



Advisory Services

Genome Canada
Performance Audit

Final Report

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Executive Summary

Under the terms of its funding agreement with Industry Canada, Genome Canada is required to have a performance audit completed by March, 2009. This report presents a summary of the approach followed in planning and conducting the performance audit as well as our detailed findings and recommendations for improvement. The audit was planned and conducted with reference to the Office of the Auditor General's *Performance Audit Manual*.

Audit Objectives and Scope

The audit was planned using a risk-based approach through which key risks facing the achievement of Genome Canada's strategic objectives and expected results were identified and linked to related mitigating processes and practices in place which were then subject to in-depth examination. The overall objectives of the audit are to provide an independent assessment of Genome Canada's operations regarding the economy, efficiency, and effectiveness of funds used. The specific audit objectives as developed based on the risk assessment process are as follows:

- The process for approving and monitoring funded projects provides reasonable assurance that approved projects are consistent with Genome Canada's objectives, are approved in a transparent manner, and that project funding is used for intended purposes;
- The management controls and overall governance structure with respect to the delivery of Genome Canada programming through the Genome Centres is effective and efficient;
- International partnership strategies and management practices effectively support the achievement of Genome Canada's strategic objectives with due regard to Genome Canada's reputation;
- Plans to help ensure sustained funding and support for Genome Canada's continued operations have been developed and implemented;
- Performance measurement and reporting processes are being carried out effectively and efficiently to assist it in achieving its mandate and report on its results; and
- Human resources management practices are effective in ensuring that sufficient resources are available with the required skills set, at the right time, to meet Genome Canada's existing and future requirements.

The scope of the audit covered Genome Canada's management controls, processes, and practices related to the audit objectives identified above, with a focus on the period covering Genome Canada's fiscal years 2007 and 2008. The audit was conducted concurrently with a performance evaluation. As such, information obtained and analyzed in conjunction with the evaluation was considered and included in our audit findings where appropriate and relevant. Our fieldwork was completed on February 6, 2009. Our work was limited to, and our recommendations are based on, the procedures conducted, and the findings and recommendations should be considered in the context of the procedures performed. We relied on information and representations of management and others for the completeness of background information provided.

Summary of Findings

A summary of our key findings, categorized by the specific audit objectives to which they relate, is provided below.

A) Approval and Monitoring of Projects

- We found that practices and processes are in place to help ensure that approved projects are consistent with Genome Canada's objectives, are approved in a transparent manner, and are monitored for compliance with recipient funding agreements. Key mechanisms relied upon by management to reduce risks associated with perceived conflicts of interest in funding decisions include: the use of predefined and communicated

evaluation criteria to assess applications for funding; the use of International Science Review Panels to assess the scientific merit of proposals along with a concurrent due diligence assessment to evaluate the financial and managerial capacity of proposed projects; and requirements for Board members and review panel members to sign conflict of interest declarations.

- Genome Canada has mechanisms in place to monitor both the scientific and financial progress of projects, including quarterly project progress reports, interim reviews, and the Centres' use of a recipient audit framework to guide recipient audit activities. Although Genome Canada continues to make improvements to processes and procedures based on lessons learned, opportunities to continue to improve the nature and formality of internal procedures, processes, and roles and responsibilities were noted.
- Genome Canada has conducted wide spread consultations to identify and fund areas of relevance to Canadians and the scientific community. In response to government interest to fund more targeted research themes, Genome Canada introduced a Position Paper Process in 2006, through which funding themes are identified based on the input of the scientific community. While Genome Canada has focused its competitions over the past two years on Position Paper themes, it is recommended that the process be complemented by periodic open competitions to allow for the identification and funding of other projects of strategic and/or emerging importance to Canada and enable a balance between open and targeted research competition. It is our understanding that management is exploring mechanisms to fund open competitions and to fund projects further along the value chain towards commercialization in response to stakeholder needs. Genome Canada should continue to consider and implement new funding approaches to enhance its ability to achieve its mandate.

B) Genome Centres

- We found that processes and practices are in place to monitor the performance of the Genome Centres with respect to the contractual obligations as stated in each Centre's funding agreement. Each Genome Centre has a funding agreement with Genome Canada that defines Genome Canada's expectations and conditions precedent to providing financial contributions to the Centre in support of Genome Canada funded projects. Genome Canada has implemented a number of mechanisms to facilitate its monitoring of each Centre's performance with respect to their obligations under the funding agreement and to engage the input of representatives of the Centres, including: regularly scheduled meetings among functional heads; the cross-attendance by Genome Canada's Chief Executive Officer (CEO) and Genome Centre CEOs at Genome Canada and Genome Centre Board meetings; the development and communication of documented roles and responsibilities for the Centres and Genome Canada; and the conduct of financial monitoring site visits by Genome Canada's Finance group.
- Despite the use of mechanisms, such as those described above, to communicate and engage the Genome Centres, results of our interviews indicate a perceived shift in the relationship between Genome Canada and the Centres away from a partnership style of collaboration. Genome Canada should continue to utilize existing forums to continue to engage the input of the Centres in an effort to resolve existing or perceived collaboration issues and clarify the expected role and contribution of the Centres.

C) International Partnerships

- Genome Canada has recently formalized an International Strategy that identifies three primary mechanisms to support international research partnerships: International Consortium Initiatives (ICIs); international collaborations; and bilateral initiatives. We noted that the strategy defines the general criteria that must be met for these types of arrangements to be funded and further noted that there are well documented and defined processes for funding ICIs.
- The identification and initiation of international partnership and collaboration opportunities is supported and informed by Genome Canada's Science and Industry Advisory Committee. To further strengthen its existing partnership practices, it is recommended that Genome Canada publicize its International Strategy and formalize

and communicate procedures related to non-ICI partnerships to enable a greater understanding of the rationale and expected benefits of non-ICI partnerships among key stakeholders.

D) Sustainability of Funding

- We noted that Genome Canada employs a number of practices and mechanisms to obtain ongoing support for its initiatives at various levels, including the federal government, the scientific and research community, and Canadians at large. A core element of Genome Canada's funding model is the requirement that all Genome Canada funded projects must involve the funding of at least 50% of eligible costs from other sources, including provincial governments, private industry and other public sector partners. In addition, Genome Canada has actively worked on strategies to secure additional sources of future funding that include private financing options as well as philanthropic opportunities.

E) Performance Measurement and Reporting

- Genome Canada has developed performance measurement strategies and frameworks, including its Performance Measurement Strategy, its Performance, Audit, and Evaluation Strategy (PAES) and Results-based Management and Accountability Framework (RMAF). The Centres play a key role in gathering performance information and data related to Genome Canada funded projects. Although Genome Canada has identified the need to develop and implement a national performance measurement repository to provide a systematic means through which Genome Canada can collect real-time performance data on Genome Canada funded projects, such a system has not yet been implemented. We recommend that management consider providing dedicated resources to help progress the implementation of a national performance measurement repository and supporting process forward.

F) Human Resources Management Practices

- Genome Canada is a relatively lean organization, with less than 20 full time employees. Genome Canada manages risks related to its human resource complement by creating new positions or roles as necessary to respond to emerging needs and has documented a succession plan for its executive management positions.

Our detailed observations and recommendations are categorized under each of the six audit objectives in the "Observations and Recommendations" section of this report. Genome Canada agrees with each of our recommendations for improvement. Genome Canada's responses follow each recommendation in the "Observations and Recommendations" section of the report.

