

Canada's Biotechnology Strategy - Charting the Path Forward

Expert Roundtable, Halifax May 25, 2006
Meeting Summary

Executive Summary

The Canadian Biotechnology Advisory Committee consulted various members of the biotechnology community to obtain input on the renewal of the Canadian Biotechnology Strategy. Given the current economic and environmental context, the strategy is an important part in positioning Canada as a responsible world leader in biotechnology. This roundtable, held in Halifax, was the second of a three workshop series.

Overall, participants supported the development of a renewed strategy if it displayed certain qualities and was embraced with strong federal leadership. They noted, however, that it might be a “tough sell” to get industry and other parties interested and involved in any active way. The strategy must demonstrate that it would be proactive, focused on action, with a different process and tangible results, and with federal commitment for industry and likely other stakeholders to become involved with the development and implementation of the strategy .

There was strong agreement that the strategy requires federal leadership for success, and participants recognized the advantages of reflecting a broad set of views (from industry, academia, provinces/territories and others) in implementing a strategy.

The strategy should be action oriented with a clear overall objective and strong leadership. This could mean that the strategy itself takes the form of an action plan, or that a strategy is accompanied by an action (or business) plan; participants generally expressed a preference for the latter. The strategy should be accompanied by outcome-oriented, targeted and measurable goals and action items. Strategy goals should recognize and support the need to commercialize. The strategy should also include both short-term pragmatic targets that relate directly to the problems and gaps affecting the success of biotechnology in Canada and long-term goals that provide alignment and guidance to the partners of the strategy. Finally, the goals should reflect Canadian values (recognizing that values are difficult to define and may change over time) and address development of an ethical framework/process. Participants cautioned against focusing the strategy on the need to become a “world leader,” pointing out that being a world leader is an outcome, not a goal.

Commercialization was identified as a key challenge to address in a renewed strategy. Participants noted that Canada is weak in moving research into development and commercialization. There is a plethora of funding programs to support research, but there are very few biotechnology-related funding programs to help young entrepreneurs take their ideas to market. We are also lacking in the necessary human capital (especially skilled and experienced senior managers) to build successful companies. Our education system is not geared to developing the entrepreneurial skills required to build successful companies and thus a successful biotechnology sector.

Participants supported the development of strategic clusters, or regional specialization, as a means of promoting the biotechnology sector. However, “picking the winners” should not be embraced at the expense of existing broad-based activity in other areas. In fact, participants pointed out that strategic focus can create the conditions needed for innovation in other areas both within and outside biotechnology (e.g. investment in defence led to the development of the Internet).

Table of Contents

EXECUTIVE SUMMARY	2
1.0 INTRODUCTION	4
1.1 SETTING THE CONTEXT: TAKING STOCK	5
1.2 ILLUSTRATIONS OF PROGRESS OF THE CURRENT STRATEGY	6
1.3 INSIGHTS FROM CANADIANS: FOCUS GROUP RESULTS	6
2.0 CHALLENGES FOR A FUTURE STRATEGY	6
3.0 IMPROVING OUR APPROACH – PROBLEMS, OPPORTUNITIES AND INITIATIVES	8
4.0 FUTURE STRATEGY: GOALS AND PRINCIPLES	11
5.0 FUTURE STRATEGY: CONSIDERATIONS AND DIRECTIONS	11
6.0 FUTURE STRATEGY: GOVERNANCE, FEDERAL ROLES AND LEADERSHIP	13
6.1 GOVERNANCE MODEL	13
6.2 FEDERAL GOVERNMENT ROLES AND LEADERSHIP	14
6.3 IMPLEMENTATION INSTRUMENTS	14
7.0 CONCLUSION	14
APPENDIX 1 - ROUNDTABLE AGENDA	15

1.0 Introduction

This report summarizes the proceedings of the roundtable workshop entitled *Canada's Biotechnology Strategy: Charting the Path Forward* held May 25, 2006, at the Renaissance Inn in Halifax, Nova Scotia. The workshop is the second of a three workshop series convening members of the biotechnology community from academia, research centers, industry, financial support agencies, and environmental and other interested organizations.

