



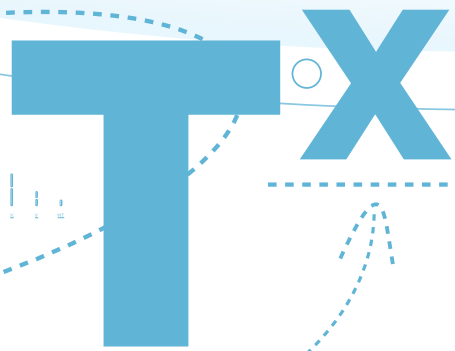
# IMPACT<sup>x</sup>

Annual Report 2010–2011



Genomics works on the smallest of scales, studying the building blocks of life. But the knowledge that comes from a single genomics discovery can have significant impact—producing transformative technologies with wide-ranging applications that contribute to human health, food supply and safety, clean energy and environmental sustainability.

To foster the development of such applications, Genome Canada acts as an integrator, bringing together researchers, funders and end users in projects designed to deliver value to Canadians. Our aim is to make sure this country realizes its abundant potential to be a leader in the global bio-economy, progressing constantly along the research continuum from discovery to utility for the benefit of all.



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## PARTNERSHIP PAYS OFF

The benefits multiply when scientists work directly with the end users who will apply their discoveries in the real world. Combining the latest genomic insights with on-the-ground practical perspectives, Genome Canada-funded researchers are partnering with industry members on projects that will yield significant benefits for Canadians both in terms of their well-being and the bottom line.



**ONE SINGLE GENOME**



**THE FUTURE OF AN INDUSTRY**

# Improving swine health

With the support of Genome Canada, scientists are looking to do for the country's pork industry what has already been done for beef—where knowledge of the bovine genome applied to cattle-raising practices has helped Canadian producers realize benefits of \$180 million a year.

Led by Graham Plastow, John Harding and Bob Kemp, the swine health project is a strong example of partnership in action. Its contributors include Genome Canada, Genome Alberta, the Alberta Livestock and Meat Agency (ALMA) and PigGen Canada—a not-for-profit organization comprising nine private pig-breeding companies. Maximizing total project funding by aligning smaller-scale research projects with the larger-scale Genome Canada-funded initiative, the project's research/industry

partners are seeking ways of breeding swine less susceptible to major diseases, reducing dependence on the use of costly antibiotics. At the same time, they're investigating new disease-control mechanisms and diagnostic tools that will help pork producers identify illness among their animals—all of which will lead ultimately to a stronger, safer industry. The significance of the work has attracted attention south of the border: the U.S. Porcine Virus Host Genetics Consortium is now also a major contributor.

## **A FUNDING SPRINGBOARD**

As the swine health project illustrates, involving all stakeholders in genomics research raises the profile of the work underway and attracts follow-on funding. This type of leveraging is actively pursued through the country's six Genome Centres,

where regional players expand the scope of Genome Canada projects or sponsor spin-off initiatives that multiply the federal government's genomics investment several times over. Involving industry in genomics research also contributes to the entrepreneurial capacity of Canadian researchers—important because innovations only begin to realize their economic potential once they've been successfully commercialized. Genome Canada is supporting this important dimension of Canada's genomics enterprise through its recently launched EEG (Entrepreneurship Education in Genomics) program, and by introducing scientists to business investors through a memorandum of understanding with the Business Development Bank of Canada.



“ The farthest-reaching impacts come from research that builds strong collaborative relationships between industry and science. We give the research community unique insight into the issues and challenges we’re facing and help ensure that, practically, the work done will contribute to the competitiveness of the sector. With its large-scale programs and national scope, Genome Canada is the only organization in the country positioned to create national and international collaborations and leverage industry and other government funding. The two Alberta-led large-scale projects we’re involved in are strong examples of Genome Canada’s capacity to bring together leaders in animal genomics research, industry and provincial funders in a pan-Canadian—in fact, international—effort. The end result will be the ability of Canadian producers to select and raise better livestock at a lower cost, delivering even healthier and safer meat to market and giving Canadian livestock and meat a competitive advantage globally.”

***Dr. David Chalack, Chair***

*Alberta Livestock and Meat Agency*

## CUTTING ACROSS SECTORS

It used to be that energy production was energy production, farming was farming, and never the two would meet. But with the rise of the bio-economy, the borders between many economic sectors have blurred. At the genetic level, living things are much the same—microbes and humans, pine trees and parasites. And that means discoveries in one arena can have game-changing applications in another.

**APPLICATION HERE**







**REVOLUTION EVERYWHERE**

# Ready for work: multipurpose microbial communities

Metagenomics—the study of microbial communities rather than individual microbes—has become a hot research area precisely because of its potential to yield discoveries and technologies that cut across whole economic sectors.

A project supported by Genome Canada in 2010-11 involves the study, modelling and cloning of new proteins that can convert inexpensive organic waste into high-value biofuel and at the same time help clean polluted land and water. It furthers previous work by lead researcher Elizabeth Edwards at the University of Toronto that resulted in the commercialization of a solution for the pulp-and-paper industry, using microbial communities to generate energy from waste


material and remove harmful solvents from contaminated sites.

## **FROM SOLVENT PONDS TO OIL SANDS**

Beyond alternative energy sources like biofuels, metagenomics has applications in the traditional energy sector as well. With funding from Genome Canada, a University of Calgary team, led by Gerrit Voordouw, is investigating ways to limit the environmental impact of extracting crude oil from Alberta's oil sands, creating a database of information on the genetic potential of naturally existing microorganisms, genes and biological processes. By making the database publicly available, these researchers will give scientists from other sectors the opportunity to use the research themselves.

## **PAVING THE WAY TO ADOPTION**

In addition to sharing their findings, the team from the University of Calgary is also making genetic and microbial tools available for green applications in a number of industries. Addressing and openly communicating the ethical, environmental, economic, legal and social implications of genomics research (what Genome Canada calls GE<sup>3</sup>LS)—for example, through public outreach and engagement with policy makers and regulators—helps make sure society is more receptive to innovations like these, and better prepared to translate them into meaningful impacts.



“ When you do research, it’s not always clear what the application will be. Sometimes the discovery is that there is an application. With our past project, we didn’t set out thinking we would develop a microbial inoculant we could inject into contaminated sites to clean them up. In the course of our research we realized, wow, these microbes we’re studying can do a lot! Now our aim is to develop similar, marketable solutions to problems facing the forestry and biorefinery sectors. We’re working very closely with industry as we look to not only clean up sites but also to add value to waste— by converting it into biofuels, bioplastics, adhesives, things that can be resold within the sector or across sectors. If you can recover something valuable while cleaning up, the process pays for itself. It’s a win-win.”

**Elizabeth Edwards, Professor**

*Department of Chemical Engineering & Applied Chemistry  
University of Toronto*

## SHARED TOOLS, COLLECTIVE HOPE

It took nearly a decade and \$2 billion to sequence the first human genome. The same can be done today in less than a week for about \$7,000—and by 2014 is likely to take just minutes, at a cost of \$100. Technology is evolving at a breakneck pace, enabling new kinds of discovery. Case in point: by making new sequencing technologies available to researchers across the country, Genome Canada is creating opportunities for scientists to make discoveries that will shed fresh light on the genetic workings of devastating diseases.



**FROM POWERFUL TECHNOLOGIES**



**THE PATHWAY TO A CURE**

# Innovation. Insight. Intervention.

Next Generation Sequencing can spell out a person's entire genetic code in a matter of days, opening the doors to new, lifesaving discoveries. Powerful technologies like these are essential for researchers looking to identify the genes responsible for genetic disorders—which affect some 500,000 Canadian children today. In partnership with the Canadian Institutes of Health Research (CIHR), last year Genome Canada made Next Generation Sequencing technologies available to a pair of research consortia focused on the causes of childhood diseases. Access to these and other indispensable tools is provided through six Genome Canada Science and Technology Innovation Centres, which offer capabilities in everything from DNA sequencing, mapping and genotyping to microarrays, genetic analysis, proteomics and bioinformatics.

## **FROM RARE CONDITIONS TO COMMON CANCERS**

In the first of these two important projects, *Finding of Rare Disease Genes in Canada* (FORGE), Dr. Kym Boycott at the Children's Hospital of Eastern Ontario is heading a national research team to investigate some 100 rare childhood genetic disorders, studying children and their families to help discover the disease-causing genes. Not only will the results improve diagnoses and therapies for these rare diseases specifically, but will also potentially point the way toward treatments for more common illnesses as well.

In the second project, Dr. Poul Sorensen at the University of British Columbia is heading a separate national research team to crack the code of up to six of the most challenging childhood cancers known. His work aims

to enable the development of innovative tailored therapies and new drugs based on a better understanding of how aggressive cancers function—improving children's chances of survival.

## **AND KNOWLEDGE FOR ALL**

The findings of these research projects will be recorded in a national database, extending the benefits of the shared technology by improving knowledge exchange and enhancing the analytical tools available to scientists dedicated to fighting childhood diseases—with the potential for linkages with an international consortium of partners including the European Union and, in the U.S., the National Institutes of Health.