Background

Genome Canada (“the organization”) is a not-for-profit corporation established in February 2000 under the Canada Corporations Act Part II with the vision “to position Canada as a world leader in genomics and proteomics research”.

Genome Canada operates at arms length from the federal government and receives conditional grants through a multi-year Funding Agreement with Industry Canada. 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”. Genome Canada has also committed to providing a national leadership role on the ethical, environmental, economic, legal, and social (GE³LS) issues associated with genomics and proteomics research.

Genome Canada’s vision and mandate are supported by five strategic objectives, as defined in its Funding Agreement with Industry Canada:

1. the development and establishment of a coordinated national strategy for genomics and proteomics 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 and proteomics related fields through regional Genome Centres across Canada;
3. the support of large-scale genomics and proteomics projects of strategic importance to Canada, which are beyond current capacities 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 (GE³LS) and other issues related to genomics and proteomics research, and the communication of the relative risks, rewards, and successes of genomics and proteomics to the Canadian public; and
5. the encouragement of investment by others in the field of genomics and proteomics research.

In support of these objectives, Genome Canada’s business model focuses on funding large-scale and multidisciplinary research projects and science and technology (S&T) platforms (facilities which provide access for researchers to sophisticated technology and expensive equipment and infrastructure, such as DNA sequencing, genotyping, proteomics analysis, information technology, and bioinformatics expertise). Funding is provided through a competitive process in which approved projects receive up to 50% of the required funding for eligible and approved projects. A key element of Genome Canada’s business model is the requirement for applicants to secure the remainder of the funding from other sources, such as provincial governments, foundations and private industry. In addition, Genome Canada facilitates a high level of collaborative research with genomics and proteomics researchers in other countries through its International Program.

As of March 31, 2008, Genome Canada had received a total of \$840 million in federal funding for large-scale research projects, S&T platforms, and operations, and had funded over 118 large scale projects and ten S&T platforms.

Genome Canada is staffed with less than 20 employees and two contracted personnel. It is governed by a Board of Directors made up of a maximum sixteen members from industry and the scientific community in Canada and the United States. Genome Canada’s operations are complemented by six Genome Centres (“the Centres”) located across the country (British Columbia, Alberta, Prairie, Ontario, Quebec, and Atlantic). The Centres are each separately federally incorporated and are responsible for much of the management and monitoring of Genome Canada funded research projects. The relationship between Genome Canada and each of these Centres is governed by funding agreements with each Centre that mirror the agreement between Industry Canada and Genome Canada.

Audit Approach and Objectives

A performance audit plan was developed using a risk-based approach through which key risks facing the achievement of Genome Canada’s strategic objectives and expected results were identified through interviews with management and key stakeholders and through documentation review. Key risks were then linked to the core processes and practices in place within Genome Canada that are designed to mitigate these key risks. This information was used to determine the specific audit objectives and related criteria to be assessed through the examination as illustrated below:

Audit Objective	Audit Criteria
<p>Audit Objective #1: Processes for approving and monitoring funded projects provide reasonable assurance that approved projects are consistent with Genome Canada’s objectives, are approved in a transparent manner, and that project funding is used for intended purposes.</p>	The process to assess, evaluate and approve applications for funding is transparent and has mechanisms in place to ensure that approvals are free from bias and conflicts of interest.
	Assessment criteria are defined and support Genome Canada’s objectives.
	Results from consultations, research and analysis is formally considered and used to coordinate calls and priorities for funding.
	Funding priorities and themes consider the needs of stakeholders, policy requirements, and expected results and impacts.
	A risk-based approach to the monitoring of funded projects exists and is followed.
	Progress reports prepared by the recipient are reviewed to ensure the project is progressing consistently with approved project objectives and statements of work.
<p>Audit Objective #2: Management controls and overall governance structure with respect to the delivery of Genome Canada programming through the Genome Centres is effective and efficient.</p>	A mechanism exists to identify and share lessons learned, knowledge and expertise between the Genome Centres.
	Funding agreements clearly define terms, reporting requirements, and performance expectations of the Genome Centres.
	Roles and responsibilities for managing and delivering the program are clearly defined and communicated.
	A mechanism exists to verify that the terms of funding agreements have been met and to monitor the progress of the Genome Centres.
<p>Audit Objective #3: International partnership strategies and management practices effectively support the achievement of Genome Canada’s strategic objectives with due regard to Genome Canada’s reputation.</p>	A framework that guides Genome Canada’s partnership activities and expectations has been documented and communicated to relevant stakeholders.
	Partnership opportunities are consistently identified and managed across the organization.
	The results of partnership activities are monitored and lessons learned are identified and acted upon.
	Mechanisms are in place to help ensure that partners’ ethics and values are not in conflict with those of Genome Canada.
<p>Audit Objective #4: Plans to help ensure sustained funding and support for Genome Canada’s continued operations have been developed and implemented.</p>	There is ongoing and transparent communication of Genome Canada’s objectives and results to key external stakeholders.
	Input is sought on a regular basis from key stakeholders through mechanisms such as environmental scanning, surveys, or other means of monitoring public opinion and stakeholder satisfaction.

Audit Objective	Audit Criteria
	Plans/contingency plans have been developed to respond to changes in future funding for Genome Canada's operations.
Audit Objective #5: Performance measurement and reporting processes are being carried out effectively and efficiently to assist it in achieving its mandate and report on its results.	Results expected from the program are clear, measurable, and directly related to Genome Canada's objectives.
	Expected results are monitored, communicated and reported on a regular and timely basis and support effective and timely management decision-making at both the project and organization-wide levels.
	There is a process in place to determine whether funded projects were successful in contributing to expected results overall.
Audit Objective #6: Human resources management practices are effective in ensuring that sufficient resources are available with the required skills set, at the right time, to meet Genome Canada's existing and future requirements.	Succession planning is a key element of Genome Canada's strategic planning process to ensure human resource plans are in place to provide for Genome Canada's future viability and continuity of effective operations.

The audit criteria were developed with reference to recognized models of control, Treasury Board Secretariat's Core Management Controls: A Guide for Internal Auditors, and performance audit criteria used by the Office of the Auditor General as listed in publicly available reports. The audit planning phase was completed between February and May of 2008.

The scope of the audit covered Genome Canada's management controls, processes, and practices related to the audit objectives identified above, with a focus on the period covering Genome Canada's fiscal years 2007 and 2008.

Our audit work included the conduct of 31 interviews with representatives of Genome Canada staff and management, members of the Board, and representatives from each of the Genome Centres. We conducted physical site visits at two of the largest Centres (Ontario and British Columbia) and examined a sample of funded project files representing 15% of total project funds provided by Genome Canada. Our audit work also included the examination and analysis of documentation of relevance to the each of the audit objectives. In addition, information obtained through the performance evaluation being conducted concurrently, and reported under separate cover, of relevance to the audit objectives was referred to in our analysis. This included the results of a survey administered to principal investigators, co-funders, and Peer Review Panel members to obtain their views on a number of areas of relevance to Genome Canada's mandate and objectives. Our fieldwork was completed on February 6, 2009.

Our work was limited to, and our recommendations are based on, the procedures conducted, and the findings and recommendations should be considered in the context of the procedures performed. We relied on information and representations of management and others for the completeness of background information provided.

Observations and Recommendations

Our observations from the audit fieldwork, recommendations for improvement, and Genome Canada's responses to our recommendations are categorized below under each of the six audit objectives as stated in the performance audit plan.

