SPECIAL REGIONAL EDITION

British Columbia | Prairies | Ontario | Quebec | Atlantic Canada

Your Health Research Dollars at Work

CIHR IRSC

In the past year, CIHR continued to support world-class research at universities, hospitals and research institutions across Canada.

CIHR has invested in nearly 12,000 researchers and trainees. On any given day, many of these researchers are publishing important results and sharing information about their work. These results, some of which are described in this newsletter, will have a far-reaching impact on the health of Canadians and others. They will form the basis of new innovations in health-care delivery.

For example, **Dr. Alexandre Prat of the Centre hospitalier de l'Université de Montréal (CHUM)** and **Drs. Samuel Weiss and V. Wee Yong of the University of Calgary's Hotchkiss Brain Institute** each reported significant findings with implications for treatment of multiple sclerosis (MS), a disease which affects 75,000 Canadians. Dr. Prat has identified a molecule that shows promise as a therapeutic target for decreasing neuroinflammation. In studies with mice, Drs. Weiss and Yong found that the hormone prolactin, produced by women during pregnancy, encouraged the growth of myelin, the protective coating around nerve cells. Myelin damage is a major feature of MS.

Elsewhere, *Time* magazine named findings by **University of Manitoba** researcher **Dr. Stephen Moses** as the number-one health research breakthrough of the year. Dr. Moses led two clinical trials of male circumcision that proved successful in reducing HIV incidence in young men. CIHR provided over $2.5 million in funding to this study.

We hope that you will enjoy this special, regional edition of *Your Health Research Dollars at Work*.

Welcome to a special, regional edition of CIHR's newsletter *Your Health Research Dollars at Work.*

CIHR is a national organization with significant local reach. Investments in Canadian health research, made on behalf of the Government of Canada, can be seen in every province in Canada.

In 2007-08, 89 Canadian institutions[1] received funds from CIHR. A large portion of this funding went to researchers in Ontario, Quebec and British Columbia. However, in Atlantic Canada, investments in CIHR-supported projects in the region have increased by approximately 140% since 2000-01. And, in the Prairie provinces, funding has increased by more than 77% over the same period.

Initiatives such as the Regional Partnerships program have meant that more researchers from smaller universities, including those without medical schools, are now on a more equal footing with larger institutions when it comes to funding. The program has resulted in the creation of successful, world-renowned research teams, including the group led by neuroscientist Dr. Bryan Kolb at the University of Lethbridge, who is profiled in the 2007-08 CIHR Annual Report. CIHR funding to Dr. Kolb's university has also helped it attract support from other funders, such as the voluntary sector.

These successes are critical to the growth of the economy, both at a regional and national level. As recognized in the Government of Canada's S&T strategy, research, innovation and excellence are critical to success in the knowledge-based economy.

CIHR investments across Canada, on behalf of the Government of Canada, have helped cultivate research excellence, have contributed to a highly-qualified workforce, have helped generate new commercial opportunities and have significantly impacted the quality of health care and health care delivery. I hope you enjoy reading about these accomplishments in our special regional newsletter.

Alain Beaudet, MD, PhD
President
Canadian Institutes of Health Research

1 Excluding institutions paid through direct payments.

CIHR IRSC

About the Canadian Institutes of Health Research
The Canadian Institutes of Health Research (CIHR) is the Government of Canada's agency for health research. CIHR's mission is to create new scientific knowledge and to enable its translation into improved health, more effective health services and products, and a strengthened Canadian health-care system. Composed of 13 Institutes, CIHR provides leadership and support to nearly 12,000 health researchers and trainees across Canada. www.cihr-irsc.gc.ca

