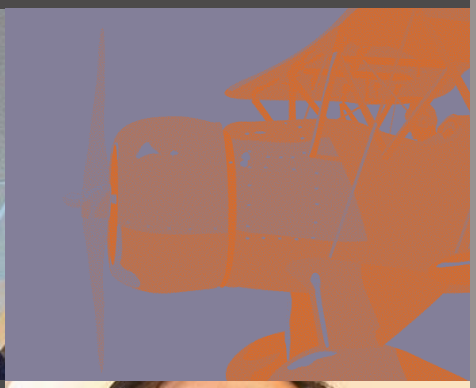

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# Harmonizing ethics review

Can BC's ethics review process be streamlined and still maintain standards for excellence?

You're a researcher who's come up with a promising new medical treatment – a discovery that could revolutionize health care and enhance quality of life for British Columbians. Now that you've proven your concept, you'll need to test the treatment's safety and effectiveness. This will involve a multi-site clinical trial, where you will seek human subjects in several locations to undergo the treatment.

Before you can get started, your proposed study must undergo ethics review, a process designed to ensure your human research subjects are thoroughly protected. For every institutional site where you'll be recruiting participants, you fill out an application and submit informed consent forms. Each institution has an expert panel known as a research ethics board (including scientists and other professionals such as ethicists and lawyers) to review the ethical issues relating to all research at that institution. Each of these boards will need to approve your study before you can proceed.

One by one, you start to hear back from the different institutions. The first ethics review board asks for modest changes, so you resubmit the revised application to all research sites for another ethics review. Then, you hear from a different institution, asking for further revisions. And on and on it goes, until every site has granted approval.

Ethics review is a process that can take months, even years for very large studies. And for each new or revised submission, volunteer review ethics boards must meet to consider the applications. The burden on these committees is enormous.

Sound time-consuming and frustrating? According to many, the current situation can present significant barriers to effective and efficient research.

"Everyone agrees that there are no shortcuts when it comes to protecting people in research studies," says Dr. Martin Schechter, MSFHR's Chief Scientific Officer. "But there is also a strong desire for finding ways to make ethics review work better for everyone."

MSFHR has heard from health research stakeholders across BC. Many would like to see an effective, coordinated provincial approach to ethics approval – one that improves quality, access, consistency, efficiency and capacity for ethics review of research involving human subjects. But while they may agree on the need for such an approach, it's not clear what potential solutions might be acceptable to stakeholders. Options vary widely, ranging from adoption of harmonized core guidelines and institutional review reciprocity to implementation of a coordinated and shared provincial ethics review mechanisms.

**"Everyone agrees that there are no shortcuts when it comes to protecting people in clinical trials. But there is also a strong desire for finding ways to make ethics review work better for everyone."**

