



# **Corporate Plan 2009–10**



**Genome**Canada

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**Genome**Canada

# Corporate Plan 2009–10

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## EXECUTIVE SUMMARY

Genome Canada's Corporate Plan 2009–10 summarizes the activities and results achieved in fiscal year 2008–09 and outlines the planned activities and expected results for fiscal year 2009–10. While the proposed activities fall within the fiscal framework of funding allocated to Genome Canada for the achievement of its five objectives, the initiation of any new large-scale research activities in 2009–10 will be contingent upon a number of factors, including the successful outcomes of international peer reviews, assessments of scientific merit and relevance, assessments of the potential for national and global scientific and socio-economic impact, and receipt by Genome Canada of new funding support.

The Position Paper Process (an approach for allocating funding to targeted strategic research themes in nationally recognized areas of interest and of socio-economic importance to Canadians) continued to play a pivotal role in the overall strategic activities of Genome Canada. In 2008–09, Genome Canada launched a competition to address the strategic research themes of agriculture—plants and bioproducts. These two research themes had been recommended in the first Position Paper cycle as areas which merit funding support. In the fall of 2008, two more strategic research themes—child health and agriculture-animals—were identified in the second cycle of the Position Paper Process as areas which merit funding support.

Genome Canada is committed to ensuring that cutting-edge technology is available for Canadian genomics and proteomics researchers. The thirteen innovative research projects funded under the aegis of the Technology Development Competition will produce results in 2010. These results will widen and update the menu of technologies available to the entire Canadian scientific community. The Science and Technology Platform Leaders meeting which took place in January 2009 was an opportunity for the leaders of the six Genome Canada-funded platforms, and leaders of other platforms to meet and share details of advances in technologies, as well as best methods and practices in delivering high quality technology services.

In fiscal year 2008–09, the final reports of Genome Canada's first strategic competition, Applied Genomics and Proteomics Research in Human Health, and Genome Canada's first bilateral international competition with Genome España in the areas of Human Health, Plants and Aquaculture, were received. The process for the review of the final reports will be developed in 2009–10 as part

of the on-going implementation of Genome Canada's Performance, Audit and Evaluation Strategy activities. A comprehensive assessment of these projects will, not only determine the accomplishments relative to the project objectives, but also the socio-economic benefits offered, including the potential applications arising from these projects.

Genome Canada's presence in the international arena of genomics and proteomics research was specifically targeted in 2008–09. The strategy involved engagement and assumption of leadership in select international research projects, workshops, consortia and partnerships. Genome Canada's ongoing support and interest in several international consortium initiatives—the Structural Genomics Consortium, the Public Population Project in Genomics, the International Knockout Mouse Consortium, and the Cancer Stem Cell Consortium—strengthens and enhances the international status of Canada and Canadian scientists. Other initiatives included the organization of the second annual International Funders' Forum, as well as involvement in future opportunities such as the International Regulome Consortium, the International Barcode of Life, the International Cancer Genome Consortium, the Canada–Italy partnership (focused on collaboration of large-scale genomics research projects related to human health), and the Canada–Chile partnership (focused on collaboration of large-scale genomics research projects related to the aquaculture industry). Genome Canada's third international conference—2020 Vision: The Impact of Science on Society—offered an exciting platform for researchers, decision- and policy-makers in academia, government, the media and industry to hear the latest scientific advances and their potential impact on society and the economy. Also in 2008–09, Genome Canada's

## EXECUTIVE SUMMARY

involvement in the project related to protein ligands came to an end.

During 2007—08, Genome Canada demonstrated its application of rigorous principles and standards for project management, selection and support of excellent science, and significant co-funding by undertaking of an interim review of 33 projects funded through Competition III, as well as an interim review of six Genome Canada-funded Science and Technology platforms. In 2008—09, all remaining issues identified by the international review committees for each of these interim reviews were successfully resolved. Ongoing monitoring is in place to ensure continued progress towards the meeting of each project's objectives.

In 2008—09, Genome Canada continued to advance and refine its national GE<sup>3</sup>LS (ethical, environmental, economic, legal and social issues associated with genomics research) framework with the following initiatives: organization of an international GE<sup>3</sup>LS symposium—Navigating the Changing Landscape; recruitment of a Chief GE<sup>3</sup>LS Officer, and development of a strategy for assuming national and international leadership in the area of GE<sup>3</sup>LS.

Press conferences, a new web site, press releases, sponsorship of key science conferences and youth education programs, and partnership with the Canadian Museum of Nature to support the GEEE! In Genome travelling exhibition were among the many ways Genome Canada communicated the risks, rewards and successes of genomics and proteomics research to the Canadian public and key stakeholders.

Genome Canada's proposed and ongoing initiatives for 2009—10 reflect its desire to sustain its presence at the cutting edge of genomics and proteomics research and capitalize on the rich opportunities for scientific research of national and international importance. Genome Canada will strengthen its international leadership with continued participation in important international genomics and proteomics research collaborations and consortiums. It

will facilitate workshops and conferences for Canadian and international genomics researchers to gain the latest knowledge with respect to data release, polar genomics, platform technology, and rapidly changing new developments in genomics research. It will mine the results of the five-year performance audit for best practices and suggestions in order to ensure Genome Canada's operations and programs are "best-in-class" in terms of economy, efficiency and cost effectiveness; and, will review the evaluation assessment in order to make any necessary "course corrections" for Genome Canada to fulfil its five objectives.

Since its establishment as the primary funding and information resource for genomics and proteomics research in Canada, Genome Canada has become a national force for discovery, development and knowledge in these fields. Additional and appropriate federal funding will enable Genome Canada to keep pace with the research momentum it has created and ensure that Canada and Canadians continue to benefit from the innovation and creativity in genomics and proteomics that Genome Canada has come to represent.

# GENOME CANADA EXECUTIVE SUMMARY

| Projects Status   | National   | International  |
|---|--|--|
| <b>STRATEGIC RESEARCH PRIORITIES</b>  |  |  |
| <b>COMPLETED</b>  | <ul style="list-style-type: none"> <li>Applied Genomics Research in Human Health Competition</li> </ul>  | <ul style="list-style-type: none"> <li>Genome Canada / Genoma España Joint Projects in Human Health, Plants and Aquaculture Competition</li> </ul>   |
| <b>ONGOING</b>  | <ul style="list-style-type: none"> <li>Competition III</li> <li>Technology Development Competition</li> <li>Competition in Applied Genomics Research in Bioproducts or Crops</li> </ul>              | <ul style="list-style-type: none"> <li>Structural Genomics Consortium (SGC)</li> <li>Public Population Project in Genomics (P<sup>3</sup>G)</li> <li>International Knockout Mouse Consortium</li> <li>Cancer Stem Cell Consortium (CSCC)</li> </ul>                            |
| <b>UNDER DEVELOPMENT</b>  | <ul style="list-style-type: none"> <li>■ Aquatic &amp; Terrestrial Animal Genomics Competition</li> <li>■ Child Health Genomics Competition</li> <li>■ New Genomics Frontiers Competition</li> </ul> | <ul style="list-style-type: none"> <li>■ International Barcode of Life (iBOL)</li> <li>■ International Regulome Consortium (IRC)</li> <li>■ International Cancer Genomics Consortium (ICGC)</li> <li>■ Canada-Italy Partnership</li> <li>■ Canada-Chile Partnership</li> </ul> |
| <b>SCIENCE &amp; TECHNOLOGY PLATFORMS</b>   |  |  |
| <b>ONGOING</b>  | <ul style="list-style-type: none"> <li>Science &amp; Technology Platform Leaders Meeting</li> </ul>  |  |
| <b>OPERATING EXPENDITURES</b>   |  |  |
| <b>COMPLETED</b>  |  | <ul style="list-style-type: none"> <li>International GE<sup>3</sup>LS Symposium</li> <li>Protein Ligand Workshop</li> <li>3<sup>rd</sup> Genome Canada International Conference</li> </ul>   |
| <b>ONGOING</b>  | <ul style="list-style-type: none"> <li>Education and Public Outreach</li> <li>Genome Canada Operations</li> <li>Genome Centres Operations</li> </ul>   | <ul style="list-style-type: none"> <li>International Funders Forum</li> </ul>  |
| <b>NEW</b>  | <ul style="list-style-type: none"> <li>Polar Genomics Workshop</li> <li>Turning Data into Knowledge Workshop</li> </ul>  | <ul style="list-style-type: none"> <li>4<sup>th</sup> International Genomics Conference</li> <li>Data Release Workshop</li> </ul>  |
| <ul style="list-style-type: none"> <li>● Research initiatives and activities currently supported by Genome Canada</li> <li>■ Research initiatives and activities that are currently under development and have been identified by Genome Canada as significant strategic priorities that have the potential for national and global scientific and socio-economic impact</li> </ul> |  |  |

## SECTION I – About Genome Canada

Genome Canada is a not-for-profit corporation, at arm's length from the federal government. Genome Canada was created in February 2000, with its head office in Ottawa, Ontario. Its link to the government is formalized through a funding agreement with Industry Canada. It is the primary funding and information resource relating to genomics and proteomics research in Canada.

Genome Canada's vision is to position Canada as a world leader in genomics and proteomics research. Its mandate is to develop and implement a national strategy in genomics and proteomics research for the benefit of all Canadians in key selected areas such as health, agriculture, environment, forestry, fisheries and new technology development. As well, Genome Canada is committed to assuming a leadership role with regard to ethical, environmental, economic, legal and social (GE<sup>3</sup>LS) issues associated with genomics research, and to communicating with Canadians on these and other issues.

Genome Canada's business model is based on the premise of funding and managing large-scale and multidisciplinary, international peer-reviewed research projects and science and technology platforms. It also includes the fostering of focal points of expertise in genomics and proteomics research in regions across Canada and the co-funding of projects with both domestic and international partners. Genome Canada brings together industry, government departments and agencies, universities, research hospitals and the public in support of large-scale projects of strategic scientific importance to Canada. To date, Genome Canada has planned for the commitment of more than \$900M to genomics and proteomics research. When combined with estimated funding commitments from partners in the private, public and philanthropic sectors, the investment will total over \$1.9B to support more than 128 innovative, large-scale research projects and science and technology (S&T) platforms.

Each of Genome Canada's five competitions to date has generated much interest from the research community, as reflected in the receipt of large numbers

of Letters of Intent. The number of excellent projects reviewed by international peer review panels speaks to Canada's untapped potential for cutting-edge research in genomics and proteomics. Genome Canada is unleashing this potential by providing opportunities for Canada's scientists to develop skills and lead outstanding international research collaborations.