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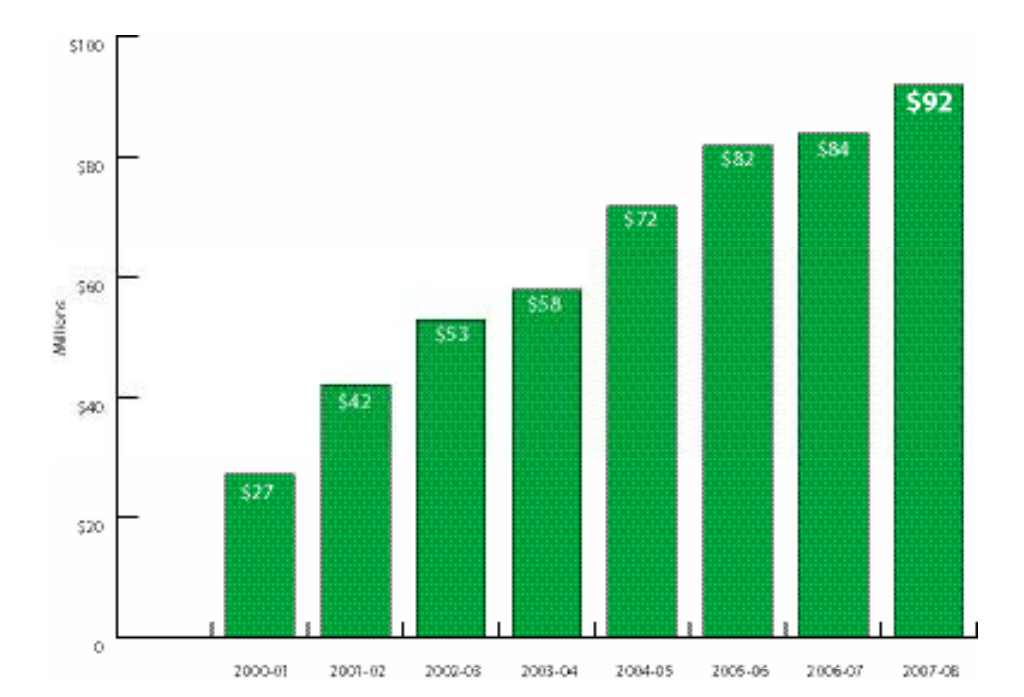
CIHR investment in BRITISH COLUMBIA



Direct payments are excluded in the figures above.

In 2007-08, CIHR contributed approximately **$92** million in funding for health research in British Columbia, providing support for projects in **8** funded institutions.

New Knowledge

Lack of language linked to suicides

An inability to speak one's own language appears to be linked to higher youth suicide levels in Aboriginal communities, report CIHR-supported scientists **Dr. Michael J. Chandler of the University of British Columbia** and **Dr. Christopher E. Lalonde of the University of Victoria**. Aboriginal youth suicide rates vary substantially from community to community in British Columbia, as do rates of knowledge of Aboriginal languages. A preliminary investigation found that youth suicide rates effectively dropped to zero in those few communities where at least half the band members had conversational knowledge of their "Native" language.

Conducting reconnaissance on breast cancer's field marshals

Scientists believe that cancer stem cells – the one in 10,000 cells that act as field marshals and direct the other 9,999 tumor cell soldiers – are responsible for breast cancer occurring and returning. A new CIHR-funded project, led by **Dr. Connie Eaves of the University of British Columbia**, will examine discarded tissue from breast reduction procedures and tumor tissue samples. The results will improve our understanding of the role of stem cells in the initiation and progression of human breast cancer, setting the stage for the testing of new treatments.

Poor children gain more weight

Dr. Lisa Oliver of Simon Fraser University produced new evidence that where you live has an impact on weight gain. Her study tracked children over an eight-year period and determined that while most kids had roughly the same body mass index (BMI) in their early years, by age 11 those living in Canada's poorest neighbourhoods had gained more weight than those living in middle-income areas. The study provides important information for policymakers, suggesting that the prevention efforts aimed at kids aged 5-8 will produce the greatest impact.

Did You Know…

… that a CIHR-funded scientist has created a drug delivery method to treat potentially lethal fungal infections in cancer and transplant patients?

The **University of British Columbia's Dr. Kishor Wasan** developed a liquid preparation that can be taken orally with few side effects. The current intravenous treatment has serious side effects, notably severe kidney toxicity.

Excellent People

Catching seniors before they fall

Dr. Vicky Scott isn't satisfied with finding out how best to reduce falls and injuries among older people; she wants that knowledge put into practice.

Winner of the **2007 CIHR Local/Regional Knowledge Translation Award**, her efforts have significantly reduced fall-related hospitalizations and deaths among British Columbia's seniors.