— Dr. Martin Schechter

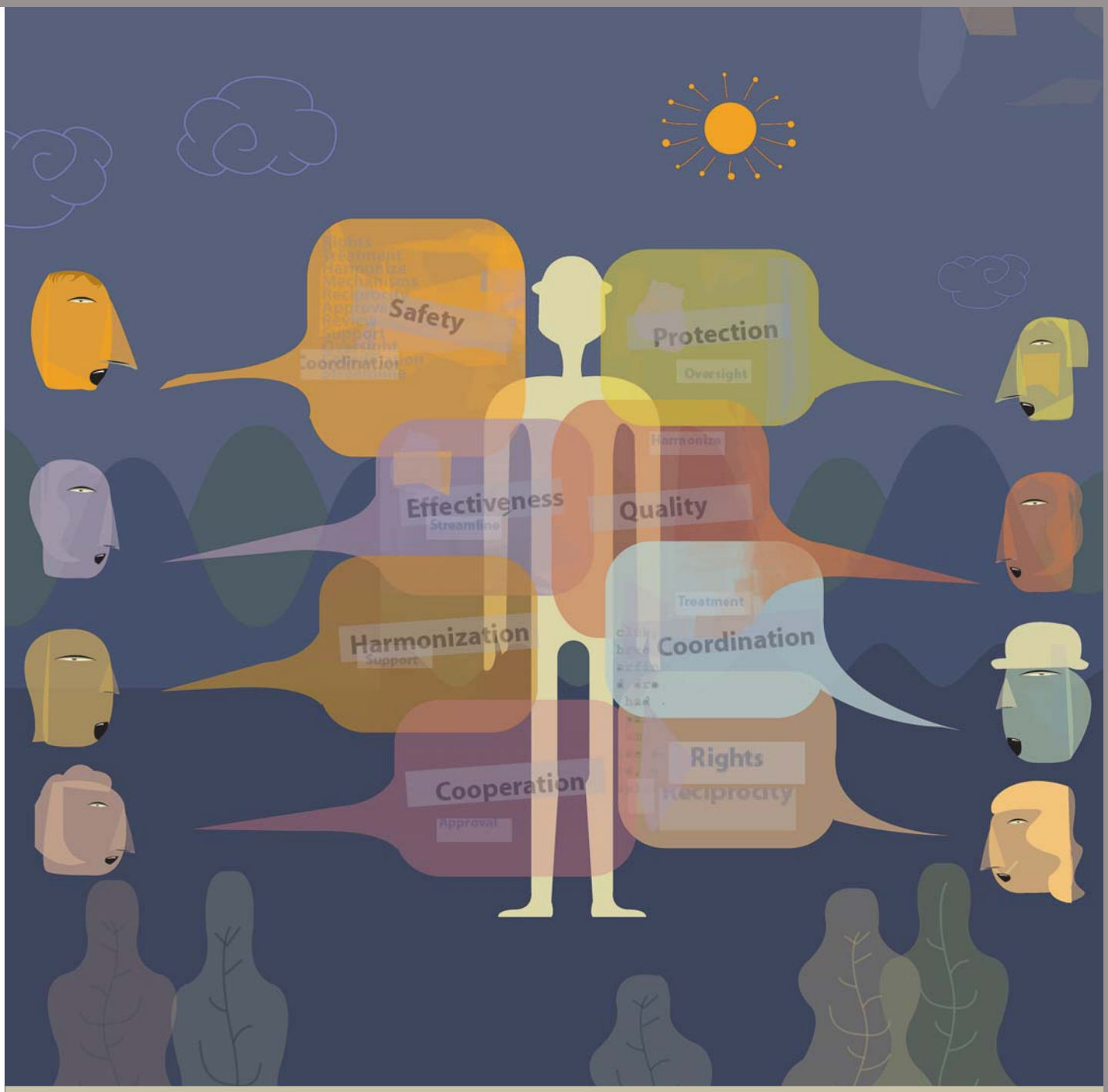
At the request of its stakeholders, MSFHR is facilitating a process to explore these options in greater depth – a project that has been given full endorsement and support of the Ministry of Health and the Ministry of Advanced Education.

The BC Ethics Harmonization Initiative will follow a process-driven path, similar to other broad consultations that MSFHR has facilitated. The process involves striking a task force, representative of the stakeholders, to guide the work; starting with an environmental scan; continuing with broad consultation; and ending with a consensus report.

In this case, the environmental scan has three components: a scan of existing ethics review mechanisms and structures in 25 academic institutions, health authorities and communities across BC; a review of harmonized ethics processes and structures in other jurisdictions (provincial, national and international); and a web-based survey of BC researchers about their experiences relating to processes for ethics review.

In November 2007, MSFHR will convene a workshop involving representatives from key BC health research institutions and stakeholders to receive the results of the environmental scans, hear from expert speakers, and discuss options for a more coordinated approach to ethics approval. In spring 2008, MSFHR will distribute a report on the outcomes of this work, presenting the workshop's options along with recommendations for next steps. ■

*For more information about MSFHR Ethics Initiatives, visit www.msfhr.org.*




## Stakeholder voices: MSFHR's consultation process

Health authorities. Universities. Community-based research funders. Life sciences industries. Teaching hospitals. What do they have in common?

