Perspectives on Progress | ANNUAL REPORT 2009–2010

INFLECTION
REFLECTION

GenomeCanada

2000–2010
A celebration of achievement and discovery.

INFLECTION

The advancement of genomics research over the past 10 years has surpassed the expectations of even the most enthusiastic observers.

While it took years and cost $3 Billion to sequence the first human genome, the same task can now be done in weeks and for less than $50,000. Gigabytes of complex raw genomic data can be digested and analyzed at previously unimaginable speeds by sophisticated bioinformatics tools. Metabolomic, proteomic and systems biology technologies are expanding scientists' views into cellular behaviour—pointing the way to new arenas of discovery.

Genomics has reached an inflection point, poised to harness the power of **technology** to translate the last decade of research into applications that radically improve **human health**, strengthen **economic competitiveness** and enrich our **society**—enhancing quality of life for all Canadians.

REFLECTION

Since its inception in 2000, Genome Canada has played a pivotal role in the establishment and growth of this country's genomics research sector. In this anniversary year, the organization took the opportunity to reflect on the achievements of the past—and ready itself for the opportunities of the future.

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MESSAGE FROM THE MINISTER OF INDUSTRY

Science and technology have always played an important role in human progress, but are arguably more tightly interwoven in our daily lives today than at any other point in history. They hold the keys to Canada's economic prosperity, our health and social well-being.

I am proud to acknowledge Genome Canada's considerable contribution to this country's scientific endeavours over the past 10 years. Since Genome Canada's inception, the first sequencing of the human genome has spawned thousands of new discoveries that are saving lives today, transforming industries and deepening our understanding of the fabric of life on this planet.

Genome Canada has proven to be a valuable instrument of the government's Science and Technology Strategy. The research it has funded, the partnerships it has forged, both within and outside of Canada, and the infrastructure support made available to Canadian researchers have helped to propel our country to a leadership position on the world stage of genomics.

I congratulate the staff, executive and directors of Genome Canada for their collective achievement on the occasion of the organization's tenth anniversary, and I look forward to seeing the ways in which genomics will enhance Canada's competitiveness and quality of life as its discoveries are applied in the years to come.

Sincerely,

The Honourable Tony Clement
Minister of Industry

MESSAGE FROM THE MINISTER OF STATE (SCIENCE AND TECHNOLOGY)

Over the past 10 years, Genome Canada has supported scientific research on the frontier of genomics and proteomics.

In exploring the building blocks of life, Genome Canada-funded researchers have identified the causes of debilitating and, in some cases, lethal diseases. They have discovered ways to make crops hardier; to preserve fish stocks; to cultivate healthier forests. They have driven the development of new technologies that extend Canada's research capabilities—and have made those technologies available to other Canadian researchers, strengthening our country's scientific foundation.

Our government recognizes the importance of Genome Canada's efforts—and is committed to seeing research in this vital area continue. To demonstrate that commitment, Budget 2010, *Leading the Way on Jobs and Growth* provided Genome Canada with $75 million in new funding to support its Science and Technology Innovation Centres and a large-scale research competition.

I know I am not alone in looking forward to seeing how genomics discoveries will continue to improve the lives and livelihoods of Canadians. I want to congratulate Genome Canada on entering its second decade as a facilitator of scientific progress in Canada.

Sincerely,

The Honourable Gary Goodyear
Minister of State (Science and Technology)

MESSAGE FROM THE CHAIR

The evidence that Canada's genomics enterprise has reached an inflection point is all around us. People's lives are being saved by genetic screening for heritable diseases that are otherwise undetectable. Science-driven entrepreneurs are commercializing genomic solutions. With the knowledge and technologies at their disposal, Canadian scientists have been the first in the world to sequence the genomes of epidemic viruses such as SARS virus and last year's 'swine flu', H1N1.

Research is being translated into applications that are poised to deliver significant benefits for human health, economic prosperity and overall social wellbeing. The opportunities associated with this 'inflection' are enormous. For example, as researchers discover the genetic causes of disease, pharmaceutical manufacturers can develop finely targeted drugs for treatment—improving outcomes and accessing a multi-billion dollar market.

Genome Canada is committed to seeing that the opportunities of genomics are realized for Canadians and the world. The organization has played an essential role in the development of the country's genomics capabilities since 2000, not only by funding large-scale research projects but also by building the technological infrastructure to enable discovery, and by forging connections with international scientists and consortia.

2010 marks Genome Canada's 10th anniversary, affording the opportunity for the organization to reflect on the progress made during its first decade and consider where it will be needed most in the years to come—supporting researchers' efforts to apply their discoveries, fostering commercialization, and expanding Canada's capabilities in key areas such as health, agriculture, the environment, forestry, and fisheries.

Over the course of 2009–10, Genome Canada underwent some significant transitions. In the spring, my predecessor, Dr. Calvin Stiller, concluded his term as Board Chair after six years of outstanding service. My fellow Board members and I thank him for his commitment and exemplary stewardship of the organization.

In October 2009, after a tenure of impassioned and visionary leadership, founding President and CEO Dr. Martin Godbout stepped down. Martin was among those 'pioneers' who early on recognized the significance genomics would have on the economy, environment and society as a whole. We are all grateful for his inspiring work, and for establishing the strong foundation that Genome Canada will build on in the years to come.

Through its activities and programs—in partnership with federal departments and agencies—Genome Canada will continue to play a role in strengthening Canada's knowledge, people and entrepreneurial advantages, three key elements of the Government of Canada's Science and Technology Strategy. It will continue to play a leadership role in addressing the ethical, environmental, economic, legal and social (GE^3LS) implications of genomics research.

Genome Canada will also continue to raise Canadians' awareness of their country's genomics success, and of the potential genomics has to improve their lives. Last year, Genome Canada commissioned an EKOS Research Associates survey of public attitudes toward genomics. We were gratified to learn that 82 percent of Canadians are supportive of genomics research and 45 percent have some familiarity with it (up from just a third in 2001).

I must thank everyone within the organization, and particularly the members of the joint Board-management transition team established last fall, for their commitment and perseverance over the course of what was a very busy time. The organization not only maintained its operations successfully as it began the search for a new President and CEO, but in fact advanced its strategic thinking and direction.

The Board was pleased to appoint Mr. Dale Patterson to the position of interim CEO by year's end—and pleased also to have the federal government acknowledge Genome Canada's good work and value as an enabler of its Science and Technology Strategy by allocating $75 Million to Genome Canada in its 2010 Budget.

I look forward to leading the Board through the coming year as we begin to see the outcomes of this inflection point genomics has reached—and as the benefits of the country's scientific leadership begin to multiply.

Sincerely,

C. Thomas Caskey, M.D., FACP
Chair

HUMAN HEALTH

PUTTING LIFESAVING TOOLS IN THE HANDS OF HEALTHCARE PRACTITIONERS

Genomics and proteomics are changing the face of medicine, enabling faster, more accurate diagnoses and targeted approaches to treatment. Dr. Jean-Claude Tardif of the Montreal Heart Institute and Dr. Michael Phillips—also of the Institute and a researcher at Genome Québec—recently led an international team that included GE^{3}LS researcher Denise Avard to better understand why some patients with hardening of the arteries respond to treatment using cholesterol-lowering statins while others do not. Their work will help develop diagnostic tests and ethical guidelines for future research as well as strategies for integrating genetic knowledge into healthcare practice.

PAVING THE WAY FOR PERSONALIZED MEDICINE

From the beginning, the promise of personalized medicine has been a driver of genomics research: the idea that prevention and treatment efforts can be made dramatically more effective by tailoring them to an individual's genetic makeup. In 2009–10, several research projects funded by Genome Canada brought the vision of personalized medicine closer to reality.

Pinpointing individuals at risk of colon cancer

The ARCTIC project (*Assessment of Risk for Colorectal Tumors in Canada*)—a joint initiative of the Ontario Genomics Institute and Genome Québec led by Drs. Brent Zanke and Thomas Hudson—continued its work last year on determining key genetic factors that make individuals susceptible to cancer. A Canadian company, ArcticDx Inc., was spun out of the research and is developing a diagnostic testing solution for determining an individual's risk of colorectal cancer.

Seeking solutions through international collaboration

In October 2009, after an intensive process of evaluation, the Cancer Stem Cell Consortium (CSCC)—part of the Canada-California Strategic Innovation Partnership—awarded funding to its first two projects, each partnered with a California lab. The Canadian leaders of the projects are Dr. Tak Mak and Dr. John Dick, both of the University Health Network. Genome Canada's Board of Directors approved funding of up to $14 Million to support the genomics research to be undertaken by the Canadian scientists in each of these 'Disease Team projects', both of which have set a target of readiness for Phase 1 clinical testing of stem cell-based therapies in four years.

Making knowledge shareable

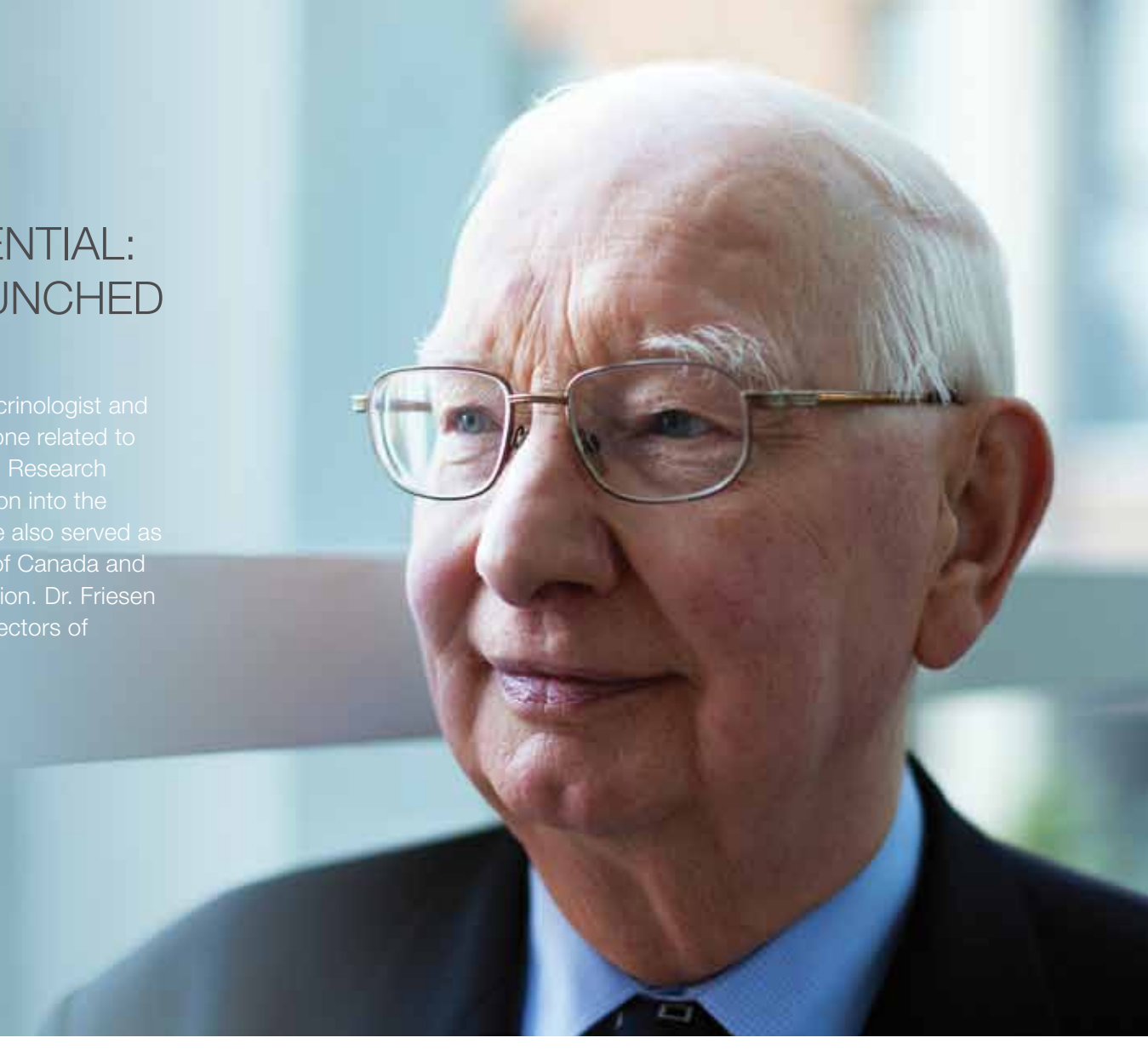
One recent Genome Canada-funded project (*Novel, Rapid Molecular Theranostic Technologies for Nucleic Acid Detection*) produced a technology that in less than an hour can identify any of the 17 viruses responsible for common respiratory infections—accelerating a process that used to take up to two days. Work continued last year to make the tool available on CD, a cost-effective format that will eventually extend the benefits of this genomics research to both developed and developing countries.

This work has led to the creation of a new Canadian company called GenePOC.

REFLECTION:
DR. HENRY FRIESEN

PURSUING THE POTENTIAL: THE VISION THAT LAUNCHED GENOME CANADA

Dr. Henry Friesen is a distinguished endocrinologist and the discoverer of human prolactin (a hormone related to lactation). He was President of the Medical Research Council of Canada and led its transformation into the Canadian Institutes of Health Research. He also served as President of the National Cancer Institute of Canada and the Canadian Society for Clinical Investigation. Dr. Friesen was the founding Chair of the Board of Directors of Genome Canada.



"Genome Canada was to be different: funding large-scale genomics research projects in five sectors—health, environment, fisheries, forestry and agriculture. The goal was to make Canada a world leader in selected areas. That approach has turned out to be at the centre of Genome Canada's success."