An assistant professor at the **University of British Columbia**, Dr. Scott has worked with health practitioners and researchers to create a province-wide coalition for the coordination and facilitation of evidence-based fall-reduction initiatives. She also leads a Population Health Fund project for the development and testing of a Canadian Falls Prevention Curriculum for health professionals and community leaders.

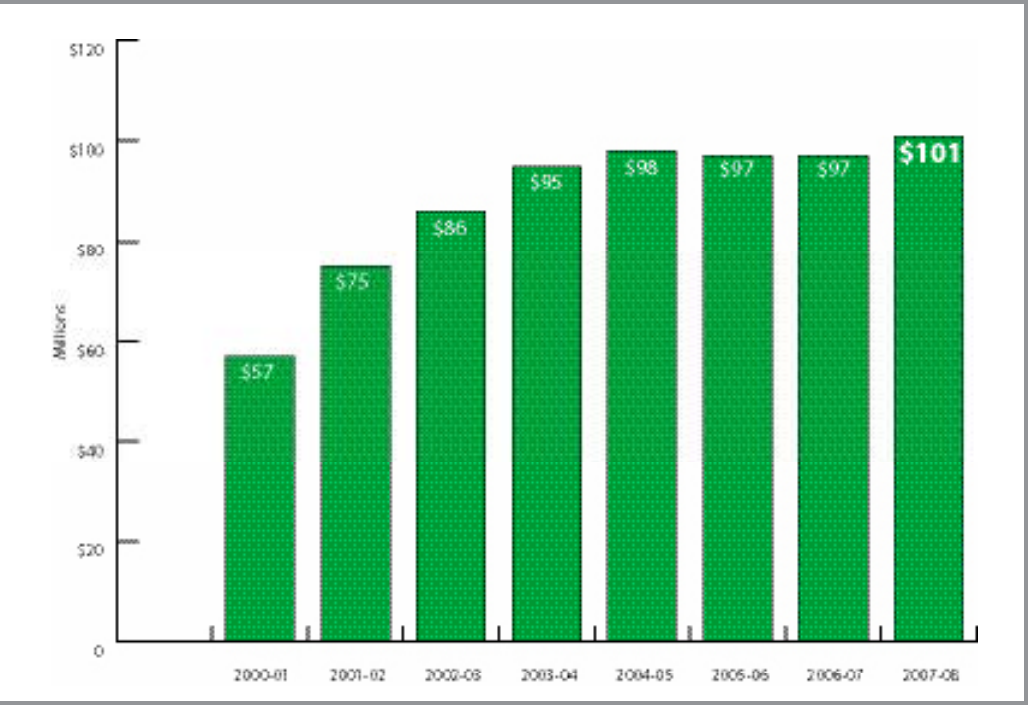
Frequently published in peer-reviewed journals, Dr. Scott routinely makes presentations to groups ranging from seniors' associations to international conferences.

Commercial Opportunities

Drug development for deadly lung disease

Dr. Nasreen Khalil of the University of British Columbia received funding from CIHR's Proof of Principle program, teaming up with Vancouver-based Pacific Therapeutics Ltd., to commercialize a new drug that can stop a disease known as idiopathic pulmonary fibrosis (IPF). There is less than a 20% survival rate for this disease, which affects as many as 42 people per 100,000. In experiments with rats, treatment with the peptide developed by Dr. Khalil's team has been shown to slow and even prevent the onset of IPF. According to Dr. Khalil, the technology could be used for a number of other conditions where excessive scarring poses a serious risk, such as progressive asthma or restenosis of the arteries following angioplasty.

CIHR investment in the PRAIRIES



Direct payments are excluded in the figures above.

In 2007-08, CIHR contributed approximately **$101** million in funding for health research in the Prairie provinces, providing support for projects in **8** funded institutions.

New Knowledge

Hormone could help repair MS damage

A team of CIHR-funded researchers at the **University of Calgary** is uncovering important information about the nerve-repairing potential of a hormone produced by women during pregnancy. In studies with mice, **Drs. Samuel Weiss and V. Wee Yong of the Hotchkiss Brain Institute** found that the hormone prolactin encourages the growth of myelin, the protective coating around nerve cells. Myelin damage is a hallmark of multiple sclerosis, a disease that affects 75,000 Canadians.