They're all MSFHR stakeholders — important voices that command the Foundation's full attention.

Health research stakeholders across BC played a vital role even before MSFHR was created by the Government of British Columbia in 2001. As members of the Coalition for Health Research in BC, they contributed to the capacity-building plan that convinced the government to set up the Foundation. Today, our stakeholders remain a source of information and feedback that is essential to priority-setting, program development and policy evolution at MSFHR.

MSFHR employs various mechanisms to ensure that stakeholder voices are heard and attended to. These include periodic surveys and standing advisory structures such as the Research Advisory Council and the Health Services and Policy Research Network Steering Council. Other activities include: outreach visits to health research institutions across the province; requests for feedback on draft documents posted on the MSFHR website; and many other ad-hoc task forces, workshops and celebratory events. It's how MSFHR stays attuned and responsive to the needs of the health research community.


*BC Healthy Living Alliance Chair Suzanne Allard Strutt joined Gordon Hogg, Minister of State for ActNow BC, to announce a $21 million initiative to promote healthy eating, physical activity and living smoke free. MSFHR is coordinating the program evaluation component.*

# Evaluating BC health promotion initiatives

MSFHR lends process expertise to provincial programs

Some heavy hitters were on hand at Nat Bailey Stadium in August 2007 to announce a new provincial game plan for promoting healthy eating, physical activity and living smoke-free.

The Honourable Gordon Hogg, Minister of State for ActNow BC, joined representatives of the BC Healthy Living Alliance (BCHLA) to launch a $22-million initiative aimed at improving the health of British Columbians.

BCHLA is the province's largest ever health promotion team. With funding received through ActNowBC, this group of nine BC organizations will implement a wide range of projects that target known gaps – including lack of access to public supports – that compromise healthy living. These programs are expected to reach nearly one million British Columbians.

"Our partners in the BC Healthy Living Alliance enable us to work together as a team in making British Columbia the healthiest region ever to host an Olympic and Paralympic Winter Games," says Hogg. "From kids to seniors, we will help encourage the changes needed to ensure all British Columbians live long, healthy lives."

MSFHR's role in the BCHLA initiative reflects the Foundation's mandate to contribute to the expansion of provincial capacity for population health and health promotion research. Through its partnership with BCHLA, over the next three years MSFHR is facilitating a rigorous process for embedding evaluation into the roll-out of all BCHLA programs. The Foundation has assembled an eight-member international External Expert Advisory Panel. The panel will provide scientific review over the life of the initiative. Their work began in summer 2007 when they reviewed applications and made recommendations to MSFHR and BCHLA on the selection of an Evaluation Leader to undertake the arms-length evaluation of each BCHLA-funded health promotion project.

**"It's not enough to simply put money into what we believe will be worthy health promotion projects — we need evidence that these initiatives really make a difference."**

— Gordon Hogg, Minister of State for ActNow BC

"Evaluation is essential to determine which programs or clusters of programs are the most effective," explains Hogg. "It's not enough to simply put money into what we believe will be worthy health promotion projects – we need evidence that these initiatives really make a difference. This evaluation will give us a foundation of proof for making future policy decisions and investments that improve the health of British Columbians." ■

## MSFHR's catalyst role

Increasingly, MSFHR is called upon by government and the community to act as an independent provincial facilitator to advance strategic health research initiatives and activities. Besides the BC Healthy Living Alliance project, MSFHR is leading a number of other initiatives. These include:

**BC Ethics Harmonization Initiative** (see page 16) – With endorsement from the BC Ministries of Health and Advanced Education, MSFHR is responding to the health community's call for an initiative to look at ethical review across the province. MSFHR is currently facilitating a consultative process to explore options.

**Nursing Research Initiative** – The BC Ministry of Health has provided $8 million to MSFHR to support applied health services research related to the nursing workforce and associated policy initiatives. MSFHR has assembled an Advisory Council, representative of the practice and academic community, to consult and develop recommendations regarding strategic and funding priorities.