QUESTION ANSWER with Dr. Henry Friesen

Q When did the need for an agency like Genome Canada become clear?

A In the early 1990s, the science community recognized the growing importance of genomics. In response, the federal government created the Canadian Genome Analysis and Technology program (CGAT) with a five-year investment of $22 Million. When CGAT ended, MRC was asked for bridge funding to support genomics-related research. It was clear we had to act, as Canada was falling behind the rest of the world in this critical area. With the encouragement of Kevin Lynch, then Deputy Minister of Industry Canada, Martin Godbout and others developed a proposal to government that led to the creation of Genome Canada in 2000 with a budget of $160 Million, and I was appointed its first Chair.

Q What were the early days like?

A Genome Canada was to be different: funding large-scale genomics research projects in five sectors—health, environment, fish, forestry and agriculture. The goal was to make Canada a world leader in selected areas. The first request for proposals brought a flood of applications, exceeding Genome Canada's budget by a factor of twelve. Later that first year, we went back to the government and asked for more money. Remarkably, a further $140 Million was allocated in the next federal Budget, an extraordinary show of confidence given that Genome Canada at that point had disbursed few funds. Within five years, with co-funding, the organization was involved in large-scale genomics projects in all five sectors of focus, in all regions of the country and internationally as well, valued at more than $850 Million.

Q What was unique about the Genome Canada model?

A The large-scale projects required a much more hands-on management than many scientists were used to. Genome Canada at times was criticized for this, but the first major review of the organization commended Genome Canada for its high standards of accountability and project management. The establishment of the five regional Genome Centres was also unique to the model. It created partnerships and collaboration between Genome Canada, the Centres and researchers in the regions, and ensured the provinces had both a role to play and sense of ownership in the work being done. Foresight in developing international partnerships was also of great strategic significance. No single investigator, no country alone had the resources or capacity to pursue the entire genomics research agenda. Early on Genome Canada reached out beyond our borders and established large-scale joint programs with many countries.

Q How are we better situated now to harness the power of genomics than we were 10 years ago?

A There is so much greater understanding of the field now than when Genome Canada began. The extraordinary amount of genomic data generated in the interval is truly mind numbing. The tools of genomics allow data to be generated faster and cheaper by orders of magnitude. In the beginning, the concept of personalized medicine was a promissory note. Today it is reality. Ten years ago I illustrated the point with the Deputy Minister of Finance: "Millions of people are treated for hypertension," I said. "Some get the benefits of drug treatment; some do not, because of their genomic makeup. Genomics will allow us to tailor treatments to individuals." As a side note, that Deputy Minister confided a year later that he himself suffered from poorly controlled hypertension when I had spoken to him. Our discussion had struck a responsive chord, and he went on to champion the importance of genomics research at the highest levels of government. Both in science and politics people and timing make the difference!

TECHNOLOGY

BUILDING THE TOOLS TO DRIVE NEW DISCOVERIES

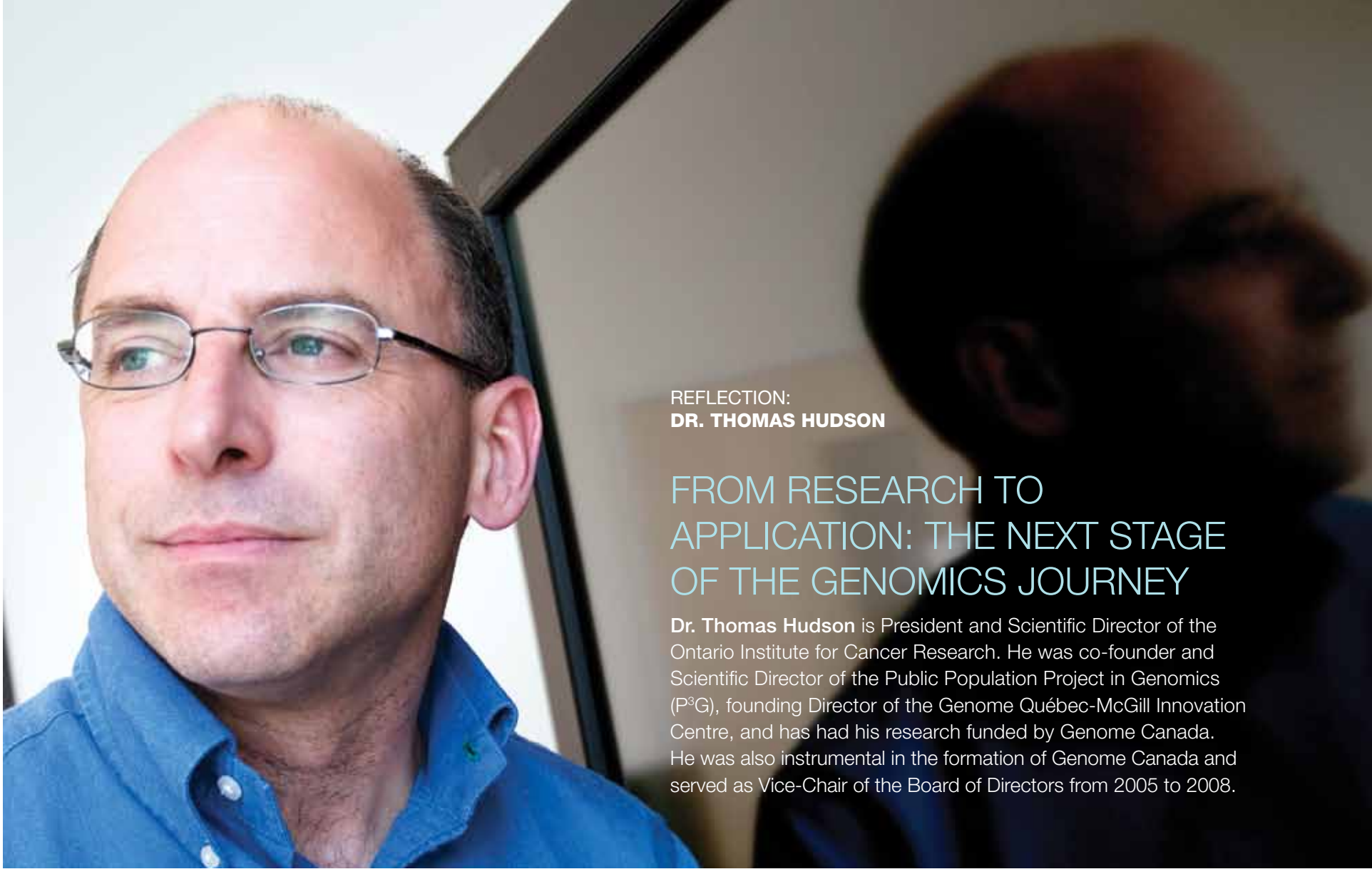
Large-scale, complex genomic research requires specialized tools: conventional technologies often are not up to the task. Developing new solutions that enable research is therefore a critical component of the genomics enterprise—one at which Canadian scientists excel. In one Genome Canada-supported project, researchers are working on a technology that will quantify microRNA expression—the process that carries out DNA instructions in our cells—faster and more cost-effectively than existing solutions, doing what today takes tens of hours and tens of thousands of dollars in just two hours at a very low cost.

THE FOUNDATION FOR TOMORROW'S BREAKTHROUGHS

Genome Canada's investments in technology—and in the country's Science and Technology Platforms—provide researchers with access to the leading-edge technologies, equipment and expertise they need to carry out complex, large-scale investigations cost effectively, supported by leading data analysis expertise. Those centres are available not only to Genome Canada-funded projects but also to other researchers. Last year, that access proved critical for a team of researchers in BC who successfully identified all gene mutations of a patient's breast cancer tumour—before and after metastasization—using the expertise and infrastructure available at the Genome Sciences Centre in Vancouver.

Extending the opportunity for science and technology development

Thirteen projects funded through the Genome Canada Technology Development Competition are developing solutions to improve existing clinical processes, new techniques for instrumentation, new software for data analysis, and new devices for generating genomic data in the lab. These projects, which were awarded funding in 2007, will conclude in July 2010. The resulting innovations will expand the menu of technologies available to the entire Canadian scientific community and the Science and Technology Platforms.



REFLECTION:
DR. THOMAS HUDSON

FROM RESEARCH TO APPLICATION: THE NEXT STAGE OF THE GENOMICS JOURNEY

Dr. Thomas Hudson is President and Scientific Director of the Ontario Institute for Cancer Research. He was co-founder and Scientific Director of the Public Population Project in Genomics (P^3G), founding Director of the Genome Québec-McGill Innovation Centre, and has had his research funded by Genome Canada. He was also instrumental in the formation of Genome Canada and served as Vice-Chair of the Board of Directors from 2005 to 2008.

"We would have lost out as a country without Genome Canada. Now we have an organization that sets incredibly high standards for excellence and gives our genomics researchers the resources they need to be world leaders."

QUESTION ANSWER with Dr. Thomas Hudson

Q Why was the creation of Genome Canada important for scientists in this country?

A My group at MIT in 1997 had more funding for genomics research than all of Canada. The country was dangerously close to being left out of this important area of research. Many people saw Canada was at a critical point. It took two years to generate the rationale for creating Genome Canada, and that was very much a grassroots exercise. It came from the scientific community. And now here we are, 10 years later, benefiting from an organization that sets incredibly high standards for excellence and gives Canadian researchers the resources they need to be world leaders.

Q How has genomics research evolved over the past decade?

A Technology has advanced so quickly. Canadians can take a lot of the credit for these technology advances—in large part because Genome Canada helped build the platforms that have made them possible. Our expertise is recognized around the world. Companies from other countries come to us to test their technologies because of our experience in testing and implementation.

Q How would you describe the state of genomics in Canada today? Have we truly hit an 'inflection' point?

A We're at the point where research is translating into exciting applications that promise to change the world we live in. That takes a long time in genomics because of the nature of the research. But we've put in the time, we've amassed tremendous amounts of knowledge. So we have cases now where genomics is saving lives. For example, in 2008, researchers identified the gene responsible for ARVC, a cardiovascular disease that was killing healthy, middle-aged men across Newfoundland. At-risk individuals are now being diagnosed preventatively through genomic screening, which is helping prevent a large number of premature deaths. And Canadian researchers were the first to sequence the SARS and H1N1 genomes.

Q Looking ahead, what excites you most about genomics?

A We're still discovering how best to apply what we know about many of the genes that have been identified. I personally am very excited about the International Cancer Genome Consortium. This is a 12-country initiative to study genomic abnormalities in cancer and sequence 25,000 cancer genomes. Genome Canada has actively contributed to the development of the consortium through various committees. To date the consortium has raised about $400 Million. It's the largest project of its kind ever undertaken and Canada has taken the lead role in coordinating the network, the scientific committees, and more importantly, the massive databases and data dissemination to the international research community. That's quite impressive when you think that just 10 years ago it wasn't clear if genomics research had a future in this country.

ECONOMY

REVITALIZING THE FORESTRY SECTOR BY OUTMANEUVERING A PEST

Genomics may prove the key to future competitiveness for a number of Canadian economic sectors, especially those that have biology at their base such as forestry, fisheries, agriculture and the environment. Canadian researchers' recent discovery of a way to blend genetic and genomic data with geographic and economic information could be the key to controlling the pine beetle infestation that has destroyed 14 million hectares of Western Canada's forests.

THE BRIDGE BETWEEN KNOWLEDGE AND PROSPERITY

The economic impact of genomics and proteomics research registers on many levels. Not only are industries being transformed by the application of new discoveries, but genomics is emerging as a sector unto itself. Since 2000, more than 20 Canadian companies have either spun out of Genome Canada projects or, like DVS Science, have accessed the resources they need to flourish with the help of Genome Canada funding. Created to produce a revolutionary solution for detecting rare cells, DVS Science achieved sales of $2 Million in 2009–10, a figure projected to climb above $95 Million over the next five years.