Six Canadian Genome Centres are located in Halifax, Montreal, Toronto, Saskatoon, Calgary and Vancouver. These Genome Centres are not-for-profit organizations that support, at a regional level, genomics and proteomics research. For researchers in all genomics- and proteomics-related areas, the Genome Centres facilitate access to leading-edge S&T platforms, and assist in applying different approaches to project development, management and fundraising. Furthermore, the Genome Centres create opportunities for regional public outreach programs.

Genome Canada is recognized as a major player in the international genomics and proteomics arena. Through activities ranging from funding and participating in international symposia and workshops to developing bilateral and multilateral collaborations, Genome Canada is contributing expertise and leadership in the identification of strategic international genomics and proteomics research priorities.

Genome Canada has taken the lead in launching innovative projects that will have socio-economic benefits not only for Canadians, but also for the global community. For example, Genome Canada-funded projects have led to:

- the development of a simple blood test to identify a hereditary heart condition;

- research into the genomics of the wine grape, the world’s most economically important fruit;
- development of genomics tools to grow trees that are more resistant to pests, drought or higher temperatures, promising a new approach to forestry;
- mapping the genome of the Atlantic cod to identify genes responsible for growth and resistance to stress or disease, creating opportunities to revitalize Newfoundland’s fishing industry;
- providing global leadership in enabling the benefits of developing biotechnology in Africa;
- creating state-of-the-art facilities such as the one in British Columbia, where sequencing machines and sophisticated equipment serve numerous large-scale genomics research projects, such as the one that allowed the sequencing of the SARS virus, at a speed the World Health Organization called “stunning.”

Over its relatively short history, Genome Canada has established Canada’s leadership in GE<sup>3</sup>LS and the potential implications associated with genomics and proteomics research. Genome Canada is consolidating its effort in this area with the development and implementation of a comprehensive GE<sup>3</sup>LS strategy that will identify priorities and actions for Genome Canada to take its leadership position into the next phase.

### Governance

Genome Canada reports to Parliament through the Minister of Industry by way of the submission of a corporate plan and an annual report.

Genome Canada is governed by a Board of Directors comprising up to 16 individuals drawn from the academic, private and public sector communities. The Presidents of five major federal research agencies—the Canada Foundation for Innovation, Canadian Institutes of Health Research, National Research Council, Natural Sciences and Engineering Research Council, and Social Sciences and Humanities Research Council—are non-voting, ex-officio advisors to the Board of Directors.

## GENOME CANADA GOVERNANCE STRUCTURE



The Board of Directors has overall responsibility for the stewardship of the business and affairs of Genome Canada, establishing a number of committees to help it discharge its duties, including an Executive Committee, Audit Committee, Investment Committee, Election Committee, Corporate Governance Committee and Compensation Committee.

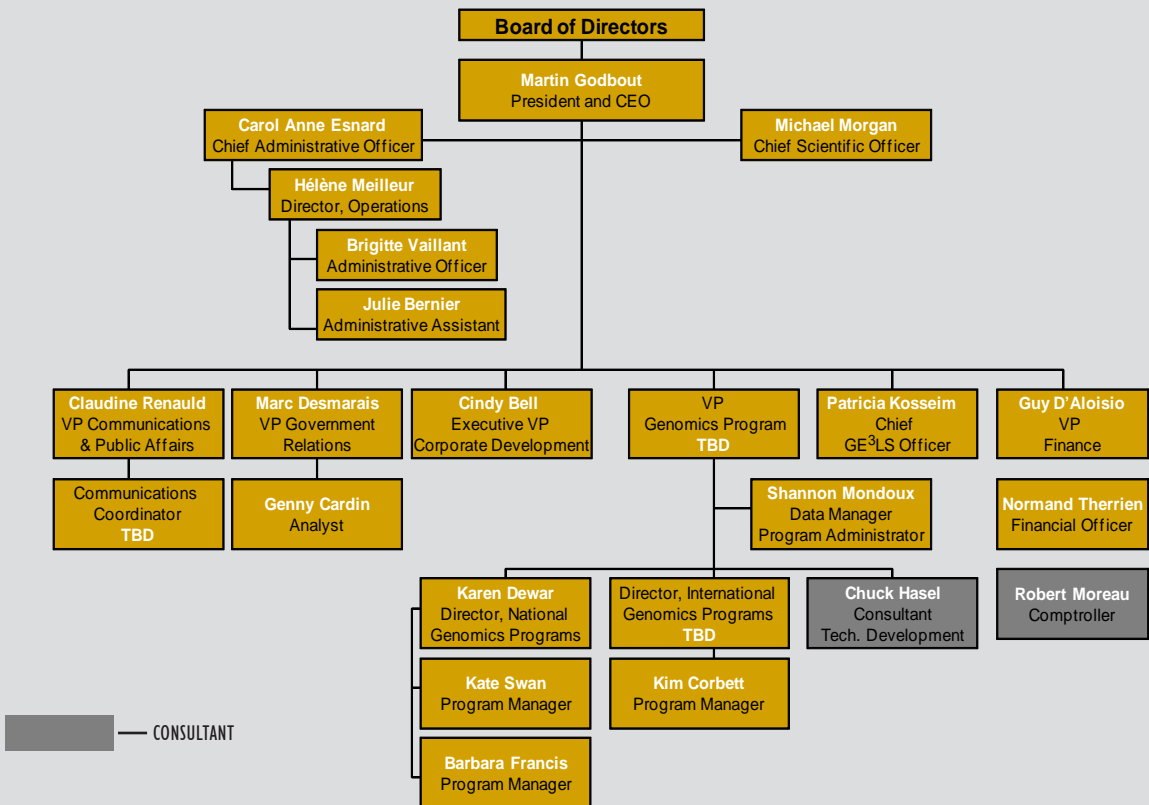
The Board of Directors has also established a Science and Industry Advisory Committee (SIAC) that provides strategic and visionary advice and expertise on an integrated strategy for research and development in the areas of genomics and proteomics in Canada.



## SECTION I — About Genome Canada

The President and CEO reports to the Board of Directors. The management team, which reports directly to the President and CEO, represents a cadre of results-oriented team players with solid track records and specialized areas of expertise who are comfortable working and collaborating with colleagues and associates at provincial, national and international levels. Genome Canada maintains a small staff complement and works within an organizational structure that has few management layers thus allowing for nimble and rapid response and adaptability to an ever-changing genomics research environment. Consultants, who provide expertise in the delivery of specialized services, are used on an as-needed basis.

### GENOME CANADA ORGANIZATION



### ABOUT THIS DOCUMENT

Genome Canada's Corporate Plan 2009–10 reports on activities and performance for 2008–09, and outlines anticipated plans and expected results for the fiscal year 2009–10.

The reporting of plans and activities in this corporate plan is organized around Genome Canada's five objectives:<sup>1</sup>

1

the development and establishment of a coordinated strategy for genomics<sup>2</sup> research to enable Canada to become a world leader in areas such as health, agriculture, environment, forestry and fisheries;

2

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;

3

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

4

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

5

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

<sup>1</sup> Genome Canada's Funding Agreement signed March 31, 2008

<sup>2</sup> "Genomics" means the study of the genes and their functions, namely genomics, proteomics, genotyping, sequencing, bioinformatics and other related fields of research (as per the definition stated in the Funding Agreement signed March 30, 2008).

## SECTION II — Pursuing our Objectives : Performance for 2008–09

Since its creation in 2000, Genome Canada has been committed to encouraging, developing, facilitating and financing the expansion in Canada of genomics and proteomics research capacity and to affirming Canada's stature on the world's genomics and proteomics research stage. This section outlines Genome Canada's major activities and accomplishments for 2008–09 in fulfillment of its mandate and objectives.

**1** Objective 1:  
The development and establishment of a coordinated strategy for genomics research to enable Canada to become a world leader in areas such as health, **agriculture, environment, forestry and fisheries.**

### Strategy for success

Genome Canada's approach for developing and establishing a coordinated strategy for genomics and proteomics research in Canada is to assume the role of facilitator or leader, bringing together select Canadian and international groups from a number of specific areas (health, agriculture, environment, forestry, fisheries, new technologies, and GE<sup>3</sup>LS) which have common interests in the fields of genomics and proteomics research. Activities in 2008–09 included engaged interaction with researchers, the hosting of conferences and workshops in Canada, and participation in international forums, events and research projects.

### What was achieved

#### STRATEGIC RESEARCH PRIORITIES – NATIONAL

##### Position Papers (Ongoing)—

In 2006–07, Genome Canada launched the first Request for Position Papers—a new approach to optimize the allocation of future investment in genomics and proteomics research for 2008 and subsequent years. The fundamental premise of the process states that funding will be targeted to strategic research themes in nationally recognized areas of interest and of socio-economic importance to Canadians. These strategic research themes will be described in a series of “position papers.” The position paper must define the importance of the problem(s) to be tackled, and how genomics/proteomics tools can be brought to bear to provide solutions. It must describe the current state of the science in Canada and abroad, the infrastructure and human resources capacity available in Canada, the estimated total funding required over four years, and the expected socio-economic outputs, outcomes and impacts on the sector or discipline.

Genome Canada invited the scientific community to join with other stakeholders to identify strategic research themes by submitting Expressions of Interest (EOIs) and writing position papers. Participating communities then selected leaders who agreed to manage the production and submission of completed position papers in the summer of 2008. Following an international peer review, two position papers were recommended to the Board of Genome Canada for inclusion in Genome Canada's annual strategic research portfolio and budget submission to Industry Canada. In 2007–08, the recommended position papers addressed the themes of Agriculture—Plants (Crop Genomics for a Healthy Canada) and Bioproducts (Securing Canada's Future Bio-based Economy through Genomics). In 2008–09, the papers recommended to be carried forward focused on the areas of Agriculture—Animals (Aquatic and Terrestrial Animal Genomics) and Children's Health (Child Health Genomics: An Investment in Canada's Future).

An announcement of additional funding for Genome Canada in the 2008 federal budget led to the launch of a Competition in Applied Genomics Research in Bioproducts or Crops in April 2008.

### Position Papers (Under Development)

Supported by revised guidelines and selection criteria, the third Request for Position Papers exercise was launched in November 2008. Such strategic research themes as bio-products, agriculture—plants, agriculture—animals and children’s health were not considered in this third round. The remaining five position papers developed over the past two years will either remain in the process for consideration as submitted, or be revised according to comments received from the peer review panel.