Hope helps the terminally ill

A **University of Saskatchewan** research team working with terminally ill cancer patients has found that engaging in activities that increase hope, such as deciding on gifts to be given in perpetuity, increases well-being during a person's last days. The team, led by CIHR-funded scientist **Dr. Wendy Duggleby**, also found that hope eases the suffering of the families and health professionals caring for the terminally ill. The research team has produced an award-winning video called *Living with Hope,* which can be viewed at www.usask.ca/nursing/research/livingwithhope/video.htm.

Does bariatric surgery make the best sense?

Almost 1 million Canadians are severely obese and many are seeking bariatric surgery as a solution. But while the surgery can substantially reduce weight and increase quality of life, it carries a 0.5-2% up-front risk of death and has potentially serious complications. A CIHR-funded study, led by **Dr. Raj Padwal of the University of Alberta**, is collecting data to determine the benefits, risks, and costs of bariatric surgery in the Canadian context. The results are expected to directly influence and streamline patient care.

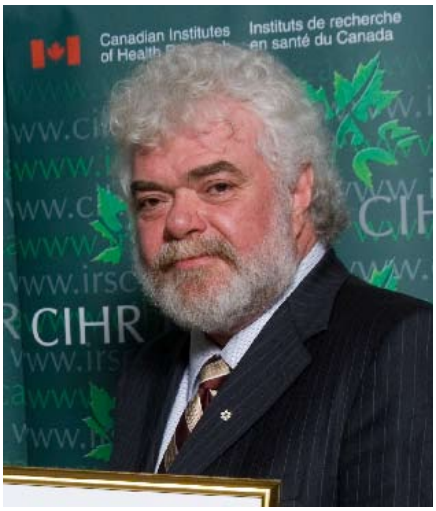
Did You Know…

… that **University of Saskatchewan** microbiologist **Dr. Wei Xiao** has found a way to trigger a protein combination that sends an SOS signal for cells to fight cancer-causing agents?

The CIHR-supported study could lead to better cancer diagnosis through targeting defective genes. It may also pave the way for a drug that activates the SOS response in cells.

Excellent People

A champion fighter against HIV



Winner of the 2007 **CIHR Michael Smith Prize in Health Research** as Canada's Health Researcher of the Year, **Dr. Frank Plummer** is, quite simply, one of the leading HIV/AIDS researchers on the planet. Scientific Director General of the **National Microbiology Laboratory**, Dr. Plummer has dedicated almost two decades to working in Nairobi, Kenya, where he discovered and studied a group of women who have remained resistant to HIV infection despite repeated exposure to the virus. His work is widely regarded as critically important to eventually developing an HIV vaccine.

In 2005, Dr. Plummer and his team received funding from the Bill & Melinda Gates Foundation's Grand Challenges in Global Health to continue studies on HIV resistance and work on an HIV vaccine. Dr. Plummer's work has also led to low-cost educational and practical interventions to reduce the spread of HIV/AIDS that have been adopted by UNAIDS and the World Bank.