1) Approval and Monitoring of Projects

Under its funding agreement with Industry Canada, Genome Canada is accountable for ensuring that grants are awarded for eligible projects to eligible recipients who demonstrate a firm commitment to secure at least 50% of the total requested funding for eligible costs from other sources. In addition, the award process must consider the extent to which the project contributes to achieving Genome Canada's national objectives in areas considered to be priorities to the Board. We examined the practices and processes in place to determine whether approved projects are consistent with Genome Canada's objectives, are approved in a transparent manner, and are monitored for compliance with the funding agreement with the recipient's host institution.

Mechanisms are in place to help ensure transparency and reduce conflicts of interests in the review and approval of applications for Genome Canada funding.

Since its inception, Genome Canada has adopted the use of International Science Review Panels (or Peer Review Panels) to assess applications for funding and provide recommendations for approval based on a consensus rating. These Panels are supported by external peer reviews of the more specialized science aspects of the application. In addition, a due diligence process is conducted through which applications are assessed against a number of pre-defined criteria, including: management capability, financial capacity, and reasonableness and adequacy of co-funding. Although in the past, the scientific and due diligence reviews were conducted sequentially, this process has been revised such that both reviews now occur concurrently. This change in the process was initiated in response to concerns raised through Competition III in which the due diligence occurred before the scientific assessment, which left some in the scientific community concerned that the process may have excluded projects of merit from being considered for approval solely based on the results of the due diligence process. The current process, through which applications for funding are assessed for both scientific merit and due diligence on a concurrent basis, is intended to help ensure that all relevant aspects of proposals are assessed as a whole in a comprehensive manner.

The application and approval process is transparent, in that applicants are informed of the composition of the Peer Review Panel and are invited to provide input on any concerns they have with respective members. Panel members and external peer members are selected by Genome Canada based on their scientific expertise and credentials. The use of international, rather than domestic, scientists in the application review process helps reduce perceived and actual conflicts of interest in the assessment process, as Panel members should not stand to gain from the outcome of the proposal review process. Reviewers are required to complete a Conflict of Interest declaration through which they must confirm their lack of conflict of interest or disclose any potential actual or perceived conflicts of interest with respect to the applications for each funding competition. This disclosure is facilitated by Genome Canada's provision of listings of all project leaders, co-investigators, and collaborators for each application received to each reviewer that must be reviewed in conjunction with their certification. Reviewers are denied access to any projects for which they have a conflict, or potential conflict, of interest.

In addition, Panel and due diligence team members are not provided with information on the total project funding available for any given funding competition. This helps to ensure that projects are recommended for approval based on an assessment of the merit of the project, rather than based on total funding available.

All applications recommended for approval are forwarded to Genome Canada's Board of Directors for final approval. Board members are guided by Genome Canada's *Confidentiality and Conflict of Interest Policy* which requires the disclosure of any potential conflict of interest situations to the Board and the removal of the individual from any

related decisions in which a potential conflict exists. Based on our review of a sample of project files from Competitions I, II, III, and Applied Human Health, documentation supporting the final recommendation of the Peer Review Panel was on file, including the biographies and credentials of the Panel members. In addition, the evaluation of each project was consistent with documented guidelines and assessment criteria and there was evidence on file that status reports were being used by Genome Canada to confirm that all requirements, such as confirmed co-funding plans, were met prior to funds being provided to the recipients. Our review of the Board meeting minutes substantiated the approval of all funded projects through the Board based on the recommendations of the Panel.

Transparency is further encouraged through Genome Canada's solicitation of input from the Genome Centres on competition guidelines and public posting of final competition guidelines for each funding competition on their website. The guidelines describe the review process and the criteria against which applications will be assessed. The guidelines for the most recent competitions examined through the audit specifically state that applications must support Genome Canada's five objectives (which are listed in the guidelines), including the requirement to address GE³LS issues and secure 50% co-funding to encourage investment by others. Finally, applicants are provided with a copy of each Panel member's review and a summary of the Panel findings to help further their understanding of the funding decision. The level of services required by projects approved through the Panel process is used by Genome Canada to assess the funding support needed by the S&T Platforms that will be supporting the projects. Based on the results of our interview process, representatives of management from the Genome Centres were consistent in their view that the funding assessment and approval process is transparent and equitable, and was considered to be "best in class" by most interviewees. In addition, our survey of principal investigators, co-funders, and Peer Review Panel members also indicated that the majority of respondents believed the approval process to be transparent, equitable, and free from conflicts of interest.

Funding themes are identified based on the input of the scientific community and wide spread consultations.

Through its initial competitions, Genome Canada focused on funding proposals under open competitions rather than funding specifically targeted research themes. This was, in part, intended to solicit input and responses from the wide scientific community on topics of relevance and interest to Canadians and generate interest in and awareness of large scale genomics and proteomics research projects. In response to the federal government's interest in more strategically targeted funding, Genome Canada started to focus on funding competitions based on specific research themes, commencing with the launch of the Applied Genomics and Proteomics Research in Human Health Competition in 2003, which was aimed at funding proposals focusing on the development and application of genomics and proteomics tools to improve the prediction, prevention and treatment of human disease for individuals and populations. Genome Canada enhanced its targeted funding process in 2006, in which a national retreat was held with over 140 scientist and stakeholder representatives from both Canada and internationally to discuss trends in genomics and proteomics research and identify areas of strength and opportunity for Canadian researchers. This forum was one of several key factors that led to the development of the Position Paper Process, which has been followed annually since the fall of 2006 to identify research themes of national significance, interest, and socio-economic importance to Canadians. Priority themes are then selected and funded through targeted competitions in the priority research area. These targeted competitions were initiated in addition to Genome Canada's current portfolio of New Technical Development projects, S&T Platforms, international projects and Competition III projects.

Through the process, researchers and stakeholders from across the country are invited to submit position papers that define the significance of a problem of interest, how genomics/proteomics research may provide solutions, the current state of the related science in Canada and internationally, Canadian research capacity, estimated total funding over a four year period, and expected socio-economic outputs, outcomes and impacts. As part of the process, national workshops are held to bring together interested stakeholders to help define the goals and actions required for the proposed thematic area. The papers are rated and assessed against pre-defined criteria by an international peer review panel, consisting of globally recognized scientists and experts in their field.

The value of the Position Paper Process is well respected by stakeholders, with 83% of our survey respondents indicating that Genome Canada's process for identifying and focusing on high priority research themes is effective to very effective as of the date of the end of our audit fieldwork.

Finding #1: The Position Paper Process alone may not be sustainable over time in supporting the identification of strategic areas of priority.

Although the Position Paper Process directly solicits and engages the input of the scientific community and other key stakeholder groups in identifying areas of strategic priority for future funding competitions, the process is a lengthy one by virtue of the extent of national consultations required, the research and writing required by research teams submitting papers, and the review and award process. As a result, a significant level of effort is required by the research community throughout this process. Based on the results of our interviews with representatives of the Genome Centres and Project Leaders, there is a concern that past participants in the process may lose interest in participating in future years. Results of our interviews further identified that the current process may limit the extent to which emerging or new areas of priority are identified due to the focus on specifically targeted research funding competitions. However, it is our understanding from discussions with Genome Canada management that although the most recent Position Paper Process resulted in a fewer number of papers proposed, the process did attract new and formidable research leaders in Canada.