Giving an environmental edge to Canada's resource sector

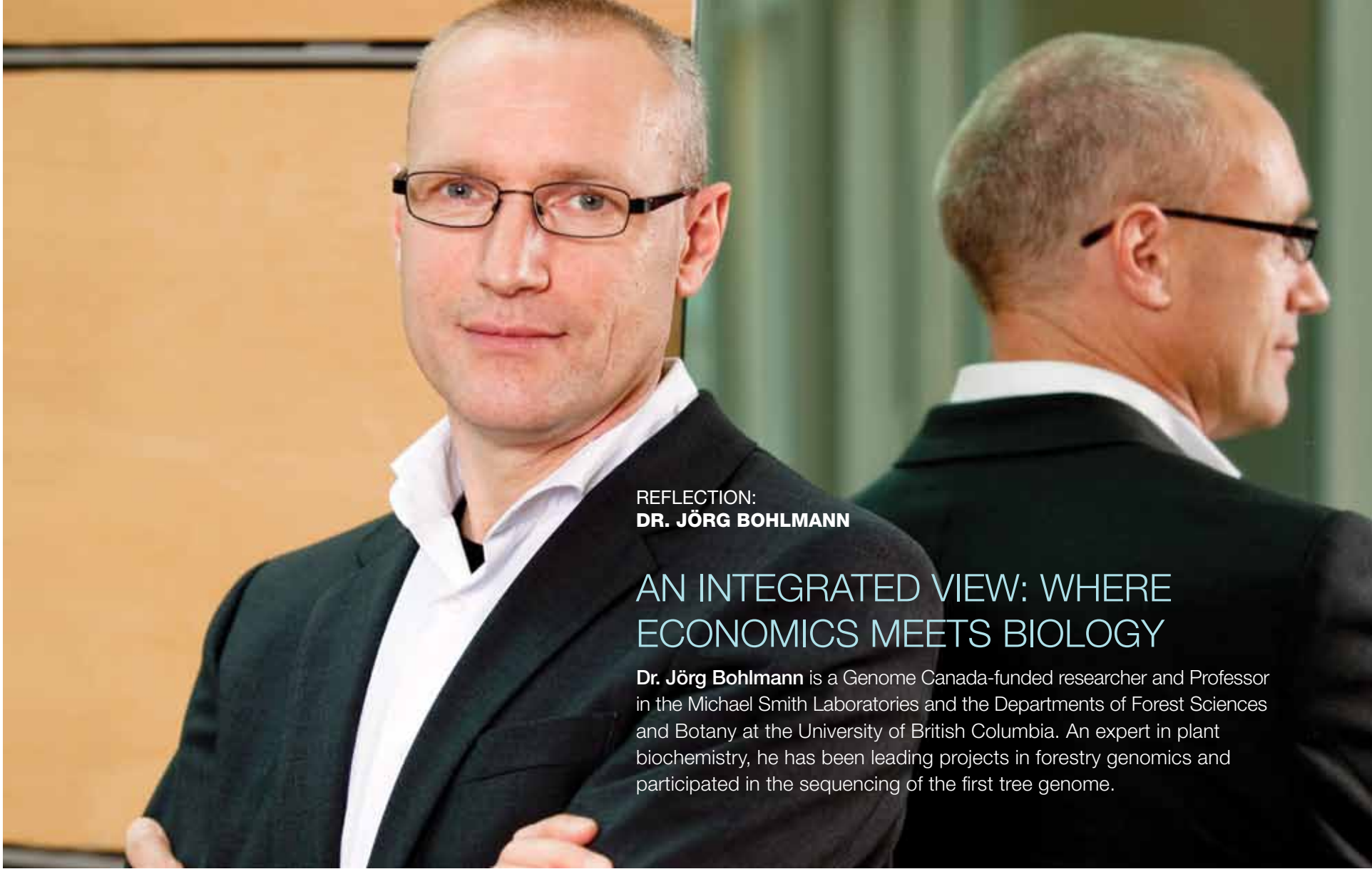
The oil, gas and coal industries are major contributors to the country's economy. They are also sources of environmental concern. The Genome Canada-funded Metagenomics for Greener Production and Extraction of Hydrocarbon Energy project is developing technology to minimize the environmental impact of oil sands production by decreasing its water consumption and greenhouse gas emissions; and to enable the extraction of clean-burning gas from coal beds—all by harnessing the potential of microorganisms, genes and biological processes that exist naturally in microbial communities in these kinds of resource deposits.

The ABCs of economic advantage

The hydrocarbon metagenomics project mentioned above is one of 12 projects funded in 2009 through Genome Canada's Applied Genomics Research in Bioproducts or Crops (ABC) competition. ABC called for projects using genomic or proteomic approaches to support the production of sustainable bioproducts and crops. The 12 projects funded have a combined value of $112 Million.

Barcoding life

In an international consortium initiative, Canadian researchers continued their collaboration with international colleagues last year, applying the method they have developed for identifying species using a short gene sequence from a certain position in the genome—a kind of 'barcode' for identifying forms of life. The International Barcode of Life project (iBOL) has built an ever-growing library of sequences that quickly and easily allows experts and non-experts alike to identify species, giving scientists the ability to better monitor and manage biodiversity. This will also be of extraordinary value to those charged with tracking the trans-border carrying of species, either legal or illegal, those responsible for the integrity of our food supply and for forensic scientists, with significant societal and economic benefits.



REFLECTION:
DR. JÖRG BOHLMANN

AN INTEGRATED VIEW: WHERE ECONOMICS MEETS BIOLOGY

Dr. Jörg Bohlmann is a Genome Canada-funded researcher and Professor in the Michael Smith Laboratories and the Departments of Forest Sciences and Botany at the University of British Columbia. An expert in plant biochemistry, he has been leading projects in forestry genomics and participated in the sequencing of the first tree genome.

"When I was an undergraduate, genomics wasn't formally called 'genomics', and it wasn't part of our curriculum. Now we have a whole generation of scientists in forestry who have been trained up in it: genomics is integral to their approach."

QUESTION ANSWER with Dr. Jörg Bohlmann

Q How did you first encounter genomics?

A I came to Canada 10 years ago as a biologist without any real prior experience in genomics. I had cloned genes and characterized enzymes, but genomics was quite new to me. On one of my first days at UBC, a colleague showed me a memo—an invitation to submit a forestry project to a new organization called Genome Canada. He didn't want to take it on alone so we started working together. That became my first active engagement with the field of genomics.

Q What's been your experience working with the Science and Technology Platforms?

A Fascinating. Here I am, interested in tree biology, collaborating with researchers whose specialization might be sequencing cancer cells. Working with the regional Genome Centres has been very positive. There is real collaboration on the science, from the preparation of the proposal to the publication of results. It really is a partnership.

Q How have forestry sector members responded to your work?

A That's been interesting, too. Ten years ago few people thought that genomics would have a role in forestry. Many people when they hear 'genomics' still think human health, but the applications are really so much broader. Now scientists are performing genomics studies in systems of forest biology in collaboration with mathematical modelers and economic forecasters. We're seeing real integration across sectors and disciplines. When I was an undergraduate, genomics wasn't formally called 'genomics', and it wasn't part of our curriculum. Now we have a whole generation of scientists in forestry who have been trained up in it: genomics is integral to their approach. That's going to substantially advance our capabilities for research and applications even further.

Q Do you find it difficult to project the economic impact of your work?

A Yes. The expectation for our research to deliver short-term economic benefits is quite high, but the reality is somewhat more complicated. It's hard to put a specific dollar figure to it. But for a multi-billion dollar industry like forestry that's suffering from issues such as the mountain pine beetle, our work could have a significant impact in terms of losses avoided and jobs saved.

Q Where do you see the next big developments happening?

A As bioinformatics capabilities catch up with the massively accelerated rate of genome sequencing, we'll see major developments in analyzing and interpreting the huge amounts of data available to us. Genome Canada's support is helping make that next wave of bioinformatics innovation possible that will help us sequence a conifer genome. I have to say that none of the research we're doing would have been possible without funding for large-scale genomic research projects. Genome Canada essentially put Canadian genomics researchers on the map.

SOCIETY

ACHIEVING SOCIETAL BENEFITS DEMANDS A BIG PICTURE PERSPECTIVE

The advantages genomics brings to human health, the economy and environment, taking into account the broader societal implications, can ultimately improve Canadians' quality of life. To continue their work of discovery, researchers require access to vast collections of data—sufficient to identify large-scale trends and variations. Genome Canada is helping provide that access by funding projects such as, the Public Population Project in Genomics (P^3G), an international consortium initiative to manage and harmonize biobanks, providing researchers with the statistically significant data sets they need to answer important research questions.

SCIENCE AND SOCIAL RESPONSIBILITY

The societal implications of genomics are addressed through what Genome Canada calls "GE^{3}LS": *genomics* and its related *ethical, economic, environmental, legal* and *social* aspects. The organization pursued its international strength and leadership last year in advancing GE^{3}LS research and promoting its uptake. All projects funded through the ABC Competition in 2009–2010 have integrated GE^{3}LS components, and one of the large-scale ABC projects is a stand-alone GE^{3}LS research initiative: Value Addition through Genomics and GE^{3}LS (or "VALGEN").

Adding Value to Genomics and GE^{3}LS

Over the next four years, VALGEN will respond to the deep governance challenges posed by crop biotechnology and bioproducts innovation by examining three core issues: 1) intellectual property management; 2) regulation and governance; and 3) democratic engagement. The VALGEN project spans across Canada, is multi-disciplinary, and coordinates horizontally across all ABC genomics projects and integrated GE^{3}LS components. By advancing knowledge, maximizing synergy, building capacity, enabling applications and enhancing benefits, VALGEN "adds value" and increases return on investments in agricultural genomics.

Maximizing the impact of P^{3}G

The Public Population Project in Genomics (P^{3}G) represents a not-for-profit international consortium focused on fostering collaboration in population genomics. Its goal is to help promote harmonization among different international biobanks through harmonized data-collection methods, data-sharing policies, and consent and governance processes, thereby enhancing the possibility of linking sufficiently large sample sizes for genetic and environmental studies on health and disease while safeguarding the privacy of the individuals involved. A major component of P^{3}G is CARTaGENE, a project involving the collection of socio-demographic and health assessment data as well as biological material and DNA samples from 50,000 Quebec citizens aged 40–69.

REFLECTION:
DR. BARTHA MARIA KNOPPERS

ETHICS, PRIVACY AND POPULATION HEALTH: THE COMPLEXITIES OF GENOMIC DISCOVERY

Dr. Bartha Maria Knoppers is Director of the Centre of Genomics and Policy, Faculty of Medicine, Department of Human Genetics, at McGill University, and a founder of Genome Canada. She served as Chair of the International Ethics committee of the Human Genome Organization (HUGO) and founded both the Population Project in Genomics (P^3G) and CARTaGENE. Dr. Knoppers is also a Genome Canada-funded researcher, and served on its Board from 2000 to 2006. She currently plays key roles in the International Stem Cell Forum, 1000 Genomes Project and International Cancer Genome Consortium.

"Genomics research started with an emphasis on rare diseases… now scientists are looking at the gene-environment interactions related to the health of the population. For that, you need to amass huge amounts of data. International collaboration and harmonization are a must."

QUESTION ANSWER with Dr. Bartha Maria Knoppers

Q What first drew you to genomics?

A I was working on the legal aspects of *in vitro* fertilization/human reproduction in 1984 and was invited to attend a conference on newborn screening, a controversial topic at the time. I had six months to get myself up to speed on the topic. By the end of that half-year, I was immersed in genetics and its implications. I have always been interested in how ethics, law and policy influence the evolution of new technologies.

Q Population genomics seems to be a hot topic these days—why is that?

A Genetic research started with an emphasis on rare diseases. Over time, that's shifted: now scientists are looking at gene-environment interactions related to common diseases and the health of the population. For that, you need to amass huge amounts of data. International collaboration and harmonization are a must. Hence, the creation of the Public Population Project in Genomics (P^3G), which in turn has provided some of the policy and epidemiological and IT tools for harmonization, access, and consent for initiatives such as the International Cancer Genome Consortium (ICGC).

Q Has public perception of the ethical issues associated with genomics research changed over the years?

A People understand more today. I think the public is quite behind genomics and proteomics research in many ways: they see the potential for it to improve their lives. Policymakers are having to catch up with the shift from protecting individual privacy to considering questions of privacy and access to information on a mass scale, across international boundaries, as happens in genomics research. Genome Canada's national GE^3LS strategy is promoting world-class research that is resulting in tangible benefits for researchers, policy-makers, technology users and the general public. I find it particularly interesting to note that some of the research is coming full circle. We started with the focus on individual cases, rare diseases, then expanded out to take a population view, and now we're closing back in on individualized treatment, personalized medicine. Mass vaccines will be a thing of the past and targeted interventions are the way of the future.

Q Is genomics becoming 'everyday'?

A It is starting to normalize and some of the stigma attached to it is starting to fade. We may soon talk about our genetic risk factors the way we talk about the weather today!

THE LOOK AHEAD: PERSPECTIVES FROM CANADA'S GENOME CENTRE LEADERS

Genome Canada asked the CEOs of the country's Genome Centres for their views on the past 10 years—and what they see as the big stories ahead for genomics in this country.

The participants

Alan Winter
President and CEO
Genome British Columbia

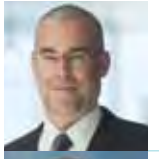
GenomeBritishColumbia

David Bailey
President and CEO
Genome Alberta

GenomeAlberta

Wilf Keller
President and CEO
Genome Prairie

GenomePrairie



Christian Burks
President and CEO
Ontario Genomics Institute

OntarioGenomicsInstitute

Jean-Marc Proulx
President and CEO
Genome Québec

GenomeQuébec

Steve Armstrong
President and CEO
Genome Atlantic

GenomeAtlantic

Q How has the genomics landscape changed over the last 10 years?

A

DAVID BAILEY: Ten years ago we were mapping the Human Genome Sequence. The challenge then was simply generating genomic data. Today the challenge is analyzing the vast amounts of genomic information that have since been produced.

ALAN WINTER: At the time, we couldn't really imagine what the impacts of the Human Genome Project would be. Since then we've seen enormous technological advancements that have allowed us to better understand the value of genomic outcomes from a practical perspective.

STEVE ARMSTRONG: I would say genomics has become an 'enabling technology' that impacts virtually every sector and every aspect of our lives.

WILF KELLER: The cost of DNA sequencing has dropped dramatically, making genomics accessible to a far greater pool of people and organizations. We are now able to accomplish a lot more, faster with a lot less money. The next 20 years will be a tremendous era of transformation where we'll see research discoveries translate into important social and economic benefits.

Q What impact are genomics and proteomics going to have in our daily lives in the near future?

A

CHRISTIAN BURKS: Less expensive genome sequencing will allow us to identify population variant biomarkers in human genomes, which we'll use to create diagnostic and prognostic tests and bring about a new era of personalized medicine.

JEAN-MARC PROULX: Recently we witnessed the first foray into the brave new world of clinical genetics—gene discovery and diagnosis using complete genome sequencing. As sequencing becomes more affordable, it's possible to imagine sequencing the entire genome of severe-disease patients.

ALAN WINTER: And we're learning that we can mitigate many adverse drug reactions through a better understanding of genomics and associated biomarkers in patients.

STEVE ARMSTRONG: We'll see advances outside of human health as well. Biofuels, for example. The use of genomics tools to optimize biofuel production from materials such as algae and camelina (a vegetable oil crop) could be a significant area of economic opportunity for Canada.

