



## **BIOTECHNOLOGY AND LEGISLATORS: Supporting Informed Decision-making**

**IOG Technology and Governance Programme**

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The Institute On Governance (IOG) is a non-profit organization founded in 1990. Its mission is to explore, share and promote the concept of good governance in Canada and abroad, and to help governments, the voluntary sector, communities and the private sector put it into practice for the well-being of citizens and society. From our perspective, governance comprises the traditions, institutions and processes that determine how power is exercised, how citizens are given a voice, and how decisions are made on issues of public concern.

Our current activities fall within the following broad themes: building policy capacity; Aboriginal governance; technology and governance; board governance; and values, ethics and risk.

In pursuing these themes, we work in Canada and internationally. We provide advice on governance matters to organizations in the public, private and non-profit sectors. We bring people together in a variety of settings, events and professional development activities to promote learning and dialogue on governance issues. We undertake policy-relevant research, and publish results in the form of policy briefs and research papers.

You will find additional information on the Institute and our current activities on our web site, at [www.iog.ca](http://www.iog.ca).

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# Biotechnology and Legislators: Supported Informed Decision-making

## Executive Summary

### *Background*

Biotechnology issues are increasingly finding their way into Canadian courts and legislatures. In 2001, the Institute On Governance, with the support of a number of interested parties including Genome Canada and Industry Canada's Biotechnology Secretariat, launched a "Biotechnology and Governance Program" to explore what biotechnology means for Canadians and their governance arrangements. One aspect of this program was to look at the information requirements that legislators might have to support informed decision-making.

### *Objectives*

- Identify information needs of legislators;
- Examine some existing models;
- Consider options; and,
- Propose basic communications approaches.

### *Methodology*

Interviews, a focus group and a seminar were conducted with federal legislators to understand their needs, experience with biotechnology information, preferences for obtaining information and recommendations for future information provision.

In addition, the National Judicial Institute and Genome B.C., which have biotechnology education programs, were examined.

### *Basic Findings*

Legislators want information that:

- Connects to the current government agenda;
- Relates to emerging public issues affecting biotechnology; and,
- Highlights progress and challenges.

Information must be:

- Timely;
- Credible;
- Comprehensible to non-scientists;

- Covering all sides of an issue; and,
- Concise.

### ***Current Situation at the National Level***

The study examined the current approach at the national level. Legislators felt that while many sources of information on the subject of biotechnology are available, these sources lack coherency and association to current issues and concerns. In light of the very heavy workload confronting legislators, greater focus and coordination is required.

### ***Other Models***

*The National Judicial Institute* model provides courses and seminars to help members of the judiciary understand the complex legal issues involved in biotechnology. The context within which this information is presented is fairly stable and grounded in a basic legal framework.

*Genome B.C.* offers a program more tailored to the needs of legislators, and it seems to be working well. Nevertheless, account must be taken of the fact that the organization, in its web site, states that it aims to act as ‘the catalyst for a vibrant, genomics-driven sciences cluster with far-reaching social and economic benefits for the province and Canada.’ In other words, it has specific promotional goals which may not offer an entirely objective picture to legislators.