In addition, projects are funded for specific priority areas identified through the Position Paper Process for an average of 4 years. However, as future funding under this process will be based on new and different areas of priority, there is currently no mechanism in place for taking projects within a strategic area of priority further down the commercialization stream. It is our understanding that management is exploring options to provide funding for development phases, but this has not yet been initiated.

Recommendation #1: It is recommended that the Position Paper Process be complemented by periodic open competitions to allow for the identification and funding of other projects of strategic and/or emerging importance to Canada that do not fall within Position Paper priority themes. It is our understanding that management is currently considering options in this area, and we encourage the adoption of a hybrid approach that allows for both open and targeted research funding competitions. Consideration should be given to staggering the Position Paper Process to every two to three years to allow for a balance between strategic based and open competitions. We also recommend that new and emerging areas of importance to Canada as identified through federal policies and strategies continue to be considered in the identification of strategic funding themes. It is our further understanding that management is exploring options to fund projects further along the value chain towards commercialization in response to stakeholder needs. We encourage the exploration of avenues to enable this type of funding in the future as a means of providing additional mechanisms to sustain longer term funding for areas of strategic relevance to Canada.

Management Response: *Management agrees with the recommendation. It should be noted that the Position Paper process, through the initial stage of requesting "Expressions of Interest", is specifically designed to encourage the scientific community in academia, industry and government to identify strategic and emerging themes of importance to Canada. It is important to note as well that the competitions resulting from the process are open to all scientists in that particular theme area. However, management recognizes the need for periodic "open" competition and believes that an appropriate balance between strategic and fully open competitions is a critical component of an effective overall research funding strategy.*

Mechanisms are in place and are followed to monitor the progress of funded projects and assess compliance with funding agreements.

Genome Canada conducts a number of activities prior to releasing funding for an approved project. These activities include ensuring that significant Panel recommendations are addressed, arrangements to secure Scientific Advisory Boards for the projects are made, and ensuring that sufficient documentation is received to support co-funding plans and commitments. The majority of direct project monitoring activities subsequent to project funding being received are conducted by Program Managers at the Genome Centres. Program Managers are responsible for on-going project monitoring, including communicating and meeting with Project Leaders and members of the project

research team, assessing quarterly project progress reports, responding to and resolving project issues as they arise, and communicating with Genome Canada Program staff. In addition to regular and ongoing communication between the Program Managers and Project Leaders, there are three primary mechanisms utilized by Genome Canada to monitor the scientific and financial progress of research projects:

- Quarterly project progress reports are submitted to the Genome Centres for every project that define key milestones achieved, funding expended, co-funding received and secured, estimated cash flow requirements for the next quarter, and performance metrics achieved. These reports are reviewed by the Centres (and by Genome Canada's Technical Development Consultant in the case of S&T Platform projects), for reasonableness of project progress and costs claimed and are used to prepare and substantiate quarterly draw requests to Genome Canada to receive the expected cash requirements for the project for the subsequent quarter. Although Genome Canada does not receive the quarterly project reports with the exception of the S&T Platform reports, it is Genome Canada's expectation that any scientific and financial issues identified through these reports will be reported to Genome Canada by the Centres on a timely basis.
- Comprehensive interim reviews are initiated by Genome Canada on every project approximately eighteen months after funding approval. Interim reviews are conducted by an International Science Review Committee (ISRC). The process consists of a review of a written project progress report submitted by the Project Leader that is analyzed by the ISRC and by external expert reviewers who provide written assessments of their evaluation of the project's progress against the project's objectives and plan. Representatives from each project meet face to face with the ISRC to discuss the project. The review assesses the project's progress against approved milestones and outcomes, including: progress of the research, GE³LS aspects, the capacity of the research team to meet approved objectives based on progress to date, the reasonableness of any proposed changes to the project, the progress towards meeting social and economic benefits objectives, and financial and managerial soundness. The results of the review culminate in a recommendation to the Board regarding whether the project should continue, be terminated, or if there are specific issues that need to be addressed to support continuing the project. In cases where significant issues are identified, site visits are conducted by the Panel.
- A risk-based approach to selecting projects for audit has been documented and defined in Genome Canada's Recipient Audit Framework. The framework provides a risk assessment tool that the Centres are expected to use to rank project risks as being low, medium or high based on a number of pre-defined and measurable criteria. This risk rating is then used as a basis for selecting projects for audit. The framework recommends that all high risk projects and projects for which credible allegations of mismanagement of funds have been received be audited. The framework further requires compliance audits to be conducted in accordance with CICA standards. As of the end of our audit fieldwork, a total of 6 recipient audits had been conducted. Based on our review of a sample of these audits, all reports were issued as opinions in accordance with CICA standards and in compliance with the Recipient Audit Framework.

In addition to the above, final project reports are submitted to the Centres and to Genome Canada at the end of each project that describe the project's outcomes and achievements in relation to approved objectives and performance metrics, such as research contributions resulting from the project, recruitment statistics, and other measures. The final report is utilized by Genome Canada to reconcile and validate final project payments.

Based on our review of a sample of project files from across various competitions, we confirmed that the results of interim reviews are formally documented in consistent reports (Interim Review of Progress Final Committee Recommendations) that rated project progress, identified whether significant changes were proposed for the future and the assessment of the changes, and rated the research team, collaborations, S&T platforms, personnel, benefits of the project, public outreach and communications, financial progress and capacity (including co-funding) and management capability and capacity. Recommendations were provided to proceed as proposed, proceed according to specific recommendations of the review panel, and/or undertake a site visit for further investigation of specific issues in accordance with established and documented interim review guidelines and procedures.

In addition, we conducted site visits to two of the larger Genome Centres and interviewed management from all Centres and examined related documentation. We noted that although the format of Centre documentation varied, formal documented policies and procedures for financial project management and monitoring existed and appeared to be followed by Centre personnel.

With respect to the S&T Platforms, Genome Canada's Technical Development Consultant monitors platform progress through attendance at the Scientific Advisory Board meetings for the S&T Platforms and through a review of quarterly platform progress reports. In addition, it is our understanding that the Technical Development Consultant plans on visiting all of the S&T Platforms involved in the New Technical Development projects to examine the scientific and financial progress at the one year mark of their project. This is in lieu of an interim panel review, as these projects are shorter than projects funded under other competitions, and are generally expected to be only two years in length.

Lessons learned are identified and acted upon to further develop and improve Genome Canada policies and processes.

Results of our interviews with representatives of Genome Canada and documentation review consistently identified that Genome Canada regularly conducts informal post-mortem reviews of the results of funding competitions to identify areas where policies, processes, or procedures may need to be improved to better respond to stakeholder needs and/or improve the efficiency of the process. Specific actions that have resulted from such reviews of lessons learned include the following:

- The requirement for all projects from the Applied Human Health competition onward to establish Scientific Advisory Boards (SABs) to manage internal changes to the project. It is our understanding that Genome Canada has developed terms of reference for the SABs to help ensure a consistent approach going forward.
- Clearly defining and documenting the expectation that in order to release funds, projects must demonstrate a firm commitment of at least 75% of required co-funding and a feasible plan for securing the remaining 25% of co-funding commencing with the ABC Competition.
- Developing a streamlining process to review project applications for the ABC Competition in response to the significant number of letters of intent received.
- The development of a Data Release and Resource Sharing Policy in 2005 in response to the need to have better mechanisms for sharing research data among the research community.