### STRATEGIC RESEARCH PRIORITIES — INTERNATIONAL

#### International Collaborations

Genome Canada was an active participant, and in some instances took on a lead role, in the following international collaborations:

- **International Funders’ Forum (Ongoing)**—The purpose of the International Funders’ Forum is to increase awareness and communication among the funders of large-scale international genomics projects, to discuss issues around the funding of these projects, and to identify opportunities for future collaboration. The first meeting of the forum was held on October 16, 2007, in Quebec City. Among the outcomes was the establishment of a Genome Canada-led steering committee mandated to action the recommendations from the first meeting, which included the organization of an annual International Funders’ Forum as well as a workshop on data release, and the establishment of an intranet site. Genome Canada hosted the second International Funders’ Forum on October 21, 2008, in Vancouver. Representatives from Canada, China, the European Commission, Germany, Italy, Japan, the Netherlands, Norway, Spain, Sweden, the United Kingdom and the United States were present. International participants presented briefly on the mandates and ongoing initiatives of their respective funding agencies. Discussions focused on the planning of the data release workshop, scheduled for spring 2009; content for the intranet site being developed

with support from the *Agence nationale de la recherche* (France); and specific topics related to access to research publications, evaluation metrics and intellectual property management.

- **International Knockout Mouse Consortium (Ongoing)**—The Genome Canada-funded North American Conditional Mouse Mutagenesis Project, along with the European Conditional Mouse Mutagenesis Program, the American-led Knockout Mouse Project and the Texas Institute of Genomic Medicine are the four large-scale international projects in mouse mutagenesis that constitute the International Knockout Mouse Consortium (IKMC). Studying mice with specific genes “knocked out” will provide insight into human biology and disease. The consortium serves as a vehicle for coordinating international collaboration in the area of mouse mutagenesis. Genome Canada is a member of the consortium’s steering committee. Outcomes of the IKMC meeting that took place in Toronto on May 13, 2008, included the appointment of a leading Canadian researcher as chair of the steering committee with Genome Canada providing secretariat support.
- **Cancer Stem Cell Consortium (Ongoing)**—Building on two years of discussions and meetings between leading Canadian and Californian cancer stem cell experts and funding agencies, the Cancer Stem Cell Consortium (CSCC) was formally incorporated in November 2007. Members of the consortium include the Canadian Institutes of Health Research, the Canadian Foundation for Innovation, the Stem Cell Network, the Ontario Institute for Cancer Research, and Genome Canada. The CSCC, which is governed by a board of directors, offers a collaborative medium for scientists in Canada and California

## SECTION II — Pursuing our Objectives: Performance for 2008—09

to focus on cancer stem cell research and its applications. Cancer stem cells (CSC) are considered to be the major culprits at the root of many cancers, accounting for tumour growth and metastases, and their eradication will potentially offer enduring cancer cures. Genome Canada is playing a lead role in the development of the consortium, inviting public and private entities such as federal and provincial funding agencies, non-governmental cancer organizations and pharmaceutical and biotechnology companies to join the consortium and contribute funding to support cancer stem cell research. The CSCC Strategic Plan, developed by a team of Canadian and Californian scientists, will guide the Board of the CSCC as it defines the sequence of research activities it will undertake to achieve its goals over the next five years. The research programs of the CSCC will focus on identifying CSC biomarkers and anti-CSC therapies. State-of-the-art infrastructure will be developed to provide live CSCs for study and to translate research findings into clinical applications. The support of large-scale efforts will enable research teams to link patient clinical data to basic advances in CSC biology by sharing cutting-edge technology platforms and pursuing common research goals. The Consortium will embrace the development of diverse approaches and adopt, as a fundamental principle, open collaboration across a wide range of disciplines, including those that address ethical, legal and social issues related to cancer stem cell research. The CSCC members will jointly coordinate requests for applications to encourage the development of research teams with goals that can best be achieved by using an integrated large-scale approach not feasible through individual investigator-initiated grants. In February 2009, a joint call for applications was issued by the CSCC and the California Institute for Regenerative Medicine to support Disease Teams of Canadian and Californian scientists focusing on cancer stem cell research. This is the first initiative resulting from the Memorandum of Understanding signed by the two organizations in June 2008. The CSCC Board is currently developing

its Operational Plan (2009—2014) to implement other components of its strategic plan, as well as identifying other potential members of the Consortium.

- International Cancer Genome Consortium (Under development)—The International Cancer Genome Consortium (ICGC) was formally launched in April 2008. The goal of the consortium is to produce an atlas of (somatic) genome abnormalities in cancer. Countries involved in the ICGC include Australia, Canada, China, France, India, Japan, Singapore, Spain, the United Kingdom, and the United States. Although Genome Canada has observer status in the ICGC, Genome Canada staff have played an active role in the development of the consortium through both the Executive and Science Planning Committees. Along with other Canadian funders, Genome Canada is also exploring opportunities for additional Canadian participation in the consortium.
- Canada–Italy Partnership (Under development)—A Memorandum of Understanding was signed in the fall of 2007 between Genome Canada and the Italian National Research Council (CNR) with the objectives of expanding existing linkages and establishing a collaborative framework between Canada and Italy in the area of large-scale genomics and proteomics research related to human health. As a first step in strengthening this new partnership, approximately 40 scientists and representatives of funders from Canada and an equal number from Italy participated in a workshop in Rome, April 7–8, 2008. The objective of the workshop was to increase awareness of current research activities in Canada and Italy in the area of large-scale genomics and proteomics research related to human health and to identify opportunities for future collaboration. The workshop participants

## SECTION II – Pursuing our Objectives: Performance for 2008–09

agreed that a joint Request for Applications should be developed to support joint research projects in several areas of common, identified interests and strengths. Genome Canada and CNR staff have developed guidelines for a proposed joint competition which will be launched if future funding is available. The first step in the development of such a competition was the receipt of Letters of Intent in February 2009.

- Canada–Chile Partnership (Under development)—In 2007, Genome Canada initiated a collaboration with the Department of Fisheries and Oceans (DFO) to explore possible joint international initiatives in the area of genomics and aquaculture with Spain, a proposal that has been extended to include Norway and Chile. Genome Canada and DFO organized a workshop in Ottawa on May 1, 2008, to bring together Canadian scientists and the aquaculture industry to define Canadian opportunities and needs. In Barcelona on June 25–27, 2008, Genome Canada and DFO co-hosted an international workshop on “Applied Genomics to Improve Aquatic Animal Health” involving participants from Canada, Spain, Norway and Chile. Their objectives were to identify key questions in aquatic animal health that would benefit from international collaborative genomics research and to determine a mechanism to achieve this. While some individual collaborations developed between members of the Canadian research community and Spanish, Norwegian and Chilean researchers as a result of the workshop, it was clear that neither Spain nor Norway had the interest nor the resources to pursue a large-scale joint international initiative with Canada at this time. As a result, DFO and Genome Canada are working with Chile to develop a bilateral program in genomics and proteomics addressing aquatic animal health.

### National and International Workshops, Conferences and Symposia

Genome Canada continued to organize, host and co-sponsor national and international workshops, conferences and symposia, including the:

- 3rd International Genome Canada Conference (Completed)—Genome Canada held its third Canadian international conference—2020 Vision: The Impact of Science on Society—on October 22–24, 2008, in Vancouver. The conference theme focused on future trends in genomics research and the impact this work will have, not just on the world of bioscience, but on how it relates to the environment, the economy, ethics, society and the law. This third conference attracted more than 225 participants and featured keynote speakers and presenters on topics related to human genetic variation, commercialization and drug discovery, the role of government science advisors, stem cells, the genomics of childhood diseases and the future of genomics research over the next decade and beyond.
- International GE<sup>3</sup>LS Symposium 2008 (Completed)—The International GE<sup>3</sup>LS Symposium 2008—Navigating the Changing Landscape—took place in Calgary on April 28–30, 2008. The three-day event offered a comprehensive overview of the GE<sup>3</sup>LS landscape. Discussions focused on highlights, issues and the impact of current GE<sup>3</sup>LS research, as well as new needs and opportunities likely to drive changing research agendas in the Genome Canada community and beyond. Over 150 participants from across the globe, including a significant number of research trainees, engaged in the discussions during both the oral presentations and the poster sessions. Presenters’ biographies, conference abstracts and posters from the symposium are publicly available on Genome Canada’s website ([www.genomecanada.ca](http://www.genomecanada.ca)), together with a report of the closing session entitled Knowledge Translation—Making a Difference.

## SECTION II — Pursuing our Objectives: Performance for 2008—09

- Protein Ligand Workshop (Completed)—  
A workshop was held March 15, 2008, in Stockholm, Sweden, to explore the possibility of creating an international consortium to develop selective and specific probes for human proteins. The consortium would allow for the establishment of a mechanism to identify and validate new leads for human proteins—an agreed-upon way of characterizing them and assessing which leads would be of greatest value and utility; it would also enable an assessment of the cost/benefit analysis of the various approaches. Following the workshop, a small group of scientists developed and implemented a pilot project as a first step to demonstrate the feasibility and utility of this approach. Genome Canada determined that it would not play an active role in these activities.
- Data Release Workshop (New)—  
Under aegis of the International Funders' Forum, Genome Canada is leading the development of an international data release workshop. The workshop, planned for Spring 2009, will focus on developing recommendations to encourage rapid release of data and to produce guidelines for what this will mean in practice for specific types of data to be used by the international genomics research community.

**2** Objective 2:  
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.**

### Strategy for success

Genome Canada's strategy to ensure effective management and monitoring of its funded research projects and S&T platforms is to support Genome Centres in each region across Canada. These Genome Centres are not-for-profit organizations that co-invest in and manage large-scale genomics and proteomics research projects. For researchers in all genomics- and proteomics-related areas, the Centres facilitate access to leading-edge Genome Canada fully funded S&T platforms, identify, manage and monitor new, large-scale research opportunities, and assist in fundraising activities.

### What was achieved

#### Genome Centres (Ongoing)

Genome Canada supports the operations of six Genome Centres, which are located across Canada as follows:

- Genome British Columbia (Vancouver)
- Genome Alberta (Calgary)
- Genome Prairie (Saskatoon, with a satellite office in Winnipeg)
- Ontario Genomics Institute (Toronto)
- Genome Quebec (Montreal)
- Genome Atlantic (Halifax)

The business relationship between Genome Canada and each of the Genome Centres is managed by means of a funding agreement that acknowledges the independence of each Genome Centre, but also provides the necessary provisions for each Centre to operate within a national policy framework. In 2007–08, discussions between Genome Canada and the Genome Centres were undertaken to re-examine the Genome Centre funding model. These discussions included a review of current service delivery funding as well as determining ways to improve services and gain efficiencies without disrupting the Centres' abilities to deliver on their individual funding agreements. Results included an adjustment to the funding model to reflect a new base amount of funding to support general administrative expenses of each Centre, along with the addition of a separate allocation of funding for the management of projects.