Q As an international player, how has Canada contributed to genomics research?

A

JEAN-MARC PROULX: Canada has established its ability to use genomic technologies to deal with crises. In 2010, when faced with the potential of a pandemic from the A:H1N1 swine flu virus, Winnipeg-based researchers took less than three weeks to decode the virus responsible for the infection. Virus sequencing enabled this rapid discovery, which led to the development of the H1N1 vaccine.

WILF KELLER: The country has shown leadership in the science and on the ethical side of genomics as well. There are so many complex social and legal questions arising from genomics research. Genome Canada's recognition of the need to integrate GE^{3}LS considerations into genomics research was innovative. That integrated approach will be critical to the advancement and application of genomics science in Canada.

DAVID BAILEY: With its relatively cold climate and vast amounts of water, forests, farmland and hydrocarbon resources, Canada also stands to benefit a great deal from genomics discoveries. Genomics tools are improving crop adaptation to cold stress, making aquaculture more robust, improving forest health and productivity, and mitigating some of the challenges associated with hydrocarbon resource extraction.

ALAN WINTER: Indeed, understanding how molecular biology applies to key economic and social sectors in Canada—health, forestry, fisheries, agriculture, environment, bioenergy and even mining—is resulting in significant benefits for the country.

CHRISTIAN BURKS: The economic benefits to Canada that result from genomics research are both far-reaching and multifaceted. While we're seeing the emergence of new companies and products, we're also seeing the development of new resources and tools that are accelerating life science research, academic and commercial enterprises.

Q How is Genome Canada supporting the growth and development of Canada's genomic capacity?

A

STEVE ARMSTRONG: Genome Canada funds large-scale genomics projects that demand scientists think beyond their own labs, departments or institutions and join forces with large teams spread across the country and even the world. This pursuit of 'big science' moved Canada from obscurity onto the global genomics map as a very credible player.

WILF KELLER: The establishment of regional Genome Centres across the country was a visionary move by Genome Canada. Each centre has its own unique strengths. We have a system that allows for the development of expertise and partnerships at a regional level, which builds a stronger national and international profile in the end.

ALAN WINTER: It's a powerful model of innovation and one that's well respected around the world. Canada has certainly become one of the leaders in genomics research. We are also on track to be world leaders in genomics applications where we involve both end users and social scientists in the research process.

CHRISTIAN BURKS: Since its inception, Genome Canada has contributed more than $1.5 Billion in funding to large-scale research projects. That's truly world class. And look at the results of that research—the HapMap project, DNA barcoding, the Structural Genomics Consortium, P^{3}G, defining an entire new realm of DNA variation in genomes—these all stand to change the world.

JEAN-MARC PROULX: Sequencing technology is still moving far faster than our ability to interpret the resulting data. Getting more value out of personal genome sequencing will require better databases and vastly improved analysis tools. Genome Canada has helped align a dedicated Canadian research community to develop these new tools and technologies and to tap into the potential of genomics for the benefit of the Canadian public.

PERFORMANCE AND OBJECTIVES

Throughout 2009–10, Genome Canada continued its pursuit of its five objectives. The following is a summary of key activities in each area.

1 | COORDINATED STRATEGY

Develop and establish a coordinated strategy for genomics research to enable Canada to become a world leader in areas such as health, agriculture, environment, forestry and fisheries.

Genome Canada led and participated in numerous national and international genomics research initiatives in 2009–10, serving on the Board of Directors of the International Barcode of Life Consortium, the Canadian Cancer Research Alliance and the Structural Genomics Consortium, and also as a member of the International Knockout Mouse Consortium Steering Committee and the International Cancer Genome Consortium Executive and Science Planning Committees. For its part in the Cancer Stem Cell Consortium, Genome Canada provided the secretariat and approved up to $14 Million funding in support of Canadian researchers involved in consortium projects.

2 | GENOME CENTRES AND SCIENCE AND TECHNOLOGY PLATFORMS

Provide leading-edge technology to researchers in all genomics-related fields through regional Genome Centres across Canada.

Genome Canada monitored milestones and progress on the 13 funded projects from the 2007 Technology Development Competition, which will come to a close in the latter half of 2010. The expected research output of this competition will broaden and update the menu of technologies available to the Canadian scientific community. It also continued to maintain close contact with its six Genome Canada-funded Science and Technology Platforms, in terms of encouraging access for Canadian genomics researchers to state-of-the-art technologies, expertise and infrastructure for Genome Canada-funded researchers and over 1500 others from academia and industry.

3 | RESEARCH SUPPORT

Support of large-scale projects of strategic importance to Canada by bringing together industry, governments, universities, research hospitals and the public.

Genome Canada continued its support of genomics and proteomics research in 2009–10, primarily through the management and monitoring of the 33 funded projects associated with Competition III, and the 12 funded projects associated with the Applied Genomics Research in Bioproducts or Crops Competition.

4 | GE^{3}LS LEADERSHIP

Assumption of leadership in the areas of ethical, environmental, economic, legal, social and other issues related to genomics research (GE^{3}LS).

To promote networking and communication opportunities within the research community, Genome Canada launched several GE^{3}LS leadership projects in 2009–2010, including a new GE^{3}LS website and e-newsletter (*IMPACT*). In June 2009, Genome Canada also launched a national GE^{3}LS database (Canada GE^{3}LS) identifying researchers working in given areas or on particular issues: the necessary first step toward networking and eventual team-building across disciplines. Genome Canada also conducted a new GE^{3}LS Researchers Survey to gather ideas for further improving communication and networking within the GE^{3}LS research community.

In an effort to broker two-way dialogue and knowledge transfer between researchers and federal policy makers on important public policy issues, Genome Canada collaborated with several national partner organizations to launch a new Ottawa GE^{3}LS series called GPS: *Where Genomics, Public and Society Meet*. A new Policy Portal was created on the GE^{3}LS website to disseminate information about GPS events and resulting policy briefs published after each event.

Genome Canada collaborated with the regional Genome Centres last year to clarify research application guidelines and evaluation criteria for GE^{3}LS integration. Genome Canada also developed a conceptual paper on the evolution of integrated GE^{3}LS and various potential models for strengthening integration efforts in the future.

5 | COMMUNICATIONS

Communication of the relative risks, rewards and successes of genomics to the Canadian public.

The organization continued to partner with youth education programs such as the Canada-wide Science Fair and the Sanofi-Aventis BioTalent Challenge. Its *GEEE! in Genome* travelling exhibition made its way to more museums across Canada, making stops in Thetford Mines, Kitchener and Vancouver in 2009–10. Genome Canada also funded students' attendance at numerous national and international conferences and workshops throughout the year including the WHO Human Genome Organisation Symposium on Genomics and Ethics, Law and Society in Geneva, Switzerland.

6 | CO-FUNDING

Encouragement of investment by others in the field of genomics research.

Genome Canada is dedicated to becoming a 'knowledge broker'—creating programs and mechanisms that support the translation of funded research into commercial services or products so that all Canadians can realize the benefits. This demands partnership, attracting organizations that can contribute both additional funds for projects as well as expertise to help carry technologies down the road to market.

For example, the Structural Genomics Consortium includes a number of public and industry partners beyond Genome Canada to support its work, including the Canadian Institutes of Health Research, the Government of Ontario, the Canada Foundation for Innovation, the Wellcome Trust, Swedish funding agencies, GlaxoSmithKline, Merck, and Novartis.

Genome Canada attracted co-funding to a number of genomics and proteomics research projects in 2009–10 and continued to develop its collaborative relationships with the private, public and philanthropic sectors.

FUNDING SOURCES FOR GENOME CANADA APPROVED PROJECTS AS OF MARCH 2010

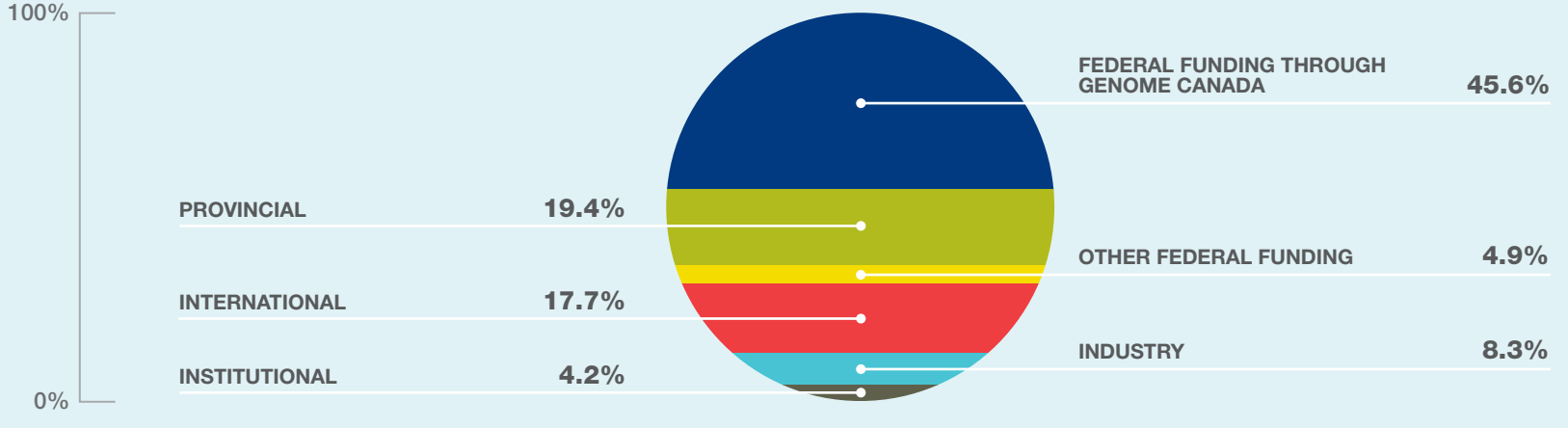


Figure does not include funding and related co-funding of Genome Centres.

Current projects with Genome Canada funding (2009–10)

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
Large-Scale Projects			
Genome British Columbia	Agriculture	Rieseberg, Loren	Genomics of Sunflower
Genome British Columbia	Agriculture	Lund, Steven van Vuuren, Hennie	Grape and Wine Genomics
Genome Alberta	Agriculture	Weselake, Randall Selvaraj, Gopalan	Designing oilseeds for tomorrow's market
Genome Prairie	Agriculture	Fowler, Brian	Crop Adaptation Genomics – Use of genomic tools for crop improvements in temperate climates
Genome Prairie	Agriculture	Rowland, Gordon Cloutier, Sylvie	Total Utilization Flax GENomics (TUFGEN)
Ontario Genomics Institute	Agriculture	Grbic, Miodrag	Genomics in Agricultural Pest Management (GAP-M)
Genome Québec	Agriculture	Bureau, Thomas	Bridging comparative, population and functional genomics to identify and experimentally validate novel regulatory regions and genes for crop improvement
Genome British Columbia	Development of New Technologies	Borchers, Christoph	MS-based Structural Proteomics for Drug Development and Design
Genome British Columbia	Development of New Technologies	Marra, Marco Jones, Steven Holt, Rob	Production-scale Deployment of Next-generation Sequencing Instruments
Genome British Columbia	Development of New Technologies	Hansen, Carl Marra, Marco	Towards Single Cell Genomics
Genome Alberta	Development of New Technologies	Sensen, Christoph	Four-dimensional modelling of genetic disease patterns

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
Genome Prairie	Development of New Technologies	Hicks, Geoff	Enabling Technologies for Embryonic Stem Cell Functional Genomics
Ontario Genomics Institute	Development of New Technologies	Kain, Kevin Greenberg, Michael Chan, Warren	Quantum dot diagnostics: Simultaneous genomic and proteomic profiling of multiple pathogens at point-of-care
Ontario Genomics Institute	Development of New Technologies	Henkelman, Mark	Automated Three-dimensional Phenotyping of Mouse Embryos
Ontario Genomics Institute	Development of New Technologies	Hebert, Paul	Environmental Barcoding through Massively Parallelized Sequencing
Ontario Genomics Institute	Development of New Technologies	Tanner, Scott	Massively Multiparametric Flow Cytometer Analyzer
Ontario Genomics Institute	Development of New Technologies	Kelley, Shana Sargent, Ted	Multiplexed MicroRNA Detection on an Electronic Chip
Ontario Genomics Institute	Development of New Technologies	Figeys, Daniel	Proteomic Technologies for the Study of Rare Cells
Ontario Genomics Institute	Development of New Technologies	Morris, Quaid Bader, Gary	Software Tools to Simplify Gene Function Prediction
Ontario Genomics Institute	Development of New Technologies	Petronis, Art	Technologies for Methylome Studies
Genome Québec	Development of New Technologies	Sekaly, Raffick Brinkman, Ryan	High-throughput, High-dimensional, Multi-parametric Analysis of the Immune System
Genome Québec	Development of New Technologies	Tabrizian, Maryam	Integrated Proteomics Platforms for High-throughput Biomarker Discovery and Validation
Genome British Columbia	Environment	Bohlmann, Jörg Cooke, Janice	Genomics-Enhanced Forecasting Tools to Secure Canada`s Near-Term Lignocellulosic Feedstock Supply for Bioenergy using the Mountain Pine Beetle-Pinus spp. System