The workshop was divided into five parts. The first part included a series of overview presentations to set the context for the discussion. In the second part, participants were given an opportunity to comment on the needs or problems and opportunities that should be addressed in a strategy for the future and to identify initiatives to address them. In the third part, participants considered the goals and guiding principles of a renewed strategy. The fourth part enabled views on broad direction and considerations for the strategy, such as whether Canada should adopt a strategy that focuses on its strengths and whether it should be a Canadian or a federal strategy. The fifth part focused on governance of the strategy as well as clarifying the role and leadership of the federal government.¹ Where appropriate, participants were asked to consider and build upon the results of the first session in Montreal.

Dr. Lyne Létourneau, a member of the Canadian Biotechnology Advisory Committee (CBAC), opened the workshop by welcoming participants and thanking them for attending. She explained that the input provided during the workshop would help CBAC in identifying a direction for the development of a renewed Canadian Biotechnology Strategy (CBS). A Canadian strategy appears to be imperative given the social and economic impacts of biotechnology. Dr. Létourneau explained that the original 1998 strategy was based on the three pillars of “stewardship,” “innovation” and “engagement” and that it was an important part in the positioning of Canada as a responsible world leader in biotechnology. Given the dynamic nature of biotechnology, a renewed strategy is required and expected to be evolving, comprehensive, current and relevant. These are necessary conditions for Canada to be successful and take advantage of opportunities to deal with various issues.

Dr. Létourneau noted that CBAC is well positioned to undertake a review of the Canadian Biotechnology Strategy given that it is a body that synthesizes and reconciles the streams of analysis and advice coming from a variety of other advisory groups in Canada and abroad; that it explores the various perspectives of the Canadian public and diverse stakeholders groups; and is mandated to provide advice on biotechnology and its future to the federal government.

Finally, Dr. Létourneau explained that the results from the session would be analyzed jointly with the results from all three roundtables (Montreal, Halifax and Vancouver) as well as with findings gathered from three citizen focus groups conducted in the same period and used to inform the advice that CBAC will provide to the Government of Canada.

Next, as a means of building a common understanding from which to work, the facilitator provided a working definition of a strategy:

¹ A copy of the workshop agenda is available in Appendices 1.

- *A strategy is a description of the overall intended approach for achieving desired ends, the general plan for success...it is the summary pattern of the prescribed and aligned actions or tactics directed toward an agreed target/end state.*

He also highlighted the nature of the advice on a future strategy that CBAC is seeking at this session, including a sense of direction (e.g. strategic priorities, goals, etc.) and priorities (e.g. areas of focus), identification of elements around which stakeholders can align, recommendations about how the strategy should be governed and identification of desired measurements for success.

Finally, participants listened to three presentations designed to set the context for discussion of a future strategy. The first presentation described the state of biotechnology in Canada today; the second presentation detailed some of the progress made on the 1998 Canadian Biotechnology Strategy; and the third presentation highlighted the results of the Halifax based focus group on biotechnology complemented with comparable results from the Montreal focus group. The main points of these presentations are highlighted below.

1.1 Setting the Context: Taking Stock

Trefor Munn-Venn of the Conference Board of Canada presented an overview of the state of biotechnology in Canada.² He noted that public discourse on biotechnology in Canada has been characterized by two opposing views. On one hand, there are those who view biotechnology as inherently bad while others believe that biotechnology is the answer to all our problems. In its review of the biotechnology sector, entitled *Biotechnology in Canada: A Technology Platform for Growth*, the Conference Board of Canada used an evidence-based approach to assess biotechnology without making judgements about whether it is good or bad. An innovation graphic was used to develop a framework for understanding biotechnology.

Mr. Munn-Venn reviewed some of the key findings from the report *Biotechnology in Canada* but advised caution in interpreting the findings, saying that the data available on biotechnology are generally not well developed, and differences between jurisdictions make comparisons difficult, particularly when comparing Canada to other countries.

In response to a question about the definition of biotechnology, Mr. Munn-Venn noted that there is no common definition in use around the world, making it difficult to consistently identify, measure and analyze biotechnology. However, he clarified that the Conference Board's report uses Statistics Canada's definition: "*the application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services.*"

He identified several key questions for consideration for moving into the future:

Can we move from commodity production to higher value-added products and services?

Can we overcome our commercialization challenges?

Will we be able to export our technologies?