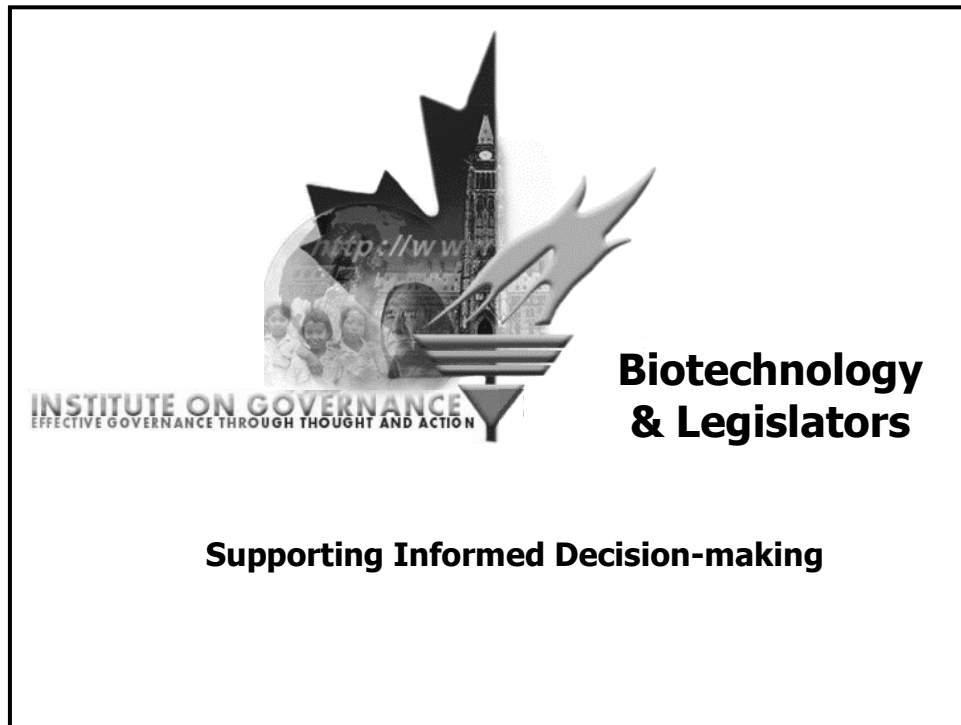
### ***Recommendations***

A biotech ‘champion’ in each party caucus, working with an *independent* organization to:

- Produce seminars for MPs and Senators on impending legislation, ‘hot’ issues and current developments;
- Seminar reference material to be posted on a Parliamentary biotech Web site; and,
- A pilot project to be tested with Parliamentarians.

## The Report

The following report was developed in 'deck' format to consolidate a variety of inputs, including a working paper, seminar, focus group, presentation by the National Judicial Council and input from Genome B.C.



## Our Program

- IOG Biotechnology and Governance Program launched in 2001
- Supported by Genome Canada, Canadian Biotechnology Secretariat and key departments with biotech interests

### Goal

Explore what biotech means for Canadians and their governance arrangements (education, governance research, anticipation)

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## Study Objectives

1. Identify biotech information needs of legislators
2. Examine existing models
3. Identify options
4. Propose basic communications approaches to promote informed decision-making

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## Study Approach

- expert interviews
- group discussion and seminar for MPs
- review of National Judicial Institute model
- recommendations

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# 1. Needs Analysis

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## The Basic Challenge

In the light of massive legislative workload, how to stay on top of:

- rapidly evolving biotechnology
- complex science
- complex ethical issues
- major economic issues
- wide ranging areas (health, environment, agriculture...)
- need for continuous regulation

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- rapidly evolving biotechnology
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- complex ethical issues
- major economic issues
- wide ranging areas (health, environment, agriculture...)
- need for continuous regulation



## Legislators Say ...

Legislators need biotech information that:

- relates to the current government legislative agenda
- connects to emerging public issues (SARS, BSE...)
- highlights progress and challenges



## Nature of Information Needs

Biotech information for legislators must be:

- *timely*
- credible
- comprehensible to non-scientists
- reflective of all sides of the issue
- diverse, complete, but *concise*



## Diverse Information

### ***Biotech Promise:***

- Cancer screening
- DNA fingerprinting
- Stem-cell research
- Food production

### ***Biotech Risks:***

- Healthcare costs
- Privacy
- Ethical questions
- Food safety



## Many Areas of Interest

Areas of interest include:

- economic sectors (e.g. food production)
  - including regional impact
- values, rights and risks
- quality of the supporting science
- interdepartmental dialogue
- the 'precautionary principle'



## 2. Current Models



## Already Many Information Sources

Information sources for legislators include:

- Library of Parliament
- Caucus research
- House and Senate Committees
- 'Bacon and Eggheads' breakfasts
- FSSHC 'Breakfast on the Hill'
- Lobbyists
- Media

*... but they need focus, analysis, synthesis*



## 'National Judicial Institute' Model

Courses and seminars that provide:

- information on an array of topics
- a diversity of views
- basic scientific information
- opportunities to explore roles of the courts, Parliament and other players



## Genome B.C.

Organization acts as a catalyst... with far-reaching social and economics benefits for the province and for Canada

- educational program “tailored to the needs of legislators”
- no details can be made available.