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
Genome Alberta	Environment	Voordouw, Gerrit	Metagenomics for Greener Production and Extraction of Hydrocarbon Energy
Genome Alberta	Environment	Facchini, Peter Martin, Vincent	Synthetic Biosystems for the Production of High-Value Plant Metabolites
Genome Prairie	Environment	Levin, David Sparling, Richard	Microbial Genomics for Biofuels and Co-products from Biorefining Processes
Ontario Genomics Institute	Environment	Edwards, Elizabeth Major, David	BEEM: Bioproducts and Enzymes from Environmental Metagenomes
Genome Québec	Environment	Tsang, Adrian	Genozymes for Bioproducts and Bioprocesses Development
Genome British Columbia	Fisheries	Koop, Ben Davidson, William Omholt, Stig (Norway)	Consortium for genomic research on all salmonids project (cGRASP)
Genome Atlantic	Fisheries	Bowman, Sharen Trippel, Edward	Atlantic cod genomics and broodstock development
Genome British Columbia	Forestry	Bohlmann, Jörg Ritland, Kermit	Conifer forest health genomics
Genome Québec	Forestry	MacKay, John Bousquet, Jean	Arborea II: Genomics for molecular breeding in softwood trees
Genome British Columbia	GE^{3}LS	Burgess, Michael Danielson, Peter	Building a GE^{3}LS architecture (GE^{3}LS Arc)
Genome Alberta	GE^{3}LS	Caulfield, Timothy Einsiedel, Edna	Translating science: Genomics and health systems

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
Genome Prairie	GE^{3}LS	Phillips, Peter Castle, David	Value Addition to Genomics and GE^{3}LS (VALGEN)
Ontario Genomics Institute	GE^{3}LS	Singer, Peter Daar, Abdallah	Strengthening the role of genomics and global health
Genome British Columbia	Health	Finlay, Brett Brunham, Robert Reiner, Neil	Functional genomics for emerging infectious diseases (Proteomics for Emerging Pathogen Response – PREPARE)
Genome British Columbia	Health	Hancock, Robert Babiuk, Lorne	The pathogenomics of innate immunity (PI2)
Genome British Columbia	Health	Marra, Marco Connors, Joseph Gascoyne, Randy	High resolution analysis of follicular lymphoma genomes
Genome British Columbia	Health	Marra, Marco Hoodless, Pamela	Dissecting gene expression networks in mammalian organogenesis (MORGEN)
Genome British Columbia	Health	Moerman, Donald	Efficient identification and cloning of single gene deletions in the nematode Caenorhabditis elegans
Genome British Columbia	Health	Simpson, Elizabeth	Pleiades promoter project: Genetic resource for CNS regional and cell specific molecular delivery
Genome Prairie	Health	Hicks, Geoff Rossant, Janet	North American conditional mouse mutagenesis project: High throughput mammalian functional analysis for the discovery of novel determinants of human disease

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
Ontario Genomics Institute	Health	Andrews, Brenda	Integrative biology
Ontario Genomics Institute	Health	Danska, Jayne Macpherson, Andrew	Genome-environment interactions in type 1 diabetes
Ontario Genomics Institute	Health	Durie, Peter Zielenski, Julian	The contribution of genetic modulators of disease severity in cystic fibrosis to other diseases with similarities of clinical phenotype
Ontario Genomics Institute	Health	Guidos, Cynthia	Identification of genetic pathways that regulate the survival and development of cancer and cancer stem cells
Ontario Genomics Institute	Health	Hegele, Rob	Structural and functional annotation of the human genome for disease study
Ontario Genomics Institute	Health	Pawson, Tony Wrana, Jeff Li, Shawn	The dynactome: Mapping spatio-temporal dynamic systems in humans
Ontario Genomics Institute	Health	Scherer, Stephen	Autism genome project
Genome Québec	Health	Abou-Elela, Sherif	Functional annotation of essential alternatively spliced isoforms
Genome Québec	Health	Dewar, Ken	An integrated genetic/physical genome map for the old world monkey, cercopithecus aethiops
Genome Québec	Health	Pastinen, Tomi Peterson, Alan Sinnett, Daniel	The GRID project (Gene Regulators In Disease)
Genome Québec	Health	Rouleau, Guy Drapeau, Pierre	Identification and characterization of genes involved in common developmental brain diseases

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
Genome Québec	Health	Phillips, Michael Tardif, Jean-Claude	Pharmacogenomics of drug efficacy and toxicity in the treatment of cardiovascular disease
Genome Atlantic	Health	Samuels, Mark Young, Terry-Lynn	Atlantic medical genetic and genomics initiative (AMGGI)
Science and Technology Platforms			
Genome British Columbia	Science and Technology Platform	Marra, Marco	BC Cancer Agency Genome Sciences Centre
Genome British Columbia	Science and Technology Platform	Nelson, Colleen	The Microarray Facility at the Prostate Centre
Genome British Columbia	Science and Technology Platform	Borchers, Christoph	University of Victoria – Genome BC Proteomics Centre
Genome Alberta	Science and Technology Platform	Sensen, Christoph	The integrated and distributed bioinformatics platform
Ontario Genomics Institute	Science and Technology Platform	Scherer, Stephen	The Centre for Applied Genomics
Genome Québec	Science and Technology Platform	Dewar, Ken	McGill University and Genome Québec Innovation Centre
International Consortium Initiatives			
Ontario Genomics Institute	Health	Edwards, Aled	Structural genomics consortium (SGC phase II)
Ontario Genomics Institute	Health	Rudnicki, Michael	International Regulome Consortium (IRC)
Genome Québec	Health	Knoppers, Bartha Maria	Public Population Project in Genomics (P^3G)
Ontario Genomics Institute	Environment	Hebert, Paul	International Barcode of Life Project (iBOL)

NOTES ON GOVERNANCE

Genome Canada is governed by a Board comprised of a minimum of 12 and maximum of 16 directors drawn from the academic, private and public sectors. The Board also includes five non-voting, ex officio advisors; namely, the presidents of the following federal research agencies: Canada Foundation for Innovation (CFI), Canadian Institutes of Health Research (CIHR), National Research Council (NRC), Natural Sciences and Engineering Research Council (NSERC), and Social Sciences and Humanities Research Council (SSHRC).

The Board oversees the direction and management of the property, business and affairs of Genome Canada. Its governance framework is defined by the corporation's letters patent, general bylaws, funding agreements with Industry Canada, corporate policies, and strategic plans.

Key Board activities in 2009–10

Succession activities

The tenure of former Chair of the Board, Dr. Calvin Stiller, concluded in June of 2010. Dr. Thomas Caskey was named as his successor. In September 2009, Genome Canada appointed a new Vice President of Genomics Program (Dr. Karl Tibelius) and a Vice President of External Relations (Mr. Dale Patterson).

Following the departure of former President and CEO, Dr. Martin Godbout, in October 2009, the Board established a Transition Team to oversee the operations of Genome Canada. Chair of the Board, Dr. Thomas Caskey, assumed leadership of the Transition Team made up of Board members Drs. Natalie Dakers, Pete Desai and Jacques Simard and representatives from Genome Canada's senior management team, Dr. Cindy Bell and Mr. Dale Patterson. Due to the existence of clear processes and procedures for dealing with a transition, the organization experienced minimal disruption and continued to move Genome Canada forward in the pursuit of its achievements.

The Transition Team had three mandates—to oversee:

- Completion of the 2010 federal budget submission
- The search for a new President and CEO
- The general operations of the organization

In March 2010, the Board appointed Genome Canada's Vice-President, External Relations, Mr. Dale Patterson, as interim CEO, and established a search committee for the recruitment of a new President and CEO.

The federal budget submission and funding allocations

The Transition Team completed the preparation of Genome Canada's annual request for federal funding in the fall of 2009, receiving Board approval of the submission in November.

Budget 2010 provided Genome Canada with "an additional $75 Million to launch a new targeted research competition focused on forestry and the environment and sustain funding for the regional genomics platforms."

Other fiduciary activities in 2009–10 that showcased key strategic priorities for the Board included:

- Approving up to $14 Million in funding to support two Canada-California projects through the Cancer Stem Cell Consortium Disease Team Research Awards competition.
- Funding up to $4.6 Million for the International Barcode of Life project.
- Providing funding support at current levels for operation of the country's regional Genome Centres for 2010–11—acknowledging the central importance of partnership with the Genome Centres to Genome Canada's overall model.

Approving new competitions

Fulfilling the direction provided by the federal government in its Budget, Genome Canada prepared—and the Board approved—the timelines, principles and selection criteria for two new funding competitions:

- The 2010 Large Scale Applied Research Project which focuses on funding forestry and environmental projects as well as projects from other sectors, such as human health, fisheries and agriculture.
- The 2010 competition for Science and Technology Platforms Operations Support.

Additional activities of the Board

Also in 2009–10, the Board approved Genome Canada's 2010–11 operational budget, 2008–09 annual report and 2010–11 corporate plan. As well, the Board adopted policies on science and technology platform access, expenditure authority and limitations, and procurement and contracting.

Committees of the Board

The Board has a number of permanent committees, each with a specific mandate:

Audit Committee

The Audit Committee is mandated by the Board of Directors to provide direction, oversight and advice with respect to the accounting, auditing, financial reporting, internal controls, corporate risk assessment, and financially related legal compliance functions of Genome Canada.

Compensation Committee

The Compensation Committee is mandated by the Board of Directors to provide advice and recommendations with respect to compensation practices, policies and procedures for Genome Canada employees, including compensation and bonus guidelines.

Corporate Governance Committee

The Corporate Governance Committee is mandated by the Board of Directors to provide direction, over-sight and advice with respect to matters of corporate governance, including development of corporate governance principles and guidelines, review of bylaws, corporate policy, Committee terms of reference, and development of a Board and Committee assessment process.

Election Committee

The Election Committee is mandated by the Board of Directors to provide advice and recommendations with respect to Board and Committee succession planning including the selection process and selection criteria, as well as Board and Committee size, composition and profile.

Executive Committee

The Executive Committee shall, while the Board of Directors is not in session, be competent to exercise all or any of the powers vested in the Board of Directors, save and except any powers to adopt, amend or repeal bylaws of Genome Canada and do such acts as must be performed by the directors themselves under the law.

Investment Committee

The Investment Committee is mandated by the Board of Directors to provide direction, oversight and advice with respect to matters involving the investment management of any funds at the disposal of Genome Canada, including the formulating of investment policies and implementation strategies with respect to Genome Canada's investments.

Science and Industry Advisory Committee

The mandate of the Science and Industry Advisory Committee is to provide strategic advice to the Board of Directors of Genome Canada that will contribute to the corporation's achievement of its long-term objectives of excellence and leadership in genomics and proteomics research and in ethical, environmental, economic, legal and social aspects (GE^3LS) of this research in Canada.

Genome Canada's Team

Board of Directors

- Executive Committee
- Audit Committee
- Investment Committee
- Election Committee
- Corporate Governance Committee
- Compensation Committee

Number of meetings held by the Board and its Committees in 2009–10:

Board of Directors	7
Executive Committee	7
Audit Committee	4
Investment Committee	4
Election Committee	5
Corporate Governance Committee	4
Compensation Committee	2
Science and Industry Advisory Committee	1

BOARD OF DIRECTORS

(as at March 31, 2010)

C. Thomas Caskey (Chair)
Director and Chief Executive Officer
The Brown Foundation Institute of Molecular Medicine and Genetics
University of Texas
Houston, Texas

Prabhat D. (Pete) Desai (Vice-Chair)
President
Desai & Desai Inc
Calgary, Alberta

Natalie E. Dakers
CEO
Centre for Drug Research and Development
Vancouver, British Columbia

Sylvie Dillard
President
Conseil de la science et de la technologie
Quebec Ministry of Economic Development, Innovation and Export Trade
Quebec, Quebec

Connie J. Eaves (until December 2009)
Professor
Medical Genetics, Faculty of Medicine
University of British Columbia
Vancouver, British Columbia

William Gelbart
Professor
Molecular and Cellular Biology
Harvard University
Boston, Massachusetts

Martin Godbout (until October 2009)
President and CEO

K. Kellie Leitch
Paediatric Orthopaedic Surgeon
Associate Professor, Faculty of Medicine
University of Toronto
Chair, Ivey Centre on Health Innovation and Leadership, Richard Ivey School of Business
University of Western Ontario
Chief of Surgical Services, Lakeridge Health
MaRS Centre
Toronto, Ontario

André Marcheterre
Past President
Merck Frosst Canada
Lorraine, Quebec

Eric M. Meslin
Founding Director
Indiana University Center for Bioethics
Associate Dean for Bioethics
Professor of Medicine and Medical and Molecular Genetics, Public Health and Philosophy
Indiana University
Indianapolis, Indiana

Kelvin K. Ogilvie
(called to the Senate in August 2009)
Emeritus Professor of Chemistry
Acadia University
Wolfville, Nova Scotia

Stephen W. Scherer
Director
The Centre for Applied Genomics
The Hospital for Sick Children
Director, McLaughlin Centre for Molecular Medicine
University of Toronto
Senior Scientist, The Hospital for Sick Children
Professor of Medicine, University of Toronto
Toronto, Ontario

Jacques Simard
Canada Research Chair in Oncogenetics
Professor, Department of Molecular Medicine
Faculty of Medicine
Université Laval
Director, Endocrinology and Genomics
Centre de recherche du CHUQ
Quebec, Quebec

EX OFFICIO ADVISORS

Alain Beaudet
President
Canadian Institutes of Health Research
Ottawa, Ontario

Pierre Coulombe (until February 2010)
President
National Research Council Canada
Ottawa, Ontario

Suzanne Fortier
President
Natural Sciences and Engineering Research Council of Canada
Ottawa, Ontario

Chad Gaffield
President
Social Sciences and Humanities Research Council of Canada
Ottawa, Ontario

Eliot A. Phillipson
President and CEO
Canada Foundation for Innovation
Ottawa, Ontario

OFFICERS

(as at March 31, 2010)

C. Thomas Caskey
Chair, Board of Directors

Prabhat D. (Pete) Desai
Vice-Chair, Board of Directors

Cindy Bell
Executive Vice-President, Corporate Development

Jean Brunet
Corporate Secretary
Stein Monast L.L.P.