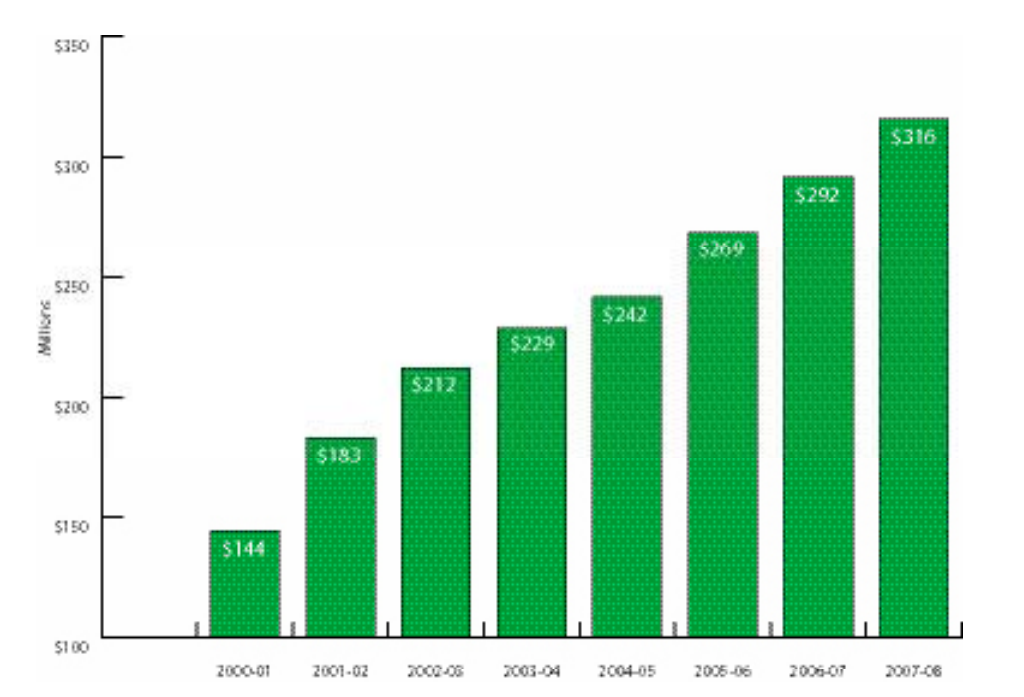
In addition to his role with the National Microbiology Laboratory in Winnipeg, Dr. Plummer is the Chief Science Advisor for the Public Health Agency of Canada and Director General of the Centre for Infectious Disease Prevention and Control in Ottawa.

Commercial Opportunities

Adding nitric oxide could assist anti-arthritis drugs

Arthritis affects more than 3 million Canadians, but many of the drugs used to treat arthritis cause stomach irritation, induce bleeding and contribute to the development of ulcers. A CIHR-funded study led by the **University of Alberta's Dr. Edward Knaus** is investigating whether nitric oxide can help circumvent the undesirable side effects of these drugs. The research could provide new and improved arthritis therapies.

CIHR investment in ONTARIO



Direct payments are excluded in the figures above.

In 2007-08, CIHR contributed approximately **$316** million in funding for health research in Ontario, providing support for projects in **36** funded institutions.

New Knowledge

Old antibiotics offer new hope for Alzheimer's patients

Dr. William Molloy of McMaster University in Hamilton has launched a clinical trial to study the possibility of using two generic antibiotics, doxycycline (used for acne) and rifampicin (a tuberculosis treatment), to treat Alzheimer's disease. Previous tests have demonstrated that the drugs slow the development of dementia. The trial will include about 500 patients with mild to moderate dementia, primarily from around Ontario.

Major study to validate coronary disease markers

Having previously identified more than 150 new gene markers linked to coronary artery disease (CAD), an Ottawa-based research team is launching a CIHR-funded study involving 12,000 people to verify the results. Identifying the genes that predispose people to CAD is the key to knowing who is at risk and to developing treatments tailored to each person's set of genes, according to **Dr. Robert Roberts**, President, CEO and Chief Scientific Officer at the **University of Ottawa Heart Institute**. Dr. Roberts will lead the Ottawa Heart Genomics Study.

Keeping GPs in the gene loop

CIHR-supported researchers are helping keep family physicians up-to-date on the state of genetic research. **Dr. June Carroll of the University of Toronto** and **Drs. Judith Allanson** and **Brenda Wilson of the University of Ottawa** created GenetiKit to help doctors answer patients' questions about the genetic causes of disease. The toolkit contains information aids about the risk of inheriting breast or colorectal cancer, and a table outlining the possible consequences of genetic testing. With trials completed in Ontario, the researchers are evaluating the project and gathering information on how doctors rate the toolkit.

Did You Know…

… that lithium helps bones to heal?

CIHR-funded researchers at the **Hospital for Sick Children** in Toronto have found that the drug commonly used to treat bipolar disorder also improves healing after a bone fracture, reducing long-term disability and the need for additional surgery. The study was led by **Dr. Benjamin Alman**.

Excellent People

The man for all seasons – and countries

Dr. Peter Singer is the rarest of researchers: a bioethicist with Bay Street sensibilities, and winner of **CIHR's 2007 Michael Smith Prize in Health Research.**

Co-Director of the **McLaughlin-Rotman Centre for Global Health's Program on Life Sciences, Ethics and Policy**, Dr. Singer has published more than 230 articles, held more than $50 million in research grants (including large grants from Genome Canada and the Bill & Melinda Gates Foundation) and trained more than 70 graduate students.