Finding #2: There are opportunities to further improve the nature and formality of internal procedures, processes, and roles and responsibilities. Results of our interviews with Genome Canada management and representatives from the Genome Centres were consistent in recognizing the fact that Genome Canada was quick to mobilize in its early years. As a result, the formality of the organization's processes and procedures has improved over time as resources have been made available to address organizational matters. However, based on the results of our interviews and documentation review, we identified a number of additional opportunities to improve the content and/or formality of existing process and procedural documentation. These opportunities include the following:

- There is currently limited documented internal guidance for Genome Canada staff on the expected procedures to be performed on projects in areas such as reviewing final project reports, sharing information between functional areas, and other matters. Staff currently rely upon externally published competition guidelines and corporate memory in this regard.
- A baseline international partnership strategy has been documented, but there are currently no supporting tools or procedures to help guide partnership activities and procedures. This is commented on further in the "International Partnerships" section of this report.
- In some limited instances, roles and responsibilities of Genome Canada personnel were not clear internally due to transitions in roles and/or the requirement to assume new responsibilities as the organization grew and evolved. These observations relate primarily to the programming and partnerships areas, in which some personnel identified a need for greater clarity in the division of roles and responsibilities among personnel in these areas.

Genome Canada is a small organization, with under 20 employees and few management layers. As a result, strong knowledge management and documentation practices are recommended to reduce risks associated with loss of corporate memory during times of turnover or transition.

Recommendation #2: It is recommended that management document key expected procedures and roles / responsibilities for Genome Canada personnel in the areas identified above as well as areas identified through lessons learned exercises.

Management Response: *Management agrees with the recommendation. As part of its operational plan for FY 2009-10, management will target those areas mentioned in the report, as well as others identified by management, that require the preparation and/or formalization of processes and procedures, and will put a plan in place for their development and implementation.*

2) Genome Centres

The Genome Centres are located in British Columbia, Alberta, the Prairies, Ontario, Quebec, and Atlantic. Genome Canada provides funding to the Centres for approved projects and S&T platforms in addition to base funding for the Centre's operations. We examined the governance structure and controls in place regarding the delivery of Genome Canada programming through the Centres.

There are frequent and regularly scheduled communications between Genome Canada and the Genome Centres.

Genome Canada and representatives of the Genome Centres discuss issues, emerging areas of priority, and other matters through regularly scheduled teleconferences and in-person meetings among the functional heads. These meetings are held between the F7 or Finance members, the C7 or Communications group, the G7 or Chief Executive Officer (CEO) level, and the S7 or Chief Scientific Officer level. We reviewed meeting minutes from each group for the last year and noted that the meetings occurred on a regular basis with participation from across the Centres and from Genome Canada. We also noted that the meeting minutes evidenced the sharing of ideas, progress on competitions, branding, co-funding, strategies, communications, and other matters of national relevance. Based on the results of our interviews with management from each of the Centres, consistent comments were received regarding the strong and collegial relationships between Genome Canada and the Centres as well as the utility of the regularly scheduled meetings as a means of keeping the Centres informed of new priorities and issues and for sharing lessons learned. It is our further understanding that national GE³LS leader meetings will be implemented in the near future due to the hiring of a Chief GE³LS Officer by Genome Canada in the fall of 2008. This should help to strengthen the understanding of Genome Canada's GE³LS strategy across the country and help prioritize activities and efforts in this area.

In addition, the CEO of Genome Canada sits as an observer on each Genome Centre's Board of Directors, and similarly, Genome Centre CEOs are invited to attend Genome Canada Board meetings, which further open the forums for sharing information and communications. This structure allows for information sharing at the highest level and should preclude each party from being involved in decisions in which they may have a perceived conflict of interest. It is noted that the CEO of Genome Canada initially was a full voting Board member of each Genome Centre to help ensure that funding agreements with the Centres were being implemented. As the Centres evolved, Genome Canada's CEO became an ex-officio member and is now an observer with no voting rights to reflect the independent nature of the Centres yet still contribute to Genome Canada's knowledge and understanding of the Centres' activities.

The success of the sharing of strong management practices between the Centres is further evidenced through partnering initiatives that have been developed among specific Centres to address areas such as mutual training of project managers.

The funding agreements with each of the six Genome Centres mirror Genome Canada's agreement with Industry Canada.

Each Centre has a funding agreement with Genome Canada that defines Genome Canada's expectations and conditions precedent to providing financial contributions to the Centre in support of Genome Canada funded projects. Funding agreements further specify mechanisms to assess and report on ongoing performance of the

Centres, including their responsibility for monitoring project progress and the specific monitoring elements to be considered for Genome Canada funded projects. The Centres are responsible for directing funds to individual projects and platforms in their area of the country. The Centres act as regional focal points to support genomics and proteomics research by facilitating access to leading-edge S&T platforms, assisting in applying project development, management and fundraising strategies, and conducting public outreach programs at a regional level. Each Centre is further expected to raise co-funding for its core operations to expand its capacity.

Each Centre has the flexibility to develop its own processes and procedures related to managing Genome Canada funds, provided it respects the obligations of its funding agreement with Genome Canada. We conducted site visits at two of the larger Centres, interviewed management from all Centres, and examined related documentation. We noted that although the format of Centre documentation varied, formal documented business plans and operating policies and procedures existed, including detailed policies and procedures for financial project management, defined roles and responsibilities, and communication protocols between the projects and the Centre.

Further, our review of the funding renewal process for the Centres provided evidence that formal guidelines had been provided by Genome Canada to the Centres, documented instructions for the review panel were provided, and we examined detailed notes on file regarding the assessment of each Centre's business plan, financial plan, GE³LS plan, identification of socio-economic benefits, selection and management of projects and platforms, and assessment of past performance by the review panel.

Each Centre operates with local independence under an obligation to operate within a national policy framework for Genome Canada funded projects.

Finding #3: Roles and responsibilities of the Genome Centres do not appear to be consistently understood and/or agreed upon, creating perceived issues in their relationship with Genome Canada.

Genome Canada developed and communicated the roles and responsibilities of the Genome Centres through the "Review of Genome Centres Roles and Responsibilities" document that was discussed at a meeting held with the CEOs of the Centres in June 2007. The document provides a high level allocation of responsibilities between Genome Canada and the Genome Centres across nine key process areas. We examined this document and discussed its contents with representatives of both Genome Canada and the Centres and noted that there was an uneven familiarity with the document amongst the Centres. In addition, results of our interviews with both representatives of Genome Canada and representatives from the Genome Centres indicate a perception that the relationship between Genome Canada and the Centres has changed over time. This perceived shift in the role and relationship between the Centres and Genome Canada was noted, despite the numerous mechanisms Genome Canada has put in place to facilitate and encourage communications both between the Centres themselves and between Genome Canada and the Centres, such as the regularly scheduled meetings among functional heads and attendance at Board meetings discussed at the beginning of this section of the report.

It is our understanding that the perceived change in the relationship between Genome Canada and the Centres stems largely from the belief among the Centres that they were not sufficiently consulted with when Genome Canada changed the funding model for the Centres in 2008. We have examined correspondence supporting the communication of the change in the model through two Board meetings, however the Centres perceive that this decision was largely "handed down" to them without any potential for recourse. We did note that the base level of funding was modified by Genome Canada subsequent to their presentation of the original model in response to concerns over the adequacy of base funding identified by the Centres. The change to the funding model was initiated by a review of ways and means to gain efficiencies in program delivery, taking into account the recommendations of the 2005 Mattick Report on the assessment of the Centres.