² The Conference Board of Canada: *Biotechnology in Canada, A Technology Platform for Growth*, 2005. (www.conferenceboard.ca)

Do we have the scientific *and* business management talent we need today—and will we have it in the future—in order to compete internationally?

Will we be able to exploit our biomass resources in an ethical and sustainable manner?

Will Canada be able to keep up with other countries?

1.2 Illustrations of Progress of the Current Strategy

The session facilitator presented a brief overview and summary impression of progress made and performance of the 1998 strategy³ under each of the ten 1998 work plan themes, with illustrations of events, publications, capabilities and processes that had been established.

1.3 Insights from Canadians: Focus Group Results

Jeff Walker from Decima Research provided a summary of the results of two focus group discussions on biotechnology held recently in Montreal and Halifax (with the main focus on Halifax results). A third focus group discussion is being held in Vancouver. The focus group discussions were three hours in length with 12 to 15 “involved Canadians.” He highlighted some of the initial results from these discussions:

- Everyone has heard about biotechnology and can identify one or two of its applications, but most feel that they do not have a strong understanding of biotechnology, including the issues involved and how it is governed in Canada. Limited public understanding is seen as a limit to public acceptance.
- Canadians see biotechnology as an important technology that will affect and change their lives, and recognize that there will be benefits to them or to society in general (especially in health) and believe that biotechnology will generate high-paying jobs.
- Participants highlighted the importance of addressing ethical and regulatory issues and expressed a high level of faith in the ability of the Canadian system to do so.
- Overall, focus group participants felt that a biotech strategy is needed to ensure that limited resources are used appropriately and risks are managed but questioned the ability of the federal government to cooperate among departments to implement it. They noted the following priorities for a strategy:
 1. Regulatory supervision and long-term research;
 2. Public education and outreach;
 3. Strategic decision making in investment (focusing mostly on health and finding a balance between basic and commercial initiatives); and
 4. Ethics regime (implementing an ethics regime led by an arms-length body such as CBAC).

2.0 Challenges for a Future Strategy

In response to the above mentioned presentations, participants offered their insights into future challenges for biotechnology that may need to be addressed in a future strategy. The following summarizes the key discussion points (in no order of priority or importance):

- Canada’s regulatory system is not responsive enough. Canada’s regulatory process is significantly longer than most other countries. Delays in decision making (and in some cases, an absence of key decisions) result in loss of economic gain and ability to commercialize products.

³ See Annex 2 of the roundtable background paper, *Canada’s Biotechnology Strategy: Charting the Path Forward*, circulated to participants prior to the session.

- Canada’s regulatory process could identify the key decision points and associated requirements throughout its cycle and, by communicating these to submitters, the process would provide greater clarity and would better support product validation and commercialization. Adequate human and financial resources and other capacity must exist to ensure proper functioning of the system.
- Commercialization is a key challenge in Canada. Participants noted two primary reasons for this:
 - a) There is very little funding specifically allocated to help young entrepreneurs take their ideas to market. There is a plethora of funding programs to support research (e.g. IRAP) but a lack of programs (both short- and long-term) supporting development and commercialization.
 - b) We are also lacking in the necessary human capital (especially skilled and experienced senior managers) to build successful companies. Our education system is not geared to developing the entrepreneurial skills required to build successful companies and thus a successful biotechnology sector.
- Some participants also noted that Canada has a great environment for developing “ideas” but a poor business-oriented environment. Building a better environment for business would aid in the development of Canadian biotechnology, attract talent and companies to Canada and create revenues that could be reinvested in other programs such as education, intellectual property production, etc. One way to address this challenge would be to focus on creating world-class processes and structures to support biotechnology, thus creating a biotechnology-friendly environment in Canada.
- The Conference Board of Canada suggested that one way to strengthen the biotechnology industry in Canada would be to concentrate on developing a key area of biotechnology (e.g. as the United Kingdom has done with clinical trials). Participants urged flexibility in the strategy to allow for the promotion and development of pockets of specialization. They pointed out that such “strategic clusters” could be developed in different areas of the country and could be characterized in different ways, for example:
 - geographically based;
 - built around areas of distinct competitiveness or specific processes within a sector;
 - could capitalize on an existing capability or need; or
 - created around other criteria to be defined.