## Legislators Need Tailored, Independent Model

NJI is a good model but:

- does not take account of the competing requirements and issues facing legislators
- deals with already existing laws and regulations
- is grounded in the fundamental legal knowledge base of participants

Genome B.C. is effective, but

- based on organizational goal as ‘catalyst’ for ...genomics related research’



## 3. Options

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### Options Proposed by Legislators

- Information sessions on current legislation, 'hot' issues, or recent developments (repeated several times to suit participants' agendas)
- Video library based on taped info sessions
- 'Twinning' Parliamentarians with people involved in biotech
- Web site for Parliamentarians on a wide range of biotechnology information
- Debates on controversial issues
- Parliament Hill exhibits

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## 4. Recommendations



## A Proposition

- Biotech 'champion' named in each caucus to work with independent organization to produce seminars for members and senators on impending legislation, 'hot' issues, and current developments
- Seminar reference material to be posted on a Parliamentary biotech Web site
- Pilot project to test approach with Parliamentarians

## **Working Paper**

# **I. BIOTECHNOLOGY AND LEGISLATORS: Information Requirements**

## **Introduction**

### ***Background***

The Institute on Governance (IOG) is a neutral, not-for-profit think tank focussing on good governance: sound decisions taken on the basis of robust information and understanding to the benefit of all Canadians.

In 2001, the Institute launched a Biotechnology and Governance Program to explore what biotechnology means for Canadians and their governance arrangements. New discoveries and advances in biotechnology have far-reaching implications for a wide range of topics important to Canadians, such as genetically modified foods, human reproductive technology and access to personal genetic information. It is a complex field with many facets. While holding out potential benefits for health and economic prosperity, it also presents challenges for persons, individually and collectively, for professionals, the legal sector and legislators.

Issues dealing with biotechnology are increasingly showing up in courtrooms and legislatures across Canada, including the Parliament of Canada. These issues are more often than not very complicated. Consequently it is not always clear how to evaluate the available information or to assess if the information is complete, covering all sides of the issue.

### ***Objective***

The Institute's research indicates that there will be important decisions in the near future about the governance of biotechnology, and that the quality of these decisions may be enhanced if decision-makers have a sound baseline knowledge of the subject. In this context, the IOG started a research project in the spring of 2003, looking at whether there is a need for Members of Parliament and Senators to know more about biotechnology in order to make good decisions and if so, what specific initiatives might meet those information needs.

### ***Methodology***

The approach used for the project was to conduct a series of interviews with experts in biotechnology, the parliamentary system, and education and information dissemination. In addition, parliamentarians themselves were consulted through interviews, a focus group and seminar. The discussions and interviews focussed on questions that dealt with Parliamentarians' information needs and interest in biotechnology and the best way of communicating such information to them. This paper reports on the findings of those interviews and discussions.

## II. Biotechnology: The Nature of Parliamentarians' Information Needs

### *Biotechnology: Prospects and Challenges*<sup>1</sup>

Canada is a world leader in biotechnology, ranking among the top five countries in this field, and its importance to the Canadian economy has grown considerably. Investment in biotechnology research and development grew by 60 percent between 1999 and 2001 to a level of \$1.3 billion. Annual revenues rose by more than 330 percent to \$3.6 billion in the period 1997 to 2001. It is anticipated that the biotechnology sector will continue to expand quickly in the future and contribute to economic growth.

Biotechnology holds out the promise of seemingly endless possibilities for the health and prosperity of Canadians as well as better protection of the environment. Biotechnology permeates all aspects of life. It has implications for the health of Canadians, the food we eat, our economy and trade, environmental protection and law enforcement.

At the same time, biotechnology raises complex legal, social, political and ethical issues. For example, existing patent laws may not be adequate to deal with new genetic materials produced in laboratories or the technology for producing these. Stem cell research has led to a debate about legal and ethical concerns. The creation of genetically modified foods has resulted in consideration of the risks and benefits to the health of Canadians and has raised issues about the labeling of foodstuffs. The desire by insurance companies for individual genetic information has led to a debate about the rights of individuals to privacy. The genetic decoding of the causes of certain inherited diseases has resulted in court cases involving the adequacy of genetic counseling.

Furthermore, biotechnology is complex and has a breathtakingly quick pace of development, with new discoveries and developments reported daily. This means that it is difficult for legislators, courts, health and other professionals as well as the public at large to keep up to date on developments, critically sift through available information, form opinions on the quality of the science, determine the risks embodied in the technology and assess the ethical dimensions of issues. In fact, scientific advances often exceed the pace of development of policy and regulatory agendas, which creates an environment of uncertainty within which legislators, the courts and other professionals work. This suggests that in the near future, Parliamentarians will increasingly have to grapple with biotechnology issues as the Government and Parliament put in place a governance structure that balances promotion and regulation of industry, privacy of personal information and the risks and benefits to the health of Canadians.

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<sup>1</sup> Much of the information presented in this section is based on two reports: Institute On Governance, *Linking in, Linking Out, Linking Up: Exploring the Governance Challenges of Biotechnology*, Ottawa, 2002, and Industry Canada, *Canada's Biotechnology Sector*, Ottawa, 2003.