Guy D'Aloisio
Vice-President, Finance

Carol Anne Esnard
Chief Administrative Officer

Martin Godbout (until October 2009)
President and CEO

Michael Morgan (until June 2009)
Chief Scientific Officer

Dale Patterson
Interim CEO and Vice-President, External Relations

SCIENCE AND INDUSTRY ADVISORY COMMITTEE

(as at March 31, 2010)

William A. Bridger, Chair
President
R.M. Spencer & Associates
Edmonton, Alberta

Laura Brown (to December 2009)
Manager, Marine Ecosystems and Aquaculture Division
Fisheries and Oceans Canada
Nanaimo, British Columbia

David Cox (to December 2009)
Senior Vice President and CSO
Biotherapeutics and Innovation Center
Pfizer Inc.
San Francisco, California

William L. Crosby
Professor, Department of Biological Sciences
University of Windsor
Windsor, Ontario

Edna F. Einsiedel
University Professor, and Professor of Communication Studies
Faculty of Communication and Culture
University of Calgary
Calgary, Alberta

Simon J. Gaskell
Vice President Research
Manchester Interdisciplinary Biocentre
University of Manchester
Manchester, United Kingdom

Maud Hinchee
Chief Technology Officer
ArborGen, LLC
Summerville, South Carolina

Kathy Hudson
Director
The Genetics and Public Policy Center
Johns Hopkins University
Washington, District of Columbia

Si Lok
Scientific Director
Professor and Chair of Genomic Medicine
Genome Research Centre
Li Ka Shing Faculty of Medicine, University of Hong Kong
Hong Kong, China

Dale Patterson (to September 2009)
President
The Bourton Group
Toronto, Ontario

Eddy Rubin (to December 2009)
Director, Joint Genome Institute
US Department of Energy, and
Director, Genomics Division
Lawrence Berkeley National Laboratory
University of California, Berkeley
Berkeley, California

John Yates
Professor, Chemical Physiology
The Scripps Research Institute
La Jolla, California

GENOME CANADA STAFF

(as at March 31, 2010)

Martin Godbout (until October 2009)
President and CEO

Dale Patterson
Vice-President,
External Relations (as of October 2009)
Interim CEO (as of March 2010)

Cindy Bell
Executive Vice-President, Corporate Development

Julie Bernier
Administrative Assistant / Receptionist

Genny Cardin
Analyst

Sheila Chapman
GE^{3}LS Program Manager

Kim Corbett
Program Manager

Guy D'Aloisio
Vice-President, Finance

Karen Dewar
Director, National Genomics Programs

Carol Anne Esnard
Chief Administrative Officer

Shannon Fisher
Program Administrator/Data Manager

Barbara Francis
Program Manager

Chuck Hasel
Consultant, Technology Development

Patricia Kosseim
Chief GE^{3}LS Officer

Brianne Leclair
Information Management Manager

Hélène Meilleur
Acting Director of Communications and Events

Michael Morgan (up to June 2009)
Chief Scientific Officer

Robert Moreau
Comptroller

Kate Swan
Associate Director, International Genomics Programs

Normand Therrien
Finance Officer

Karl Tibelius (as of September 2009)
Vice-President, Genomics Program

Brigitte Vaillant
Administrative Officer

COMPENSATION

Directors

(1) Directors are not compensated for regular Board and Committee duties.

(2) During the year, Genome Canada had a service agreement with Hodran Consultants Inc. which provided the services of Dr. Martin Godbout as President and Chief Executive Officer. Hodran Consultants Inc. was compensated $213, 200 from April 1, 2009 to October 15, 2009. Hodran Consultants Inc. was also compensated $393,600 as termination indemnity for termination of the service agreement, representing twelve months of fees, in accordance with the provisions of the agreement.

Officers

The following individuals are officers of Genome Canada and have employment agreements, including base salary and eligibility for performance awards which, as of March 31, 2010, fell within the following ranges:

Cindy Bell Executive Vice-President
Corporate Development
$199,982–$249,978

Guy D'Aloisio
Vice-President, Finance
$179,577–$215,492

Carol Anne Esnard
Chief Administrative Officer
$151,334–$181,601

Employees

The following individuals are employees of Genome Canada and have employment agreements, including base salary and eligibility for performance awards which, as of March 31, 2010, fell within the following ranges:

Karen Dewar
Director, National Genomics Programs
$130,601–$143,661

Hélène Meilleur
Acting Director of Communications and Events
$120,000–$132,000

Normand Therrien
Finance Officer
$100,806

Interchange Agreement

Through an interchange agreement with a federal government agency, Genome Canada employed **Patricia Kosseim** as its Chief GE^{3}LS Officer at a salary range of $124,900 to $147,725.

MANAGEMENT DISCUSSION

Since the creation of Genome Canada in 2000, the federal government has committed $915 Million to the corporation for the purpose of supporting large-scale, leading-edge research in genomics and proteomics. The most recent funding includes $100 Million from Federal Budget 2007, $140 Million from Federal Budget 2008 and $75 Million from Federal Budget 2010. Through formal funding agreements with Industry Canada, funds are provided to support research projects, technology platforms and operations.

All research projects supported by Genome Canada through federal investments are required to be co-funded with other parties, including provinces, universities, the private sector, and other national and international organizations. As at March 31, 2010, more than $900 Million in co-funding commitments have been raised.

A rigorous competitive process determines which research projects and technology platforms throughout Canada will be funded. Projects are selected through a system of peer review which includes an assessment of the scientific merit of the proposal and a concurrent due diligence review of the proposed management structure, the proposed budget and related financial data, including co-funding. Reviewers are chosen for their recognized expertise in the science and management of large-scale genomics/proteomics projects and are all from the international scientific community to avoid conflict of interest. Genome Canada's Board of Directors makes the final decision on which applications to fund, based on recommendations received from the international panel of reviewers.

Guided by the terms and conditions in the funding agreements with each of the six Genome Centres, Genome Canada disburses funds to each for approved projects and platforms. In turn, each Centre directs the funds to individual projects and platforms through the lead institution located within its region. The operations of the Centres themselves are supported by Genome Canada.

Financial Highlights 2009–10

In the year ended March 31, 2010 Genome Canada dispersed a total of $81.9 Million for both its own operations and for the funding of Projects, Platforms and Genome Centre operations.

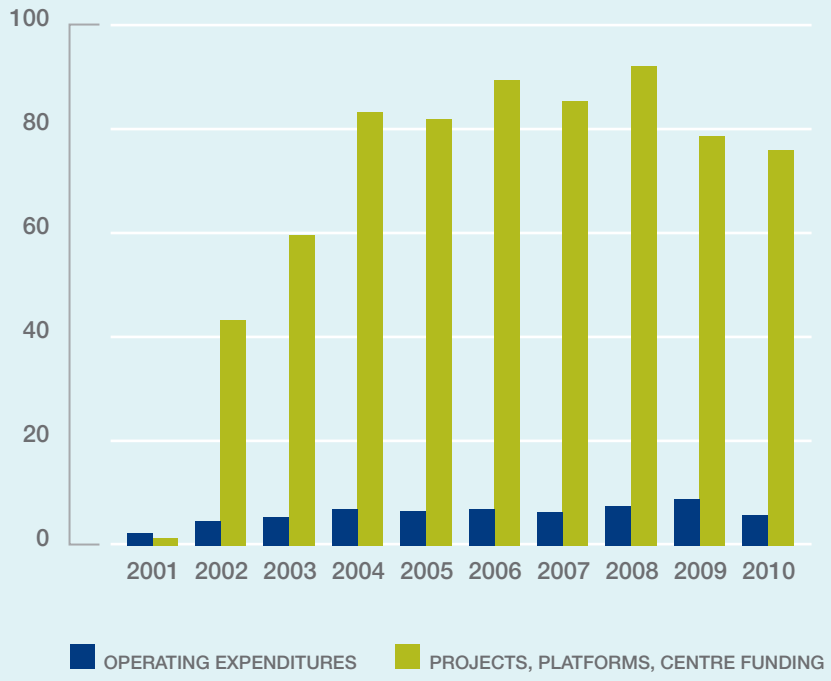
Operations

- Genome Canada cost of operations totals $5.8 Million of which 50% relates to salaries and benefits, 29% to general and administrative expenses, and 11% to communications and external affairs.

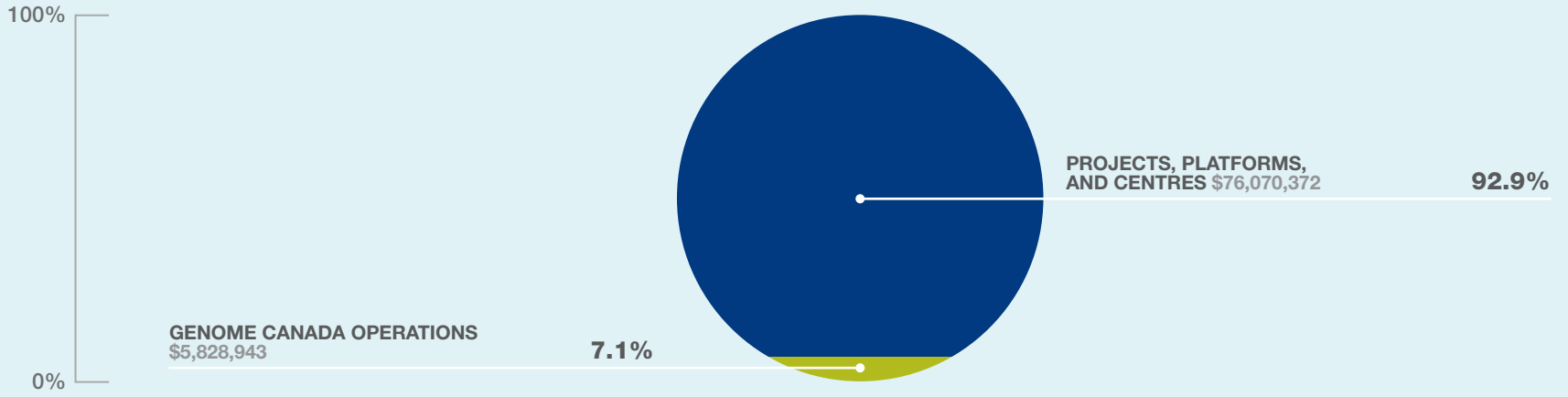
Projects, Platforms and Centres

- From inception to March 31, 2010, Genome Canada disbursements to Projects, Platforms and Genome Centre operations total $692.2 Million.
- From total disbursements of $76.1 Million in fiscal year 2009–10, $37.5 Million was directed to projects approved through Competition III, $10.3 Million to Science and Technology Platforms, and $6.4 Million to Applied Genomics in Bioproducts and Crops.
- As at March 31, 2010 a total of $50.1 Million remains as deferred contributions, representing disbursements that will be made in subsequent years for Genome Canada operations and for approved projects and platforms.
- Through the combined efforts of Genome Canada, Genome Centres and Project Leaders, it is estimated that over $900 Million in co-funding has been raised and committed from inception to March 31, 2010, bringing the total committed value of investments in genomics and proteomics research through Genome Canada to over $1.7 Billion.

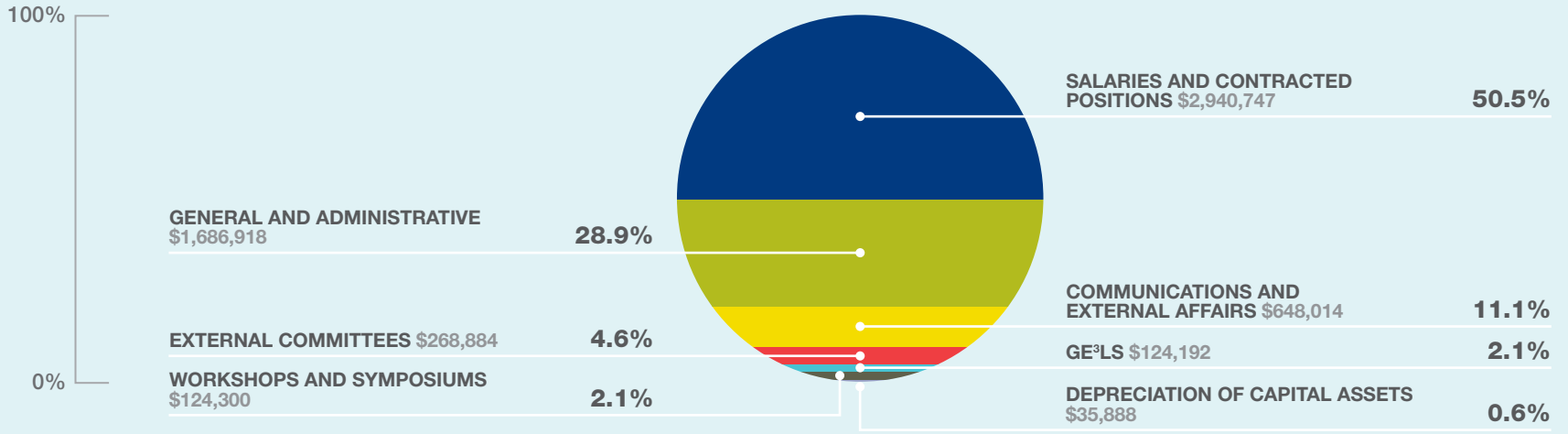
Annual Expenditures (in Millions of dollars)