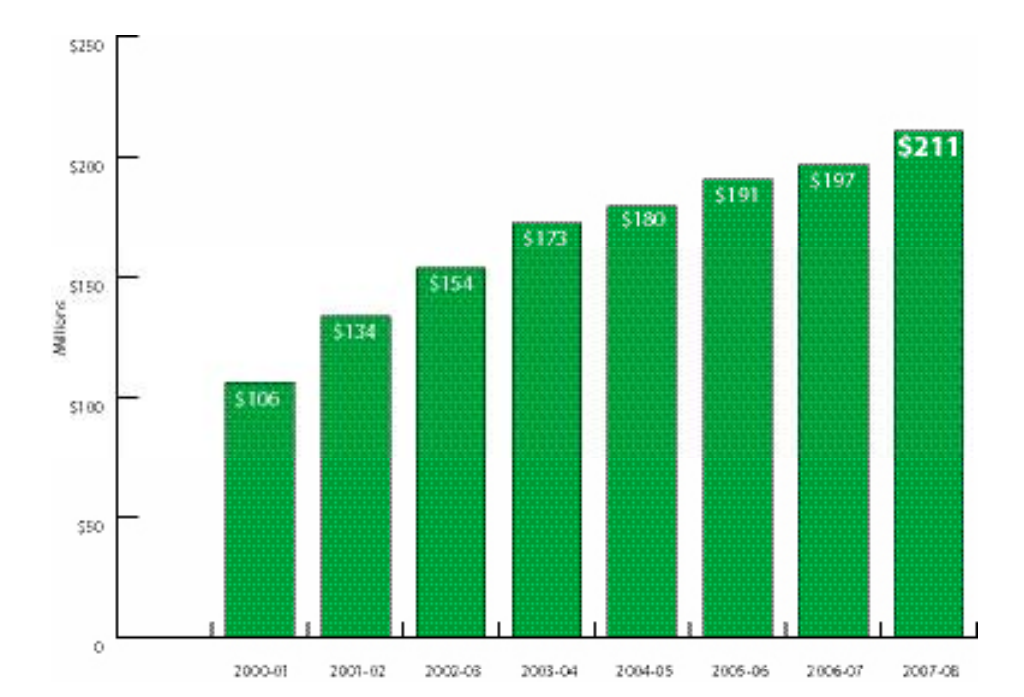
Believing firmly that human health and economic health go hand-in-hand, he actively advocates dealing with the massive health challenges faced in developing countries by building up their domestic science, technology and entrepreneurial infrastructure. His work in identifying biotech breakthroughs holds promise for tackling global health challenges.

Commercial Opportunities

Researchers develop a better way to deliver chemo drug

Drs. Micheline Piquette-Miller and Christine Allen are getting closer to clinical trials with a new biodegradable implant that can deliver chemotherapy directly to ovarian tumors. The implant is placed in the abdominal cavity and slowly releases the anti-cancer drug paclitaxel, increasing effectiveness and reducing the side effects from chemotherapy. The **University of Toronto** researchers received funding from CIHR to accelerate commercial development of the product.

CIHR investment in QUEBEC



Direct payments are excluded in the figures above.

In 2007-08, CIHR contributed approximately **$211** million in funding for health research in Quebec, providing support for projects in **25** funded institutions.

New Knowledge

Major CIHR study examines food's role in aging

Over the past five years, Nutrition as a Determinant of Successful Aging: The Quebec Longitudinal Study (NuAge) has been tracking the biological, nutritional, functional, medical and social traits of almost 1,800 men and women aged 68 to 82. This CIHR study is helping generate important data that will address questions about how nutrition can help preserve memory and the impact of nutrition on loss of muscle mass. The study, one of the most comprehensive research projects of its kind, is co-led by **Dr. Pierrette Gaudreau of the University of Montreal.**

Warfarin may have anti-cancer role

A health-care database study that compared more than 11,000 men with prostate cancer to 69,000 without it showed that those who used the blood thinner warfarin for at least four years were 20% less likely to develop the disease. CIHR-funded researcher **Dr. Vicky Tagalakis of Sir Mortimer B. Davis Jewish General Hospital, McGill University** is taking her investigation further to see if warfarin may prolong survival rates in prostate cancer. The study could lead to clinical trials of warfarin for the prevention and treatment of prostate cancer.