“ Single-gene disorders, while individually rare, have in aggregate an enormous impact on the wellbeing of Canadian families. Our research will rapidly facilitate the development of new diagnostic tests and improve genetic counselling, early intervention and the prevention of complications for affected families. Our work requires next-generation sequencing technologies that can quickly analyze the coding portion of the human genome—technologies that demand significant infrastructure and expertise and are not available at the majority of academic institutions in Canada. Our collaboration with the national Science and Technology Innovation Centres, facilitated by Genome Canada’s *Advancing Technology Innovation through Discovery* program, has made the goal of identifying 100 new rare disease genes an emerging reality, and has integrated Canada’s genomics expertise with the Canadian clinical genetics centres.”

**Dr. Kym Boycott, Children’s Hospital of Eastern Ontario**  
*FORGE Canada Consortium*

## IN THE EYES OF THE WORLD

Genomics is at the heart of what's come to be called the 'bio-economy'—an economy driven by the application of biotechnology. It's a global phenomenon, and Canada has huge potential to play a leading role in it thanks to the country's history of scientific excellence and abundant natural resources. Genome Canada is committed to making sure Canada takes its place in this fast-changing, competitive arena—and ensuring that it has a seat at the table of the world's most important scientific forums.



**DISCOVERY AT HOME**



# LEADERSHIP ABROAD



# Because disease knows no borders

As the leading global cause of pediatric cancer deaths, childhood brain cancer is a focus for top researchers around the world. Children with a poor prognosis are often submitted to painful treatments that have little positive effect and compromise the life-quality of those lucky enough to survive. The result is suffering for patients and families alike—and a cost of more than \$100 million a year to the healthcare system in Canada alone. Thanks to the work of leading scientists funded by Genome Canada, our country was invited in 2011 to join the efforts of the International Cancer Genome Consortium in taking on this terrible disease.

## **COMPASSIONATE CARE, BETTER OUTCOMES**

Genome Canada last year provided Drs. Michael Taylor, Marco Marra and David Malkin with funding for their study of medulloblastomas, the most common form of brain tumours. Identifying the different types of medulloblastomas, this medical tag team is establishing a classification system that will help doctors determine the most effective interventions for individual patients—and lead to new, more effective treatments that limit unnecessary side effects and the risk of over-treatment. Their discovery of this cancer's genetic markers may also help reveal its underlying risk factors to aid potential prevention efforts.

## **UNRAVELLING THE MYSTERY OF AUTISM**

Genome Canada-funded researcher Dr. Stephen Scherer at the University of Toronto, made headlines last year when the research findings from his international study, *The Autism Genome Project*, were published in the June 2010 edition of *Nature*. The largest project of its kind, the study involved 120 scientists from more than 50 institutions in 12 countries. Researchers compared the DNA of 1,000 people with autism spectrum disorder with that of 1,300 people without it. More than 100 autism-related genes were identified, helping explain why different people show different symptoms. The results of the study will ultimately improve autism treatments, which today depend on behavioural and educational interventions.

“ The most common cause of childhood cancer deaths is brain cancer. About six or seven years ago, I put together an international consortium called MAGIC—the Medulloblastoma Advanced Genomics International Consortium. (Medulloblastomas are the most common kinds of malignant brain tumor in childhood.) MAGIC includes 45 centres around the world—in Asia, Europe, North and South America—all of which have contributed tissues for us to study. So the world’s biggest medulloblastoma initiative is being led by Canada. This project has put our country on the map, and helped earn us a place in the International Cancer Genome Consortium (ICGC), which is a genome-sequencing effort so massive it would have been impossible, even unthinkable 25 years ago. One of Canada’s three ICGC projects is my current medulloblastoma work, which I simply could not be doing without Genome Canada’s support.”

***Dr. Michael Taylor, Principal Investigator***

*The Arthur and Sonia Labatt Brain Tumour Research Centre  
Hospital for Sick Children, Toronto*

## A BIG DEAL

Genomics research may delve into a microscopic world, but its scope is often *macro*—involving dozens of scientists, huge volumes of data and complex technologies. Genome Canada is designed specifically to support such large-scale projects, and did so last year through a competition that selected 16 research teams to share in \$121 million in funding from Genome Canada and partners—all large-scale projects ready to transform innovative ideas into practical applications.

**THE SMALLEST SECRETS**



The image features a serene landscape with a calm lake in the foreground, a dense forest of evergreen trees in the middle ground, and a large, rocky mountain peak in the background. The entire scene is overlaid with a semi-transparent green grid pattern that is most prominent on the left side. The text 'MASSIVE RESEARCH' is centered horizontally across the middle of the image.

**MASSIVE RESEARCH**

# Impact on all sides

Spanning the full range of Genome Canada's target sectors—agriculture, environment, fisheries, forestry and health—the projects funded as part of the 2010 large-scale research competition are substantial initiatives conceived to deliver widespread benefits to Canadians. Among them: metagenomic investigations into the ways microbial communities might serve as an early warning system for drinking water contamination; DNA-based diagnostics for spotting forest pests and pathogens; and—in partnership with the International Wheat Genome Sequencing Consortium—development of the next generation of wheat cultivars (breeds of wheat) by sequencing a genome five times the size of a human's.

## **THE FOREST, THE TREES AND THE TOLL OF CLIMATE CHANGE**

Forestry has always been an important contributor to Canada's economy, but in recent years—on top of fierce international competition and global market challenges—the sector has suffered from the negative effects of climate change. Estimates project harvests of the lodgepole pine and spruce in BC and Alberta—valued at \$10 billion a year today—will decline by 35 percent this century as trees once well adapted to their environments are lost to pests and drought. With funding awarded last year, Drs. Sally Aitken and Andreas Hamann will lead a large-scale project to sequence seedlings of both species, determine the genes involved

in adaptation to local climate conditions, and identify ways of ensuring the right trees are planted in the right locations.

## **THE PROCESS OF INCLUSION**

Every one of the large-scale projects funded in 2010 has a GE<sup>3</sup>LS component, addressing the ethical, environmental, economic, legal or social aspects of the research. By involving key stakeholders, from industry members to the general public, GE<sup>3</sup>LS aims to ultimately encourage wider adoption of emerging approaches and new technologies.

“ We’re looking to determine how, at the genomic level, trees adapt to climate so that we can avoid declines in productivity and forest health due to climate change. This kind of adaptation—to temperature and moisture—is complex. Thousands of genes need to be studied simultaneously to get at the genetic basis of adaptation: we’re targeting 10,000 genes in our project. This would not be feasible on a small scale. The Science and Technology Innovation Centres supported by Genome Canada, such as the Genome Sciences Centre in Vancouver, are critical to large-scale projects like ours. And Genome Canada encourages the formation of interdisciplinary teams to tackle complex problems, encouraging biological scientists to work with social scientists, broadening the potential scope and impacts of research results. This is important because, at the end of the day, reforestation decisions are dictated by forest policy—and so to change forest management decisions, science-based changes in policies need to be made.”

**Sally Aitken, Director, Centre for Forest Conservation Genetics**  
*University of British Columbia*

# Message from the Chair



2010–11 marked the beginning of Genome Canada's second decade as the country's leading funder of genomics and proteomics research. It was a year energized by the appointment of Dr. Pierre Meulien to the position of President and CEO—a decision with which I and my fellow Board members are very pleased. Dr. Meulien brings a keen understanding of the connection between research and its application. This orientation will serve us well as Genome Canada continues to pursue its agenda to see genomics discoveries translated into socio-economic advances for Canadians.

On behalf of the Board, I wish to thank Mr. Dale Patterson for his active and steady guidance of the organization as interim CEO prior to Dr. Meulien's appointment, and am grateful that we will continue to benefit from his knowledgeable perspective as Vice-President, External Relations. His skills



in communicating the Genome Canada story and scientific advancements to the public and governments are exceptional.

In addition to approving funding awarded through three separate competitions last year—the *2010 Large-Scale Applied Research Project Competition*, *2010 Competition for Science and Technology Innovation Centre Operations Support*, and *Advancing Technology Innovation through Discovery Competition*—the Board was engaged on several planning fronts to ensure Genome Canada is well positioned to carry out its agenda in the months and years to come.

The innovative research plan put forward this past fall merges our mutual interest with the Canadian Institutes of Health Research in exciting new areas of childhood diseases and cancer discovery. The integration of ideas from the provincial Genome Centres has been rewarding.

In 2010-11, the Board authorized a study that will determine which of the corporation's 152 projects hold the greatest promise for 'utility'—practical applications that yield measurable benefits and commercialization. The study will also provide us with a formal assessment of the impact of Genome Canada's funding over the past decade, establishing a clear benchmark against which to accelerate future achievements.

The Board itself saw the addition of five new directors in 2010–11: René Douville, Daniel Gagnier, Peter Harder, Lorne Hepworth and George Weinstock. These directors are all well experienced, committed to public service, and bring a unique skillset to our directors' table. They deepen our capacity and our collective strength. I look forward to working with them—and all members of the Board—in implementing the recommendations of the external evaluation of Genome Canada's governance that was completed late in the fiscal year.

I personally am proud of the opportunity to be part of this vital organization as it proceeds into its second decade, and eager to contribute to its ongoing evolution as it solidifies its role as an essential supporter of Canada's genomics research sector.