#### Technology Development Competition (Ongoing)

The Technology Development Competition was launched in April 2007. Its intent was to solicit proposals that deal with various aspects of technology development, such as incremental improvements to existing processes, new techniques for the latest generation of genomics and proteomics instrumentation, new software for analyzing large datasets, entirely new technologies, and in-lab devices to improve production of large-scale data. An International Scientific Review Committee recommended funding 13 of the 51 proposals for two years at a cost of approximately \$19M (of which Genome Canada's contribution is \$9.5M), which was accepted by the Board of Directors in December 2007. The outcomes from these research projects will broaden and update the menu of technologies available to the entire Canadian scientific community and the already-funded S&T platforms across Canada. All 13 Technology Development projects were launched by July 2008 and their results will be available in the latter half of 2010.

#### Competition for Science and Technology Operations Support (Ongoing)

In June 2008, Genome Canada's Board of Directors approved one year of interim funding for the currently-funded S&T platforms. The Board also approved the launch of an open competition for Science & Technology Operations Support with Letters of Intent due at Genome Canada on February 6, 2009. The purpose of this RFA is to solicit



## SECTION II — Pursuing our Objectives: Performance for 2008–09

applications for S&T platform operations, support for ongoing Genome Canada Competition III projects, and pending projects from the Applied Genomics Research in Bioproducts or Crops Competition. The Genome Canada Board of Directors agreed, at its February 2009 meeting, to not proceed with the Competition for Science and Technology Operations Support, but rather to extend support for the currently funded six Science and Technology platforms until March 31, 2011.

### Science and Technology Platform Leaders Meeting (Ongoing)

The leaders of the six Genome Canada-funded platforms, other representatives of platforms, and staff members from the Genome Centres met in January 2009 for a two-day workshop to share details of advances in technologies made available by the platforms, to discuss methods to improve cross-platform communication, and to share best methods and practices in delivering high-quality technology services. The next workshop is scheduled for January 2010.

## SECTION II – Pursuing our Objectives: Performance for 2008–09

**Table I - Science and Technology Platforms User Statistics (as at Nov. 2008)**

| PLATFORM/SERVICES PROVIDED   | USER TYPE  | NUMBER OF CLIENTS  |
|--|--|--|
| <b>Vancouver General Hospital</b><br><ul style="list-style-type: none"> <li>• Microarray Analysis</li> </ul>   | Genome Canada projects                               | 3  |
|  | Non-Genome Canada Academic                           | 26   |
|  | Industry   | 1  |
|  | <b>Total</b>   | <b>30</b>  |
| <b>British Columbia Cancer Agency Genome Sciences Centre</b><br><ul style="list-style-type: none"> <li>• DNA sequencing</li> <li>• Clone fingerprint mapping</li> <li>• Gene expression profiling</li> <li>• Bioinformatics</li> </ul>   | Genome Canada projects                               | 7  |
|  | Non-Genome Canada Academic                           | 63   |
|  | Industry   | –  |
|  | <b>Total</b>   | <b>70</b>  |
| <b>University of Victoria Proteomics Centre</b><br><ul style="list-style-type: none"> <li>• Proteomics</li> </ul>  | Genome Canada projects                               | 4  |
|  | Non-Genome Canada Academic                           | 113  |
|  | Industry   | 3  |
|  | <b>Total</b>   | <b>120</b>   |
| <b>The Centre for Applied Genomics (Toronto)</b><br><ul style="list-style-type: none"> <li>• DNA Sequencing and Synthesis</li> <li>• Microarray Analysis and Gene Expression</li> <li>• Cytogenomics and Genome Resources</li> <li>• Genetic Analysis</li> <li>• Statistical Analysis</li> <li>• Biobanking</li> </ul> | Genome Canada projects                               | 11   |
|  | Non-Genome Canada Academic                           | 543  |
|  | Industry   | 13   |
|  | <b>Total</b>   | <b>567</b>   |
| <b>McGill University and Genome Quebec Innovation Centre</b><br><ul style="list-style-type: none"> <li>• Genotyping</li> <li>• Functional Genomics</li> <li>• Proteomics</li> <li>• DNA sequencing</li> </ul>  | Genome Canada projects                               | 12   |
|  | Non-Genome Canada Academic                           | 538  |
|  | Industry   | 29   |
|  | <b>Total</b>   | <b>579</b>   |
| <b>Bioinformatics Platform (Calgary)</b><br><ul style="list-style-type: none"> <li>• Software Tools</li> <li>• Help Desk</li> <li>• Training</li> </ul>  | Genome Canada projects requests                      | 350  |
|  | Non-Genome Canada requests                           | 646  |
|  | <b>Total</b>   | <b>996</b>   |
|  | <b>TOTAL (not including Bioinformatics Platform)</b> | <b>Genome Canada projects</b><br><b>Non-Genome Canada Academic</b> |

**Notes:**

- Statistics for most of the platforms are based on a one-year period from 2007 to 2008

## SECTION II — Pursuing our Objectives: Performance for 2008–09

**3** Objective 3:  
The support of large-scale projects of strategic importance to Canada, by bringing **together industry, governments, universities, research hospitals and the public.**

### Strategy for success

Genome Canada's strategy to ensure that large-scale genomics and proteomics research projects of the highest calibre are funded is to issue calls for proposals in the areas of health, agriculture, environment, forestry, fisheries, new technologies, and GE<sup>3</sup>LS. Projects are selected for funding through a rigorous scientific peer-review process involving international experts, as well as a due diligence process that examines the excellence of the proposals' financial and management elements. Central to Genome Canada's strategy is ensuring that the GE<sup>3</sup>LS issues and potential socio-economic benefits related to genomics and proteomics research are addressed as an integrated component of each proposal.

### What was achieved

#### STRATEGIC RESEARCH PRIORITIES – NATIONAL

Applied Genomics and Proteomics Research in Human Health Competition (**Completed**)—Of the 14 large-scale projects funded through Genome Canada's first strategic competition (launched in 2003–04), the majority of the projects ended in 2007–08; the remainder concluded in 2008–09. Project leaders are required to submit final reports describing the outcomes and achievements to Genome Canada within three months of completion. The process for the review of the final reports will be developed as part of the on-going implementation of Genome Canada's Performance, Audit and Evaluation Strategy.

Competition III Projects Interim Review (**Ongoing**)—In September 2007, Genome Canada undertook an interim review of all 33 funded projects in Competition III by an international review panel of experts. The purpose of the review was to evaluate i) research progress; ii) the research team's ability to achieve the approved objectives, based on the progress to date; iii) changes in research direction (made or proposed); iv) progress towards ensuring that the social and/or economic benefits are realized; and v) the financial and management aspects of the project. The review is also used to provide advice regarding alternative approaches and avenues to strengthen the projects.

The review will determine whether funding for a project should be continued, reduced or cancelled. As a result of the interim review, 17 projects required no follow-up and were approved to proceed as proposed, 13 were required to respond to the issues identified by the review panel and 3 were subject to a site visit. The ongoing management and monitoring of all projects continued through 2008–09 to ensure that all issues identified by the international science review committee were resolved. The majority of Competition III projects will be entering their fourth and final year in 2009.

Applied Genomics Research in Bioproducts or Crops Competition (**Ongoing**)—A strategic competition on applied genomics research in the areas of agriculture crops, bioenergy and bioproducts was launched April 1, 2008, with a Request for Applications and the release of the competition guidelines and evaluation criteria. A total of 58 Letters of Intent were received by May 20. During the month of June, Genome Canada conducted information sessions with potential applicants in each of the six regions to clarify the guidelines and the scope of the competition. By October 3, Genome Canada had received 48 full proposals. In November, as a result of high application pressure, the proposals were subjected to a streamlining process which involved a full scientific review of each proposal by several members of the International Review Committee in order to determine whether proposals were competitive or non-competitive (does not merit funding). Applicants received the results

during the first week of December 2008, and the applicants of those proposals deemed in the competitive range were invited to a face-to-face meeting with members of the International Review Committee in Toronto on January 18–21, 2009. Twelve successful applicants of the ABC competition were notified after the recommendations of the International Review Committee were discussed by the Genome Canada Board of Directors in February 2009.

### STRATEGIC RESEARCH PRIORITIES – INTERNATIONAL

Genome Canada–Genoma España Joint Projects in Human Health, Plants and Aquaculture Competition (Completed)—

Three large-scale projects funded through Genome Canada’s first international bilateral competition (launched in 2003–04) ended in 2007–08. Their project leaders are also required to submit final reports describing the outcomes and achievements to Genome Canada within three months of completion. The process for the review of the final reports will be developed as part of the on-going implementation of Genome Canada’s Performance, Audit and Evaluation Strategy.

#### International Consortium Initiatives

An International Consortium Initiative (ICI) is a large-scale genomics scientific research project (more than \$50M) led by a Canadian researcher(s), which will further enhance the international status of Canada and Canadian scientists. Applicants submit Letters of Intent to Genome Canada, which are reviewed by Genome Canada’s Science and Industry Advisory Committee and, if the ICI criteria are met, funding is provided for an international workshop to bring together key stakeholders to develop a full proposal. The proposal is submitted to a rigorous due diligence process as well as international scientific peer review. The full process from the submission of a Letter of Intent to approval for funding by the Board of Directors can take up to two years.

For those ICIs under development, Genome Canada and partners support the applicants during the development of the full proposals and conduct the review of the proposals with appropriate expert input. For the funded ICIs, Genome Canada is involved in ongoing oversight through participation in the Board of Directors, International Scientific Advisory Board, Steering Committee and Management Committee meetings of the consortia.

Current ICIs either funded in 2008–09 or under development include the:

- **Structural Genomics Consortium (SGC) (Ongoing)**—The SGC is a not-for-profit international consortium with a mandate to determine the three-dimensional structures of proteins of medical relevance (for example, proteins from the parasite that causes malaria) and place them in the public domain without restriction. The availability of these protein structures will greatly facilitate the development of new drugs. Following a successful review of Phase I (2003–07) by an international review committee, funding for Phase II (2007–11) by the stakeholders comprising the consortium was approved. In Phase II, the SGC will generate and release the structures of another 600 proteins, including several human integral membrane proteins. Activities in 2008–09 include the determination of up to 48 protein structures, the publication of a number of seminal papers in science publications such as *Nature* and *Cell*, outreach activities including symposiums and workshops, as well as strategic collaborative discussions with potential partners for the consortium that may lead to an increase in the resources that could be brought to bear to determine the structure of membrane proteins.

