

r:evolution

CIHR: TOWARDS A NATIONAL
HEALTH RESEARCH AGENDA



A woman in a dark wetsuit is walking on a sandy beach, carrying a yellow surfboard with red and black stripes. The background shows the ocean and a clear sky. The text is overlaid on the right side of the image.

The mandate of the **Canadian Institutes of Health Research (CIHR) is to excel, according to international levels of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products, and a strengthened health care system.**

For additional information on CIHR,
visit our website at www.cihr.ca or
telephone (613) 941-2672.

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To accomplish this, Canada must mobilize the best research minds to:

- *better understand all the determinants of health and the mechanisms of disease, develop new approaches to diagnoses, treatment and prevention of illness and disability, and promote health, care and support*
- *point the way to an evidence-based, effective and responsive health system*
- *transfer this new knowledge to professional practice, the health care system, industry, and Canadians.*

This broad, bold mandate reflects the importance that Canadians place on health, their health care system, and the contributions of knowledge-based health industries to the 21st-century economy.

To accomplish its goals, CIHR will:

- *develop a robust research environment built on excellence and a strong ethical perspective*
- *create a health research agenda that capitalizes on scientific opportunities, responds to the health challenges facing Canadians, and connects health research and Canada's national goals*
- *stimulate partnerships that will advance Canada's health research agenda and engage the Canadian public*
- *foster the application of research results to practitioners, policy makers, industry, and the Canadian public*
- *build a global model of an innovative and effective national health research system.*

CIHR recognizes the importance of all disciplines that apply to human health and disease: advances in understanding require the convergence of expertise from many disciplines. CIHR also believes that a problem-based approach to health and health research must bring together the best researchers, regardless of discipline or geography.

This first annual health research agenda provides a framework for discussion as Canada, with the involvement of CIHR's 13 institutes and its partners, develops a coherent approach to health research.

message

*FROM THE HEALTH MINISTER
OF CANADA*

When the Government of Canada created the Canadian Institutes of Health Research, it was driven by a vision of a national health research agency capable of galvanizing the energy and creativity of Canada's best health researchers, so that through their efforts and achievements, Canadians can benefit from improved health and more effective health care.

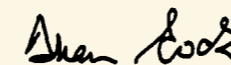
Since the creation of CIHR in June 2000, CIHR and its President, Dr. Alan Bernstein, have lived up to the challenge. Thirteen institutes are up and running, and researchers from all corners of Canada have responded with enthusiasm and a resolve to tackle a range of difficult health questions facing Canadians, from autism and diabetes to the health of Aboriginal people. The thirteen Institute Scientific Directors, along with the volunteers on the Institute Advisory Boards, have brought their expertise and experience to ensure that each of the institutes play an important role in shaping their fields of research.

CIHR's mandate is broad and bold. It calls on the health research community to excel in the creation of new knowledge and to share this knowledge with Canadians: those who deliver health services, those who design prevention strategies, and those who are building Canada's knowledge-based economy.

CIHR now proposes a national health research agenda focussed on building Canada's international leadership in health research, integrating disciplines of research, improving the health of vulnerable populations, and strengthening our health system. The direction that CIHR is proposing in this discussion paper will build on Canada's capacity to sustain and improve its health care system by drawing on the evidence resulting from research.

I would like to extend my best wishes to Dr. Alan Bernstein and the CIHR Governing Council, as well as to the entire CIHR research community, as they move forward in this exciting direction.

Yours very truly,



ALLAN ROCK

TOWARD AN INTEGRATED HEALTH RESEARCH AGENDA

The current revolution in health research is being driven by, and, in turn, has created, new multi-disciplinary fields and applications. The mapping of the human genome foreshadows a revolution in health and health care. For example, it is already possible to determine a person's susceptibility to certain disorders decades before symptoms appear. Soon, through an understanding of the complex interplay between the psychosocial, economic, environmental, cultural and biological determinants of health, it will be possible to predict an individual's risk of common diseases such as diabetes, heart disease, cancer and mental illness. These advances will lead to new strategies for health promotion and disease prevention. They are also leading to entirely new social and ethical challenges that must be addressed if we are to move forward as a society.

We are also learning new ways to manage serious illnesses, such as cardiovascular disease. For example, we now know of the role of physical activity, nutrition and body weight in health promotion and the prevention of cardiovascular diseases and diabetes.