## ***Parliamentarians: Biotechnology Information Needs***

The Government and Parliament of Canada have had to deal with complex issues involving biotechnology. Examples are the debates on the establishment of a National DNA Data Bank for policing, a private members bill to establish a DNA Data Bank on missing persons and the proposed Assisted Human Reproductive Act (Bill C-13).

Participants in the discussions and those interviewed reported that from the perspective of Members of Parliament, there is a lack of knowledge about some of the issues coming through Parliament, as seen in the House of Commons debate on reproductive technology. In order to have a fruitful debate, it is critical for participants to be well informed. The consequences of lack of adequate information include debates that are ineffective or control of the discussion by the department(s) sponsoring the legislation.<sup>2</sup>

From the discussions and interviews, it is clear that there is an urgent need for a systematic effort to provide Members of Parliament with the information they need to make sound decisions. The status quo is not adequate. To be in a position to deal better with the issues raised by biotechnology, Parliamentarians need information that is *timely, comprehensible, credible, concise, complete* and *reflective of the diverse views* of various interests. Parliamentarians agree that they need to better understand the science and the diversity of perspectives in order to be able to weigh the information, form judgements and to have more productive debates on biotechnology related issues and proposed legislation.

Further, seminar participants and interviewees repeatedly stressed that the extraordinary workload of Parliamentarians means that they must be very selective in the information they choose to absorb. To capture the interests of Members of Parliament and Senators, the information must be either directly related to the work at hand in the legislature, to ‘hot’ topics such as SARS, and possibly to ‘breaking good news stories’.

Finally, those interviewed emphasized the use multiple avenues for providing biotechnology information to Parliamentarians. There is no one single magic bullet that would provide all the information about biotechnology needed. The participants in the study stressed that while Parliamentarians currently have access to many sources of information on biotechnology, new and additional approaches are needed.

## ***Parliamentarians: Specific Biotechnology Interest Areas***

While stressing the need for Parliamentarians to get information on Biotechnology that relate immediately and directly to the legislative work at hand, seminar participants and those interviewed offered some suggestions as to the specific areas of biotechnology issues that Parliamentarians might be interested in. These were as follows:

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<sup>2</sup> It should be noted here that the Members of Parliament that sit on Committees reported that they feel that they are better equipped than most of their colleagues to deal with biotechnology issues since they ask for and receive biotechnology information in the conduct of their work.

*Sector Interests:*

Which sectors, industries and other groups are concerned with the technology and why?

*Values, Rights and Risks:*

How can one weigh, for example, the right to know if food is genetically modified against the risk of misinformation?

*The Nature of Science:*

What is good and bad science and how do you identify which is which? What risks does bad science pose? What is the role of peer review in determining whether science is good or bad?

*Interdepartmental Dialogue:*

How can the need to have discussion across departments be reconciled with the fact that proposed legislation must come from a single department?

*The Precautionary Principle:*

How does this work when it deals with science-based decisions?

### **III. Meeting the Biotechnology Information Needs of Parliamentarians: Options**

#### ***Current Options***

Parliamentarians currently receive information about biotechnology from a wide variety of sources. The Library of Parliament through its Research Branch provide briefings on request as well as working closely with Committees and the Clerks of the Committees to develop work plans, recommend witnesses etc. The Library provides a news digest (Quorum) for all Parliamentarians for information on current issues and operates an electronic reference site with links to other relevant information sources. As well, the Library organises lectures on topical issues on a periodical basis

Further, the Partnership Group for Science and Engineering (PAGSE), in co-operation with the Clerks of Parliament and the Natural Sciences and Engineering Council of Canada (NSERC) have developed information sessions for Parliamentarians, the 'Bacon and Eggheads Breakfast'. These sessions are held on Parliament Hill and are open to Parliamentarians, their staff and the media. The 'Bacon and Eggheads' sessions have been running for about 5 years with participation by Parliamentarians at less than 25 percent. Parliamentarians that participated in this study had mixed reviews of these sessions. Nevertheless, the sessions are seen as successful by the sponsors and worthy of continued investment.

Another initiative that was mentioned by participants of this study was an exhibit in the Parliament buildings on biotechnology products by BioteCanada, an industry group.

In addition, Parliamentarians receive a vast quantity of papers and electronic messages that provide, among others, information on biotechnology from a variety of interest and lobby groups and experts both inside and outside Committee work. One interviewee suggested that what is required is an ‘information combine’ that would winnow out the good information from the reams of paper and push the rest out of the back of the combine.