**HPV Vaccine Research Project** – Following the granting of regulatory approval in Canada for the use of the Gardasil™ vaccine for the prevention of infection from four strains of human papilloma virus (HPV), MSFHR received a request from the BC Provincial Health Officer to provide oversight and accountability mechanisms for an HPV vaccine research project. Undertaken at the Vaccine Evaluation Centre at the Child & Family Research Institute and the BC Centre for Disease Control, the program will determine the most cost-effective way to provide immunity, comparing a two-dose regimen against the currently-approved three-dose regimen.

**Health Services and Policy Research Support Network (HSPRSN)** – The BC Ministry of Health has granted $16 million for programs that support and build BC's capacity to undertake health services and policy research focused on health system evaluation, redesign and innovation. MSFHR supports a consultative framework as well as program development and implementation.

## BC Healthy Living Alliance members:

BC Lung Association

BC Pediatric Society

BC Recreation and Parks Association

Canadian Cancer Society, BC and Yukon Division

Canadian Diabetes Association

Dietitians of Canada, BC Region

Heart and Stroke Foundation of BC and Yukon

Public Health Association of BC

Union of BC Municipalities

The alliance also has non-voting representation from all BC health authorities, and the provincial and the federal governments.

*For more information: www.bchealthyliving.ca*

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*Members of the VANDU Women CARE Team: Back row: Sharon Message, DJ, Lorie Turner, Fern Charlie, Amy Salmon, and Hilla Kerner-Soliman. Front row: Jewels Chapman, Kristy Hoyak, Laurel Dykstra, Juanita Mayes, Jackie Robinson, and CD.*

# Supporting and building knowledge about women who use drugs

Personal stories about the unique VANDU Women CARE project

**By Dr. Amy Salmon and the VANDU Women CARE Team**

Positive health care experiences are not the norm for women in Vancouver's Downtown Eastside. But when they occur, the impact is significant for women's physical and emotional well-being. Fran Dawson, who lives with HIV, fibromyalgia, lung disease, and mental health issues, describes how she felt after her doctor sat down and talked with her. "I felt good inside, safe again. I felt cared for and had hope again after being unhappy for so long. That's what Dr. P. has done for me."

The scarcity and importance of experiences like Fran's in "Canada's poorest postal code" is what inspired the VANDU Women Clinic Action Research for Empowerment Project (VANDU Women CARE). It's a unique collaboration between the BC Centre of Excellence for Women's Health, the UBC School of Nursing, and the Vancouver Area Network of Drug Users (VANDU). The project brings together academics, professional researchers, community workers, peer advocates and women who use drugs. Our goal is to produce new knowledge about the primary health care experiences of women who use drugs, while supporting their health, well-being, and leadership.

With funding from the MSFHR Health Services and Policy Research Support Network, we've provided training, remuneration, and support for VANDU Women's Group members to interview 50 women about their health care experiences. Here's what some of our peer interviewers say about the importance of this study for women in the Downtown Eastside. "Having proper health care for ourselves and each other gives a sense of belonging and well-being in our community," says Sharon Message. Jackie Robinson agrees: "It shows that we're not just throw-away people." Jewels Chapman notes: "Women who often get overlooked and stereotyped or judged are given the opportunity to speak the truth and feel comfortable about being interviewed, even if their clinic experiences have been negative."

The leadership of VANDU Women demonstrates that researchers aren't only academics. As described by our Community Research Facilitator Laurel Dykstra: "This initiative combines street-outreach, activism, writing, and research in a community-driven project that involves a lot of incredible women."

We feel fortunate to have had the support of the Michael Smith Foundation for Health Research. Their willingness to take a chance on our team shows leadership and commitment to thinking outside the box about the possibilities for supporting community-based health research. ■

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- 2006 HSPRSN Operating Grant Award

*We welcome submissions from MSFHR award recipients for our* First Person *feature. Email: info@msfhr.org*