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

# Interview with the CEO

*Q&A with Pierre Meulien*



**Q | What defined the year from your perspective?**

**A |** I could choose many things, but I think it's that Genome Canada strongly advanced its knowledge translation agenda in 2010–11. The 16 projects funded through the *2010 Large-Scale Applied Research Competition*, for example, are all looking at practical applications of genomic science and involve end users and other key stakeholders in the research. They're focused on utility.

**Q | Is there a shift required for the sector to take that 'utility' approach?**

**A |** It's a natural step. Projects reach a point of maturity where applications can be envisaged and implemented. What we're trying to do is have researchers and potential end users work together, to consider the question of application early in the process. It was one of the requirements of our *Large-Scale Research Competition* last year for proposed projects to build in that kind of involvement. At the same time, we absolutely have to keep doing fundamental, exploratory research as well. Genomics is a technology-driven sector and the technology is changing so fast, we need to keep fuelling science at the front end. And we have to make sure that technology is available to researchers.

**Q | How do you achieve that technology sharing?**

**A |** Through our Science and Technology Innovation Centres, and through ventures such as our collaboration with the Canadian Institutes of Health Research. In that case, we have a joint program—ATID, which stands for Advancing Technology Innovation through Discovery—and we invited scientists to propose projects for a specific technology platform. We awarded ATID funding to two research teams last year.

**Q | How do you determine where to focus your investments?**

**A |** Well, to begin, we are governed by the federal government's Economic Action Plan and Innovation Agenda, from which we take specific principles and priorities. Our goal is to gain an increasingly clear understanding of where the most value is likely to come so we can invest wisely on behalf of Canadians. It's easier to talk about a value chain if you're creating a widget to sell—for instance, a molecular diagnostic technology to determine the best candidates for a given drug treatment. It's not as simple when you're dealing with large-scale issues. Take forestry, for example. The mountain pine beetle has destroyed 14 million hectares of forest in BC—an area about twice the size of Lake Ontario. Genomics can help determine what to plant to recover that lost woodland. It's about integrating knowledge

and tools into forestry management practices, making decisions that we'll really only see the outcome of 50 years from now. There's immense value in that, though the returns are long term and the 'chain' may not be traditional.

**Q | What is the unique impact Genome Canada delivers?**

**A |** It stems from the fact that genomics applies to every living thing. What we do with crops can apply to livestock, to human health: plants, animals and people are all susceptible to disease in similar ways, for example. The impact of our work is broad because it reaches across sectors and there is tremendous opportunity for cross-fertilization of knowledge. Discoveries build off each other.

**Q | How does Genome Canada, as integrator, facilitate that impact?**

**A |** By designing programs that are integrated from end to end across multiple sectors. By involving end users and regulators in the research—people who understand the economics of what we're doing as well as the user landscape. This is why partnership is so important. Frankly, we will not be able to

deliver on the promise of genomics unless we partner effectively: with other funders, such as the Canadian Institutes of Health Research (CIHR), the National Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Council (SSHRC) and the Canada Foundation for Innovation (CFI); with organizations such as the National Research Council and Natural Resources Canada; with the Genome Centres, where we see a real opportunity to build an even stronger national genomics enterprise.

**Q | What are your priorities for the organization going forward?**

**A |** We will increase our funding, the proportion of investment other partners bring to the projects we support. We will continue to invest in technology, which, as I say, is changing extremely rapidly and won't stabilize for another five to 10 years. We will continue to exercise our unique role as Canada's only body positioned to support large-scale genomics research. We know we have to maintain Canada's place internationally—genomics is a global endeavour and we have to be at the table—and we have to make the translation agenda real, identifying where we can apply discoveries for the benefit of all Canadians.

### **On becoming CEO of Genome Canada**

“ I was pleased to have been selected for this position which was a logical progression for me. I had been Chief Scientific Officer at Genome BC; I was already ‘in the family’, so to speak. Before that I worked in the biopharma industry. I’ve always had an interest in genomics and the interface between research and the end user. That’s key to the space we hold here at Genome Canada—in multiple sectors, each with their own issues and complexities. It’s exciting, there’s a lot going on, and we can do incredible things if we partner in the right way. Needless to say, I’m very proud to be here.”

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## PERFORMANCE AND OBJECTIVES

In 2010–11, Genome Canada pursued its strategic objectives to: develop a coordinated strategy for genomics research, deliver leading-edge technology to researchers, support large-scale genomics projects, lead the advancement of GE<sup>3</sup>LS efforts in Canada, communicate effectively with the public on genomics issues, and encourage investment by others in the field of genomics research.

## 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, addressing important scientific questions and helping establish a Canadian approach to strategic investment in genomics research. Work included:

- Two initiatives related to the **Cancer Stem Cell Consortium**: 1) steps to establish a Canada–California Network of Resource and Technology Platforms that will coordinate cancer stem cell research resources and technologies; and 2) a partnership with the California Institute for Regenerative Medicine to support research teams advancing stem-cell-based therapies into pre-clinical development.
- Participation in a peer review process for potential Phase III funding of the **Structural Genomics Consortium**, and continuing duties as a member of the consortium's Board of Directors, ensuring targets were met for determining three-dimensional protein structures.

- Continuation of duties as a member of the Board of Directors of the **International Barcode of Life (iBOL)**, providing oversight for activities such as: iBOL's signing of a memorandum of understanding on collaboration with the international Secretariat of the Convention on Biological Diversity in the fall of 2010; coordination of researchers from 26 countries; meeting targets for barcoding a wide spectrum of multi-cellular organisms from around the world; and completing an interim review of progress in March 2011 (carried out by an international review committee).
- Initiation of bilateral discussions with other organizations regarding a national biobank and data harmonization initiative as part of the **Public Population Project in Genomics (P<sup>3</sup>G)**.
- Contributing to international collaboration through the **International Knockout Mouse Consortium** by supporting a project involving the inactivation of specific mouse genes to provide insight into human biology and disease, and through support for another project that is part of an internationally coordinated approach for characterizing the genes of mutant mice in projects of the International Mouse Phenotyping Consortium.
- Collaboration in the production of an atlas of (somatic) genome abnormalities in cancer through the funding of a project

on medulloblastomas—feeding into large-scale genome studies of tumours (representing 50 different types of clinically and societally significant cancers) through the **International Cancer Genome Consortium (ICGC)**.

## 2 | GENOME CENTRES AND SCIENCE AND TECHNOLOGY INNOVATION CENTRES

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

Through effective and mutually beneficial relationships established with the six Genome Centres, Genome Canada continued to ensure researchers have access to the technologies, expertise and services of its Science and Technology Innovation Centres—enabling the design of appropriate experimental protocols, access to leading-edge technologies and access to data analysis expertise. In 2010–11, Genome Canada:

- Launched a Science and Technology Innovation Centre Competition for Operations Support and awarded \$24 million for two years of operational support to five Science and Technology

Innovation Centres, including a new one in metabolomics that will ensure Genome Canada-funded projects have access to the latest technologies in this area.

- Began the process of analysis and impact assessment of final reports of projects funded through the 2009 Technology Development Competition—to be analyzed for accomplishments and impacts.
- Developed the joint *Advancing Technology Innovation through Discovery* program with the Canadian Institutes of Health Research, applying the latest genomics technologies to identify genetic causes of childhood diseases. Two consortia focused on pediatric cancers and rare Mendelian diseases were supported.

### 3 | RESEARCH SUPPORT

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

Genome Canada ensures that high-calibre, large-scale genomics research projects are funded through a rigorous peer review and due diligence process. In 2010-11, the organization:

- Prepared to conduct an interim review of the 12 successful projects funded through the **Applied Genomics Research in Bioproducts and/or Crops Competition**. The interim review will assess the progress of the projects through an international peer review process.
- Held a **Large-Scale Applied Research Project Competition** targeting environment and forestry genomics and also providing the opportunity for genomics research in other sectors (human health, agriculture and fisheries). Proponents were required to focus on the application of genomics research with strong potential to begin delivering benefits to Canadians—particularly economic benefits—by the end of the project. Sixteen projects were funded.
- Analyzed final reports from completed Competition III projects to assess their meeting of objectives and their research outcomes in terms of return on investment and socioeconomic impact.

### 4 | GE<sup>3</sup>LS LEADERSHIP

*Assume leadership in the areas of ethical, environmental, economic, legal, social and other issues related to genomics research (GE<sup>3</sup>LS).*

In 2010–2011, Genome Canada continued to be guided by its national GE<sup>3</sup>LS strategy, which aims to strengthen GE<sup>3</sup>LS research: further integrating GE<sup>3</sup>LS into genomics research; bridging the GE<sup>3</sup>LS research/policy gap; evaluating GE<sup>3</sup>LS research; translating results into action; and showcasing Canadian GE<sup>3</sup>LS worldwide.

A key GE<sup>3</sup>LS activity was the **GPS series** (*Where Genomics, Public Policy and Society Meet*), which promoted evidence-based policy-making through collaboration between researchers and federal policy-makers. An event addressing Online Direct-to-Consumer Genetic Testing was held, and plans were made for a second series of GPS events focused on Translational Genomics.

Other activities included biannual publication of the GE<sup>3</sup>LS e-newsletter, **Impact**; a first-year update of the CanadaGE<sup>3</sup>LS research database; maintenance of the GE<sup>3</sup>LS website; and ongoing GE<sup>3</sup>LS researcher support.