## SECTION II — Pursuing our Objectives: Performance for 2008—09

- **Public Population Project in Genomics (P<sup>3</sup>G) (Ongoing)**—P<sup>3</sup>G is a not-for-profit international consortium with the aim of fostering collaboration between researchers and projects in the field of population genomics (biobanking). The goal of P<sup>3</sup>G is to facilitate the harmonization of samples and data collected from different international biobanks. This harmonization will provide the large sample numbers needed for studies of the genetic and environmental contributions to health and disease and will generate new knowledge to improve public health and well-being. A key component of the P<sup>3</sup>G ICI is the CARTaGENE biobank, a population-based cohort and founding member of P<sup>3</sup>G that aims to collect socio-demographic and health assessment data, and biological material and DNA samples from 50,000 Quebec citizens aged 40–69. An interim review of the P<sup>3</sup>G ICI was undertaken on April 23, 2008, in Montreal, to evaluate progress to date and the research team’s ability to achieve future objectives. The reviewers recommended continued support for the ICI and acknowledged the importance of the work being undertaken by the ICI, its timeliness, the expertise of the project leaders and the progress made since the initial funding of the consortium.
- **International Regulome Consortium (IRC) (Under Development)**—The IRC is a not-for-profit international consortium with the overarching goal of exploring how gene function is regulated in mammalian cells during development, with implications for stem cell research and regenerative medicine. Employing proteomics and genomics tools and using the mouse as the primary model, the consortium’s objectives are to identify interacting proteins and target genes for 570 transcription factors in different tissues and stages of development. In June 2007, the Board of Directors of Genome Canada approved one year of funding for the staged development of the ICI. An interim review was undertaken January 29, 2009, in Toronto. The purpose of the review was to assess progress against scientific and GE<sup>3</sup>LS milestones and deliverables. Future funding support for the remaining four years of the consortium’s activities is contingent upon a number of factors, including the successful outcome of the interim review, the Board of Directors’ assessment at its March 2009 meeting of the scientific merits of the IRC and its potential for national and global scientific and socio-economic impact, and the receipt by Genome Canada of new funding support.
- **The International Barcode of Life (iBOL) (Under Development)**—The iBOL is a not-for-profit international consortium that will use DNA “barcoding” to initiate a worldwide species identification effort, which would catalogue over 500,000 species of socio-economic importance within five years. The iBOL Consortium builds on the technical accomplishments of the Canadian Barcode of Life Network funded by Genome Canada and partners under the aegis of Competition III. In 2007–08, Genome Canada worked with the iBOL project leaders, Ontario Genomics Institute staff and key stakeholders to facilitate development of an ICI proposal; this included developing appropriate governance and management structures and engaging potential funding partners. The iBOL ICI proposal was reviewed by an international committee of experts on November 7, 2008, in Toronto. The Genome Canada Board of Directors agreed, at its December 2008 meeting, with the Review Committee’s recommendation to support the ICI for six years contingent upon receipt by Genome Canada of new funding support. At its February 2009 meeting, the Board of Directors, recognizing that the research will be of great value to scientists, conservation biologists and many others and has the potential for global scientific and socio-economic impact, approved funding support for the iBOL for 2009–10.

**4**

Objective 4:

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.**

**Strategy for success**

Genome Canada’s strategy to ensure Canadian leadership in the areas of ethical, environmental, economic, legal and social issues related to genomics and proteomics research is composed of various elements, including the support of large-scale GE<sup>3</sup>LS research projects having national and international impact, and the integration of GE<sup>3</sup>LS aspects in all other Genome Canada-funded projects.

Genome Canada’s strategy to communicate the relative risks, rewards and successes of genomics and proteomics research to the Canadian public is to develop innovative education and public outreach programs aimed at establishing visibility, credibility and awareness.

**What was achieved**

In 2008–09, Genome Canada continued to advance and refine its national GE<sup>3</sup>LS framework with the following activities:

- International GE<sup>3</sup>LS Symposium **(Completed)**  
In April 2008, Genome Canada hosted an International GE<sup>3</sup>LS Symposium entitled *Navigating the Changing Landscape*. Researchers from Canada and abroad reconnected to tour the GE<sup>3</sup>LS landscape and present GE<sup>3</sup>LS research results from around the world. Participants discussed contemporary issues in GE<sup>3</sup>LS research and explored new trends and opportunities likely to influence future research agendas for the Genome Canada community and beyond. Finally, the symposium participants focused on the “Difference that GE<sup>3</sup>LS Makes” by exploring the burgeoning theme of knowledge translation and the expectations various stakeholders have when they seek to apply GE<sup>3</sup>LS research results in practice and derive concrete benefits therefrom.

- Recruitment of a Chief GE<sup>3</sup>LS Officer **(Completed)**  
Genome Canada created a new, full-time Chief GE<sup>3</sup>LS Officer position to join the senior ranks of the organization. After a recruitment process of several months, the position was filled in September 2008 for a two-year period. The new Chief GE<sup>3</sup>LS Officer has been mandated to develop and initiate implementation of a national strategy that defines the next generation of GE<sup>3</sup>LS leadership at Genome Canada. This new position signals Genome Canada’s serious and ongoing commitment to this area and the integral importance of GE<sup>3</sup>LS to its very “raison d’être.”
- Development and Implementation of a National GE<sup>3</sup>LS Strategy **(Ongoing)**  
In December 2008, Genome Canada supported a national strategy for taking GE<sup>3</sup>LS leadership to the next level. The overarching theme of this strategy is to continue to support world-class GE<sup>3</sup>LS research while also encouraging dedicated and systematic efforts to translate research results into concrete, tangible outcomes for relevant audiences, including researchers, technology users, policy-makers and the general public. Work will continue on an

## SECTION II — Pursuing our Objectives: Performance for 2008–09

ongoing basis over the next two years and beyond to implement the various components of this strategy which include:

- measuring and evaluating GE<sup>3</sup>LS success
  - strengthening the GE<sup>3</sup>LS integration model
  - bridging the GE<sup>3</sup>LS research-public policy gap
  - bringing GE<sup>3</sup>LS research results *home* to Canadians
  - showcasing Canadian GE<sup>3</sup>LS research on the international stage
  - enabling a vibrant GE<sup>3</sup>LS network across Canada
  - supporting GE<sup>3</sup>LS researchers to translate research results into action
- **New GE<sup>3</sup>LS Webpage at Genome Canada (Ongoing)**  
In Spring 2009, a new GE<sup>3</sup>LS @ Genome webpage will be launched to exchange relevant information in a timely manner, serve as a vehicle for input and consultation, and promote a virtual space for dialogue and networking across the broader GE<sup>3</sup>LS community in Canada. Work on developing and maintaining the GE<sup>3</sup>LS webpage will continue in order to provide a meaningful informational resource for researchers, policy-makers, the media and the general public.
  - **Education and Public Outreach (Ongoing)**  
In response to its national objective of assisting Canadians to understand the important issues surrounding genomics and proteomics research, Genome Canada has developed and implemented innovative and unique communications and public outreach activities and tools. These initiatives are targeted to the public, media, parliamentarians, government policy and decision-makers, researchers, partners and other key stakeholders. The six Genome Centres have been collaborators in developing, managing or using these activities and tools on a regional basis to ensure that a consistent message is delivered to all audiences.

- **News Releases and News Conference**

On May 5, 2008, Genome Canada held a news conference with the Minister of Small Business and Tourism, the Honourable Diane Ablonczy, on behalf of the Minister of Industry, to announce a \$9.37M investment in 13 technology development projects. On June 18, 2008, during the 2008 San Diego Biotechnology Industry Conference, Genome Canada participated in a joint press conference with the Honourable Tony Clement, Minister of Health, and representatives from California announcing the creation of the Cancer Stem Cell Consortium. Genome Canada also organized another press conference pertaining to the exhibition The GEEE! in Genome (see below).

Genome Canada and partners issued six press releases in fiscal year 2008–09 that were picked up by the national and international media for broad media coverage.

- **The GEEE! In Genome**

The GEEE! in Genome, a refurbished and updated 2500-sq-ft bilingual travelling exhibition, started a second three-year cross-Canada tour on March 19, 2008 in Edmonton. The Honourable Rona Ambrose (Minister of Intergovernmental Affairs and Minister of Western Economic Diversification) opened the exhibition during an official ceremony, attended by the media, at the TELUS Edmonton World of Science. The exhibition was the third most visited exhibition in the history of the Museum. The GEEE! in Genome exhibition then moved on to Red Deer for the summer and to Thunder Bay for the fall. Le Musée minéralogique et minier de Thetford Mines will welcome the exhibition from January 15 to April 30, 2009.

- **Partnering with Youth Education Programs**

In 2008–09, Genome Canada partnered with the following youth education programs:

- the Canada-wide Science Fair, which attracts high-school students with the best science projects from across the country, May 2008;
- the Sanofi–Aventis Biotech Challenge, Spring 2008.

- **Conference Support**

Genome Canada showed its support or presence at the following international genomics and proteomics conferences:

- BIO (the largest international biotechnology conference), San Diego, Spring 2008
- Bio-Finance, Toronto, Spring 2008
- HUGO (Human Genome Organization), India, Fall 2008
- HUPO (Human Proteome Organization), Amsterdam, Fall 2008
- BioContact, Quebec City, Fall 2008
- Université Laval Congrès IUFRO, Summer 2008
- The IXth World Conference on Clinical Pharmacology and Therapeutics, Summer 2008

- **Website**

In order to improve the content, navigability and look of its website, Genome Canada developed and launched a new website in the spring of 2008. The new website includes a first-ever financial database and a search capability. It not only responds better to current needs and trends in this field, but also offers better service to its diverse clientele.



## SECTION II — Pursuing our Objectives: Performance for 2008–09

### **5 Objective 5: The encouragement of investment by other Persons in the field of Genomics research.**

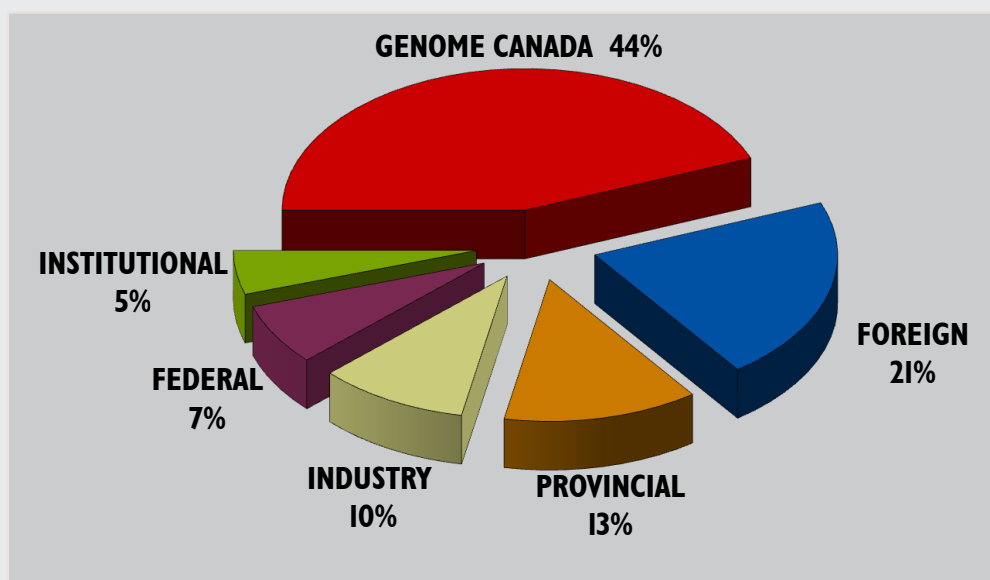
#### **Strategy for success**

Genome Canada funds up to 50% of the eligible costs of research projects, with the remainder secured through co-funding by others. Genome Canada's strategy to encourage investment by others in excellent large-scale genomics research projects is to continue developing collaborative relationships with the private, public and philanthropic sectors as well as to secure, itself and/or through the Genome Centres and the researchers, commitments for contributions from within Canada and from abroad.