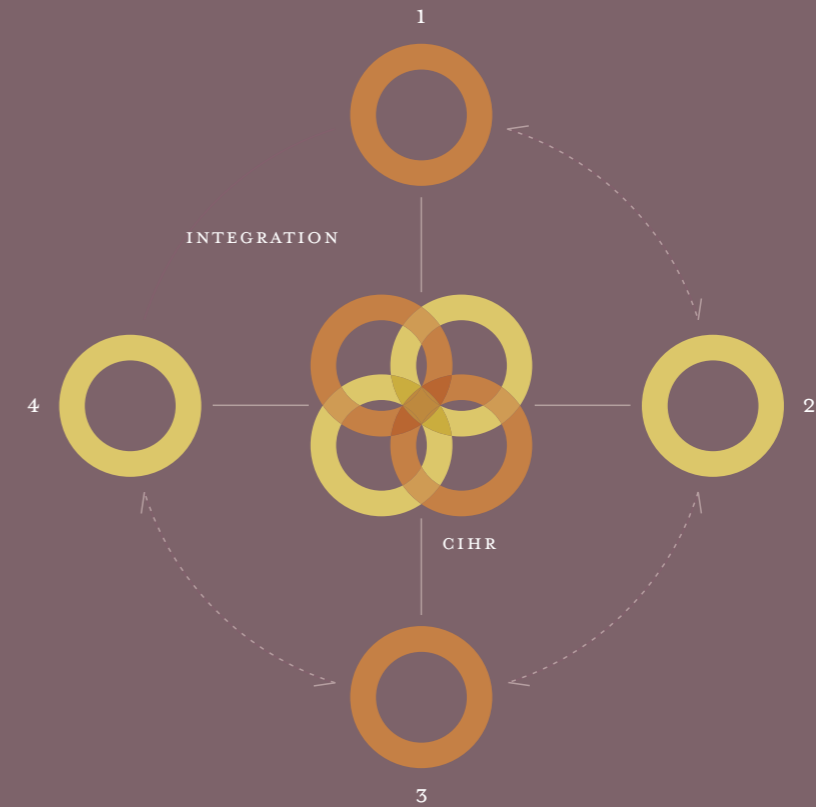
This new knowledge must be passed on and used if Canada is to benefit from the revolution in health research. This translation will require programs, commitment, and links between researchers, practitioners, policy makers and Canadians.

The scientific revolution is also changing the way researchers work. Disciplines and technologies are converging: the natural and social sciences, humanities, engineering, biomedical and clinical sciences, biotechnology, information and communication technology, nanotechnology and new materials technology. This mix of disciplines is creating new ways of looking at human health.

This convergence requires that research be funded and organized in new ways. Health research now requires increasingly larger teams, more complex and expensive facilities, and contributions from many disciplines. Canadian institutions, researchers and funding agencies must develop new programs that recognize and support both team and individual excellence.

At the same time, Canadians are more concerned about the accessibility and quality of health care and the sustainability of our health care system. In addition, all levels of government see that research is important to the future of the country; institutions across Canada are upgrading their research infrastructure and renewing their faculty complement. With the creation of CIHR, Canada is ready to handle these challenges and seize the scientific opportunities.

In setting this first national agenda on health research, CIHR has identified four directions of special priority to address current scientific opportunities. These directions, building on Canadian research strengths, will bring about new knowledge and benefit the health of Canadians, the health care system, Canadian society and our economy. They are:



1. Build Canada's international leadership through national excellence in health research.
2. Integrate the various disciplines of the health research spectrum, including life sciences, natural and social sciences, engineering, mathematics and the humanities.
3. Improve the health status of vulnerable populations.
4. Strengthen health research and the health system in the genomics era.

Directions 1 and 2 will build our health research base on the best and brightest minds, pursuing the highest levels of international excellence in health research. CIHR will pursue directions 3 and 4 in the years to come.

CIHR's accountability and evaluation structures will monitor its progress. In addition, CIHR will incorporate ethics and knowledge translation into all its initiatives.

direction 1

Progress in research requires the best people, supported at internationally competitive levels of funding, working in stimulating and supportive environments. Outstanding researchers attract outstanding colleagues and young people, as well as additional resources. They are also the best teachers and mentors for the next generation of health researchers and health care providers. Therefore, Canada must provide international-level support to attract and retain the best and the brightest, and to brand Canada as the place to conduct health research in the 21st century.

It is not possible to predict what the next health science breakthrough or paradigm shift will be, or who will create it. This is why CIHR and its partners are committed to building a broadly based, internationally competitive health research community. In CIHR's first year, the average value of grants increased by approximately 20 percent over MRC's last year of operation. The number of individual investigators supported increased by almost 25 percent. As well, CIHR developed and funded 30 interdisciplinary and community alliance projects: an investment of \$80 million over five years.