## 5 | COMMUNICATION

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

Innovative communication, education and public outreach programs and initiatives carried out in partnership with the six Genome Centres showcased Genome Canada's partnerships with the Government of Canada and the Canadian scientific community last year. These activities promote financial accountability, celebrate Canadian scientific research achievements, and educate the public about genomics research.

Key communication highlights from 2010-11 included further travels by the **GEEE! In Genome** exhibit, which visited the Telus World of Science in Vancouver (BC), and the Musée régional de Rimouski (QC); another edition of the popular **Genomics on the Hill** showcase of innovative projects to parliamentarians and key decision-makers in Ottawa; and **participation in youth** education programs including the Canada-wide Science Fair and Sanofi-Aventis BioTalent Challenge, and sponsorship of select national and international events.

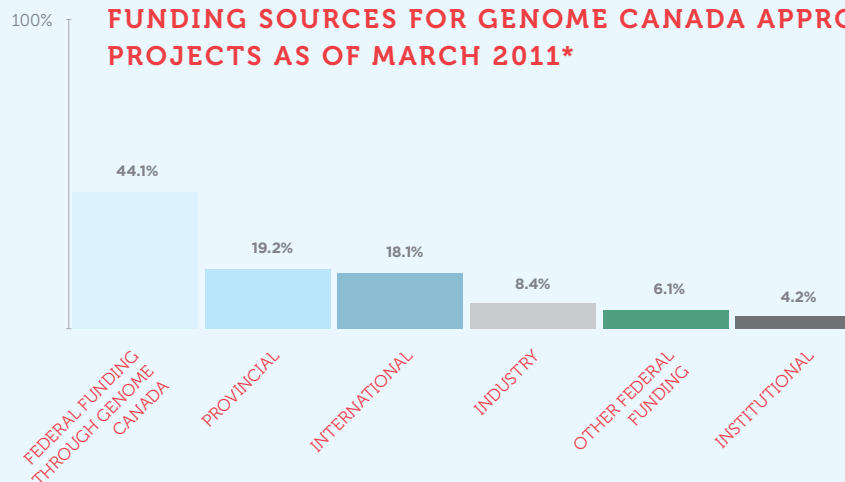
## 6 | CO-FUNDING

*Encourage investment by others in the field of genomics research.*

Effective research requires the collective efforts of many people and organizations. Genome Canada seeks to develop collabora-

tive relationships with the private, public and philanthropic sectors in Canada and abroad. The investments made by others facilitate research, ensuring that the best science is funded and translated into results for Canadians. *The chart below illustrates ongoing investments to date by others in Genome Canada-funded projects.*

**FUNDING SOURCES FOR GENOME CANADA APPROVED PROJECTS AS OF MARCH 2011\***



\* CO-FUNDING INCLUDES FUNDS RECEIVED AND COMMITMENTS SECURED SINCE 2000.

## CURRENT PROJECTS WITH GENOME CANADA FUNDING (2010–11)

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 Alberta	Development of New Technologies	Sensen, Christoph	Four-dimensional modelling of genetic disease patterns
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

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
Genome British Columbia	Environment	Bohlmann, Jorg 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
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 Atlantic	Fisheries	Bowman, Sharen Trippel, Edward	Atlantic cod genomics and broodstock development
Genome British Columbia	Forestry	Bohlmann, Jorg Ritland, Kermit	Conifer forest health genomics
Genome Québec	Forestry	MacKay, John Bousquet, Jean	Arborea II: Genomics for molecular breeding in softwood trees

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
Genome British Columbia	GE <sup>3</sup> LS	Burgess, Michael Danielson, Peter	Building a GE <sup>3</sup> LS architecture (GE <sup>3</sup> LS Arc)
Genome Alberta	GE <sup>3</sup> LS	Caulfield, Timothy Einsiedel, Edna	Translating science: Genomics and health systems
Genome Prairie	GE <sup>3</sup> LS	Phillips, Peter Castle, David	Value Addition to Genomics and GE <sup>3</sup> LS (VALGEN)
Ontario Genomics Institute	GE <sup>3</sup> 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 <i>Caenorhabditis elegans</i>



CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
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
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	Dick, John	Development of Highly Active Anti-Leukemia Stem Cell Therapy Project
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	Mak, Tak	Therapeutic Opportunities to Target Tumor Initiating Cells in Solid Tumors

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
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, <i>cercopithecus aethiops</i>
Genome Québec	Health	Pastinen, Tomi Peterson, Alan Sinnott, 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
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)

CENTRE	SECTOR	PROJECT LEADER(S)	PROJECT TITLE
SCIENCE & TECHNOLOGY INNOVATION CENTRES:			
Genome British Columbia	Science and Technology Innovation Centre	Marra, Marco Jones, Steven Holt, Robert	Genome Sciences Centre (GSC)
Genome British Columbia	Science and Technology Innovation Centre	Collins, Colin	The Prostate Centre - Gene Array Facility (TPC-GAF)
Genome British Columbia	Science and Technology Innovation Centre	Borchers, Christoph	University of Victoria - Genome BC Proteomics Core Facility (UVic-GBC PCF)
Genome Alberta	Science and Technology Innovation Centre	Sensen, Christoph	An integrated and distributed bioinformatics platform for Genome Canada
Ontario Genomics Institute	Science and Technology Innovation Centre	Scherer, Stephen	The centre for applied genomics (TCAG)
Genome Québec	Science and Technology Innovation Centre	Dewar, Ken	McGill University and Génome Québec Innovation Centre
INTERNATIONAL CONSORTIUM INITIATIVES:			
Ontario Genomics Institute	Health	Edwards, Aled	Structural genomics consortium (SGC phase II)
Genome Québec	Health	Knoppers, Bartha Maria	Public Population Project in Genomics (P <sup>3</sup> G phase II)
Ontario Genomics Institute	Environment	Hebert, Paul	International Barcode of Life Project (iBOL)

# REPORT ON GOVERNANCE

Genome Canada is governed by a Board of Directors, comprised of up to 16 independent members from the academic, private and public sectors. It also includes five non-voting, ex officio advisors, namely the presidents of five major 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 general leadership and stewardship of Genome Canada is under the auspices of the Board, whose responsibilities include strategic planning, risk mitigation, performance and evaluation, financial planning and succession. Permanent committees support the Board in fulfilling its obligations.

The Board operates within a governance framework defined by Genome Canada's letters patent, general bylaws, funding agreements with Industry Canada, strategic plans, and policies and procedures. Its actions are guided by a standard of conduct outlined in Genome Canada's Conflict of Interest Policy, as well as a corporate governance manual, a handbook of standards and guidelines.

## KEY BOARD ACTIVITIES IN 2010-11

### STRATEGY AND PLANNING

2010-11 was a forward-looking year at Genome Canada. The Board endorsed the organization's submission to the 2011 federal

budget process, which focused on four areas: support for large-scale projects, the establishment of collaborative partnerships, support for access to and development of leading edge technologies, and translation of research results into applications. It also oversaw the commencement of the organization's strategic planning process, which will result in a five-year Strategic Plan for 2012-17. That process will be informed by a study of Genome Canada projects that have high potential for translation to utility and will result in an impact assessment of Genome Canada's funding over the past 10 years.

One of Genome Canada's key activities is the funding of peer-reviewed large-scale projects and Science and Technology Innovation Centres. In 2010-11, the Board allocated three-year funding support to 16 large-scale projects from the *2010 Large-Scale Applied Research Competition*; two-year funding support to five Science and Technology Innovation Centres through the

*2010 Science and Technology Innovation Centre Operations Support Competition*; and 18-month funding support to two consortia from the *Advancing Technology Innovation through Discovery Competition*, a collaborative program in conjunction with the Canadian Institutes of Health Research.

The Board ratified a memorandum of understanding with the Business Development Bank of Canada for the purpose of identifying Genome Canada-funded research projects with strong potential for translation into practical applications. It also approved a three-year pilot program to develop an entrepreneurship program with business schools across the country, and endorsed a partnership with the Gairdner Foundation and the regional Genome Centres to co-organize a 2012 Genomics Symposium to showcase the achievements of genomics research in Canada over the past decade as well as celebrate the 10<sup>th</sup> anniversary of the 2002 Gairdner International Awards for genomics.

## **SUCCESSION ACTIVITIES**

After a four-month international recruitment process, Dr. Pierre Meulien became Genome Canada's new President and CEO in October 2010, replacing interim CEO Mr. Dale Patterson (VP External Relations), who had held the position since March 2010.

2010–11 also saw the appointment of five new directors to the Board—representatives from the public and private sectors.

## **AUDIT, FINANCE, MONITORING AND REPORTING**

Required financial and reporting milestones were met in 2010–11, including approvals of the following:

- Audited financial statements for year ending March 31, 2010
- The 2010–11 operational budget for Genome Canada
- A one-year extension of operational funds to the six Genome Centres (until March 31, 2012)
- The 2009–10 Annual Report
- The 2011–12 Corporate Plan

The Board of Directors received an interim review report for the International Barcode of Life project, and was informed of preparations underway for an interim review of the Applied Genomics Research in Bioproducts or Crops Competition, to take place in April 2011.

## **GOVERNANCE**

Genome Canada undertook a governance review by an external party in Winter 2011 for the purpose of ensuring the Board of Directors was operating at an optimal level. The Board will discuss the findings of the report as well as the recommended action plan at its June 2011 meeting.