Other potential reasons for the perceived change in the relationship noted by our interviewees included the following:

- Genome Canada does not involve the Centres in the ongoing management and monitoring of international partnerships agreements, which some Centres believe reduces the full extent of relationships and contacts

that could be leveraged to maximize partnership opportunities. However, we did note that the role of Genome Canada in directly overseeing and monitoring ICI projects was specifically recommended by an ICI project committee in recognition of the complexities of these types of projects.

- As Genome Canada has increased its documentation of expected policies and procedures and responded to lessons learned, its expectations and requirements of the Centres have become more formalized through additional procedures and policies over time. While this is a positive step for Genome Canada in helping to ensure greater consistency and understanding of its expectations and demonstrating accountability for Genome Canada funding, many Centres have interpreted this shift to be more of a top-down approach rather than a consultative one.

In addition, it was noted that there are no defined criteria or guidelines to assist the Centres in identifying when Genome Canada is required to be involved in specific project issues. As a result, there have been inconsistencies in the timeliness with which some project issues were communicated to Genome Canada by the Centres. It is our understanding that a working group initiated by Genome Canada is addressing this and related issues.

What is common among the examples cited above is a perceived shift in the relationship away from a partnership style and approach to more of a top down and directional approach. Based on the results of our interviews, this perceived change in management style has not been embraced by many representatives from the Centres. Because the Genome Centres are associated with Genome Canada by virtue of Genome Canada's branding, strains or perceived tensions in the relationship between Genome Canada and the Centres creates risks related to potential impairments to Genome Canada's reputation and image, as the communications and outreach performed by the Centres may be compromised or biased.

In addition, Genome Canada's increased focus on the outsourcing service delivery aspect of the relationship with the Centres may also increase the risk that the Centres become more focused on short-term activities rather than longer term benefits and initiatives of importance to Genome Canada. The significance of having a partnership style of relationship with the Centres was raised in the 2005 review of Genome Centres' performance. This report specifically noted issues in the manner in which some Centres appeared to be focused on helping their regions secure a greater share of Genome Canada funding rather than acting as true partners to try and expand Genome Canada projects and impacts as a whole, with each region building its strengths in areas of strategic importance. The report also noted the value of the Centres as a mechanism to advance genomic science provided the Centres are well led and engage positively with Genome Canada and regional stakeholders to realize a common vision.

It was further noted through the audit that some Centres are not participating effectively in Genome Canada's pre-screening procedures as required in Genome Canada's competition guidelines, which state that the Centres are expected to ensure that only those projects meeting Genome Canada's evaluation criteria are being brought forward for review and funding consideration. This was most recently observed through the ABC Competition, in which the percentage of applications that passed Genome Canada's streamlining process varied significantly between the Centres. This has the potential to lead to a sub-optimal use of the time and effort of Panel reviewers, representatives from the scientific community involved in submitting applications for funding, and Genome Canada and Genome Centre employees.

Recommendation #3: It is recommended that Genome Canada continue to utilize its existing forums (such as regularly scheduled management meetings with the Centres) to further engage and solicit the input of the Centres in an effort to resolve existing or perceived collaboration issues in their relationship and clarify the expected role and contribution of the Genome Centres. Dependent upon the results of these consultations, existing funding agreements with the Centres and/or roles and responsibilities documentation may need to be revised to better reflect the expectations going forward. It is our understanding that management has initiated a working group that is tasked with identifying and resolving issues or areas requiring greater clarity between the Centres and Genome Canada. We encourage the continuation of the work of this group.

Management Response: *Management agrees with the recommendation. Management notes as well that related observations also appear in the Evaluation Report. Funding for the Genome Centres under the March 2007 Funding Agreement with Industry Canada ends March 31, 2010, offering an opportunity in fiscal year 2009-10 for Genome Canada to review its business relationship with the Centres, as well as clarify roles and*

responsibilities. With the approval of the Board, Management will begin discussions with the Centres, with a view to ensuring an outcome that focuses on maximum effectiveness and efficiency in the delivery of genomics research funding in Canada. Management will report to the Board in September 2009 on the results of the review and with recommendations that address the observations raised in the Audit Report and other issues related to the current funding model.

Mechanisms are in place to monitor the operations of the Centres with respect to their obligations under their Funding Agreement with Genome Canada.

At a global level, all Centres underwent an external performance review in 2005 that was referenced in revising the funding model in 2007. This review was part of the process for renewing funding to the Centres. As required under its funding agreements with the Centres, Genome Canada also received each Centre's annual report and corporate plan.

Through regular site visits to the Centres, Genome Canada's Finance group regularly monitors and assesses the Centres' processes and controls in place with respect to the financial management of projects and vouches a sample of transactions to supporting documentation for accuracy. Finance also monitors funding expended and committed as well as co-funding received and committed through a central database based on information provided by the Centres through quarterly draw requests.

Although there have been no compliance audits of the funding agreements with the Genome Centres to date, Genome Canada's Performance, Audit, and Evaluation Strategy has identified this as an area to be implemented by the fall of 2009. We encourage management to follow through with this implementation.

3) International Partnerships

The first of Genome Canada's five national objectives is to enable Canada to become a world leader in genomics research. In this regard, collaborations and partnerships with international leaders are key mechanisms in providing opportunities to establish Canadian leadership, build on Canadian strengths, leverage the expertise of international players, and increase Canada's reputation and credibility as a world leader in genomics research. We examined Genome Canada's international partnership strategies and practices to assess their alignment with Genome Canada's national objectives and safeguarding of Genome Canada's reputation.

An international partnership strategy has recently been formalized.

Genome Canada's International Strategy, developed in the fall of 2008, identifies three primary mechanisms to support international research partnerships: International Consortium Initiatives; international collaborations; and bilateral initiatives. The strategy defines specific considerations, or criteria, that are expected to be considered in identifying and selecting partnerships. These criteria include assessing whether the area is of strategic importance to Canada, the benefits of Genome Canada's participation, the potential impact if Genome Canada did not participate in the initiative, as well as lost opportunities or benefits of not entering the partnership.

The identification of partnership opportunities is guided by documented criteria and by Genome Canada's management team, Board, and Science and Industry Advisory Committee.

At a strategic level, Genome Canada's Board of Directors is assisted by a Science and Industry Advisory Committee (SIAC). SIAC is a permanent committee of the Board that consists of individuals from science and industry sectors in Canada and internationally who are recognized in genomics and proteomics research and in related fields of GE³LS issues. SIAC's roles and responsibilities include providing advice and recommendations on emerging scientific research opportunities and challenges, including scientific consortia and international networks, and monitoring international trends, developments, and potential for global collaborations. As such, SIAC plays a key role in identifying and advising on international partnership opportunities for Genome Canada. In addition, SIAC

helps to provide a level of due diligence in the identification and initiation of partnership opportunities through their role in discussing and advising on Genome Canada's planned activities in this area.