Although this is a good start, CIHR recognizes that these trends must continue if Canada is to develop a robust and competitive cadre of health researchers in every part of the country.

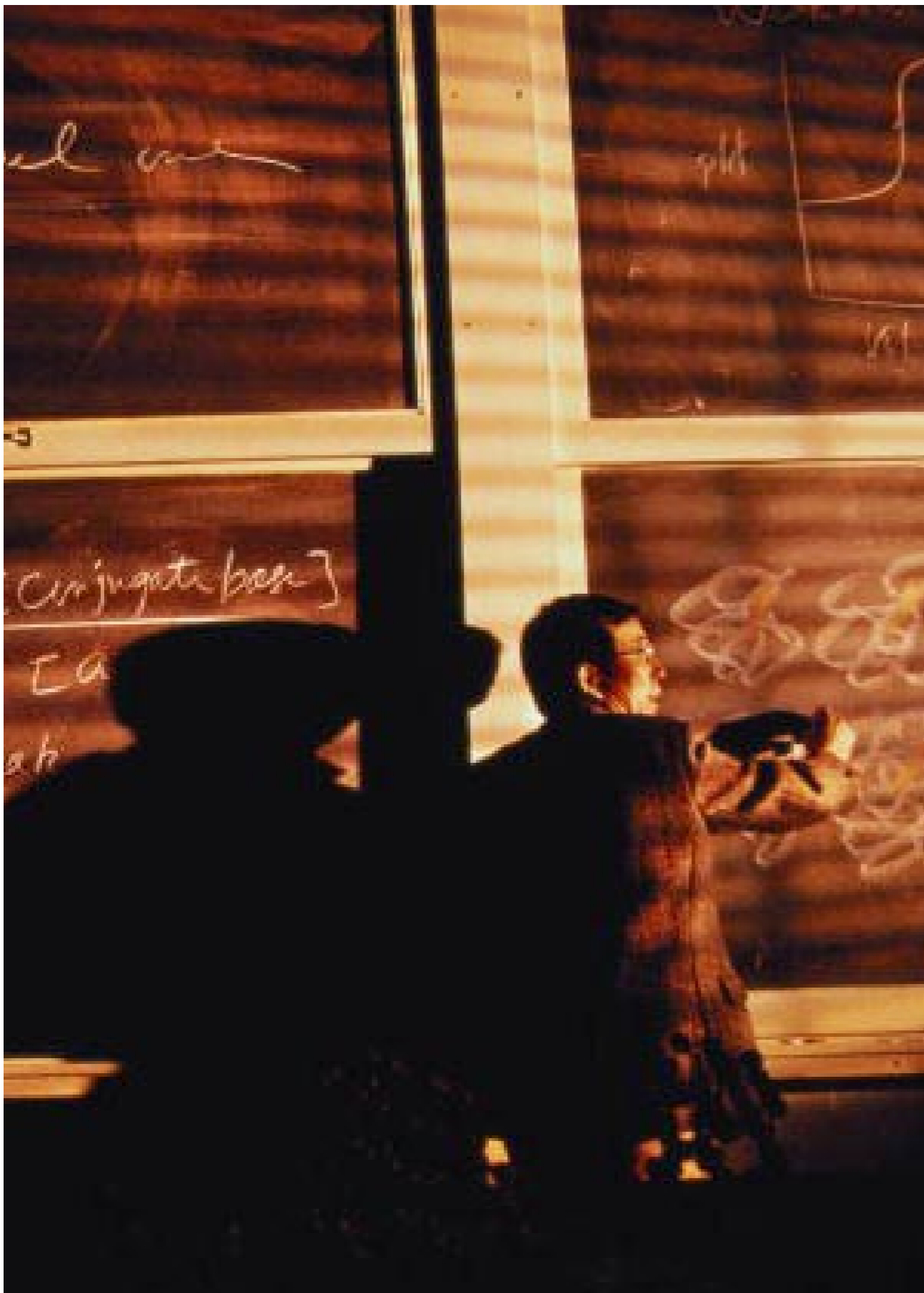
Accordingly, Canada will continue to foster leading-edge health researchers, as determined by peer review, and broaden and deepen its health research community. In 2001, CIHR launched two new programs: Establishment Grants to help host institutions attract internationally recognized researchers to Canada, and Development Grants to

help institutions build a critical mass of health researchers. These programs have two objectives: to allow universities and teaching hospitals to recruit research leaders from abroad, and to increase the number of institutions that have critical mass in health research. These programs demonstrate the partnership between CIHR and host institutions, as well as CIHR's vision to create a national, virtual institute that connects health researchers across Canada.