#### **What was achieved**

Since 2000, Genome Canada has approved projects totaling \$1.5B which have and are being jointly funded with co-funders as shown in the figure below.

#### FUNDING SOURCES FOR **GENOME CANADA**-APPROVED PROJECTS



**Note:** Figure above does not include funding and related co-funding of Genome Centres.

## SECTION III – Grant Management for 2008–09

The federal government, through Industry Canada, has approved a total of \$840M in funding for Genome Canada since 2000–01; \$160M in 2000–01; \$140M in 2001–02; \$75M in 2003–04; \$60M in 2004–05; \$165M in 2005–06; \$100M in 2006–07 and \$140M in 2007–08. This funding was provided in one lump sum in the years indicated, with the exception of the \$100M that was announced in the federal budget of March 2007 and the \$140M from the federal budget of February 2008. In accordance with new government policies, these funds will now be paid based on the annual cash requirements of Genome Canada over the next five years. All funding has come in the form of conditional grants, formalized through funding agreements between Genome Canada and Industry Canada.

As a not-for-profit, arm's-length organization, Genome Canada has the flexibility to maximize the grants it receives from the federal government through careful and judicious investment. It also has the ability to leverage additional funds from other levels of government and from the private sector.

### Investment and Management of Funds

Two Board Committees support the Board of Directors of Genome Canada in fulfilling its fiduciary responsibilities with respect to grant management. The Investment Committee is responsible for overseeing the investment and management of funds received from the federal government according to a Board-approved investment policy that outlines guidelines, standards and procedures for the prudent investment and management of funds. The Audit Committee is responsible for overseeing Genome Canada's policies, processes and activities in the areas of accounting and internal controls, risk management, auditing and financial reporting. Both committees meet quarterly and report to the Board on the outcome of their deliberations.

### Source and Use of Funds

Grants received from the federal government in 2000–01 (\$160M) and 2001–02 (\$140M) funded the large-scale research projects and S&T platforms that were approved in Competitions I and II, for up to four years (2002–06). These grants also funded the operations of Genome Canada and five Genome Centres.

The grant received from the federal government in 2003–04 (\$75M) funded projects and associated S&T platforms that were approved for up to three years (2003–06) in the Applied Genomics and Proteomics Research in Human Health Competition.

The grants received from the federal government in 2004–05 (\$60M) and in 2005–06 (\$165M) funded the projects that were successful in Competition III for three years, the operations of Genome Canada and six Genome Centres for three years, and the renewal of six S&T platforms until the end of fiscal year 2007–08.

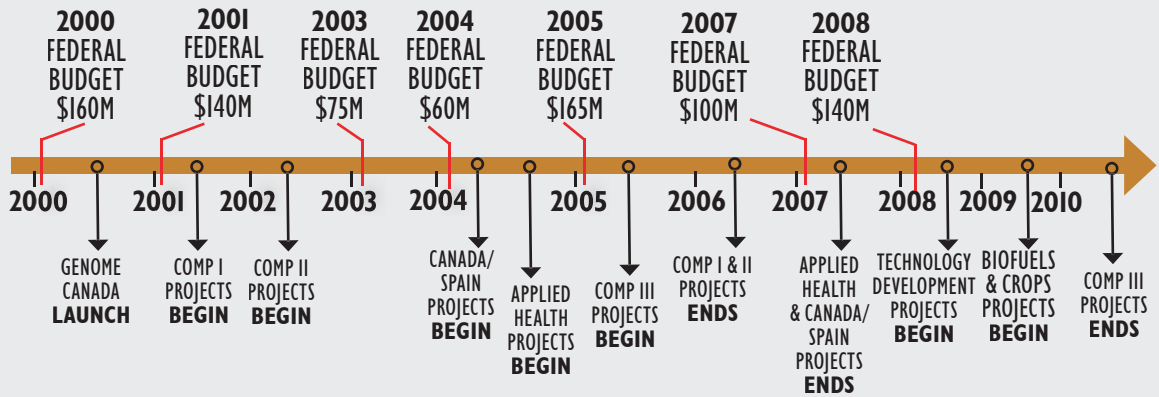
The grant approved by the federal government in March 2007 (\$100M) will fund the fourth year of Competition III projects, the S&T platforms through 2008–09, Phase II of the Structural Genomics Consortium, and the operations of Genome Canada and the six regional Genome Centres through 2009–10.

The grant approved by the federal government in February 2008 (\$140M) will fund a competition in Applied Genomics in Bioproducts and Crops, research projects through the Cancer Stem Cell Consortium, as well as continued funding for S&T platforms and the operations of Genome Canada and the six regional Genome Centres.

Federal investment earnings of over \$80M, earned with the federal investment, has allowed Genome Canada to launch other research initiatives, such as a bilateral research competition between Genome Canada and Genoma España, the Bovine Genome Sequencing Initiative, funding for two ICIs (the Structural Genomics Consortium Phase I and the Public Population Project in Genomics), as well as a competition in 2007–08 for New Technology Development projects.

## SECTION III – Grant Management for 2008–09

### Funding and Investments



#### Cash Management

Genome Canada disburses funds on a quarterly basis through the six regional Genome Centres for approved research projects and S&T platforms. Each Genome Centre is required to review expenditures to date and estimate cash requirements for each project and platform that it manages. It then submits a “draw request” to Genome Canada indicating the cash needs of the Centre for the subsequent quarter. The Genome Centres assess the project/platform needs against the approved budget, actual expenditures, scientific progress reports and co-funding received from other sources. Genome Canada conducts a thorough review of the draw request submission before releasing funds.

#### Annual Audits

As a not-for-profit, incorporated organization, Genome Canada selects external auditors to undertake an annual audit of its financial statements; the external auditors for 2008–09 are KPMG LLP. Auditors are required to submit an audit plan to Genome Canada’s Audit Committee in February for review and approval. The audit is conducted within 45 days of each fiscal year-end in accordance with generally accepted Canadian auditing standards. The objective is to express an opinion on whether Genome Canada’s financial statements present fairly, in all

material respects, the financial position, results of operations, and cash flow of the corporation. Upon completion of the audit, the financial statements and a summary of audit findings are presented to the Audit Committee and then to the Board of Directors in June for approval.

#### Recipient Audits

In 2006–07, Genome Canada developed and implemented a Recipient Audit Framework in consultation with the Genome Centres. As part of this exercise, a risk assessment tool was developed to enable the Centres to identify projects and platforms that will undergo a detailed compliance audit. This framework was introduced to bring a common approach to recipient audits across Canada and to improve the management control framework within which genomics and proteomics research is administered. Recipient audits on individual projects have been undertaken in 2007–08 and 2008–09 with a total of six being completed to date.

## SECTION III – Grant Management for 2008–09

### SUMMARY OF REVENUES AND DISBURSEMENTS TO DATE

DETAILS (in millions of dollars)\*

|  | Projects<br>Funded | ACTUALS<br>2000–01<br>to 2007–08 | FORECAST<br>2008–09 | FORECAST<br>CUMULATIVE<br>to 2008–09 |
|--|--------------------|----------------------------------|---------------------|--------------------------------------|
| <b>REVENUES</b>  |                    |                                  |                     |                                      |
| Government of Canada                                     |                    | 606.7                            | 29.5                | 636.2                                |
| Investment Income  |                    | 82.5                             | 1.9                 | 84.4                                 |
|  |                    | <b>689.2</b>                     | <b>31.4</b>         | <b>720.6</b>                         |
| <b>PROGRAM AND OPERATING DISBURSEMENTS</b>               |                    |                                  |                     |                                      |
| <b>Research Projects</b>                                 |                    |                                  |                     |                                      |
| Competition I  | 17                 | 80.6                             |                     | 80.6                                 |
| Competition II   | 33                 | 146.9                            | (0.7)               | 146.2                                |
| Competition III  | 33                 | 105.5                            | 45.1                | 150.6                                |
| Applied Genomics in Human Health Competition             | 14                 | 57.7                             | 2.2                 | 59.9                                 |
| Bovine Genome Sequencing Project                         | 1                  | 6.0                              |                     | 6.0                                  |
| Structural Genomics Consortium                           | 1                  | 16.3                             | 6.3                 | 22.6                                 |
| Public Population Project in Genomics                    | 1                  | 4.3                              | 2.3                 | 6.6                                  |
| International Regulome Consortium                        | 1                  | 1.0                              | 1.3                 | 2.3                                  |
| International Barcode of Life                            | 1                  |                                  | 0.1                 | 0.1                                  |
| Genome Canada-Genoma España Competition                  | 3                  | 7.7                              |                     | 7.7                                  |
| C. difficile   | 1                  | 0.1                              | 0.1                 | 0.2                                  |
| New Technology Development                               | 13                 | 0.2                              | 4.1                 | 4.3                                  |
|  | <b>119</b>         | <b>426.3</b>                     | <b>60.8</b>         | <b>487.1</b>                         |
| <b>S&amp;T Platforms</b>                                 | <b>10</b>          | <b>69.8</b>                      | <b>12.0</b>         | <b>81.8</b>                          |
| <b>Operating Expenditures</b>                            |                    |                                  |                     |                                      |
| Genome Canada  |                    | 48.0                             | 9.2                 | 57.2                                 |
| Genome Centres (6)                                       |                    | 40.9                             | 6.0                 | 46.9                                 |
|  |                    | <b>88.9</b>                      | <b>15.2</b>         | <b>104.1</b>                         |
| <b>Total Disbursements</b>                               | <b>128</b>         | <b>585.0</b>                     | <b>88.0</b>         | <b>673.0</b>                         |
| <b>Excess (deficiency) of Revenue over Disbursements</b> |                    | <b>104.2</b>                     | <b>(56.6)</b>       | <b>47.6</b>                          |
| <b>Opening Cash Balance</b>                              |                    |                                  | <b>104.2</b>        |                                      |
| <b>Closing Cash Balance</b>                              |                    | <b>104.2</b>                     | <b>47.6</b>         | <b>47.6</b>                          |

\* As at February 2009

## SECTION IV – Plans for 2009–10

### PLANNED ACTIVITIES AND EXPECTED RESULTS FOR 2009–10

In 2009–10, Genome Canada will continue to deliver its mandate as the primary funding and information resource for genomics and proteomics research in Canada, aligning its activities to its five national objectives. It will continue to conduct, as required, on-going monitoring and interim reviews of its large-scale research projects and S&T platforms in order to ensure milestones are met and to identify areas for improvement. Genome Canada will continue to consult broadly with its research community, assess and assist in the development of ICIs, and actively engage with international consortia. Genome Canada will undertake several activities with respect to assessing results of the research it has funded.