At an operational level, there is a well documented and defined process for funding International Consortium Initiatives. ICIs are large-scale genomics research projects that are led by Canadian researchers and are expected to further enhance the international status of Canada and its scientists. Applications for funding through this process are subject to the same rigour as regular Genome Canada projects (i.e. international peer review and due diligence on financial / management capacity). Once approved, Genome Canada assists in overseeing ICI projects through its participation in the Board of Directors, International Scientific Advisory Board, Steering Committee and Management Committees of the consortia. Other partners must commit to at least 75% of the total costs of the initiative. ICI applicants submit letters of intent that are then considered by Genome Canada's Science and Industry Advisory Committee, which assess the letters against pre-defined ICI criteria. If criteria are met, an international workshop is then held to bring together Canadian and international researchers and funders to validate the potential for the ICI and initiate the proposal. Genome Canada plays an active role in fundraising for ICIs. Our review of ICI guidelines and a sample of ICI file documentation were consistent with Genome Canada's ICI principles and criteria for funding.

Other international collaboration opportunities that do not fall under the criteria of the ICI are generally identified through contacts and networking by the Genome Canada executive management team as well as senior management of the Genome Centres. Though there are no formal guidelines or procedures guiding these types of arrangements, Genome Canada's International Strategy does identify specific criteria that must be met for these types of arrangements to be funded.

Bilateral initiatives are similarly identified through networks and contacts of the senior management team. The International Strategy defines the criteria that must be met for these arrangements to be entered into, and they are formally supported by Memoranda of Understanding with the partner country or countries.

Based on our interviews with representatives from both the Genome Centres and Genome Canada, Genome Canada's management team plays an active role in facilitating and overseeing international consortia to further encourage international collaborations.

Finding #4: The rationale and benefit of entering into non-ICI partnerships is not consistently understood by some stakeholders, including Centres and Project Leaders.

As described above, the process for approving and managing ICIs is well defined and communicated. In addition, the identification and initiation of global partnership opportunities is supported by the advice and input of the SIAC. However, results of our interviews indicate a lack of consistent understanding in the rationale and selection process for non-ICI international collaborations and bilateral initiatives, as well as the overall benefits these initiatives may provide. Our interviewees consistently acknowledged Genome Canada's active pursuit and participation in a wide range of partnerships and collaborative arrangements, including participating as active members of international committees for specific genomics projects, hosting international meetings and fora, funding and hosting international consortiums, conferences and workshops, and entering into bilateral agreements to collaborate on specific areas of genomics/proteomics research. However, the linkage of these initiatives to Genome Canada's overall strategy and the results achieved was not consistently understood.

Recommendation #4: It is recommended that Genome Canada publicize its International Strategy and formalize and communicate procedures related to non-ICI partnerships. Consideration should be given to publicly posting Genome Canada's International Strategy. Consideration should further be given to formally documenting and publishing material, such as guidelines and other procedures, for non-ICI partnerships to help improve the understanding of the rationale and expected benefits of non-ICI partnerships among key stakeholders. A more transparent approach to assessing and communicating the benefits of international collaborations may better demonstrate the strategic relevance of the initiative and value for any related funding expended in support of Genome Canada's national objectives.

Management Response: *Management agrees with this recommendation. Genome Canada will undertake appropriate efforts to ensure stakeholders are aware of and have a better understanding of Genome Canada's International Strategy with respect to non-ICI initiatives. This will include posting the International Strategy itself on the Genome Canada website, and highlighting the strategy in all of its communication activities, including application procedures for non-ICI partnership initiatives.*

Partnership opportunities involve formal and informal consideration of partner's ethics and values.

As described previously, projects under the ICIs are subject to the same rigour and diligence as other Genome Canada funded projects, which includes considerations of both potential conflicts of interest as well as consideration of the extent to which the nature of the project is supportive of Genome Canada's national objectives. Although there are no formally documented policies concerning the assessment of partner values and ethics, our discussions with management indicate that the alignment and consistency of partner countries' values and ethics in the genomics research field are implicitly considered in the initial decision making process by senior management and the Board. Based on our review of a sample of bilateral agreements and ICI agreements and related project documentation, no indications of differences in this area were identified.

4) Sustainability of Funding

Under its current funding agreement with Industry Canada, Genome Canada has secured annual operational funding through to fiscal 2012/2013. Genome Canada's ability to secure additional funding to cover new large scale initiatives and research activities is contingent upon the receipt of additional funding from the federal government. This contingency is, in part, influenced by the extent to which Genome Canada's objectives align with the priorities of the government of the day, and its ability to demonstrate the value and benefits of its funding to Canadians. We examined the practices and mechanisms employed by Genome Canada to obtain ongoing support for its initiatives among Canadians and the practices to help secure ongoing and continued operations.

Genome Canada actively identifies and responds to opportunities to communicate the value of its investments and the outcomes and impacts of its funded research through different mediums targeted to specific stakeholder groups.

Based on our discussions with management and our review of supporting documentation, a number of communication mechanisms were identified that are intended to demonstrate the value of Genome Canada funding to various target audiences in an effort to secure ongoing and sustained support for Genome Canada funding. Examples of these mechanisms include:

- At the federal government level, members of Genome Canada's senior management team initiate meetings with officials from various departments, including Agriculture and Agri-Food, Finance, Health, Environment, Fisheries and Oceans, and Industry Canada, to promote the benefits of genomics and proteomics research in Canada and to discuss future areas of priority and relevance. Genome Canada also links its programs and activities to the federal government's National Science and Technology Strategy in a number of corporate publications, including its Corporate Plan. Our review of documentation and interviews confirmed that Genome Canada's co-funding strategy directly responds to the S&T core principle of encouraging partnerships. Similarly, Genome Canada initiated the Position Paper Process to identify and prioritize strategic research themes of relevance to Canadians in response to the S&T core principle of focusing on research priorities.
- Genome Canada organized *Genomics on the Hill* events through which it showcased key research projects and proposed new initiatives to parliamentarians, government, and embassy officials as a means of demonstrating the achievements of Genome Canada funding. The success of these events fostered similar events to be held by the Ontario Genomics Institute and their provincial government stakeholders.
- As described in the previous section of this report, Genome Canada's management team plays an active role in facilitating and overseeing international consortia to further encourage international collaborations and secure international sources of funding and support.

- Genome Canada has worked to assist the general Canadian public in understanding the need for and value of genomics and proteomics research through forums such as “The GEEE! In Genome” traveling exhibit, news releases, and its website.
- Genome Canada’s Annual Reports are a general vehicle through which success stories, key activities, and potential benefits and impacts are described and communicated to all stakeholder groups.
- Through the International Funders Forum initiative, Genome Canada hosts meetings of international funders of large-scale genomics projects 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 collaborations.

In addition to the above, central to Genome Canada’s operating model is the requirement for projects to secure a minimum of 50% of project funding through investments by others at the federal, provincial, municipal, private and international levels. This co-funding model directly solicits support for genomics research and Genome Canada funding.

Genome Canada regularly engages input from the scientific community and other key stakeholders to identify and respond to areas of importance to Canadians and generate support for key initiatives.

As described in the “Approval and Monitoring of Projects” section of this report, Genome Canada’s Position Paper Process directly solicits and engages input from the scientific community and other stakeholders in identifying strategic themes of relevance to Canadians. As mentioned previously, the Board of Directors has a Science and Industry Advisory Committee 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. These mechanisms are a key success factor in helping to ensure that Genome Canada initiatives continue to respond to areas of interest and areas of priority to Canadians.

Genome Canada’s senior management team has developed strategies and explored additional options to secure longer term financing and support future funding initiatives.

As discussed previously in this report, a core element of Genome Canada’s funding model is the requirement that all Genome Canada funded projects must involve the funding of at least 50% of eligible costs from other sources, including provincial governments, private industry and other public sector partners. As of March 31, 2008, more than \$800 million in committed co-funding for projects had been raised from public and private sources.