One participant illustrated this point by using the Olympics as an analogy, noting that Canada may choose to focus on developing winners in a particular event while fielding athletes in all types of events. In fact, participants pointed out that “picking the winners” in this way can create the conditions needed for innovation in other areas, both within and outside biotechnology (e.g. investment in defence led to the development of the Internet).

- The idea of strategic clusters should not be embraced at the expense of continued broad-based activity in other areas.
- There is a gap between “product push” and “consumer pull”; that is, research is undertaken and products are often developed without good market knowledge of the need, attractiveness to the consumer and potential market uptake. Market considerations should be addressed earlier in the research and development cycle in order to evaluate the potential competitiveness of a product before too much investment is made. It was noted that innovative companies are skilled at connecting technologies to markets early.
- Better support for small companies is required to improve commercialization in biotechnology. Tools required for success in biotechnology (e.g. patent lawyers) are often

inaccessible and/or unavailable to small- and medium-sized enterprises (SMEs) due to issues such as cost or lack of expertise/knowledge.

- Evaluation of the biotechnology sector must be based not only on statistics and science-based evidence but also on needs, ethics and social values.
- The biotechnology sector and the government could do a better job of communicating to the public the nature of discoveries and their potential applications. Improved public understanding of biotechnology could reduce consumer fear.

3.0 Improving Our Approach – Problems, Opportunities and Initiatives

Participants were asked to identify the needs or problems and opportunities in this field that should be addressed as part of any plan or strategy going forward. Participants also suggested initiatives that could be undertaken to respond to these challenges and problems.

In addition, the facilitator circulated a two-page summary of the Montreal Experts Roundtable (April 27): Problems/Opportunities and Initiatives and asked for feedback from participants. Participants generally agreed with the list developed by the Montreal participants. In addition, one participant suggested adding the notion of risk management to the description of risk analysis while another participant pointed out that Canada’s natural capital also includes water.

Problem - Opportunity	Solution - Initiative
Leadership, governance and priorities	
Lack of federal government leadership	<ul style="list-style-type: none"> • Cabinet needs to adopt biotechnology as a government priority; government buy-in is essential to successful implementation of a strategy. • Appoint a Cabinet-level lead for science (e.g. a Minister of Science). • Governance structure should include broad community: government, industry, academia. • Articulate specific benefits to government in the strategy. • Improve public awareness and industry involvement to create political pressure to address biotechnology issues . • Build an accountability structure to ensure that funds are allocated in accordance with the priorities outlined in the strategy.
Lack of accountability among federal departments.	<ul style="list-style-type: none"> • Assign lead responsibility for biotechnology to one department; avoid sharing lead responsibility across departments as is the case in the current

Problem - Opportunity	Solution - Initiative
	<p>strategy.</p> <ul style="list-style-type: none"> • Make more direct linkages between departmental activities and the strategy. • Include accountability criteria in funding applications. • Recommendations from CBAC should be highly focused, targeting a few specific areas to support immediate action.
Public Engagement	
<p>Lack of public awareness of biotechnology, its products and processes.</p>	<ul style="list-style-type: none"> • Leadership is needed to “make the case” for biotechnology”; that is, to build confidence and a sense of priority among Canadians. • Canadians also need to know more about the processes and ethical frameworks, etc. that are currently in place to govern biotechnology development in Canada.. • Provide balanced information from an arms-length source such as CBAC to avoid public perceptions of a “sales pitch.” • CBAC could communicate more with the media (e.g. cultivate a reporter(s)) to increase coverage of biotechnology. • Use a “success story” to illustrate the importance of biotechnology in Canada. Focus on something that is achievable in the short-term.
Commercialization and Innovation	
<p>Poor ability to move from research to development and commercialization.</p>	<ul style="list-style-type: none"> • Analyze national and international best practices to identify models that might work in Canada, e.g. theme-based funding proposals (United Kingdom)⁴; Small Business Innovation Research Program (USA)⁵. • Tap into domestic and international private sector expertise (e.g. human resources) to draw lessons from the biotechnology sector and from other sectors (e.g.