The following section outlines Genome Canada’s planned activities for 2009–10. These plans align with its strategic approach that future investments be reflective of priorities, as determined by the Board of Directors, and deliver value for taxpayers’ dollars.

Implementation of many of the proposed major research initiatives is contingent upon a number of factors, including the successful outcomes of international peer reviews, assessments of scientific merit and relevance, assessments of the potential for national and global scientific and socio-economic impact, and the receipt by Genome Canada of new funding support.

**1** Objective 1:  
The development and establishment of a coordinated strategy for genomics research to enable Canada to become a world leader in areas such as health, **agriculture, environment, forestry and fisheries.**

#### STRATEGIC RESEARCH PRIORITIES – NATIONAL

##### Position Papers (Under development)

Notwithstanding the excellent work and significant progress to-date, Genome Canada will not proceed with the third cycle of the Position Paper Process at this time. Genome Canada remains committed to this important and valuable process and is confident it will be able to proceed in due course.

#### STRATEGIC RESEARCH PRIORITIES – INTERNATIONAL

##### International Collaborations and Initiatives

Genome Canada will continue to be an active participant, and in some instances take a leadership role, in the development and support of the following new and ongoing national and international initiatives:

- International Funders’ Forum (Ongoing)
- International Knockout Mouse Consortium (Ongoing)
- Cancer Stem Cell Consortium (Ongoing)
- International Cancer Genome Consortium (Under development)
- Canada–Italy Partnership (Under development)
- Canada–Chile Partnership (Under development)

##### National and International Workshops, Conferences and Symposia

Genome Canada will continue to organize, host and co-sponsor national and international workshops, conferences and symposia, including a:

- 4th International Genome Canada Conference (New)
- Data Release Workshop (New)
- Polar Genomics Workshop (New)
- Turning Data into Knowledge Workshop (New)

**2** Objective 2:  
The provision of leading-edge technology to researchers in all genomics-related areas 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.**

#### Genome Centres (Ongoing)

Genome Canada will continue to work in close collaboration with the Genome Centres in 2009–10 with respect to oversight of operational and project management funding support.

#### Management of Technology Development Projects (Ongoing)

Working with each Genome Centre, Genome Canada will monitor the successful technology development projects quarterly through reports describing progress to milestones. This will ensure that Genome Canada maintains proper financial oversight as well as awareness of any project outcomes such as publications, reports, and abstracts presented at meetings and conferences.

#### Science and Technology Platforms (Ongoing)

In collaboration with the Genome Centres and the S&T platform leaders, Genome Canada will continue to ensure maximum access and usage of the platforms. In 2009–10, there will be an annual meeting of the leaders of the six Genome Canada-funded platforms for the purpose of sharing details of advances in technologies made by the platforms, discussing methods to improve cross-platform communication, and sharing best methods and practices in delivering high-quality technology services.

## SECTION IV — Plans for 2009–10

**3** Objective 3:  
The support of large-scale projects of strategic importance to Canada by bringing together industry, government, universities, research hospitals **and the public.**

## STRATEGIC RESEARCH PRIORITIES – NATIONAL

## Competition III Projects (Ongoing)

There will be ongoing management and monitoring of all projects for Competition III including preparation for the receipt of some final reports which are due to be completed in 2009–10.

## Emerging Issues (Ongoing)

Genome Canada will continue to seek out and be responsive to emerging opportunities, which may evolve into requests for funding.

## Applied Genomics Research in Bioproducts or Crops Competition (Ongoing)

Funds will be released and management and oversight of all projects for the bioproducts and crops competition will begin.

## Applied Genomics Research in Aquatic and Terrestrial Animals Competition (Under development)

Notwithstanding the significant work and progress to-date, Genome Canada will not proceed with the launch of a strategic competition on applied genomics research in aquatic and terrestrial animals at this time.

## Applied Genomics Research in Child Health Competition (Under development)

Notwithstanding the significant work and progress to-date, Genome Canada will not proceed with the launch of a strategic competition on applied genomics research in child health at this time.

## New Genomics Frontiers Competition (Under development)

Genome Canada will not proceed with an open competition dedicated to discovery research at this time. However, Genome Canada recognizes the importance of launching,

periodically, open competitions as part of a balanced research portfolio which would also include strategic or applied research competitions.

## STRATEGIC RESEARCH PRIORITIES – INTERNATIONAL

## International Consortium Initiatives

Genome Canada will continue to accept and review Letters of Intent for new ICIs. For those ICIs under development, Genome Canada and its partners will support the applicants during the development of the full proposals and will conduct the review of the proposals with appropriate expert input. As for the funded ICIs (SGC and P<sup>3</sup>G), Genome Canada will continue to be involved in the on-going oversight through participation in the Board of Directors, International Scientific Advisory Board, Steering Committee and Management Committee meetings. The following specific activities are planned:

- **Structural Genomics Consortium (SGC) (Ongoing)**—oversight to ensure that target milestones for the determination of three-dimensional protein structures are on track.
- **Public Population Project in Genomics (P<sup>3</sup>G) (Ongoing)**—oversight of the activities of the P<sup>3</sup>G through participation in Board, Annual, International Science Advisory Board, and management meetings.
- **International Regulome Consortium (IRC) (Under development)**—Pending Board of Directors' review of the IRC, possible follow-up of the international peer review committee's recommendations as well as oversight of the activities of the IRC through participation at Board, Annual, International Science Advisory Board, and Steering Committee meetings.
- **International Barcode of Life (iBOL) (Under development)**—follow-up of the international peer review committee's recommendations as well as ongoing oversight of the activities of the iBOL project.

## 4

## Objective 4:

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.**

#### National Strategy for “Taking GE<sup>3</sup>LS Leadership to the Next Level”

In 2009–10, Genome Canada will commence implementation of its National GE<sup>3</sup>LS Strategy for taking GE<sup>3</sup>LS leadership to the next level. Dependent on future funding to Genome Canada in 2009–10, Genome Canada will work toward:

- initiating an expert process to develop effective performance indicators for measuring and evaluating GE<sup>3</sup>LS success;
- encouraging continued initiatives to strengthen the integration of GE<sup>3</sup>LS in large-scale genomics projects and making it meaningful;
- bridging the gap between GE<sup>3</sup>LS research and federal public policy through various initiatives aimed at guiding research priorities aligned with relevant issues of national interest, and informing public policy development based on research evidence;
- encouraging effective public outreach vehicles that provide relevant GE<sup>3</sup>LS information to the general public and actively engage their views and interest on GE<sup>3</sup>LS issues, and enhances visibility of GE<sup>3</sup>LS research;

- conceptualizing, planning and organizing a signature international GE<sup>3</sup>LS event in 2010 to take stock of 10 years’ worth of GE<sup>3</sup>LS research results and mobilize the next phase of uptake and application;
- enabling a vibrant GE<sup>3</sup>LS network and sense of broader community across relevant disciplines and among relevant stakeholders across Canada.

#### Education and Public Outreach

Communicating the benefits of Genome Canada research funding to the public and informing the federal government about its role and results will continue to be priorities for Genome Canada. A revised communications plan will be developed and implemented in 2009–10.

## 5

## Objective 5:

The encouragement of investment by other in the field of genomics **research.**

Genome Canada will continue to seek out emerging opportunities, which may evolve into requests for funding, either through its ICIs or as special projects, and opportunities for scientific and funding partnerships. Genome Canada will also continue to nurture existing relationships to ensure maximum collaboration in the completion of approved projects.



## SECTION IV – Plans for 2009–10

**PLANNED RECEIPTS AND DISBURSEMENTS 2009–10**

The following table provides a preliminary estimate of the receipts and disbursements for 2009–10 and subsequent fiscal years. The estimate is based on statements of cash flow as presented to the Board of Directors at its December 2008 and February 2009 meetings. The operating budget for fiscal year 2009–10 will be presented to the Genome Canada Board of Directors for approval in March 2009.