Hand sanitizers no match for *C. difficile*

Researchers in a CIHR-funded project examining the use of hand disinfectants have found that the hospital superbug *Clostridium difficile* is not killed off by alcohol-based hand hygiene products. The research team, led by **Dr. Michael Libman**, Director of Infectious Diseases at the **McGill University Health Centre** in Montreal, is investigating the use of alcohol-based disinfection versus liquid soap and water for stopping the spread of *C. difficile,* and has found that washing with soap and water is a more effective way to remove the bacteria from hands. The team's findings have been submitted for publication.

Did You Know…

… that expectant mothers could soon be able to find out if their unborn baby has Down syndrome simply by taking a blood test?

The safer and simpler alternative to amniocentesis is being developed as part of a CIHR-funded project led by **Dr. Régen Drouin at the University of Sherbrooke**.

Excellent People

World leader in care of the elderly provides expert advice

As Chair of the Advisory Board for **CIHR's Institute of Aging**, **Dr. Howard Bergman** can give expert advice on how to help individual patients or how to make the whole health-care system work better.

Dr. Bergman, professor and Director of the Division of Geriatric Medicine at **McGill University,** is an investigator at the **Centre for Clinical Epidemiology and Community Studies.** He is also a researcher with the **Bloomfield Centre for Research in Aging of the Lady Davis Institute at the Jewish General Hospital.**

An internationally respected expert on the care of the elderly, he led CIHR-funded investigations into how Canadian health care can face the challenge of caring for frail older people. Dr. Bergman also served on the commission that reviewed the Quebec health-care system in 2000.

Commercial Opportunities

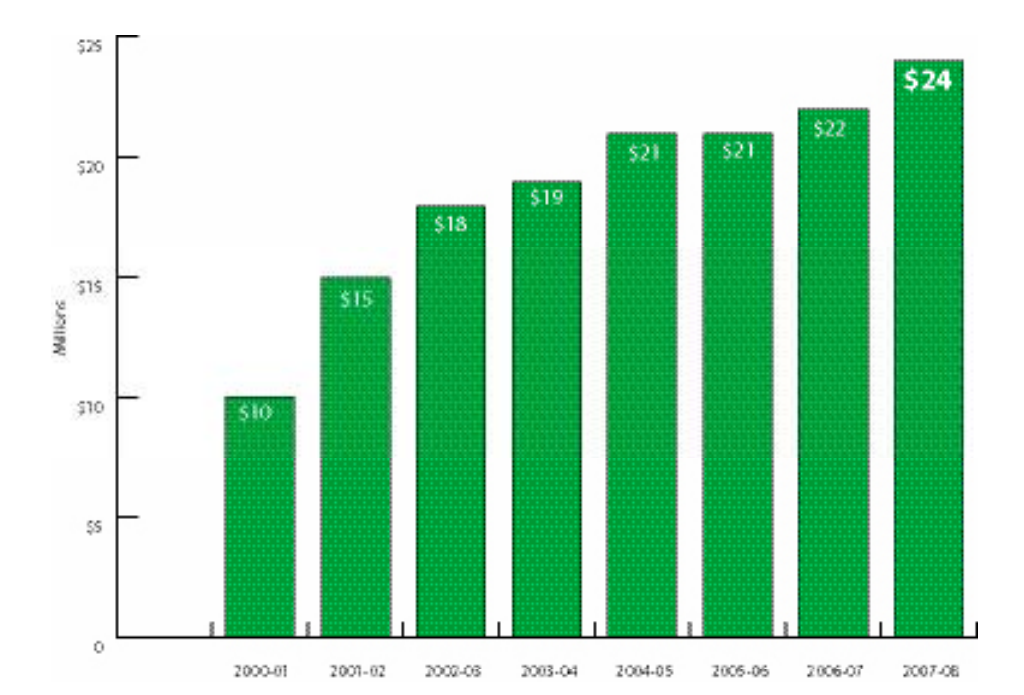
Montreal-led global team identifies key MS molecule

An international team, led by **Dr. Alexandre Prat of the Centre hospitalier de l'Université de Montréal (CHUM)**, has identified new therapeutic targets for treating multiple sclerosis (MS). With funding from CIHR, Dr. Prat has identified a molecule that researchers could target to dampen neuroinflammation and decrease the lesions characteristic of MS.