Total Expenditures 2009–10

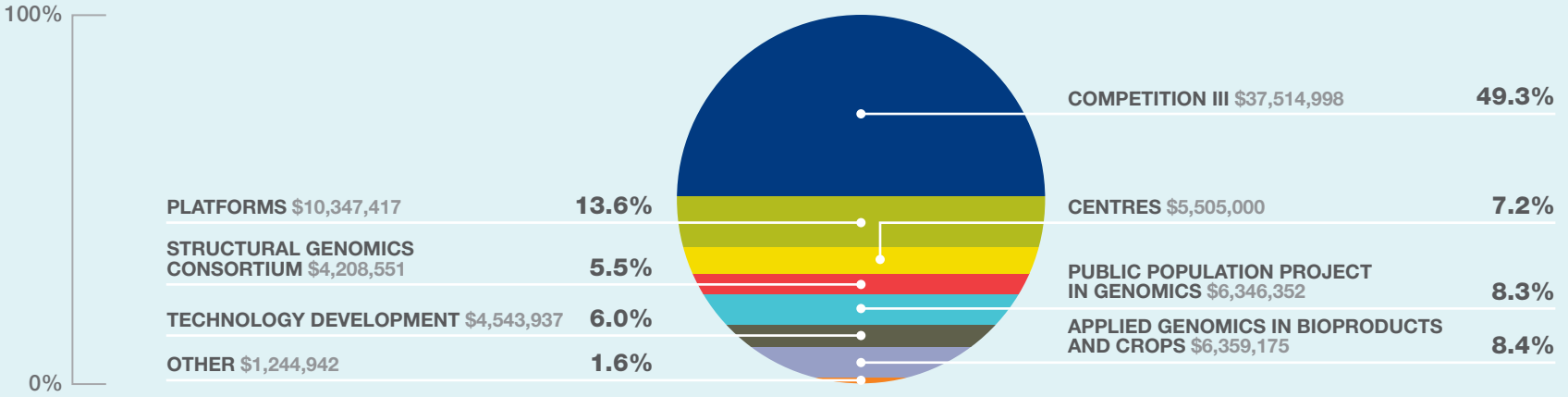


Genome Canada Operations 2009–10

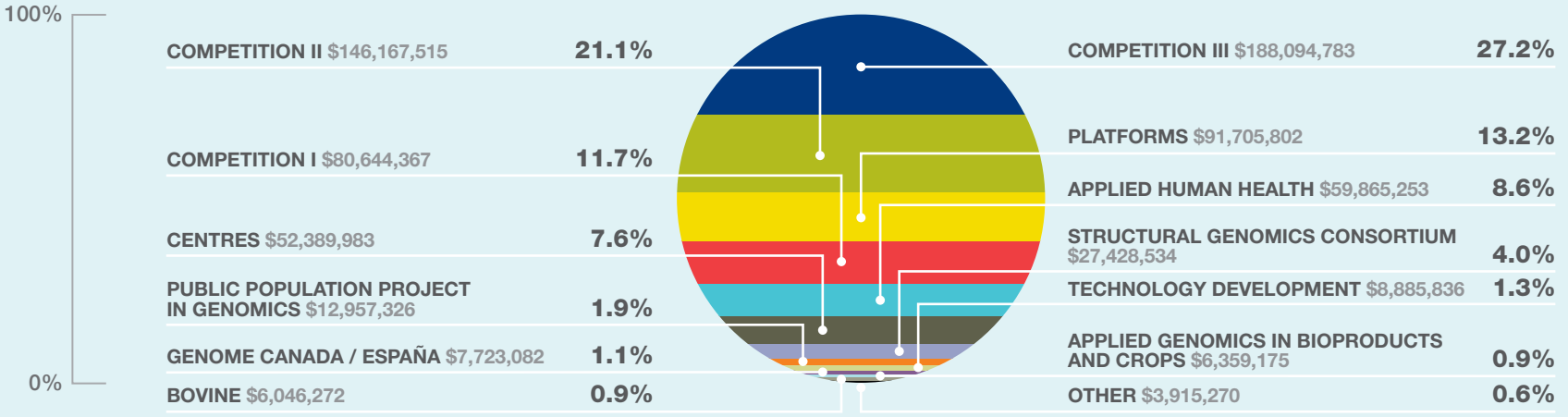


Projects, Platforms and Centres

BY PROGRAM (FY 2009–10):

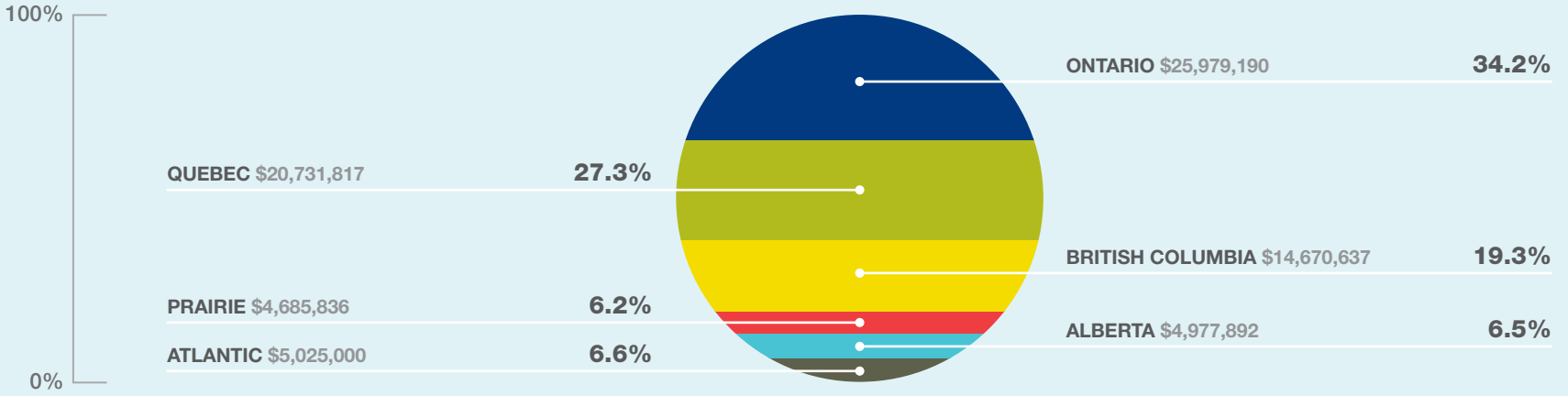


CUMULATIVE SINCE 2000:

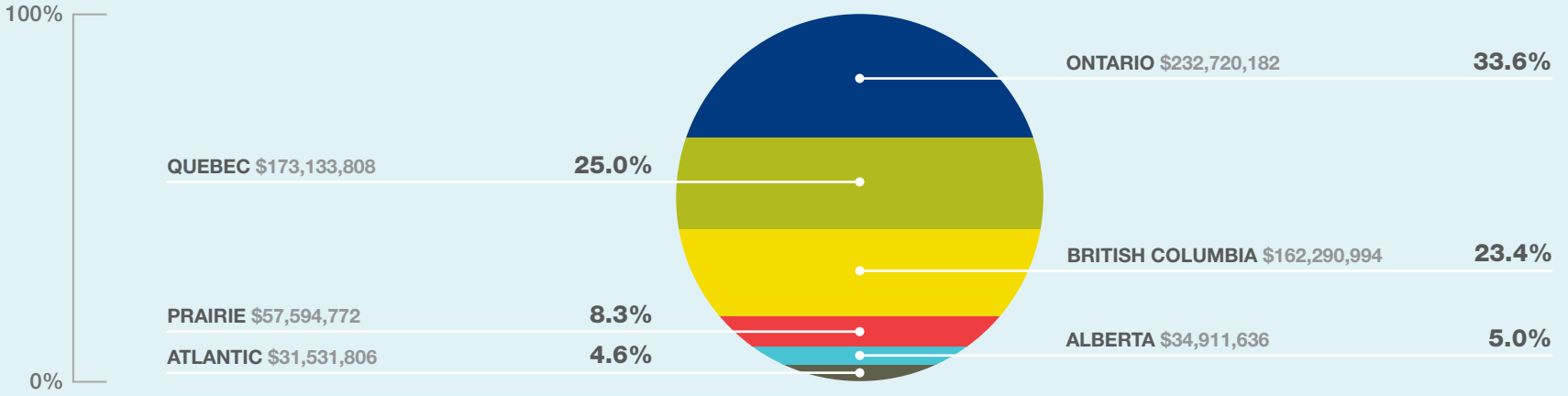


Projects, Platforms and Centres

BY REGION (FY 2009–10):

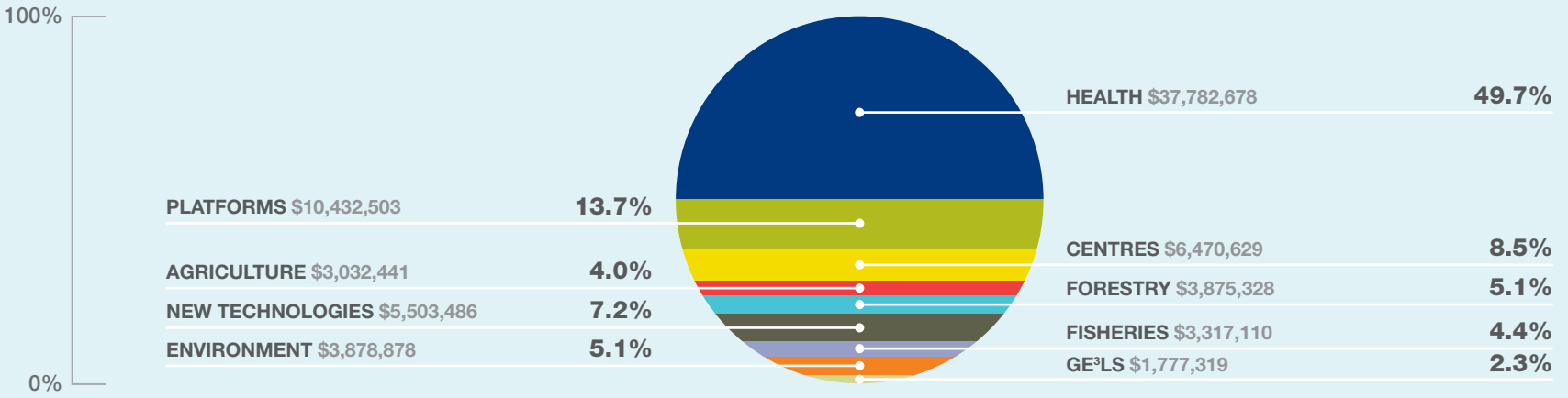


CUMULATIVE SINCE 2000:

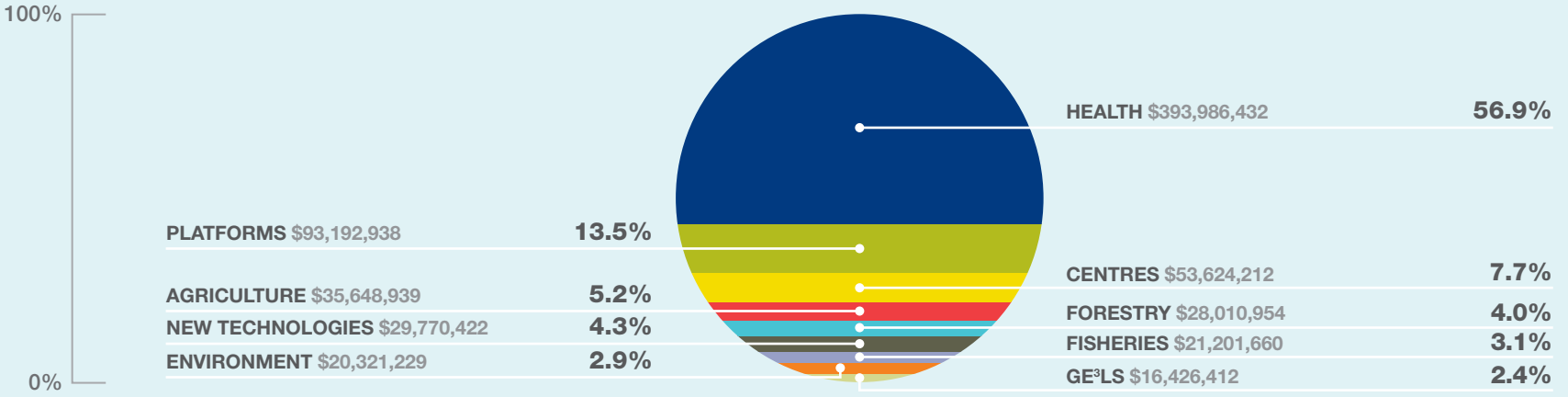


Projects, Platforms and Centres

BY SECTOR (FY 2009–10):



CUMULATIVE SINCE 2000:



Outlook 2010–11

Deferred contributions of $50.1 Million are committed to research projects and platforms approved through previous competitions, and are scheduled for disbursement in subsequent years.

Federal Budget 2010 announced additional funding of $75 Million for Genome Canada, a portion of which will be targeted to research investments in forestry and the environment, as well as other sectors supported by Genome Canada. Funding from Industry Canada is provided to Genome Canada in annual installments based on estimated cash requirements for the year. Under currently active funding agreements, over $190 Million is expected to be received over the five year period ending 2014–15 to finance approved research projects and operations.

Genome Canada's operational plan for 2010–11 calls for continued development of national and international research funding initiatives; ongoing monitoring and management of projects from Competition III, projects from the bioproducts and crops competition, International Consortium Initiatives, as well as science and technology platforms, and; managing major funding competitions for large scale research projects and science and technology platforms.