Based on discussions with representatives of Genome Canada’s senior management team, it is our understanding that a draft strategy has been developed over the past year to identify additional sources of future funding that include private financing options as well as philanthropic opportunities. While this strategy continues to be refined and is not publicly available, it does demonstrate management’s forward thinking and proactive identification of contingency options to secure additional funding from new sources to support future initiatives. The priority that Genome Canada is placing on securing new and additional sources of financing is further supported by the creation of a new position of Executive Vice-President, Corporate Development, in the fall of 2008 as well as through their current practice of leveraging federal government funding through a minimum of 50% co-funding on Genome Canada projects.

5) Performance Measurement and Reporting

As discussed in the previous section of this report, Genome Canada's ability to measure and report on the results of its funding are central to sustaining ongoing support and funding for future initiatives. There are challenges in measuring research results in any organization as its impacts and effects may take many years to materialize. Measuring Genome Canada's performance results is further challenged by the diversity of its research activities, which span a number of different industry sectors, geographies, and partners. We examined the mechanisms in place to measure, report and communicate performance results at the project and organization wide level.

Performance measurement strategies and frameworks have been documented and include defined performance measures.

In 2002, Genome Canada developed a Results-based Management and Accountability Framework and supporting Logic Model that defines its objectives, activities, outputs, outcomes and the ultimate outcomes expected to be achieved through Genome Canada funding. Performance measures were also established. A Performance, Audit, and Evaluation Strategy (PAES) was developed in the fall of 2007 that defines the key activities to be conducted by Genome Canada to ensure compliance with its funding agreement with Industry Canada and enable the identification, measurement and reporting of performance. Specific performance indicators as defined in the PAES include metrics on scientific achievements, innovation and socio-economic benefits, collaborations, jobs, investments, communications, and platform performance.

Based on our review of the performance measures, it was noted that in some cases, the definition of performance measures may be subject to differing interpretations. In this regard, Genome Canada developed a Performance Measurement Framework in May 2008 that provides greater clarity and definition for key indicators and maps indicators to Genome Canada's logic model. The framework further suggests a process for gathering performance information and clarifies the expected content and format of data required to help ensure consistency of performance data gathered from individual projects.

Finding #5: A national repository to collect, analyze and report on performance information for Genome Canada as a whole as identified in its Performance, Audit, and Evaluation Strategy, has not yet been implemented.

Genome Canada's funding agreement with Industry Canada requires the publication of performance information and results in its Annual Report and in its Corporate Plan. We examined the last two year's Annual Reports and Corporate Plans and noted that the Annual Report provided performance data on metrics such as the number of FTEs engaged by each Competition, researchers, trainees, number of publications issued, presentations, awards, and commercial activities. The Corporate Plan 2008-09 provides performance data for each of Genome Canada's five strategic objectives, including data on the number of users of Genome Canada funded Science and Technology platforms as well as activity based on the amount of cost-recovery from each user. However, our review also noted that much of Genome Canada's other performance reporting is based on case studies or specific success stories.

Based on our interviews and review of related documentation, we understand that the Genome Centres regularly collect data against performance indicators defined in the PAES from projects through quarterly project progress reports and are provided to Genome Canada upon request. In addition, final reports from the Project Leaders are provided to Genome Canada that define project outputs and outcomes against approved objectives. However, results of our interviews and documentation review process indicate that while this information is used as an input in preparing the Annual Report, final project reports are not consistently utilized or analyzed by Genome Canada at a global level. Although Genome Canada has identified the need to develop and implement a national performance measurement repository to provide a systematic means through which Genome Canada can collect real-time performance data from Genome Canada funded projects, such a system has not yet been implemented. As a result, there are opportunities to improve the processes in place to enable a more systematic means of analyzing and reporting against global performance measures that are tied to specific expected impacts and outcomes, as identified in the PAES and Performance Measurement Framework.

A key success factor in Genome Canada's sustainability strategy lies in its ability to demonstrate the benefits of funding in areas of relevance and significance to Canadians. A national and coordinated approach to performance measurement and reporting will enhance the ability of Genome Canada to produce tangible performance information at a global level. This is consistent with the findings of the review of the Genome Centres performance in 2005 in which it was noted that the Centres focused on money raised and positions created rather than focusing on the demonstrated benefits from investments and outcomes, which are of relevance to Canadians.

Recommendation #5: It is recommended that a national performance measurement repository be implemented to assist in the gathering, measurement and reporting of national performance results at the output, outcome and impact levels. A suggested performance measurement process to support the gathering and reporting of performance information has been defined in Genome Canada's Performance Measurement Framework. It is recommended that Genome Canada provide dedicated resources, such as through a Chief Performance Officer or contracted hire, to help progress the implementation of a national performance measurement repository and supporting process forward.

Management Response: *Management agrees with this recommendation. As referred to in the audit report, a national system for the recording of performance metrics and related performance information was identified in Genome Canada's Performance, Audit, and Evaluation Strategy (PAES) approved by the Board in 2007. Completion of the development and implementation of a national system is included in the proposed operational budget for FY 2009-10, as is the engagement of a Chief Performance Officer to address organization-wide performance measurement issues and initiatives.*

6) Human Resources Management Practices

Genome Canada has been designed to operate as a "lean" organization, with a small number of full-time employees. We examined management's practices in place to help ensure that sufficient resources, with the right skill sets, are in place to meet Genome Canada's current and future operating needs.

Genome Canada's employee base consists of a small number of experienced personnel with specialized skill sets.

Genome Canada has a full time staff complement of less than 20 personnel. Many of these individuals possess specialized qualifications and skill sets in science, research, technology, finance, communications and administration. Because of the small staff complement, there are few layers of management and thus few opportunities for upward mobility among staff.

Genome Canada management re-visits its organizational structure as needs and changes in priorities arise. Over the past year, two new executive positions have been created in response to identified needs: 1) a Chief GE³LS Officer was hired in September 2008 to provide a dedicated resource to developing and implementing a national GE³LS strategy; and 2) a position of Executive Vice-President, Corporate Development was created in the fall of 2008 in response to new strategies to pursue additional sources of funding for future initiatives.

Because Genome Canada is a lean organization, workload allocations and the clarity of roles and responsibilities, particularly during times of transition or turnover, need to be clear. Although job descriptions exist, as described under Finding #2 of this report, there are some opportunities to more clearly define and assign roles and responsibilities among internal staff, particularly during transitional periods. Similarly, as described under Recommendation #5, it is recommended that management consider assigning dedicated resources for performance measurement.

Genome Canada relies on external contractors to fill resource gaps on an as needed basis. Genome Canada supports continuous development and training of its employees by offering tuition support and supporting employee attendance at workshops, seminars, conferences and other forms of training.

Genome Canada has developed a succession plan for executive management positions.

Genome Canada's succession plan was approved by the Board in June 2007 and identifies seven executive management positions along with a commentary for potential successors for each position. This commentary identifies other staff members that could replace the incumbent and the ability of existing Directors and/or Managers to assume day to day operating roles of the incumbent while a permanent successor is sought. The Plan also defines a contingency plan in the event of unanticipated turnover at the President and/or executive management levels that requires the establishment of an Executive Management Committee to manage Genome Canada during the absence of the President and CEO.

Consistent with common succession planning practices, the current succession plan could be further improved by identifying potential sources of candidates to replace executive team members in the event of turnover.