**Planned Revenues and Expenditures 2009–10 and Subsequent Years \***

| DETAILS (in millions of dollars) *                           | FORECAST CUMULATIVE<br>2000-01<br>to 2008-09 | PLANNED<br>09-10 | PLANNED<br>2010-2011<br>to 2012-13 | PLANNED CUMULATIVE<br>2000-01<br>to 2012-13 | ESTIMATED<br>CO-FUNDING<br>FROM<br>2000-01<br>to 2012-13 | TOTAL<br>GENOME<br>CANADA<br>& CO-<br>FUNDING | %             |
|--|--|------------------|------------------------------------|---|--|---|---------------|
| <b>RECEIPTS</b>  |  |                  |                                    |   |  |   |               |
| Government of Canada   | 636.2  | 82.9             | 120.9                              | 840.0                                       |  | 840.0   | 43.0%         |
| Investment Income  | 84.4   | 1.4              | 1.5                                | 87.3  |  | 87.3  | 4.5%          |
| Co-Funding   |  |                  |                                    |   | 1,028.0  | 1,028.0                                       | 52.6%         |
|  | <b>720.6</b>                                 | <b>84.3</b>      | <b>122.4</b>                       | <b>927.3</b>                                | <b>1,028.0</b>   | <b>1,955.3</b>                                | <b>100.0%</b> |
| <b>PROGRAM AND OPERATING DISBURSEMENTS</b>                   |  |                  |                                    |   |  |   |               |
| <b>Research Projects</b>                                     |  |                  |                                    |   |  |   |               |
| Competition I  | 80.6   |                  |                                    | 80.6  | 73.7   | 154.3   | 7.9%          |
| Competition II   | 146.2  |                  |                                    | 146.2                                       | 140.5  | 286.7   | 14.7%         |
| Competition III  | 150.6  | 46.5             | 10.0                               | 207.1                                       | 208.6  | 415.7   | 21.3%         |
| Applied Genomics In Human Health Competition                 | 59.9   |                  |                                    | 59.9  | 73.6   | 133.5   | 6.8%          |
| Applied Genomics in Bioproducts and Crops                    |  | 9.5              | 46.1                               | 55.6  | 57.0   | 112.6   | 5.8%          |
| Bovine Genome Sequencing Project                             | 6.0  |                  |                                    | 6.0   | 63.4   | 69.4  | 3.6%          |
| Structural Genomics Consortium                               | 22.6   | 5.0              | 4.7                                | 32.3  | 175.3  | 207.6   | 10.6%         |
| Public Population Project in Genomics                        | 6.6  | 4.6              | 4.6                                | 15.8  | 55.5   | 71.3  | 3.7%          |
| International Regulome Consortium                            | 2.3  | 1.7              |                                    | 4.0   | 0.4  | 4.4   | 0.2%          |
| International Barcode of Life                                | 0.1  | 2.0              |                                    | 2.1   | 2.0  | 4.1   | 0.2%          |
| Genome Canada-Genoma Espana Competition                      | 7.7  |                  |                                    | 7.7   | 7.8  | 15.5  | 0.8%          |
| C. difficile   | 0.2  |                  |                                    | 0.2   | 0.2  | 0.4   | 0.0%          |
| Cancer Stem Cell Consortium                                  |  | 2.0              | 23.0                               | 25.0  | 60.0   | 85.0  | 4.4%          |
| Technology Development                                       | 4.3  | 5.6              |                                    | 9.9   | 9.5  | 19.4  | 1.0%          |
|  | <b>487.1</b>                                 | <b>76.9</b>      | <b>88.4</b>                        | <b>652.4</b>                                | <b>927.5</b>   | <b>1,579.9</b>                                | <b>80.9%</b>  |
| <b>S&amp;T Platforms</b>                                     |  |                  |                                    |   |  |   |               |
|  | <b>81.8</b>                                  | <b>10.8</b>      | <b>19.8</b>                        | <b>112.4</b>                                | <b>47.0</b>  | <b>159.9</b>                                  | <b>8.2%</b>   |
| <b>Operating Expenditures</b>                                |  |                  |                                    |   |  |   |               |
| Genome Canada  | 57.2   | 8.8              | 27.0                               | 93.0  |  | 93.0  | 4.8%          |
| Genome Centres (6)   | 46.9   | 5.5              | 14.0                               | 66.4  | 53.5   | 119.9   | 6.1%          |
|  | <b>104.1</b>                                 | <b>14.3</b>      | <b>41.0</b>                        | <b>159.4</b>                                | <b>53.5</b>  | <b>212.9</b>                                  | <b>10.9%</b>  |
| <b>Total Disbursements</b>                                   | <b>673.0</b>                                 | <b>102.0</b>     | <b>149.2</b>                       | <b>924.2</b>                                | <b>1,028.0</b>   | <b>1,952.2</b>                                | <b>100.0%</b> |
| <b>Excess (deficiency) of<br/>Revenue over Disbursements</b> | <b>47.6</b>                                  | <b>(17.7)</b>    | <b>(26.8)</b>                      | <b>3.1</b>                                  |  |   |               |
| <b>Opening Cash Balance</b>                                  |  | <b>47.6</b>      | <b>29.9</b>                        |   |  |   |               |
| <b>Closing Cash Balance</b>                                  | <b>47.6</b>                                  | <b>29.9</b>      | <b>3.1</b>                         | <b>3.1</b>                                  |  |   |               |

\* As at February 2009

## SECTION V – Performance, Audit and Evaluation Strategy

Genome Canada has a wide array of policies, systems and processes that have been developed over time to address issues of performance, audit and evaluation. In 2007–08, the Board of Genome Canada approved a new Performance, Audit and Evaluation Strategy (PAES) to respond to specific requirements of the latest funding agreement with Industry Canada, and to ensure that a comprehensive and integrated approach to these functions is maintained. Implementation of the Strategy began in 2008-09.

The PAES comprises three key elements and two supporting elements, each of which are integral to the strategy.

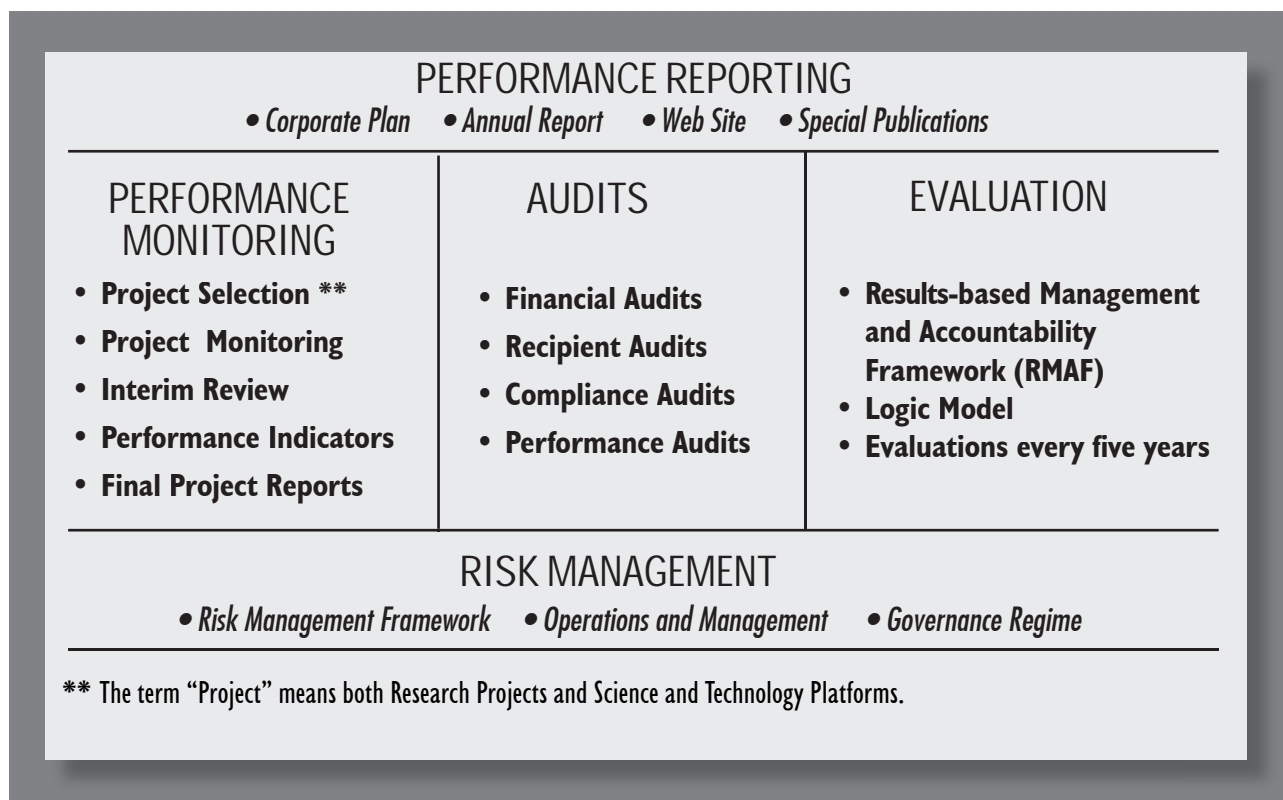
**The three key elements are:**

- Performance Monitoring and Measurement Framework
- Audit Framework
- Evaluation Framework

**The two supporting elements are:**

- Performance Reporting
- Risk Management

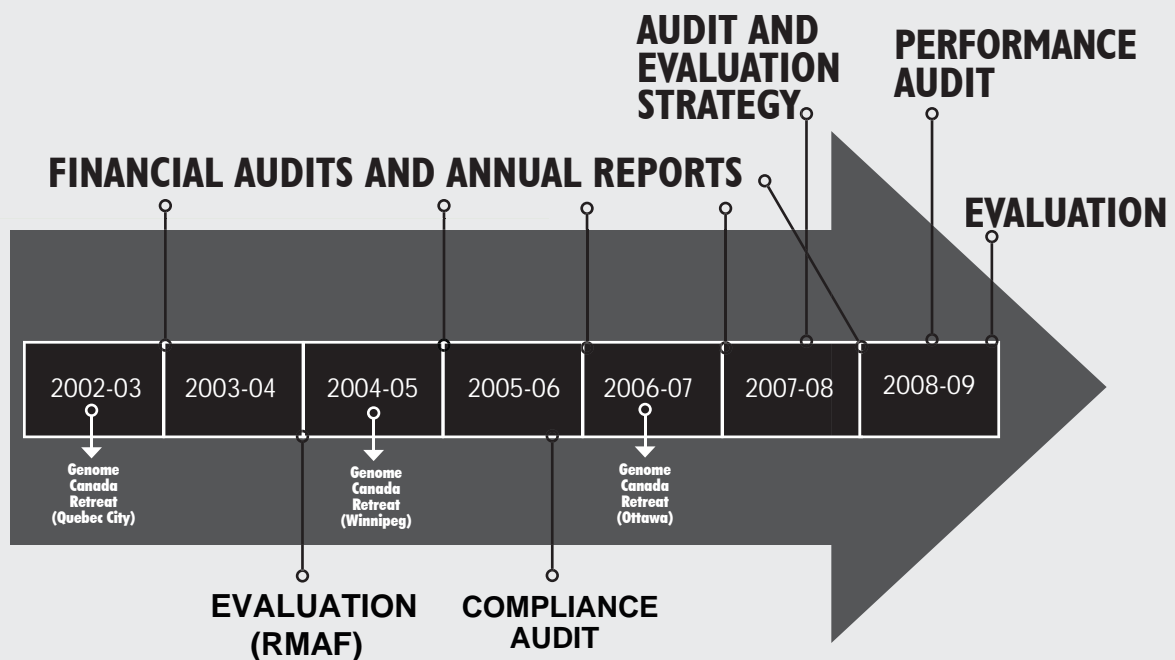
Each of the elements and their underlying components is displayed in the figure below.



## SECTION V – Performance, Audit and Evaluation Strategy

The PAES can be viewed in full on Genome Canada’s website ([www.genomecanada.ca](http://www.genomecanada.ca)). In 2008–09, activities related to ensuring completion of the performance audit and the evaluation that were called for both in the PAES and in the funding agreement with Industry Canada were undertaken. Final reports on these two significant undertakings are planned for submission to the Board of Directors in March 2009.

In fiscal year 2009–10, Genome Canada will concentrate on completing the process for assessing final project reports, and on finalizing a national system for capturing performance information from across all projects in a consolidated manner.



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### **Government of Canada**

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