A collective opportunity to talk about Genome Canada's vision for the next five to 10 years, and to engage in priority setting for a five-year strategic plan, was provided by a Joint Board of Directors and Science and Industry Advisory Committee meeting held in March 2011.

## **COMMITTEE MANDATES**

### **EXECUTIVE COMMITTEE**

While the Board of Directors is not in session, the Executive Committee exercises all or any of the powers vested in the Board, apart from the adoption, amendment or repealing of the organization's by-laws or such acts as must be performed by the directors themselves under the law.

### **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.

### **INVESTMENT COMMITTEE**

The Investment Committee provides direction, oversight and advice with respect to matters involving the investment management of funds at the disposal of Genome Canada, including formulating investment policies and implementation strategies with respect to Genome Canada's investments.

### **ELECTION COMMITTEE**

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

### **CORPORATE GOVERNANCE COMMITTEE**

The Corporate Governance Committee deals with matters of corporate governance, including the 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.

### **COMPENSATION COMMITTEE**

The Compensation Committee's mandate is to provide advice and recommendations with respect to compensation practices, policies and procedures for Genome Canada employees, including compensation and bonus guidelines.

### **SCIENCE AND INDUSTRY ADVISORY COMMITTEE**

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

### **MEETINGS HELD BY THE BOARD AND ITS COMMITTEES IN 2010-11**

Board of Directors	8
Executive Committee	8
Audit Committee	4
Investment Committee	4
Election Committee	4
Corporate Governance Committee	4
Compensation Committee	4
Science and Industry Advisory Committee	4

# Genome Canada's Team



Executive Committee



Audit Committee



Investment Committee



Election Committee



Corporate Governance Committee



Compensation Committee

## BOARD OF DIRECTORS

(as of March 31, 2011)



**C. Thomas Caskey** (Chair)

Director and Chief Executive Officer  
The Brown Foundation Institute of  
Molecular Medicine and Genetics  
The University of Texas Health  
Science Center  
Houston, Texas



**Prabhat D. (Pete) Desai** (Vice-Chair)

President  
Desai & Desai Inc  
Calgary, Alberta



**Sylvie Dillard,**

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



**René Douville**

Director, National Client Group  
RBC Capital Markets  
Montreal, Quebec



**Daniel Gagnier**

Chairman  
International Institute for  
Sustainable Development  
Rawdon, Quebec



**William Gelbart**

Professor  
Molecular and Cellular Biology  
Harvard University  
Boston, Massachusetts



**Peter Harder**

Senior Policy Advisor  
Fraser Milner Casgrain LLP  
Ottawa, Ontario



**Lorne Hepworth**

President  
CropLife Canada  
Ottawa, Ontario



**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 and Professor  
of Medicine, Medical and Molecular  
Genetics, Public Health  
and Philosophy  
Indiana University  
Indianapolis, Indiana

**Pierre Meulien**

President and CEO  
Genome Canada  
Ottawa, Ontario



**Stephen W. Scherer**

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



**George Weinstock**

Associate Director  
The Genome Center, Washington University  
Professor of Genetics  
St. Louis, Missouri

## EX OFFICIO ADVISORS

### **Alain Beaudet**

President  
Canadian Institutes of Health Research  
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

### **John R. McDougall**

President  
National Research Council Canada  
Ottawa, Ontario

### **Gilles G. Patry**

President and CEO  
Canada Foundation for Innovation  
Ottawa, Ontario

## OFFICERS

(as of March 31, 2011)

### **Cindy Bell**

Executive Vice-President,  
Corporate Development

### **Jean Brunet**

Stein Monast L.L.P.  
Corporate Secretary

### **C. Thomas Caskey**

Chair, Board of Directors

### **Guy D'Aloisio**

Vice-President, Finance

### **Prabhat D. (Pete) Desai,**

Vice-Chair, Board of Directors

### **Carol Anne Esnard**

Chief Administrative Officer

### **Pierre Meulien** (as of October 2010)

President and CEO

### **Dale Patterson** (until October 2010)

Interim CEO & VP, External Relations

### **Karl Tibelius**

Vice-President, Genomics Program

## SCIENCE AND INDUSTRY ADVISORY COMMITTEE

(April 1, 2010 to March 31, 2011)

### **Jacques Simard** (Committee Chair)

Canada Research Chair in Oncogenetics  
Director, Endocrinology and Genomics Axis  
CHUQ Research Centre  
Department of Molecular Medicine  
Faculty of Medicine, Laval University  
Quebec, Quebec

### **Anne Christine Bonfils**

Senior Science/Policy Integration Analyst  
National Research Council of Canada  
GHI Coordination Office  
Ottawa, Ontario

### **William A. Bridger**

R.M. Spencer & Associates  
Lethbridge, Alberta

### **William L. Crosby**

Professor of Biological Sciences  
University of Windsor  
Windsor, Ontario

### **David J. Drutz**

President  
Pacific Biopharma Associates, LLC  
Chapel Hill, North Carolina

### **Douglas Easton**

Director, Cancer Research UK,  
Genetic Epidemiology Group  
University of Cambridge  
Strangeways Research Laboratory  
Cambridge, United Kingdom

### **Joseph Ecker**

Professor, Plant Molecular and Cellular  
Biology Laboratory  
Salk Institute for Biological Sciences  
La Jolla, California

### **Edna Einsiedel**

Professor, Faculty of Communication & Culture  
University of Calgary  
Calgary, Alberta

### **Stacey Gabriel**

Director, Genetic Analysis Platform Program  
Co-Director, Genome Sequence  
Analysis Program  
Co-Director, Program in Medical  
and Population Genetics  
Broad Institute  
Cambridge, Massachusetts

### **Simon Gaskell**

Principal of Queen Mary  
University of London  
London, United Kingdom

### **Klaus Lindpaintner**

Vice President, Research & Development  
Chief Scientific Officer  
Strategic Diagnostics Inc.  
Newark, Delaware

### **Si Lok**

Scientific Director, Professor and Chair  
of Genomic Medicine  
Genome Research Centre  
The Li Ka Shing Faculty of Medicine  
Hong Kong University  
Pokfulam, Hong Kong

### **Jean Weissenbach**

Director, Genoscope - Centre National  
de Séquençage/CEA  
Paris, France

### **John Yates III**

Professor, Department of Cell Biology  
Scripps Research Institute  
La Jolla, California

**GENOME CANADA STAFF**

(as of March 31, 2011)

**Pierre Meulien** (as of October 2010)

President and CEO

**Cindy Bell**

Executive Vice-President,  
Corporate Development

**Julie Bernier** (until February 2011)

Administrative Assistant / Receptionist

**Genny Cardin**

Analyst

**Sheila Chapman** (until August 2010)

Program Manager (GE<sup>3</sup>LS)

**Kim Corbett**

Program Manager

**Guy D'Aloisio**

Vice-President, Finance

**Dale Dempsey** (September 2010 –  
March 2011)

Acting Director, International  
Genomics Programs

**Karen Dewar**

Director, National Genomics Programs

**Carol Anne Esnard**

Chief Administrative Officer

**Shannon Fisher**

Program Administrator

**Brianne Scott**

IM/IT Manager

**Barbara Francis**

Program Manager

**Patricia Kosseim** (until August 2010)

Chief GE<sup>3</sup>LS Officer

**Hélène Meilleur**

Director of Communications and Events

**Robert Moreau**

Comptroller

**Dale Patterson**

Interim CEO (until October 2010) &  
Vice-President, External Relations

**Kate Swan**

Associate Director, International  
Genomics Programs

**Normand Therrien**

Finance Officer

**Karl Tibelius**

Vice-President, Genomics Program

**Brigitte Vaillant**

Executive Assistant to the President and CEO



## COMPENSATION

### DIRECTORS

Directors are not compensated for Board and Committee duties.

### 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 2011, fell within the following ranges:

#### **Pierre Meulien**

*President and CEO*  
\$275,000–\$357,500

#### **Dale Patterson**

*Vice-President, External Relations*  
\$203,000–\$243,600

#### **Cindy Bell**

*Executive Vice-President  
Corporate Development*  
\$202,982–\$253,727

#### **Guy D'Aloisio**

*Vice-President, Finance*  
\$182,271–\$218,725

#### **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, 2011, fell within the following ranges:

#### **Karen Dewar**

*Director, National Genomics Programs*  
\$132,560–\$145,816

#### **Hélène Meilleur**

*Director of Communications and Events*  
\$121,800–\$133,980

#### **Karine Morin**

*Director, National GE<sup>5</sup>LS Program*  
\$105,000–\$115,500

#### **Normand Therrien**

*Finance Officer*  
\$102,318–\$102,318

### EXECUTIVE INTERCHANGE AGREEMENTS

Through an executive interchange agreement with a federal government agency, Genome Canada employed **Karl Tibelius** as its Vice-President, Genomics Program at a salary range of \$162,400 to \$194,880, and; **Dale Dempsey** as its Acting Director, International Genomics Programs at a salary range of \$118,364 to \$125,466.

## 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. The most recent funding includes \$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, Science and Technology Innovation Centres (STICs), 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, 2011, more than \$950 million in co-funding commitments have been raised.