Lou Gehrig's vaccine possible

CIHR-funded researchers at **Laval University** and **Harvard University** are working on a promising vaccine for people suffering from amyotrophic lateral sclerosis (ALS) – also known as Lou Gehrig's disease. **Laval's Dr. Jean-Pierre Julien** and **Harvard's Dr. Robert Brown** are developing a vaccine able to create antibodies that trigger the immune system to attack a rogue protein found in some ALS patients. Clinical trials could begin within two to three years.

CIHR investment in ATLANTIC CANADA



Direct payments are excluded in the figures above.

In 2007-08, CIHR contributed approximately **$24** million in funding for health research in Atlantic Canada, providing support for projects in **12** funded institutions.

New Knowledge

Genetic breakthrough prevents heart failure

More than a decade of CIHR-supported research is now helping doctors perform life-saving interventions for people with a fatal genetic heart condition called arrhythmogenic right ventricular cardiomyopathy (ARVC). With no symptoms or signals, the condition triggers ventricular fibrillation – which causes sudden death. A team of **Memorial University of Newfoundland** researchers led by molecular geneticist **Dr. Terry-Lynn Young** has identified the gene behind a type of ARVC that is believed to be more prevalent in Newfoundland than elsewhere in the world. Doctors are now implanting defibrillators in adult carriers so that a shock is delivered to the person's heart should ventricular fibrillation occur.

Mothers-to-be should seek MD counselling

Women with diabetes who want to start a family should get medical counselling, according to a new clinical practice guideline on teratogenicity (disturbances that affect the development of a fetus) associated with the high blood sugar disease. CIHR-supported researcher **Dr. Victoria Allen of Dalhousie University** co-authored the document. The guideline, approved by the Society of Obstetricians and Gynaecologists of Canada, notes that a substantial number of women with diabetes do not seek out pre-conception care programs.

How do mental health crisis services measure up?

In 2006, the **Capital District Health Authority** in Nova Scotia, in partnership with the **IWK Health Centre, Halifax Regional Police, and Emergency Health Services,** implemented a Mental Health Mobile Crisis Team to help people experiencing a mental health emergency. **Dr. Steve Kisely of Dalhousie University** is leading a CIHR-funded evaluation of the integrated mobile crisis intervention service. This evaluation will help to improve and link services and assist in the development of strategies for dealing with mental health crises.

Did You Know…

…that a research team from **Memorial University of Newfoundland** is helping make seafood processing plants safer places to work?

A CIHR-funded project led by **Dr. Barbara Neis** is instituting new workplace procedures that make tasks such as snow crab processing and knife preparation of turbot less hazardous for workers. Dr. Neis and her team are adapting these safer practices from the results of a previous CIHR-funded study that evaluated ergonomic tools for pork processing.

Excellent People

Tenacious research work pays off

Dr. Roy Duncan, the Chair of CIHR's Virology and Viral Pathogenesis peer review committee, has had his eureka moments.

His two decades of research into viral proteins resulted in the discovery of a new class of proteins with the unique ability to fuse cellular membranes. The **Dalhousie University** researcher is using the fusion-associated small transmembrane (FAST) proteins to develop new strategies against cancer and viruses.

The winner of Dalhousie's 2008 Max Forman Research Award, Dr. Duncan is working with colleagues at **McMaster University** and the **University of Ottawa**, and with the **U.S. National Institutes of Health** to apply his patented technology to the discovery and delivery of new anti-cancer agents.

Commercial Opportunities

A one-two punch to infection

Dalhousie University researchers **Drs. Donald Weaver, David Byers and Christopher McMaster** are developing experimental drugs that target bacteria's ability to build its cell membrane, the outer coating that's akin to the bacteria's skin. By "punching holes" in the membrane, the drugs weaken the bacteria cells and make them more susceptible to antibiotics. The team has created more than 200 molecules of interest in the past two years. They've formed the spin-off company DeNovaMed to help take the next step of getting promising new antibiotics from the lab to the patients who need them.