### ***Participants’ Suggestions***

The individuals interviewed had many suggestions for improving information to help legislators cope with the complex policy issues that biotechnology is posing now and in the future. It was also noted by many respondents while there is a need for better and more timely information, any new initiatives should not add to information overload. Further, as noted earlier, the majority of respondents noted that no one single approach would prove adequate. Specific suggestions included:

- X Information sessions on Parliament Hill;
- X One to two day courses for groups of about 6 people at a time;
- X Video taping of information sessions for distribution to Parliamentarians;
- X Debating sessions on a controversial issue;
- X Fact sheets; and,
- X Twinning Parliamentarians with people involved with biotechnology.

Another aspect that was discussed at length with respondents was the need for marketing both existing and new information products. To this end, many respondents suggested working with biotechnology champions among Parliamentarians as well as with the Party Whips, Committee Chairs and policy staff of Parliamentarians. As well, some participants felt it would be useful to work through other established avenues into the parliamentary system such as the Library of Parliament and political caucuses.

### ***The Courts: An example of a Biotechnology Information Strategy***

To deal with the increasing number of court cases involving biotechnology that present complex legal issues, the National Judicial Institute (NJI) has developed courses and seminars for judges to equip them to better deal with these issues. These courses are designed to include a diversity of views, impart basic scientific knowledge, and provide opportunities to apply knowledge and explore the roles and responsibilities of the courts, governments and other players.

Some have suggested that a similar strategy to provide information on biotechnology to Parliamentarians would be helpful. There may be some validity in this suggestion since in some respects, the needs for information on biotechnology of Parliamentarians are similar to those of judges. However, in other respects needs differ. The differences arise out of the nature of the work and in the backgrounds of judges and Parliamentarians.

First, Parliamentarians require information that link directly to their immediate work because of the competing demands for their time and the diversity of responsibilities they face vis-à-vis constituents, official party responsibilities, duties in Parliament, Committee work etc. As a result, courses on prospective biotechnology issues would likely be of little interest.

Second, the primary challenges to the courts are to understand what constitutes good science and determine the admissibility of scientific evidence in the context of existing laws.

Parliamentarians, on the other hand, are required to form judgements on proposed new legislation taking into account different interests and balancing the risks and benefits for all Canadians. Parliamentarians therefore operate in new situations where there are few, if any, precedents.

Third, courses and seminars are often more suitable for groups of individuals that have similar backgrounds. Judges all have law degrees and therefore have a common knowledge base and problem-solving approaches on which to build. Parliamentarians, on the other hand, come from all walks of Canadian life and are thus a far more diverse group of individuals who view the world through a variety of lenses.

### ***The Genome B.C. Model***

Late in our research, we discovered a project by Genome B.C., which has developed a good working relationship with the provincial government and strives to keep them, as well as the general public, informed regarding the benefits and challenges of engaging in genomic research.”

### ***New Options***

With the above considerations in mind, four options are outlined below. These are not mutually exclusive and could be used singly or in combination.

#### **OPTION 1: ‘Just-in-Time’ Information Seminars**

Option 1 would provide information session on biotechnology issues directly related to the legislative agenda and on ‘hot’ topics as these emerge, including ‘breaking goods news’ stories. These sessions are intended to bring the relevant information to Parliamentarians on a specific biotechnology issue just as the information is needed. Handouts would be provided to participants at the end of each session consisting of a bullet form summary of the facts presented possibly together with ‘Frequently Asked Questions and Answers’ sheet. The same seminar would be held several times to allow for the maximum participation of Parliamentarians. To be easily accessible by Parliamentarians, the seminars would be held on Parliament Hill at breakfast time in the middle part of the week.

Sponsorship by either the Speakers or the Clerks of Parliament would to lend credibility to the information sessions. Also, working with the Whips of the political parties to seek their endorsement and recommendation to their party members would help to market the sessions.

A key challenge would be to keep on top of issues reported in the media, following developments in the legislative agenda and keeping a finger on the pulse of the interests of Parliamentarians themselves. A second challenge would be to maintain an up-to-date roster of able and respected speakers so that an information session could be put into place with minimum delay. A third challenge would be to ensure Parliamentarians are aware of an up coming session. Working with the Whips of the parties to advertise and endorse sessions may prove especially fruitful.

Compared so other options presented below, Option 1 could be implemented relatively quickly. The costs of Option 1 would include the cost of the facility<sup>3</sup> and speakers as well as staff to track issues and develop an 'evergreen' roster of speakers.