A rigorous competitive process determines which research projects and Science and Technology Innovation Centres (STICs) 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 as well as benefits to Canada 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 management and benefits of large-scale genomics projects and are primarily from the international scientific community to avoid conflict of interest. Genome Canada's Board of Directors makes the final decision on which proposals to fund, based on recommendations received from the international panel of reviewers.

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

## FINANCIAL HIGHLIGHTS 2010-11

In the year ended March 31, 2011 Genome Canada dispersed a total of \$59.7 Million for both its own operations and for the funding of Projects, STICs and Genome Centre operations, down 27% from \$81.9 Million in fiscal 2009-10.

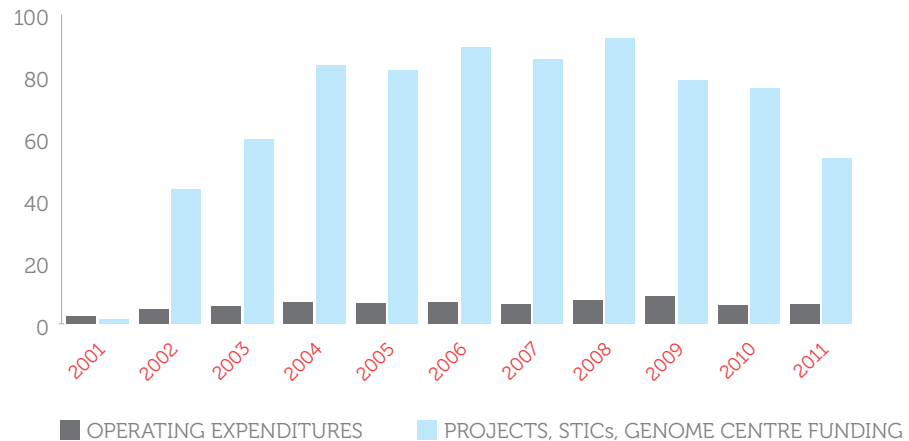
## OPERATIONS

- Genome Canada cost of operations totals \$6.2 million of which 44.2% relates to salaries and benefits, 22.8% to general and administrative expenses, and 21.9% to external committees including the Peer Review Committees, the Board, and its supporting Committees.

## PROJECTS, STICs AND GENOME CENTRES

- From inception to March 31, 2011, Genome Canada disbursements for Research Projects, Science and Technology Innovation Centres and for regional Genome Centres' operations total \$745.7 Million.
- From total disbursements of \$53.5 Million in fiscal year 2010-11, \$30.3 Million was directed to large scale research projects, \$9.5 Million to the Science and Technology

## ANNUAL EXPENDITURES (IN MILLIONS OF DOLLARS)

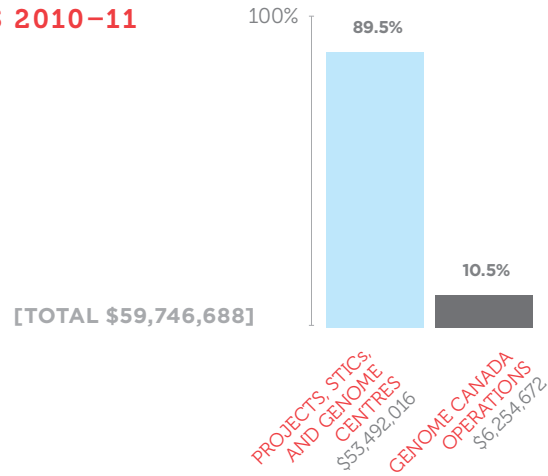


Innovation Centres, \$8.3 Million to International Consortium Initiatives, and \$5.5 Million to the regional Genome Centres in support of their operations.

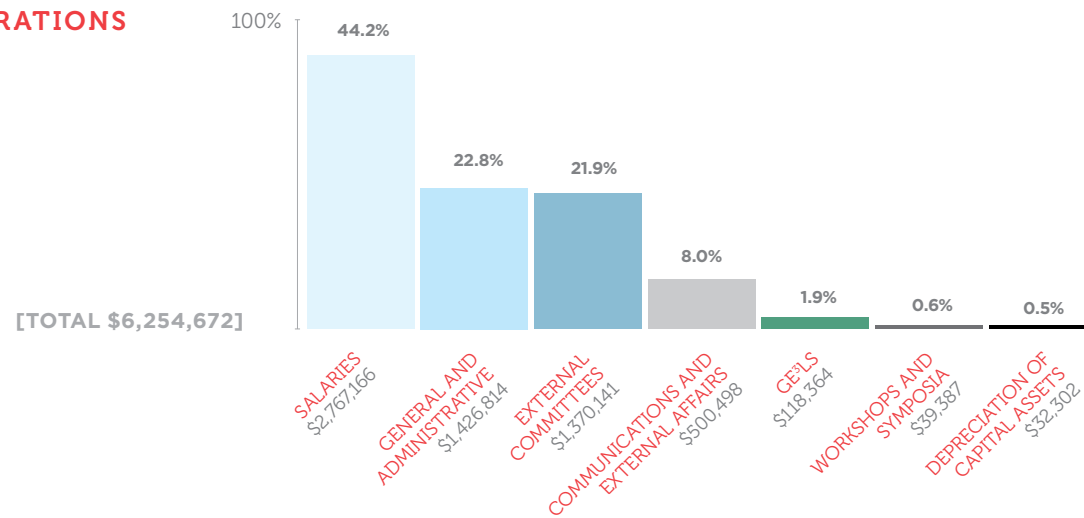
- As at March 31, 2011, a total of \$38.5 Million remains as deferred contributions, representing disbursements that will be made in subsequent years for Genome Canada operations and for approved research projects and STICs.

- Through the combined efforts of Genome Canada, Genome Centres and Project Leaders, it is estimated that over \$950 Million in co-funding has been raised and committed from inception to March 31, 2011, bringing the total committed value of investments in genomics and proteomics research through Genome Canada funded projects and initiatives to over \$1.7 Billion.

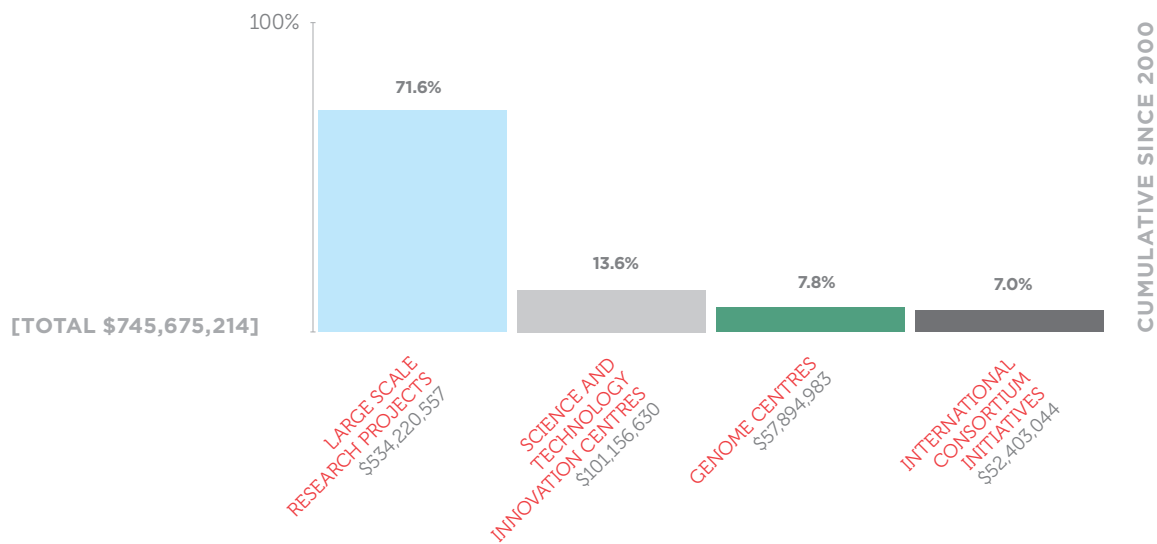
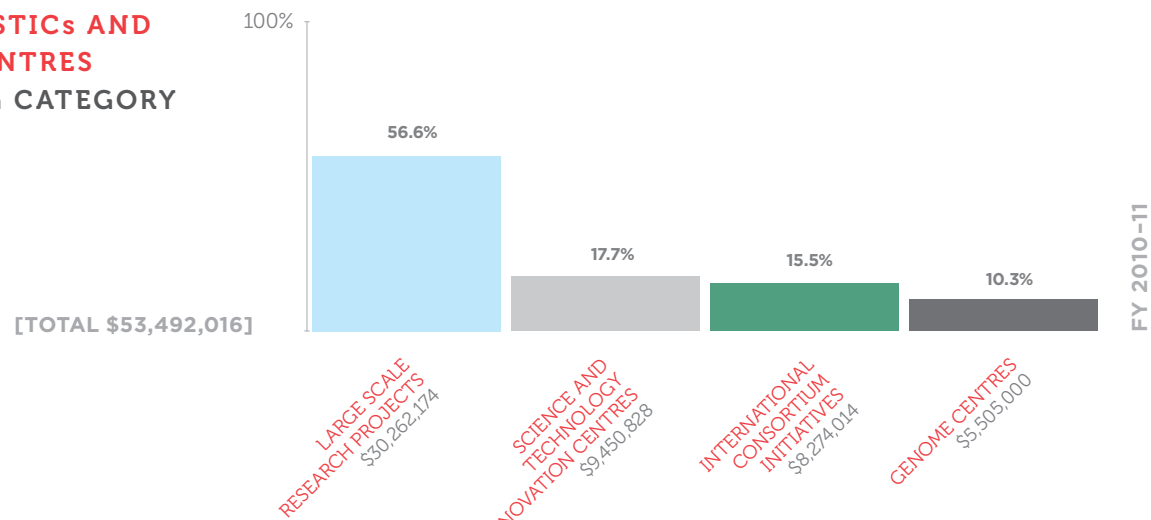
## TOTAL EXPENDITURES 2010-11



