



Biotechnology Use and Development Survey - 2003

Confidential when completed

Collected under the authority of the Statistics Act, Revised Statutes of Canada, 1985, c. S-19. Completion of the questionnaire is a legal requirement under the Statistics Act.

Si vous préférez ce questionnaire en français, veuillez cocher

Information for the Respondent

Purpose of Survey

Statistics Canada is conducting this survey to produce a profile of firms engaged in biotechnology activities in Canada. The survey focuses on the characteristics and activities of firms that use or develop biotechnology as part of their company's activity. It will also help us learn about the key characteristics of firms that develop or make bioproducts as part of the biotechnology sector.

Biotechnology is an emerging sector of the Canadian economy and its impact has the potential to be felt through all parts of Canada's society. An accurate understanding of biotechnology requires comprehensive data. Information from this survey may be used by businesses for economic or market analysis, by trade associations to study industry performance, government departments and agencies to assist policy formation, and by the academic community for research purposes.

Please report on year 2003 Canadian biotechnology and bioproducts activities of your firm unless a specific question indicates otherwise. Complete a separate questionnaire for each company engaged in biotechnology (or bioproducts) activities in Canada.

Planned Data Linkage

In order to enhance the analytic value of this survey, Statistics Canada intends to combine the data from this survey with the data you provided to the Survey of Innovation.

Authority

Collected under the authority of the *Statistics Act*, Revised Statutes of Canada, 1985, Chapter S-19. Completion of this questionnaire is a legal requirement under the *Statistics Act*.

Confidentiality

Statistics Canada is prohibited from publishing any statistics that would divulge information obtained from this survey that relates to any identifiable business, institution or individual. Data is treated in strict confidence, used for statistical purposes and released in aggregate form only. The confidentiality provisions of the *Statistics Act* are not affected by either the Access to Information Act or any other legislation.

Federal-Provincial Agreement

In order to avoid duplication of enquiry, reduce the cost of collection and provide consistent statistics, Statistics Canada has entered into an agreement with the Institut de la Statistique du Québec. Under Section 11 of the *Statistics Act* data collected from Quebec firms in this survey will be transmitted to the Institut de la Statistique du Québec. The *Statistics Act* of Quebec includes the same provisions for confidentiality and penalties for disclosure of information as the Federal *Statistics Act*.

Who should complete this questionnaire?

A knowledgeable senior person in your firm, such as an R&D manager or production manager, can quickly complete this questionnaire.

Assistance

If you have questions or require assistance please contact:

Statistics Canada - Science, Innovation and Electronic Information Division
7th floor, R.H. Coats Building, Tunneys Pasture
Ottawa, Ontario K1A 0T6

Telephone: 1-866-334-3393
Fax: 1-888-869-0972
E-mail: sieidinfo@statcan.ca

Please provide the following information:

Name of person completing this form	Telephone number Area code _ _ - _ _ - _ _ _ _
Title	Fax number _ _ _ - _ _ _ _
Web address	E-mail

Section 1 - Biotechnologies in Use

This section measures the use of biotechnologies in your firm.

1. Using the table below, please indicate the use your firm makes of each type of biotechnology listed. Check the applicable circle or circles.

Biotechnologies	Currently Used in Operation	If currently using, do you use them for			Number of Years in Use
		Product/Process Development	Current Production	Environmental Purposes	
DNA - the coding					
e.g. Genomics/Pharmaco-genetics, Gene probes, DNA sequencing synthesis amplification, Genetic Engineering	1000 1 <input type="radio"/> Yes → 2 <input type="radio"/> No	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	<input type="text"/>
Proteins and Molecules - the functional blocks					
e.g. Protein/peptide sequencing/synthesis, Lipid/protein engineering, Proteomics, Hormones, growth factors, pheromones, Cell receptors signalling	1100 1 <input type="radio"/> Yes → 2 <input type="radio"/> No	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	<input type="text"/>
Cell and Tissue Culture, and Engineering					
e.g. Cell/ tissue culture, Embryo manipulation, Tissue engineering, Hybridization, Cellular fusion, Vaccine/immune stimulants	1200 1 <input type="radio"/> Yes → 2 <input type="radio"/> No	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	<input type="text"/>
Process Biotechnologies					
e.g. Bioreactors, Fermentation, Bioprocessing, Bioleaching, Bio-pulping, Biobleaching, Bidesulphurization, Bioremediation, Biofiltration	1300 1 <input type="radio"/> Yes → 2 <input type="radio"/> No	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	<input type="text"/>
Sub-Cellular Organisms					
e.g. Gene Therapy, Viral Vectors	1400 1 <input type="radio"/> Yes → 2 <input type="radio"/> No	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	<input type="text"/>
Other					
Bioinformatics	1500 1 <input type="radio"/> Yes → 2 <input type="radio"/> No	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	<input type="text"/>
Nanobiotechnologies	1600 1 <input type="radio"/> Yes → 2 <input type="radio"/> No	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	<input type="text"/>
Environmental biotechnology	1700 1 <input type="radio"/> Yes → 2 <input type="radio"/> No	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	<input type="text"/>
Other, Please Specify: _____	1800 1 <input type="radio"/> Yes → 2 <input type="radio"/> No	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>	<input type="text"/>