⁴ For more information: <http://www.epsrc.ac.uk/Publications/Other/ResearchPrioritiesAndOpportunities.htm>

⁵ For more information: <http://grants.nih.gov/grants/funding/sbir.htm>

Problem - Opportunity	Solution - Initiative
	pharmaceuticals). <ul style="list-style-type: none"> • Capitalize on strengths to build short-term successes; this will breed a willingness to invest and ultimately build long-term success. • Build a learning environment by creating indicators to monitor success over time. • Create regional specialties/strategic clusters.
Government funding programs do not support small- and medium-sized businesses well; and the overall ability of SMEs to participate in creating a healthy business environment in Canada is limited.	<ul style="list-style-type: none"> • Provide educational programs for entrepreneurs. • Leadership to build a better Canadian business environment must come from outside industry. • Encourage interaction with other countries with similar situations. • Focus on developing regional and virtual clusters. • Implement small business innovation funds.
Individual elements of the value chain are not considered as integrated parts of a complete life cycle from research to development to commercialization.	<ul style="list-style-type: none"> • Consider all dimensions in the value chain as a whole system (e.g. address not only regulations but also intellectual property issues, etc.)
Regulatory responsiveness and coherence	
Canada's regulatory environment is not conducive to helping biotechnology products reach the market; it is too slow and does not respond easily to changing technology.	<ul style="list-style-type: none"> • Create a key decision-making body where industry can raise its concerns. • Create a fast-track process for getting products with immediate beneficial use to market. • Train regulators in new areas of biotechnology (e.g. nutraceuticals) so that decisions can be made in a more timely manner.
Risk Analysis and Liability Framework	
Lack of understanding of the risks associated with biotechnology and a lack of process/tools to assess the risk.	<ul style="list-style-type: none"> • Add risk assessment and mitigation to the strategy. • This is a long-term issue and must be addressed in the strategy as such. • Build capacity for risk assessment in labs, etc. • Consider liability issues and address them appropriately.
Human Resources, Capacity Building, Intellectual Property	

Problem - Opportunity	Solution - Initiative
Lack of senior managers with entrepreneurial skills and an inability in the education system to provide appropriate training.	<ul style="list-style-type: none"> Implement programs at tertiary education institutions to provide training for senior managers, with a focus on entrepreneurial business.

4.0 Future Strategy: Goals and Principles

Participants were asked to comment on the need to update or alter the goals and principles as stated in the 1998 Canadian Biotechnology Strategy (considering their own experience as well as the array of proposed initiatives suggested in Section 3.0 above and the one-page summary of the Montreal Experts Roundtable (April 27) discussion on goals and principles, distributed at the session). The following advice was offered with respect to improving strategy goals:

- The goals should be prioritized to support the central focus of the strategy.
- The goals should be outcome-oriented, specific and measurable. The strategy should also include both short-term targets and long-term goals.
- The goals should reflect Canadian values (recognizing that values are difficult to define and may change over time) and address development of an ethical framework/process (that is informed by Canadian values).
- A goal focused on developing Canada’s capacity to rapidly commercialize products needs to be added as a high priority. Explicit support for SMEs is needed to support growth in this sector.
- Increasing public awareness should be a key goal of the strategy.
- Goal 7 in the current CBS addresses the need to “*promote awareness of, and maintain excellence in, Canada’s regulatory system.*” One participant suggested that the government’s dual role as regulatory authority on one hand and promoters of industry on the other must be separated.
- Stewardship is important but must be undertaken within an overall societal context (informed by Canadian values and ethics). In addition, the health, environmental and economic dimensions of biotechnology are all important and should be treated equally and in an ethical way.
- Sustainable management of our resources (from the gene to the whole organism) has to be a cornerstone of the strategy (e.g. respect for biodiversity).

5.0 Future Strategy: Considerations and Directions

Throughout the discussion, participants commented on the purpose, scope and characteristics of a renewed strategy as well as on some of Canada’s responsibilities in biotechnology. Participants provided advice in five specific areas:

1. ***Should the new “Strategy” take on the form of a “Grand Strategy” with long term vision, goals and principles, etc. or more of a “National Action Plan for Biotech” with more short/medium term problems/opportunities and initiatives? Is a balance of both desirable?***
The strategy should be action-oriented with a clear overall objective and strong leadership. This could mean that the strategy itself takes the form of an action plan, or that a strategy is accompanied by a business plan; participants generally expressed a preference for a strategy/business plan combination.