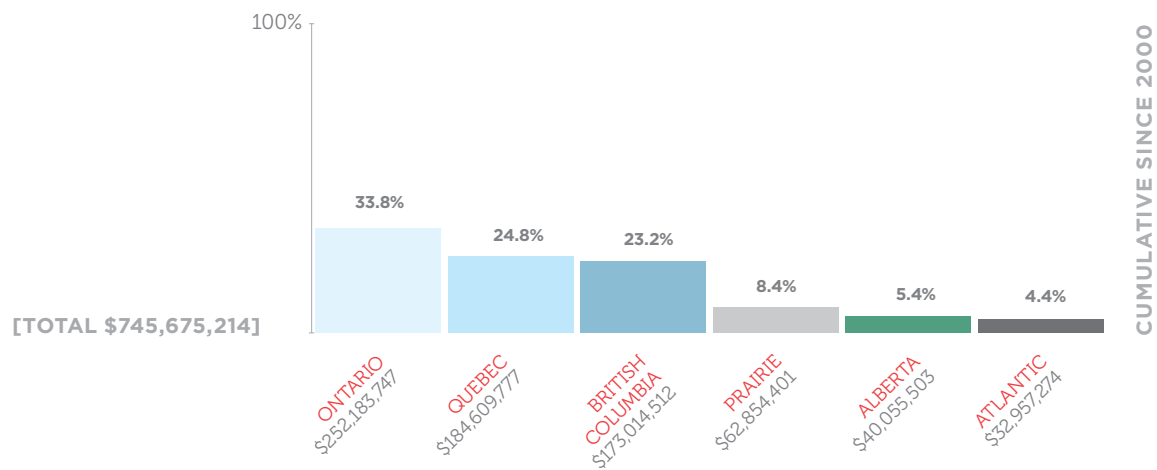
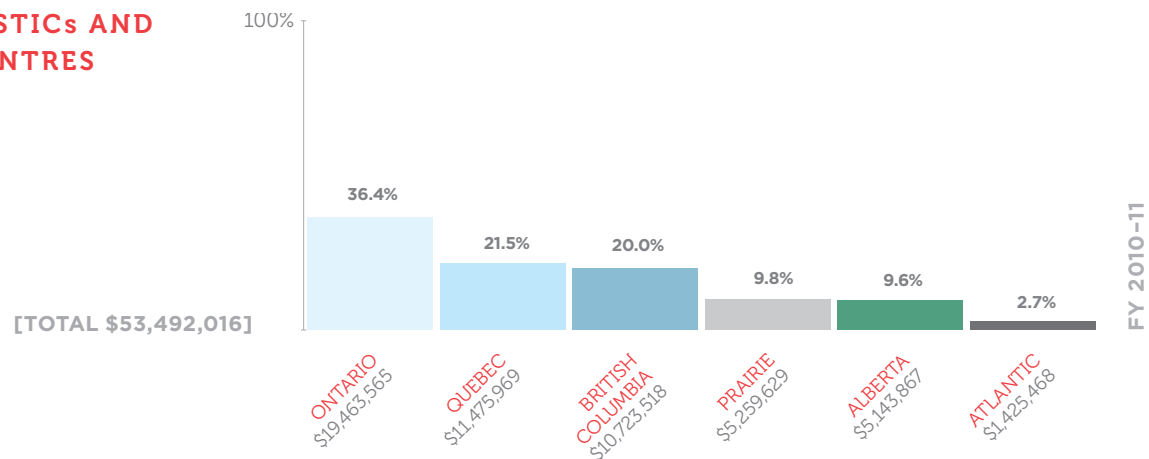
## GENOME CANADA OPERATIONS



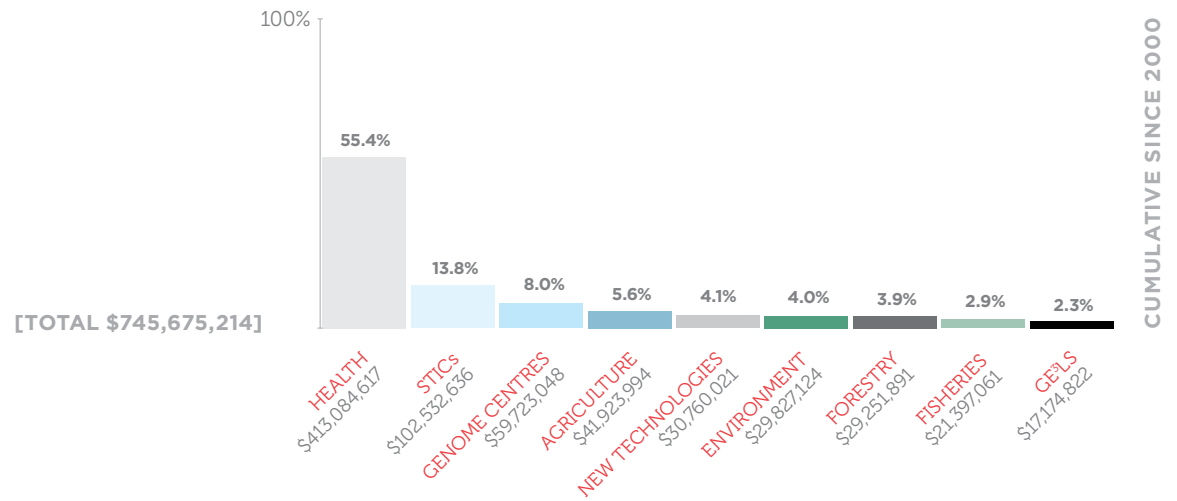
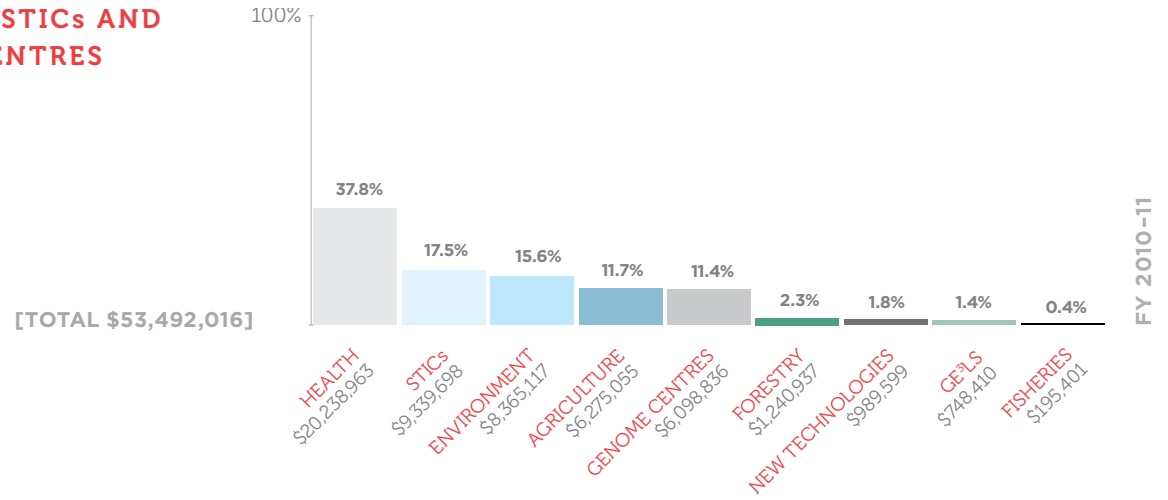
**PROJECTS, STICs AND  
GENOME CENTRES  
BY FUNDING CATEGORY**



**PROJECTS, STICs AND  
GENOME CENTRES  
BY REGION**



**PROJECTS, STICs AND  
GENOME CENTRES  
BY SECTOR**





# OUTLOOK

## Outlook 2011–2012

Deferred contributions of \$38.5 Million as at March 31, 2011 are committed to research projects and STICs approved through previous competitions and are scheduled for disbursement in 2011–12 and subsequent years.

The Federal Budget of June 2011 announced additional funding of \$65 Million for Genome Canada, a large portion of which will be targeted to research investments in applied human health, as well as other initiatives and sectors supported by Genome Canada.

Genome Canada's operational plan for 2011–12 calls for the development of a new Strategic Plan; continued development of national and international research

funding initiatives; ongoing monitoring and management of active research projects and initiatives including the interim review of 12 projects from the Applied Genomics Research in Bioproducts or Crops Competition, and; launching a major funding competition for large scale research projects in applied human health.

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, an amount of \$52 Million is estimated to be received in 2011–12 to finance already approved research projects and operations.