### **OPTION 2: Biotechnology Video Library**

Option 2 would entail videotaping information sessions on biotechnology for Parliamentarians on an ongoing basis so that these could be made available to those who were unable to attend. Over time, a library of such sessions would be built up and provide biotechnology information to Parliamentarians at a time and place of their choosing. The library could be either electronic or a regular type of lending library.

It may also be possible to videotape other information sessions such as those providing information on the basic science concepts that form part of the courses designed for judges. These too could also form part of a video reference library on biotechnology for Parliamentarians.

Similar to Option 1, this option could be implemented relatively quickly since it builds on existing information sessions. There are, however, three aspects of this option that need further exploration. First, the willingness of the presenters to have the need to videotape the sessions ascertained. Second, whether or not the current venues of the information sessions lend themselves to professional videotaping must be determined. Third, the cost of video taping and disseminating the tapes would need to be established.

It would also be useful to first pilot this approach to see whether or not Parliamentarians would make use of this type of information resource.

### **OPTION 3: Biotechnology Website: 'Information Combine'**

Option 3 is more ambitious than the first two and envisages pulling together biotechnology information from all sources into a single web site by topic and making it available to Parliamentarians. It could build on the existing concept of an electronic reference library currently provided by the Library of Parliament. Option 3 is intended to reduce the paper burden currently experienced by Parliamentarians who are inundated with information from numerous sources. It is also meant to provide information in digest form.

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<sup>3</sup> Sponsorship of the information sessions by the Clerks or Speakers of Parliament may eliminate this cost.

This option is a longer-term initiative and would take considerable time to develop, pilot and implement. The key challenges of Option 3 is to keep the information current, be representative of a wide variety of perspectives and present the information succinctly in laymen's terms. Costs are likely to be significant, both in terms of development and on an on-going basis. Consequently, an assessment of the costs and benefits would be desirable before proceeding with this option.

#### **OPTION 4: Exhibits on Parliament Hill**

Option 4 is intended to capitalize on the success of an earlier exhibit on biotechnology by an industry group on Parliament Hill by mounting new exhibits on particular topics of interest to Parliamentarians. These exhibits could draw from current exhibits at the Museums of Nature and of Science and Technology.

Similar to Option 3, this option requires a considerable lead-time. Also, costs may be significant and the feasibility of holding such an exhibit on the Hill would need to be explored. Thus an assessment of costs and benefits would be useful.

## Appendix A



## The Challenges of Biotechnology facing Legislators

*Notes on a Seminar Discussion*

Tuesday, May 27, 2003  
Canadian Museum of Nature  
Community Gallery

240 Metcalfe Street, Ottawa<sup>4</sup>

### Background

As part of its Biotechnology and Governance Program<sup>5</sup>, the Institute On Governance (IOG) has been exploring what good governance means with regards to technological developments and fostering public discussion on this issue. The Institute's research indicates that there will be important decisions in the near future about the governance of biotechnology, and that the quality of these decisions may be enhanced if decision-makers have a sound baseline knowledge of the subject.<sup>6</sup> In the hopes of encouraging sound decision-making concerning biotechnology in Canada, the IOG collaborated with Genome Canada and the Canadian Museum of Nature to hold a discussion with parliamentarians on what they need to know about biotechnology in order to do their work to the best of their ability. Members of Parliament (MPs) and Senators were invited

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<sup>4</sup> In attendance: Charles Caccia; Diane DesRochers; Mac Harb; James Lunney; Rob Merrifield; Tina Grznar, Marc Lepage, Anie Perrault; Joanne DiCosimo; George Thompson; Heather Edwards, Tim Plumptre, Marc Saner.

<sup>5</sup> The IOG's Biotechnology and Governance Program was launched in the summer of 2002 to educate and raise awareness of current policy process, to explore governance implications and to anticipate development in biotechnology. It is sponsored by 16 different federal departments as well as industry groups. More information can be found at [www.iog.ca/knowledge\\_areas.asp?pageID=12](http://www.iog.ca/knowledge_areas.asp?pageID=12).

<sup>6</sup> Boucher, L, D. Cashaback, T. Plumptre and A. Simpson. *Linking In, Linking Out, Linking Up*. Institute On Governance, 2002. [www.iog.ca/publications/biotech.pdf](http://www.iog.ca/publications/biotech.pdf).

to the Museum of Nature for May 27, where they considered the challenges presented by biotechnology and how to address them. After brief introductions by the hosts, George Thomson, Executive Director of the National Judicial Institute (NJI) gave a presentation on how his institute helps judges meet similar needs, and Tim Plumptre, Managing Director of the IOG, moderated a discussion on parliamentarians' needs. Participants also toured *The Gee! in Genome*, an exhibit sponsored by Genome Canada at the museum.