CIHR also wants to attract the brightest young people to health research, support them in their work and develop new interdisciplinary approaches to training. CIHR and its partners have launched the Strategic Initiative in Health Research Training to build a national culture of creativity, innovation and transdisciplinary research in the next generation of health researchers. CIHR's 13 institutes along with health charities, provincial governments and industry, are part of this initiative. Groups of investigators with records of excellence in both research and training will be given resources to develop interdisciplinary training programs and to support trainees. CIHR received 233 letters of intent from virtually every area of health research and from every part of Canada. Over the next six years, CIHR plans to invest, with its partners, at least \$40 million in this initiative.

CIHR's policies and programs must have a global perspective if CIHR is to achieve international excellence and influence. Accordingly, researchers from outside Canada will be involved in peer review and advisory structures, and we will share our national experience in interdisciplinary training with other countries.





**INTEGRATE THE VARIOUS
DISCIPLINES OF THE HEALTH
RESEARCH SPECTRUM** (INCLUDING LIFE
SCIENCES, NATURAL AND SOCIAL SCIENCES,
ENGINEERING, MATHEMATICS AND THE HUMANITIES)

direction 2

The current revolution in health research is being driven by the convergence of a wide array of disciplines and approaches. For example, new fields and new technologies, such as gene chips, population health, bioinformatics and health informatics, genetic epidemiology, bioethics, health economics, medical anthropology, nanotechnology, and medical imaging are the results of the convergence of two or more disciplines. To increase our lead in this revolution, Canada must act on two fronts. First, we need to make it easy to assemble teams of diverse and highly skilled researchers that can learn from each other and overcome cultural differences between disciplines and geographic distances to address complex scientific and technological challenges. Second, we need to develop ways to train a new generation of researchers who will be comfortable moving across disciplines.

In its first year, CIHR and partners funded 11 large Interdisciplinary Health Research Teams (IHRT) focusing on important, current health problems. Nineteen Community Alliances for Health Research (CAHR) are working with smaller centres to bridge the gap between researchers and those who use the

results of research. Over the coming years, CIHR will monitor these programs and, with its partners, design new programs to encourage the creation of problem-based teams.

CIHR has also launched a New Emerging Team grant program, an effort of eight CIHR institutes in collaboration with partners. This program will support multidisciplinary and cross-theme research and train new investigators.

"It has become clear to the scientific community that progress in the life sciences will largely be driven by synergies achieved with the physical sciences, engineering and computer science, and even mathematics. Universities are re-casting their campuses, their hiring policies and their curricula with this in mind. And the most advanced government research bodies are identifying novel mechanisms to foster such synergies. CIHR is clearly in harmony with leading-edge thinking."

ELLIS RUBINSTEIN
Editor, Science

direction 3

Although Canada enjoys one of the highest standards of living in the world, many Canadians have poor access to the health system. These include people with certain mental health problems and physical disabilities, many Aboriginal people, women in certain circumstances, drug users, some seniors and ethnic communities, the homeless and inner-city poor, those in rural and remote regions, and those exposed to environmental pathogens or toxins. To address the health status of Canada's vulnerable populations and their access to services, CIHR has created five institutes that focus on the health of specific populations:

- A. the Institute of Aboriginal Peoples' Health
- B. the Institute of Gender and Health
- C. the Institute of Healthy Aging
- D. the Institute of Human Development, Child and Youth Health
- E. the Institute of Neurosciences, Mental Health and Addiction

These institutes will catalyze cross-disciplinary methods to identify the diverse factors — biological, cultural, socio-economic, environmental and geographic — that influence health and access to the health system. The institutes will also look for new ways to improve the health of these populations.

CIHR is the first agency in the world to create an institute to improve the health of Aboriginal peoples. This institute will deal with the disparities in health between the general Canadian population and

Aboriginal peoples: Aboriginal life expectancy is lower, diabetes is epidemic, heart disease is twice as frequent, children and youth are less healthy, a higher proportion of individuals suffer from mental health problems, and addiction is higher, as are injury and accidents among youth. Research is needed to understand these disparities and find ways to reduce and eventually eliminate them.

The CIHR Institute of Gender and Health supports research about how sex (biological factors) and gender (socio-cultural experiences) interact with other health factors that lead to different risk factors and interventions for women and for men. Of particular interest is research on gender inequities.

The aging of the Canadian population will challenge our society and the health system. Canada must draw on its entire research spectrum to understand the causes of diseases and disabilities affecting older persons, develop prevention strategies, and understand the biological, psychological, societal and environmental influences on aging.