If you use at least one of the biotechnologies listed in Question 1



Go to Section 2

If you do not use any of the biotechnologies listed in Question 1



Go to Section 7 (**bioproducts**) and complete questions 25 to 30.

Section 2 - Human Resources in Biotechnology

Concerns have been expressed about the availability of skilled biotechnology employees. Your cooperation in careful completion of this section is essential in developing an accurate understanding of human resources in biotechnology. For the purpose of this survey Employees are defined as those workers for whom you completed a Canada Revenue Agency T-4 statement for the 2003 tax year. Include working owners. Do not include students. Only count employees working in Canada. If '0' (zero) indicate '0'.

Number of Biotechnology Employees

2. a) How many employees does your firm employ in Canada? 2000
Please report typical employment level for 2003.

b) How many employees have biotechnology-related responsibilities? 2010
Please report typical employment level for 2003.

c) Employees with full-time biotechnology responsibilities

For each group listed below indicate how many are employees with full-time biotechnology related responsibilities (50% or more of their time spent on biotech related activities)? If an employee fulfills more than 1 duty, report their primary responsibility. Count each person only once. Please report typical employment level for 2003.

Position	Number of full-time
Scientific Research & Direction	2100
Technicians	2110
Regulatory/Clinical Affairs	2120
Production	2130
Finance/Marketing	2140
Management	2150
Other, Please Specify:	2160
Total number of employees with full-time biotechnology responsibilities	2170

d) Employees with part-time biotechnology responsibilities

For each group listed below indicate how many are employees with part-time biotechnology responsibilities (less than 50% of their time spent on biotech related activities)? If an employee fulfills more than 1 duty, report their primary responsibility. Count each person only once. Please report typical employment level for 2003.

Position	Number of part-time
Scientific Research & Direction	2200
Technicians	2210
Regulatory/Clinical Affairs	2220
Production	2230
Finance/Marketing	2240
Management	2250
Other, Please Specify:	2260
Total number of employees with part-time biotechnology responsibilities.	2270

e) Total number of biotechnology employees.

Total employees with full-time and part-time biotechnology-related responsibilities (Box 2170 + Box 2270)

2011

This number must equal 2010 above.

Recruiting Practices

3. a) Does your firm have unfilled biotechnology-related positions?

- 3000 ² No ► Go to question 3b)
¹ Yes ► In the table below indicate the number of unfilled positions by category:

Position	Number of Unfilled Positions
Scientific Research & Direction	3100
Technicians	3110
Regulatory/Clinical Affairs	3120
Production	3130
Finance/Marketing	3140
Management	3150
Other, Please Specify:	3160
_____	_____
Total unfilled positions	3170

b) Did your firm attempt to recruit any biotechnology employees in 2003?

- 3200 ² No ► Go to question 5
¹ Yes ► Were you successful?
 3300 ² No ► Go to question 3c)
¹ Yes ► How many did you hire? 3310

c) Did you attempt to hire biotechnology staff from outside of Canada in 2003?