## **Opening Remarks**

Opening remarks were provided by Joanne Di Cosimo, President and CEO of the Canadian Museum of Nature, and Marc LePage, Executive Vice-President of Corporate Development at Genome Canada. Ms. Di Cosimo welcomed the group to the museum and spoke about how this project meshes with the Museum's interest in ensuring collective decision-making is based on the best information possible. Mr. LePage spoke to the groups about the status of genomics research in Canada, its implications for healthcare and the importance of public outreach on the subject.

## **Synopsis of the Presentation**

George Thomson, Executive Director of the National Judicial Institute, presented some ideas on the lessons that parliamentarians might draw from judges' experiences with biotechnology.

The National Judicial Institute endeavours to equip judges to make good decisions in the courtroom. Because judges are more frequently facing cases that require an understanding of biotechnology, the NJI struck a committee charged with developing courses to help judges understand both science in general and biotechnology in particular. This has resulted in two different types of courses. On the one hand, there are self-taught computer courses to help judges learn some basic elements of the science. On the other hand, there are seminars where judges can explore the implications of science in conversation with a diverse group of people. These educational programs are designed to including a diversity of voices, to impart basic scientific knowledge, to expose participants to a range of perspectives, to provide opportunities to apply knowledge, and to explore the roles and responsibilities of courts, governments and other players.

Issues related to biotechnology are coming through the judicial system with increasing frequency. Mr. Thomson believes that this is due to a number of factors:

- lack of policy direction
- science advancing more quickly than the policy and regulatory agendas
- high levels of uncertainty regarding biotechnology
- increasing complexity of issues

These factors also indicate that biotechnology issues are likely to come before legislators with increasing frequency. As issues related to biotechnology come through the policy and regulatory processes, legislators will face complex decisions similar to those that judges have seen in the courtroom. In such circumstances, MPs, like Judges, will likely express a desire for knowledge about both science in general and biotechnology in particular. They too will need to keep up with scientific developments, consider the implications of technology and policy, and to engage

in interdisciplinary discussions that expose them to a rich variety of perspectives. Indeed, the judicial system is addressing biotechnology issues only because there is a vacuum – one Mr Thomson feels would be best filled by strong policy analysis and legislative decision making. If the vacuum persists, then courts will become venues for policy development, which is a poor approach

## Discussion

Following the presentation, session participants discussed what practical measures could be taken to help legislators cope with the complex policy issues biotechnology is posing now, and in the future.

In the field of biotechnology, there are many new developments and many different opinions on the implications of these developments. As a consequence, one cannot expect that most educators will be free of ideological bias and it becomes a real challenge to provide an audience with complete or balanced information.. The NJI has found that it is easier to find balance when teaching how science works than when discussing the implications and risks following from the science. When bias is to be expected, exposure to a variety of perspectives may be the best approach to provide a balanced education

Participants reported that from the perspective of the MP, there is a lack of knowledge on some of the issues coming through Parliament, as was seen in the House of Commons debate on reproductive technology. In order to have good debate, it is critical for the participants in the discussion to be well informed. Otherwise the House could be controlled by the department sponsoring the legislation, or could have ineffective debate.

Session participants discussed some particular issues that MPs might be interested in:

- *sector interests* – which sectors, industries, other groups are concerned with which technology and why?
- *values, rights and risks* – how can one weigh, for example, the right to know if food is genetically modified against the risk of misinformation?
- *bad science* – what is it, how do you identify it, what risks does it pose and what is the role of peer review?
- *interdepartmental dialogue* – how can the need to have discussion across departments be reconciled with the fact that legislation must come from a single department?
- *the precautionary principle* – how does this work when it comes to science-based decisions?

Accepting the status quo is not the answer. There is a clear need for a systematic effort to provide MPs with the tools they need to make sound decisions. A number of ideas were discussed about how MPs might become better informed about biotechnology. Key recommendations included holding sessions on the hill, finding champions, and using multiple modes of communication. Participants also suggested some reference material of potential use.

## **Exhibit Tour**


Following the discussion, participants went on a guided tour of the *Gee! In Genome* exhibit, which examines the development and impact of genomics. Following its run at the Museum of Nature, the exhibit will be taken across Canada, and displayed at museums in each province.