# FINANCIAL STATEMENTS

2010

2011





**KPMG LLP**  
**Chartered Accountants**  
Place Bell  
160 Elgin Street, Suite 2000  
Ottawa Ontario K2P 2P8  
Canada

Telephone (613) 212-KPMG (5764)  
Fax (613) 212-2896  
Internet [www.kpmg.ca](http://www.kpmg.ca)

## TO THE DIRECTORS OF GENOME CANADA

We have audited the accompanying financial statements of Genome Canada, which comprise the statement of financial position as at March 31, 2011, the statements of operations and changes in net assets and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

### MANAGEMENT'S RESPONSIBILITY FOR THE FINANCIAL STATEMENTS

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian generally accepted accounting principles, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

### AUDITORS' RESPONSIBILITY

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 comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### OPINION

In our opinion, the financial statements present fairly, in all material respects, the financial position of Genome Canada as at March 31, 2011, and its results of 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.

Chartered Accountants,  
Licensed Public Accountants

June 29, 2011  
Ottawa, Canada

## GENOME CANADA STATEMENT OF FINANCIAL POSITION

March 31, 2011, with comparative figures for 2010

	2011	2010
<b>Assets</b>		
Current assets:		
Cash and cash equivalents (note 2)	\$ 12,203,605	\$ 28,552,407
Interest receivable	291,392	134,001
Prepaid expenses	142,609	111,699
Other receivables	147,508	77,311
	12,785,114	28,875,418
Investments (note 3)	26,373,510	21,850,314
Capital assets (note 4)	78,703	81,404
	\$ 39,237,327	\$ 50,807,136
<b>Liabilities and Net Assets</b>		
Current liabilities:		
Accounts payable and accrued liabilities	\$ 708,609	\$ 605,646
Deferred contributions (note 5)	38,450,015	50,120,086
Deferred contributions related to capital assets (note 6)	78,703	81,404
Net assets:		
Unrestricted net assets	-	-
Commitments (note 9)		
Contingencies (note 10)		
	\$ 39,237,327	\$ 50,807,136

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, 2011, with comparative figures for 2010

	2011	2010
Revenues:		
Amortization of deferred contributions (note 5)	\$ 59,714,386	\$ 81,863,427
Amortization of deferred contributions related to capital assets (note 6)	32,303	35,888
	59,746,689	81,899,315
Expenses:		
Contributions to Centres and approved projects	53,492,016	76,070,372
General and administrative	4,193,979	4,627,665
Communications and public outreach	500,498	648,014
External committees	1,370,142	268,884
Workshops and symposiums	39,387	124,300
Ethical, environmental, economic, legal and social issues related to genomics (GE <sup>3</sup> LS)	118,364	124,192
Amortization of capital assets	32,303	35,888
	59,746,689	81,899,315
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, 2011, with comparative figures for 2010

	2011	2010
Cash flows from operating activities:		
Excess of revenues over expenses	\$ -	\$ -
Items not involving cash:		
Amortization of capital assets	32,303	35,888
Amortization of deferred contributions (note 5)	(59,714,386)	(81,863,427)
Amortization of deferred contributions related to capital assets (note 6)	(32,303)	(35,888)
Excluded from the decrease in deferred contributions (note 8)	(720,117)	(111,829)
	(60,434,503)	(81,975,256)
Interest received on investments (note 5)	1,707,041	1,136,702
Grants received from Government of Canada	46,900,000	82,900,000
Deferred contributions related to capital assets (note 6)	29,602	14,327
Change in operating assets and liabilities:		
Increase in other receivable	(70,197)	(4,748)
Decrease (increase) in prepaid expenses	(30,910)	74,572
Increase (decrease) in accounts payable and accrued liabilities	102,963	(306,182)
	(11,796,004)	1,839,415

	2011	2010
Cash flows from investing activities:		
Disposition (purchase) of investments	(4,523,196)	13,552,137
Purchase of capital assets	(29,602)	(14,327)
	(4,552,798)	13,537,810
Increase (decrease) in cash and cash equivalents	(16,348,802)	15,377,225
Cash and cash equivalents, beginning of year	28,552,407	13,175,182
Cash and cash equivalents, end of year	\$ 12,203,605	\$ 28,552,407

Supplemental cash flow information (note 8)

See accompanying notes to financial statements.

## **GENOME CANADA NOTES TO FINANCIAL STATEMENTS**

Year ended March 31, 2011

Genome Canada (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<sup>3</sup>LS), 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:**

These financial statements have been prepared in accordance with Canadian generally accepted accounting principles and include the following 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 for not-for-profit organizations, 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.

**(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 \$134,240 (\$120,661 in 2010).

**(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.

**2. CASH AND CASH EQUIVALENTS:**

	2011	2010
Cash	\$ 110,128	\$ 479,761
Short-term investments	12,093,477	28,072,646
	\$ 12,203,605	\$ 28,552,407

**3. INVESTMENTS:**

	Cost	2011 Market	Cost	2010 Market
Government of Canada bonds	\$ 20,756,700	\$ 20,560,172	\$ 5,262,588	\$ 5,247,106
Corporate bonds and debentures	7,783,298	5,813,338	14,520,742	12,603,208
Provincial Governments bonds	–	–	3,994,000	4,000,000
	\$ 28,539,998	\$ 26,373,510	\$ 23,777,330	\$ 21,850,314

The interest rates at the end of the year range from 1.52% to 5.15% (1.52% to 5.53% in 2010) and maturity dates vary from November 15, 2011 to October 12, 2036 (2010 – November 12, 2010 to October 12, 2036).

#### 4. CAPITAL ASSETS:

	Cost	Accumulated amortization	2011 Net book value	2010 Net book value
Furniture and fixtures and office equipment	\$ 193,997	\$ 154,523	\$ 39,474	\$ 49,341
Computers and software	203,375	167,636	35,739	27,077
Telecommunication equipment	32,134	28,644	3,490	4,986
Leasehold improvements	72,681	72,681	–	–
	\$ 502,187	\$ 423,484	\$ 78,703	\$ 81,404

Cost and accumulated amortization at March 31, 2010 amounted to \$472,585 and \$391,181 respectively.

#### 5. 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.

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, 2011, the corporation received \$46,900,000 under the agreement dated March 31, 2008.

As at March 31, 2011, the status of the active funding agreements are:

	Agreement dated March 31, 2008	Agreement dated March 31, 2010
Amount committed by Industry Canada	\$ 140,000,000	\$ 75,000,000
Amount received by the Corporation	66,000,000	-
<b>Balance to be received in subsequent years</b>	<b>\$ 74,000,000</b>	<b>\$ 75,000,000</b>

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 research funding to eligible recipients and the payment of operating and capital expenditures in future periods.

Deferred contributions consist of:

	Balance as at March 31, 2009	Transactions during the year	Balance as at March 31, 2010	Transactions during the year	Balance as at March 31, 2011
Grants	\$ 636,200,000	\$ 82,900,000	\$ 719,100,000	\$ 46,900,000	\$ 766,000,000
Investment income:					
Interest received	88,815,780	1,136,702	89,952,482	1,707,041	91,659,523
Interest receivable	201,104	(67,104)	134,000	157,391	291,391
Loss on disposal	(2,000,725)	(385,319)	(2,386,044)	(474,889)	(2,860,933)
Fair value adjustment	(2,203,584)	287,817	(1,915,767)	(215,626)	(2,131,393)
	84,812,575	972,096	85,784,671	1,173,917	86,958,588
Amount amortized to revenues	(672,296,267)	(81,863,427)	(754,159,694)	(59,714,386)	(813,874,080)
Amount invested in capital assets	(590,564)	(14,327)	(604,891)	(29,602)	(634,493)
	\$ 48,125,744	\$ 1,994,342	\$ 50,120,086	\$ (11,670,071)	\$ 38,450,015

## 6. 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:

	2011	2010
Balance, beginning of year	\$ 81,404	\$ 102,965
Add restricted contributions	29,602	14,327
Less amounts amortized to revenue	(32,303)	(35,888)
	\$ 78,703	\$ 81,404

## 7. 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.

## 8. SUPPLEMENTAL CASH FLOW INFORMATION:

	2011	2010
Non-cash transactions excluded from the increase (decrease) in deferred contributions (note 5):		
Loss on disposal of investments	\$ (474,889)	\$ (385,319)
Amount transferred to capital assets	(29,602)	(14,327)
Fair value adjustment	(215,626)	287,817
	\$ (720,117)	\$ (111,829)

## **9. 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, 2011, the payments committed are approximately: \$52,219,551 in 2012 and \$74,043,645 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 \$52,260 in 2012 and \$46,320 in other future years.

### **(C) OPERATING LEASES:**

The Corporation leases its premises and equipment under long-term operating leases, which expire at various dates between 2012 and 2014. The minimum aggregate lease payments are approximately as follows:

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2012	\$	190,823
2013		160,409
2014		38,642
	\$	389,874

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## **10. 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.

## **11. 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 3 to the financial statements.

The Corporation is not subject to significant currency risk arising from its financial instruments. The Corporation is exposed to credit and interest rate risk with respect to its interest-bearing investments.

The logo for GenomeCanada, featuring the letters 'gnc' in a stylized, lowercase font.

GenomeCanada



# ACKNOWLEDGEMENTS

## GOVERNMENT OF CANADA

GENOME CANADA WOULD LIKE TO THANK THE  
GOVERNMENT OF CANADA FOR ITS SUPPORT

Canada