The health and development of children, youth and adolescents are priorities for Canadians and for CIHR. Recent studies suggest that health in adult life is linked to the health of a mother and the fetus during pregnancy, as well as to early childhood experiences. Therefore, a good start is crucial to an individual's well-being. Life transitions are milestones in one's life: from the dependency of the embryo to the autonomy of an adult, and then from this autonomy to the increasing dependency in later life. Each of these transitions is a window of opportunity for influencing health. The future of young people's health depends



direction **3**

on our understanding of the wide range of determinants that support or compromise their health.

In this first national agenda, CIHR targets two additional areas of cross-cutting research: the health of rural Canadians and the relationship between the environment and health.

The health of rural Canadians is a priority of the Government of Canada and a priority for CIHR. Rural Canada occupies 9.5 million square kilometers, or about 95 percent of Canada's territory. Almost 9 million people (30 percent of the population) live in rural and remote areas. In rural communities, as in urban areas, good health is a major resource for social, economic, community and personal development. Research is required to understand the needs of rural populations, particularly access to appropriate and effective health services. As a first step, CIHR has created the position of Special Advisor to the President on Rural and Remote Health to catalyze national discussions on rural health and design a national strategy to foster research — and the use of that research — on the health issues affecting Canadians living in rural and remote parts of the country.

Canadians are increasingly aware of the relationship between the environment and health. The integrity of Canada's food and water supplies, the challenge of teenage smoking, and environmental safety in the workplace are all of concern. In the coming year, CIHR, with its partners, will pursue research on the effect of environmental hazards on health.

"CIHR's proposed strategic direction for catalyzing research to improve the health of vulnerable populations is timely, bold and vital. CIHR is reaffirming the principle of "Health for All" and illustrating another important way in which CIHR and health researchers act in the service of our society."

MARTIN T. SCHECHTER
OBC, MD, PhD, FRCPC
Professor and Head, Dept. of Health Care & Epidemiology
Faculty of Medicine, UBC
Canada Research Chair in HIV/AIDS and Urban Population Health

"By focusing on a basic research infrastructure, CIHR is recognizing that knowledge comes from unexpected and unpredictable places, and thus research that has no immediate application is as important as research directed at a specific disease. I strongly applaud the vision of this discussion paper."

SHIRLEY M. TILGHMAN
President, Princeton University

direction

4

The completion of the sequencing of the human genome, and the emergence of stem cells for therapeutic purposes, are examples of the powerful technologies in this new era for health research and health care delivery. The approaches, information and technologies of this new science will permeate health and health research. These include functional genomics in model organisms, pharmacogenomics and patient stratification for clinical trials and treatment decisions, new tools for the study of the health of populations, new issues around the nature and costs of health services, and ethical, legal and social issues, such as privacy and the ownership of genetic information.

Canada can be a world leader in this new environment, thanks to our strengths in human genetics, stem cell biology, population health, bioethics, proteomics, and health economics. Canadian researchers lead in the establishment of productive partnerships between funding agencies, researchers, industry and communities to move genetics from the laboratory to the clinic and the community. Our health care system gives us advantages in applying the tools and concepts of genomics to the study of human populations and human health.

CIHR will emphasize the integration of the social and health sciences and ethical perspectives with biomedical approaches in genomics. The human

genome sequence is now complete and the development of a first-stage human diversity map is imminent. Now, researchers will apply this information to the study of populations and common diseases. This next stage will require the collaboration of many disciplines and approaches. CIHR will foster teamwork between genomics researchers, clinical and population health scientists, health services researchers, ethicists, statisticians, social scientists, health care providers and policy makers to put Canada at the forefront in this new era of research.

CIHR will ensure that this new science translates into an evidence-based, effective and efficient health system that provides high-quality care and is more accessible and responsive than ever.

"Canada has enormous strengths in human genetics and molecular and cell biology and has a number of young scientists capable of translating this research for the improvement of the health of the community. It is encouraging to see that CIHR intends to strengthen and extend Canada's already impressive bioethics programs. This is an exciting document."

SIR DAVID J. WEATHERALL
Regius Professor Emeritus,
University of Oxford



conclusion

CIHR has been given a broad and bold mandate by the Parliament of Canada to improve the health of Canadians through research and the application of that research. To accomplish this, CIHR will identify and support the best research and researchers, engage in many kinds of partnerships, and ensure that the results of research are applied where they can best benefit Canadians' health, Canada's health system, and Canada's knowledge-based economy.

In all of these activities, CIHR is Canada's virtual meeting ground, providing opportunities for national discussions on health and health research issues of national and international importance. The four directions in this first national health research agenda have been selected to position Canada as a world leader in health research and its application to human health in this century of health research.