FINANCIAL STATEMENTS

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Internet www.kpmg.ca

Auditors' Report to the Directors

We have audited the statement of financial position of Genome Canada as at March 31, 2010 and the statements of operations and changes in net assets and cash flows for the year then ended. These financial statements are the responsibility of the Corporation's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Corporation as at March 31, 2010 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles. As required by the Canada Corporations Act, we report that, in our opinion, these principles have been applied on a basis consistent with that of the preceding year.

KPMG LLP

Chartered Accountants, Licensed Public Accountants

Ottawa, Canada
May 3, 2010

GENOME CANADA | Statement of Financial Position

March 31, 2010, with comparative figures for 2009

	2010	2009
Assets		
Current assets:		
Cash and cash equivalents (note 3)	$ 28,552,407	$ 13,175,182
Interest receivable	134,001	201,105
Prepaid expenses	111,699	186,271
Other receivables	77,311	72,563
	28,875,418	13,635,121
Investments (note 4)	21,850,314	35,402,451
Capital assets (note 5)	81,404	102,965
	$ 50,807,136	$ 49,140,537
Liabilities and Net Assets		
Current liabilities:		
Accounts payable and accrued liabilities	$ 605,646	$ 911,828
Deferred contributions (note 6)	50,120,086	48,125,744
Deferred contributions related to capital assets (note 7)	81,404	102,965
Net assets:		
Unrestricted net assets	–	–
Commitments (note 10)		
Contingencies (note 11)		
	$ 50,807,136	$ 49,140,537

See accompanying notes to financial statements.

On behalf of the Board:

Director

Director

GENOME CANADA | Statement of Operations and Changes in Net Assets

Year ended March 31, 2010, with comparative figures for 2009

	2010	2009
Revenues:		
Amortization of deferred contributions (note 6)	$ 81,863,427	$ 87,683,590
Amortization of deferred contributions related to capital assets (note 7)	35,888	46,071
	81,899,315	87,729,661
Expenses:		
Contributions to Centres and approved projects	76,070,372	78,780,554
General and administrative	4,627,665	5,592,126
Communications and public outreach	648,014	607,830
External committees	268,884	1,847,556
Workshops and symposiums	124,300	596,299
Ethical, environmental, economic, legal and social issues related to genomics (GE^3LS)	124,192	259,225
Amortization of capital assets	35,888	46,071
	81,899,315	87,729,661
Excess of revenues over expenses, being net assets, end of year	$ –	$ –

See accompanying notes to financial statements.

GENOME CANADA | Statement of Cash Flows

Year ended March 31, 2010, with comparative figures for 2009

	2010	2009
Cash flows from operating activities:		
Excess of revenues over expenses	$ –	$ –
Items not involving cash:		
Amortization of capital assets	35,888	46,071
Amortization of deferred contributions (note 6)	(81,863,427)	(87,683,590)
Amortization of deferred contributions related to capital assets (note 7)	(35,888)	(46,071)
Excluded from the decrease in deferred contributions (note 9)	(111,829)	(1,410,199)
	(81,975,256)	(89,093,789)
Interest received on investments (note 6)	1,136,702	3,912,514
Grant received from Government of Canada	82,900,000	29,500,000
Deferred contributions related to capital assets (note 7)	14,327	26,128
Change in operating assets and liabilities:		
Decrease (increase) in other receivable	(4,748)	50,091
Decrease in prepaid expenses	74,572	159,162
Increase (decrease) in accounts payable and accrued liabilities	(306,182)	274,292
	1,839,415	(55,171,602)
Cash flows from investing activities:		
Disposition of investments	13,552,137	28,351,908
Purchase of capital assets	(14,327)	(26,128)
	13,537,810	28,325,780
Increase (decrease) in cash and cash equivalents	15,377,225	(26,845,822)
Cash and cash equivalents, beginning of year	13,175,182	40,021,004
Cash and cash equivalents, end of year	$ 28,552,407	$ 13,175,182

Supplemental cash flow information (note 9)

See accompanying notes to financial statements.

Year ended March 31, 2010

The Corporation was incorporated on February 8, 2000 under the Canada Corporations Act as a not-for-profit organization and has the following objectives:

(a) The development and establishment of a co-ordinated strategy for genomics research to enable Canada to become a world leader in areas such as health, agriculture, environment, forestry and fisheries;

(b) The provision of leading-edge technology to researchers in all genomics-related fields through regional Genome Centres across Canada, of which there are currently six, one each in British Columbia, Alberta, the Prairies, Ontario, Quebec and the Atlantic;

(c) The support of large-scale projects of strategic importance to Canada by bringing together industry, government, universities, research hospitals and the public;

(d) The assumption of leadership in the area of ethical, environmental, economic, legal, social and other issues related to genomics research (GE^3LS), and the communication of the relative risks, rewards and successes of genomics to the Canadian public; and

(e) The encouragement of investment by others in the field of genomics research.

1. Significant accounting policies:

(a) Cash and cash equivalents:

Cash and cash equivalents consist of cash as well as highly liquid short-term investments. The Corporation considers highly liquid short-term investments as those having a maturity of less than three months from the date of acquisition.

(b) Revenue recognition:

The Corporation follows the deferral method of accounting for contributions which include grants from the Government of Canada.

Externally restricted contributions and related investment income are recognized as revenue in the year in which the underlying expenses are incurred. A receivable is recognized if the amount to be received can be reasonably estimated and collection is reasonably assured.

Externally restricted contributions for purchase of capital assets are deferred and amortized to revenues on a declining balance basis at a rate corresponding to the amortization rate for the related capital assets.

Year ended March 31, 2010

1. Significant accounting policies (continued):

(c) Investments:

Investments are designated as held-for-trading, and recorded at fair value. Fair value is determined at quoted market prices. Sales and purchases of investments are recorded at the settlement date. Transaction costs related to the acquisition of investments are expensed.

(d) Capital assets:

Capital assets are stated at cost. Amortization is provided for using the declining balance method at the following annual rates:

Asset	Rate
Furniture and fixtures and office equipment	20%
Computers and software	50%
Telecommunication equipment	30%

Leasehold improvements are stated at cost and amortized using the straight line method over the term of the lease.

(e) Pension plan:

The Corporation maintains, for the benefit of almost all of its employees, a defined contribution pension plan. The cost of the plan is recorded in the statement of operations as it is incurred. The charge for the year totals $120,661 ($142,223 in 2009).

(f) Use of estimates:

The preparation of financial statements in conformity with Canadian generally accepted accounting principles requires the use of estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods. Accordingly, actual results could differ from these estimates. These estimates are reviewed annually and as adjustments become necessary, they are recorded in the financial statements in the year in which they become known.

Year ended March 31, 2010

2. Adoption of amendments and new accounting standard:

Effective April 1, 2009, the Corporation adopted the following amendments and new accounting standard:

(a) Amendments to Section 4400, *Financial Statement Presentation by Not-For-Profit Organizations*:

These amendments revised the financial statement presentation and disclosure requirements for not-for-profit organizations.

(b) Amendments to Section 1000, *Financial Statement Concepts*:

These amendments revised the definitions of assets and liabilities and removed the recognition of items as assets and liabilities solely on the basis of matching revenue and expenses.

(c) Section 4470, *Disclosure of Allocated Expenses by Not-for-Profit Organizations*:

This section establishes disclosure standards for entities that choose to classify their expenses by function and allocate expenses from one function to another.

Adoption of these amendments and new accounting standard had no significant impact on the Corporation's financial statements for the year ending March 31, 2010.

3. Cash and cash equivalents:

	2010	2009
Cash	$ 479,761	$ 52,142
Short-term investments	28,072,646	13,123,040
	$ 28,552,407	$ 13,175,182

Year ended March 31, 2010

4. Investments:

	Cost	2010 Market	Cost	2009 Market
Government of Canada bonds	$ 5,262,588	$ 5,247,106	$ 5,054,276	$ 5,093,933
Corporate bonds and debentures	14,520,742	12,603,208	20,256,495	18,115,011
Mortgage-backed securities	–	–	6,770,717	6,451,212
Provincial Government bonds	3,994,000	4,000,000	5,537,906	5,742,295
	$ 23,777,330	$ 21,850,314	$ 37,619,394	$ 35,402,451

The interest rates at the end of the year range from 1.52% to 5.53% (1.52% to 5.80% in 2009) and maturity dates vary from November 12, 2010 to October 12, 2036 (April 30, 2009 to February 12, 2037 in 2009).

5. Capital assets:

	Cost	Accumulated amortization	2010 Net book value	2009 Net book value
Furniture and fixtures and office equipment	$ 193,997	$ 144,656	$ 49,341	$ 58,234
Computers and software	173,773	146,696	27,077	37,609
Telecommunication equipment	32,134	27,148	4,986	7,122
Leasehold improvements	72,681	72,681	–	–
	$ 472,585	$ 391,181	$ 81,404	$ 102,965

Cost and accumulated amortization at March 31, 2009 amounted to $590,564 and $487,599 respectively.

6. Deferred contributions:

The Corporation receives grants from the Government of Canada to be held, invested, administered and disbursed in accordance with the related funding agreement between Genome Canada and the Government of Canada.

6. Deferred contributions (continued):

The Corporation currently operates under two active funding agreements with Industry Canada. The terms and conditions of these agreements call for payments to be made to the Corporation annually, subject to the appropriation by Parliament, at the beginning of each fiscal year, based on the estimated cash requirements for the coming year. During the year ended March 31, 2010, the Corporation received the balance of $63,800,000 remaining from the agreement dated March 29, 2007.

As at March 31, 2010, the status of the active funding agreements are:

	Agreement dated March 29, 2008	Agreement dated March 31, 2010
Amount committed by Industry Canada	$ 140,000,000	$ 75,000,000
Amount received by the Corporation	19,100,000	–
Balance to be received in subsequent years	$ 120,900,000	$ 75,000,000

Deferred contributions related to expenses of future periods represent these unspent externally restricted grants and related investment income, which are for the purpose of providing grants to eligible recipients and the payment of operating and capital expenditures in future periods.

Deferred contributions consist of:

	Balance as at March 31, 2008	Transactions during the year	Balance as at March 31, 2009	Transactions during the year	Balance as at March 31, 2010
Grants	$ 606,700,000	$ 29,500,000	$ 636,200,000	$ 82,900,000	$ 719,100,000
Investment income:					
Interest received	84,903,266	3,912,514	88,815,780	1,136,702	89,952,482
Interest receivable	414,532	(213,428)	201,104	(67,104)	134,000
Loss on disposal	(1,485,878)	(514,847)	(2,000,725)	(385,319)	(2,386,044)
Fair value adjustment	(1,334,360)	(869,224)	(2,203,584)	287,817	(1,915,767)
	82,497,560	2,315,015	84,812,575	972,096	85,784,671
Amount amortized to revenues	(584,612,677)	(87,683,590)	(672,296,267)	(81,863,427)	(754,159,694)
Amount invested in capital assets	(564,436)	(26,128)	(590,564)	(14,327)	(604,891)
	$ 104,020,447	$ (55,894,703)	$ 48,125,744	$ 1,994,342	$ 50,120,086

7. Deferred contributions related to capital assets:

Deferred contributions related to capital assets represent restricted contributions with which capital assets were originally purchased. The changes in the deferred contributions balance for the year are as follows:

	2010	2009
Balance, beginning of year	$ 102,965	$ 122,908
Add restricted contributions	14,327	26,128
Less amounts amortized to revenue	(35,888)	(46,071)
	$ 81,404	$ 102,965

8. Capital management:

The Corporation defines capital as its deferred contributions.

The Corporation's objectives in managing capital are to safeguard its ability to continue as a going concern and pursue its strategy of promoting genomics research by funding eligible projects that meet the mandate and criteria of its funder, the Government of Canada, and provide benefits to other stakeholders. Management continually monitors the impact of changes in economic conditions on its investment portfolio and its funding commitments. There were no changes to the Corporation's approach to capital management during the year.

9. Supplemental cash flow information:

	2010	2009
Non-cash transactions excluded from the increase (decrease) in deferred contributions (note 6):		
Loss on disposal of investments	$ (385,319)	$ (514,847)
Amount transferred to capital assets	(14,327)	(26,128)
Fair value adjustment	287,817	(869,224)
	$ (111,829)	$ (1,410,199)

Year ended March 31, 2010

10. Commitments:

(a) Committed funding:

The Corporation is committed to finance approved research projects, science and technology platforms and Genome Centre operations in accordance with established agreements. As at March 31, 2010, the payments committed are approximately: $49,691,029 in 2011 and $33,050,878 for other future years.

(b) Consulting:

The Corporation has entered into seven consulting agreements expiring at various dates in 2011 and 2012. The payments committed amount to $92,023 in 2011 and $5,000 in 2012.

(c) Operating leases:

The Corporation leases its premises and equipment under long-term operating leases, which expire at various dates between 2011 and 2014. The minimum aggregate lease payments are approximately as follows:

2011	$ 138,563
2012	138,563
2013	131,369
2014	21,362
	$ 429,857

11. Contingencies:

In the normal course of business, the Corporation has entered into a lease agreement for premises. It is common in such commercial lease transactions for the Corporation as the lessee, to agree to indemnify the lessor for liabilities that may arise from the use of the leased assets. The maximum amount potentially payable under the foregoing indemnities cannot be reasonably estimated. The Corporation has liability insurance that relates to the indemnifications described above.

12. Fair value of financial instruments:

The carrying value of cash and cash equivalents, interest receivable, other receivables and accounts payable and accrued liabilities approximates their fair value because of the relatively short period to maturity of the instruments.

The fair value of investments is disclosed in note 4 to the financial statements.

GenomeCanada
2000–2010
A celebration of achievement and discovery.

ACKNOWLEDGEMENTS

Government of Canada

Genome Canada would like to thank the Government of Canada for its support.

FPO