- 3400 ² No ► Go to question 4
¹ Yes ► In the table below indicate the number of biotechnology staff you hired from each country/region:

Country/Region	Number of employees hired
USA	3410
Europe	3420
Asia	3430
Other, Please Specify	3440
_____	_____
Total employees hired from outside of Canada	3450

4. Please rate the impact of the following factors on your efforts in filling biotechnology-related vacancies.

Factors	Importance				
	Low 1	2	3	4	High 5
Candidate Factors					
Compensation requirements by candidates too high	4000 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Candidates unwilling to relocate	4010 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of experience	4020 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Firm Factors					
Capital/resources insufficient to attract candidates	4100 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
External Factors					
Lack of qualified candidates	4200 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Competition for qualified candidates	4210 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, Please Specify	4300 <input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
_____	_____				

5. Did any biotechnology personnel leave your firm in 2003?

⁵⁰⁰⁰ 2 No ► Go to question 6

1 Yes ► How many? ⁵⁰¹⁰

Section 3 - Firm History

6. What year was your firm established?

⁶⁰⁰⁰

7. Is your firm a public firm?

⁷⁰⁰⁰ 2 No ► Go to question 8

1 Yes ► What year was the Initial Public Offering (IPO)? ⁷⁰¹⁰

8. Has your firm merged with another firm?

⁸⁰⁰⁰ 2 No ► Go to question 9

1 Yes ► What year did the merge take place? ⁸⁰¹⁰

9. Is your firm a subsidiary of a Multi-National Enterprise (MNE)?

⁹⁰⁰⁰ 2 No

1 Yes

10. Is your firm a spin-off? A spin-off is defined as a new firm created to transfer and commercialize inventions and technology developed in universities, firms or laboratories.

¹⁰⁰⁰⁰ 2 No ► Go to question 11

1 Yes ► Was your firm a spin-off from ¹⁰⁰¹⁰

University/hospital	1 <input type="checkbox"/>
Another Biotech company	2 <input type="checkbox"/>
Non-biotech firm	3 <input type="checkbox"/>
Government Agency/lab	4 <input type="checkbox"/>
Other, Please Specify	5 <input type="checkbox"/>

Section 4 - Biotechnology Products

This section measures the development of new biotechnology products and processes by your firm.

11. a) Do you have biotechnology products/processes on the market?

¹¹⁰⁰⁰ 2 No

1 Yes

b) Is your firm currently developing products that require the use of biotechnology?

¹¹¹⁰⁰ 2 No

1 Yes

c) Is your firm currently developing processes that require the use of biotechnology?

¹¹²⁰⁰ 2 No

1 Yes

d) Do you consider biotechnology central to your firm's activities or strategies?

¹¹³⁰⁰ 2 No

1 Yes

**If you answered "Yes" to any
Part of Question 11**

► **Go to Q12**

Otherwise

► **Go to Section 7 (bioproducts) and
complete questions 25 to 30.**

12. In the table below, for each sector listed please indicate the number of biotechnology products or processes your firm currently has for each stage of development.

Biotechnology Sector	Number of biotechnology products/processes by development stage			
	Research & Development 0	Pre-clinical trials/ Confined field trials 1	Regulatory phase/ Unconfined release assessment 2	Approved/ On market/ In production 3
Human Health				
Diagnostics (e.g. biosensors, immunodiagnostics, gene probes)	12000	<input type="text"/>	<input type="text"/>	<input type="text"/>
Therapeutics (e.g. vaccines, immune stimulants, biopharmaceuticals)	12010	<input type="text"/>	<input type="text"/>	<input type="text"/>
Drug Delivery	12020	<input type="text"/>	<input type="text"/>	<input type="text"/>
Agriculture Biotechnology				
Plant Biotechnology (e.g. tissue culture, embryogenesis, genetic markers, genetic engineering)	12100	<input type="text"/>	<input type="text"/>	<input type="text"/>
Animal Biotechnology (e.g. diagnostics, therapeutics, embryo transplantation, genetic markers, genetic engineering)	12110	<input type="text"/>	<input type="text"/>	<input type="text"/>
Non-food Agriculture (e.g. fuels, lubricants, commodity and fine chemical feedstocks, cosmetics)	12120	<input type="text"/>	<input type="text"/>	<input type="text"/>
Natural Resources				
Energy (e.g. microbiologically enhanced petroleum recovery, industrial bioprocessing, biodesulphurization)	12200	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mining (e.g. microbiologically enhanced mineral recovery, industrial bioprocessing, biodesulphurization)	12210	<input type="text"/>	<input type="text"/>	<input type="text"/>
Forest Products (e.g. biopulping, biobleaching, biopesticides, tree biotechnology, industrial bioprocessing)	12220	<input type="text"/>	<input type="text"/>	<input type="text"/>
Environment				
Air (e.g. bioremediation, diagnostics, phytoremediation, biofiltration)	12300	<input type="text"/>	<input type="text"/>	<input type="text"/>
Water (e.g. biofiltration, diagnostics, bioremediation, phytoremediation)	12310	<input type="text"/>	<input type="text"/>	<input type="text"/>
Soil (e.g. biofiltration, diagnostics, bioremediation, phytoremediation)	12320	<input type="text"/>	<input type="text"/>	<input type="text"/>
Aquaculture				
Fish health, broodstock genetics, bioextraction	12400	<input type="text"/>	<input type="text"/>	<input type="text"/>
Bioinformatics				
Genomics & molecular modelling (e.g. DNA/RNA/protein synthesising & databases for humans, plants, animals, and micro-organisms)	12500	<input type="text"/>	<input type="text"/>	<input type="text"/>
Gene therapy (e.g. gene identification, gene constructs, gene delivery)	12510	<input type="text"/>	<input type="text"/>	<input type="text"/>
Food Processing				
Bioprocessing (e.g. using enzymes and bacteria culture)	12600	<input type="text"/>	<input type="text"/>	<input type="text"/>
Functional Foods/Nutraceuticals (e.g. probiotics, unsaturated fatty acids)	12610	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other, Please Specify	12700	<input type="text"/>	<input type="text"/>	<input type="text"/>