2. Are we creating a “Canadian strategy” to guide all the stakeholders or a “federal strategy” to guide mainly the federal government?

Participants expressed different opinions as to which approach (a federal or Canadian strategy) would be better for Canada. There was strong agreement that the strategy requires federal leadership for success, and participants recognized the advantages of reflecting a broad set of views (from industry, academia, provinces/territories and others) in implementing a strategy. However, some participants pointed out the difficulties inherent in building a community-based strategy (e.g. jurisdictional issues, finding agreement among a diverse set of stakeholders) and were concerned about delaying the development and implementation of a strategy. These participants recommended a federal strategy (possibly accompanied by a Canadian action plan) in order to ensure rapid development and deployment of the strategy. Other participants strongly recommended a Canadian strategy approach.

3. Is there a case to be made for developing an innovation strategy that is focused specifically on biotechnology and which could call for a legislative umbrella, a regulatory regime and financial inducements that are specific to biotech?

The facilitator presented a spectrum of strategy options ranging from an informal strategy (e.g. characterized by independent stakeholder action) to a strongly influenced and directed strategy with a very narrow approach. He noted that the current Canadian Biotechnology Strategy would fall between *lightly influenced/coordinated* and *moderately influenced/coordinated*.

Using the spectrum as a basis for discussion, participants were asked to consider the following question:

Is there a case to be made for developing an innovation strategy that is focused specifically on biotechnology and which could call for a legislative umbrella, a regulatory regime and financial inducements that are specific to biotechnology?

Participants reiterated the need for a focused, action-oriented strategy with specific goals (e.g., the right hand side of the spectrum). However, they cautioned against developing a strategy that is too prescriptive in order to avoid marginalizing activities outside the immediate scope of the strategy; the strategy should enhance, not limit, activity. As well, they found the idea of ‘picking the winners’, or creating special areas of expertise, attractive whereby certain disciplines, sectors and/or research competencies would be selected for extra emphasis and support as long as broad based support for a wide range of developmental activity continued.

4. Should the strategy reflect intent for Canada to be a ‘world leader’ in this field? In what aspects/areas should we strive for world leadership? Would a life cycle/value chain analysis be helpful to determining which biotech industry subsectors and/or value chain stages we should focus on?

Participants at the Montreal session said it would be too difficult to choose a whole sector around which to build strategic clusters. Rather, they said, each sector needs to examine its value chain for “pressure points” and gaps to identify the inducements needed to become competitive. A strategy would then be built upon all the commonalities of these different

sector analyses. The facilitator asked participants to consider this advice as they answered the above questions.

Participants cautioned against focusing the strategy on the need to become a “world leader,” pointing out that being a world leader is an outcome, not a goal. They also felt that articulating such a goal so early in the process could misdirect effort from other priorities. Some said that the “real issue” is our need to improve our ability to commercialize and noted that if we focus on building excellence in our areas of strength, improving our ability to commercialize and ensuring we have a supportive environment for biotechnology in Canada, success and world leadership will follow.

5. *What responsibilities do we have to meet the needs of developing countries, both from an investment and responsible development and use perspective?*

Participants were asked to comment on the responsibilities Canada has to meet the needs of developing countries, both from an investment and responsible development and use perspective. They indicated that Canada has a moral and ethical responsibility for assuming a role in this area. However, it is important that we “get our own house in order before we provide leadership to other countries.” The federal government must also recognize the importance of *listening* to developing countries in order to provide the guidance that they feel they need.

Some of Canada’s strengths lie in the area of regulation and safety; thus, Canada may have a significant international leadership role and contribution in this area.

One participant also noted Canada’s responsibilities to its immigrants. Canada is inefficient at assimilating immigrant’s skills and experience in biotechnology (and other fields) such as recognizing their professional/certified status attained in their home country with reasonable conditions and timelines. Thus, we do not benefit from their knowledge and expertise. On the other hand, Canada should not encourage a “brain drain” from other countries.

6.0 Future Strategy: Governance, Federal Roles and Leadership

6.1 Governance Model

A range of governance options is available to administer a strategy. Options range from no explicit governance of a strategy (e.g. laissez faire) to a jointly led strategy (e.g. biotech community and government work together) to exclusive federal leadership of a strategy. With respect to a future biotechnology strategy, participants recommended a governance model characterized predominantly by federal leadership with joint responsibility for implementing an action plan (which could take the form of a series of action plans targeted at specific sectors and the government). Some participants, however, felt more strongly that a joint responsibility is required for guiding the strategy as well as the action plan.