## Appendix B

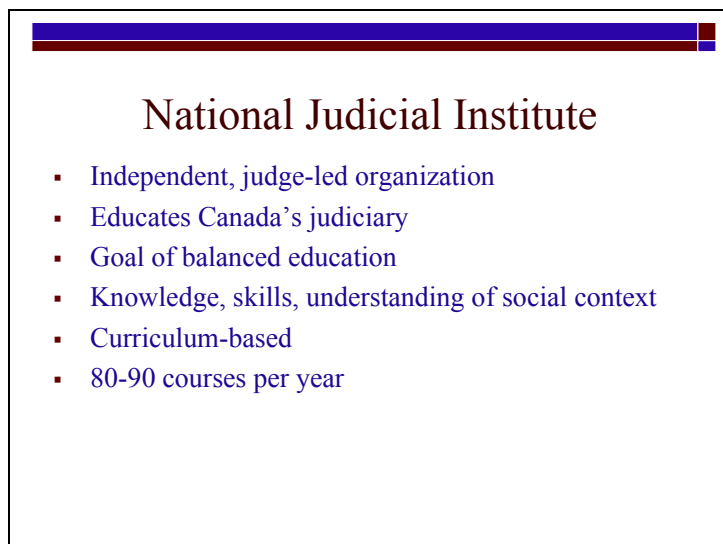


Preparing the Judiciary for Legal  
Disputes Involving  
Biotechnology

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**National Judicial Institute**  
George M. Thomson  
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**National Judicial Institute**

- Independent, judge-led organization
- Educates Canada's judiciary
- Goal of balanced education
- Knowledge, skills, understanding of social context
- Curriculum-based
- 80-90 courses per year

## Why Judicial Education in Biotechnology?

- **Understanding the science**
- **The science is creating the agenda**
- **The science is generating increasing amounts of litigation**
- **Lack of policy direction**
  - e.g., patenting of genetic material
- **Legislative uncertainty**
- **Complexity of the issues:**
  - Science, law and ethics
  - The meaning of risk

## Sample Problems

- **Bioremediation:**
  - Neutralizing toxic sites
  - Known risk vs. uncertain risk
- **Reproductive Technology:**
  - Doctor's obligation to test, to warn
  - *Charter* and legislative prohibitions
- **DNA Testing:**
  - Limits of compelled testing
  - Genes and criminal responsibility
- **Research:**
  - Informed consent
  - Regulatory negligence
- **Genetic Testing:**
  - Patentability
  - Cost of patented tests
  - Insurance
- **Genetically Modified Foods:**
  - The meaning of risk

## The Content and Format of Education

- **The Science:**
  - Self-taught computer course
    - Genetically Modified Foods: Resolving Biotechnology Issues in the Courtroom
  - DNA/Forensic Analysis
    - RCMP Data Bank
- **Working Conversations:**
  - Genetics, Ethics and the Law
  - International Working Conversation on Enviro-Genetics Disputes and Cases
  - Reproductive Technology
  - Research and the Law
  - Criminal Law: Science and Technology (Public Safety and Privacy)

## The Essential Elements of Good Education

- **Judges, scientists, ethicists, policy-makers**
  - A dialogue from different disciplines
- **Science primers**
  - Simplified but not distorted
- **A range of perspectives**
  - Judicial subjectivity
  - Openness to a range of perspectives
- **The chance to apply the knowledge**
  - Understanding options and implications
- **Exploring the roles of courts and government; the balance between privacy and technology; the risks of bad science; the implications of genetic testing**

## Implications for Parliamentarians

- **Need to understand the science**
- **Need to understand the policy implications**
  - Keeping up with the revolution
- **No single discipline or department has primacy**
  - Interdisciplinary, multi-department dialogue
- **Courts fill vacuum by necessity**
  - Poor forum for good analysis of complex policy/political issues

## APPENDIX C

### Study Sponsors

- Genome Canada
- Canadian Biotechnology Secretariat
- Agriculture and Agri-food Canada
- Canadian Food Inspection Agency
- Canadian Institutes of Health Research
- Canadian Museum of Nature
- Department of Foreign Affairs and International Trade
- Environment Canada
- Fisheries and Oceans Canada
- Food and Consumer Products Manufacturers of Canada
- Health Canada
- Human Resources Development Council
- Industry Canada
- Law Commission of Canada
- National Research Council
- Natural Resources Canada
- Natural Science and Engineering Research Council
- Royal Canadian Mounted Police
- Food & Consumer Products Manufacturers of Canada (private sector)