It should be noted that some participants cautioned against determining a governance model too soon. They felt that the purpose of the governance model is to ensure better government and

stakeholder coordination and action, and good implementation of the strategy. Thus, formulation of the strategy would ultimately guide the type of governance that is required.

6.2 Federal Government Roles and Leadership

The federal government plays a variety of roles related to strategy implementation including the following: providing financial support; regulatory responsiveness, coherence and harmonization; strategy leadership; federal coordination; international leadership; and responsible stewardship. Participants identified areas where there are gaps in the federal government's role as well as areas where the federal role can be strengthened.

- Improved federal coordination is a priority for a future strategy. Biotechnology is multi-disciplinary and multi-sectoral and must be approached in a coordinated manner. Federal coordination could be improved by a) appointing a senior-level “champion” (e.g. Prime Minister or a Minister of Science), and/or by b) implementing a program whereby government staff are exposed to different sectors and issues by moving between departments, and/or by c) centralizing biotechnology-related funding in one agency to dispense the funds across departments and monitor and guide expenditures.
- The government must improve the responsiveness of the regulatory system by addressing issues such as timeliness. Government funding programs also need to be better targeted to support the full range of activity in the biotechnology sector (e.g. from research to product development and commercialization).
- The federal government needs to approach the provinces as partners in joint planning if goals such as the development of regional clusters are to be realized.
- Participants also acknowledged that support and leadership is required from outside government to help build government priorities around biotechnology. One way to build momentum around biotechnology is to promote a “success story” that illustrates the importance of biotechnology.

6.3 Implementation Instruments

Implementation of the current biotechnology strategy is supported by the Canadian Biotechnology Secretariat (CBSec) and the Canadian Biotechnology Advisory Committee (CBAC). Participants noted that CBAC is not well known even within the biotechnology sector and urged CBAC to more actively develop relationships with industry associations and others across Canada.

Overall, participants supported the concept of an external advisory committee. However, when asked about the possible role of an external advisory committee for a future strategy, participants indicated that it is too soon to make a recommendation. The ultimate formulation of the strategy will dictate the need for an external committee as well as its form and function.

7.0 Conclusion

In conclusion, participants supported the development of a renewed strategy with certain conditions. They noted, however, that it might be a “tough sell” to get industry and other stakeholders interested and involved in any active way unless there was evidence that this strategy would be different, address current issues, be pragmatic, and show strong federal commitment and leadership.

Appendix 1 - Roundtable Agenda

8:30	Welcome and Roundtable Introduction	Lyne Létourneau CBAC member
9:00	Taking Stock: State of Biotechnology Development Presentation and discussion	Trefor Munn-Venn Conference Board of Canada
9:30	Setting the Stage: Progress of 1998 Strategy and Future Drivers and Opportunities Presentation and discussion	Facilitator
10:00	Insights from Canadians (focus group results) Presentation and discussion	Jeff Walker Decima
10:20	Break	
10:30	Improving Our Approach - Problems/Opportunities and Initiatives Given the context presented, what are the needs or problems and opportunities in this field that should be addressed as part of any plan or strategy going forward? What initiative(s) would best respond to these challenges?	Participants
11:30	Goals and Principles Given the array of needed initiatives, how would we update/strengthen the 1998 Strategy Goals and Principles so they provide longer term guidance consistent with the profile of initiatives?	Participants
12:15	Lunch	
1:15	Strategy renewal: Considerations and Directions Should this be a Canadian strategy or a federal government strategy? Should the strategy reflect an intent for Canada to be a 'world leader' in this field? In what aspects/areas should we strive for world leadership?	Participants
2:15	Strategy: Governance, Federal Roles and Leadership What governance model is needed to provide leadership and guidance to strategy implementation? Where is federal leadership fundamental?	Participants
4:00	What can we conclude Given all of the above considerations, where can we strengthen the initial profile of goals suggested earlier? On balance, what is the extent of support for a renewed Canadian Biotechnology Strategy?	Participants
4:30	Concluding Remarks	Arnold Naimark CBAC Chair