13. a) In 2003, did you have biotechnology products or processes in any stage of research and development (but not yet on market)?

13000
2 No ► Go to question 14

1 Yes ► Of the products or processes your firm had in research and development stages (not yet on market) in 2003, how many require formal regulatory evaluation and/or approval by Canadian inspection agencies? ►

Number of products or processes 13010

b) In 2003, for your **principal** product or process please indicate the current stage of development:

Research and development	13100	1 <input type="radio"/>
Preclinical	13110	2 <input type="radio"/>
Regulatory stage	13120	3 <input type="radio"/>

c) How long has your **principal** biotechnology product or process been under development?

Number of years ► 13200

Number of months ► 13201

d) How much has your firm invested in research and development of this **principal** biotechnology product or process?

13300 \$,000

14. a) In 2003, did you have biotechnology products or processes in production or on the market?

14000
2 No ► Go to question 15

1 Yes ► Of the products or processes your firm had on the market in 2003 how many were subject to formal regulatory evaluation and/or approval by Canadian inspection agencies? ►

Number of products or processes 14010

b) What was the **total time** required to bring your principal biotechnology product or process from the initial development phase/proof of concept stage to market?

Number of years ► 14100

Number of months ► 14101

c) What was the **total cost** to bring your principal biotechnology product or process from the initial development phase/proof of concept stage to market?

14200 \$,000

Section 5 - Business Practices

Contracting Out

15. a) Did your firm contract out biotechnology related activities in 2003?

¹⁵⁰⁰⁰ 2 No ► Go to question 15d)

1 Yes ► For each partner type listed below, please indicate the number and value of contracts for each group listed.

Contract Type	Number of Contracts	Total Value of Contract in 2003 by purpose: (\$,000)			
		R&D	Regulatory/clinical	Management/Production	Other
		0	1	2	3
Private research lab	15100				
University/Hospital	15110				
Government Lab	15120				
Other biotech firm	15130				
Other, Please Specify	15140				
		\$,000	\$,000	\$,000	\$,000

b) Did contracting out in 2003 replace biotechnology employees in your firm?

¹⁵²⁰⁰ 2 No ► Go to question 15c)

1 Yes ► Please indicate the number of employees replaced for each group listed below.

Position	Number of employees replaced
Scientific Research & Direction	15210
Technicians	15220
Regulatory/Clinical Affairs	15230
Production	15240
Finance/Marketing	15250
Management	15260
Other, Please Specify:	15270
Total number of employees replaced by contracting out activities	15280

c) Rate the level of importance of each of the following reasons on your decision to contract out.

Reasons for Contracting Out	Importance				
	Low 1	2	3	4	High 5
Knowledge not available internally	15300	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access outside scientific expertise	15310	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost Reduction Related to:					
R&D Activities	15320	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulatory/Clinical Affairs	15330	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production	15340	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce risk/exposure	15350	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, Please Specify:	15360	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

d) Does your firm provide contract services to other firms or organizations?

15400 2 No ► Go to question 16

1 Yes ► For each type of contract services listed below, please indicate the number of contracts entered into in 2003 and the revenues received from each:

Contract Services	Number of contracts entered into in 2003		Revenues received from this source in 2003	
		0		1
Private reseach lab	15500		\$,000
University/Hospital	15510		\$,000
Government lab	15520		\$,000
Other biotechnology firm	15530		\$,000
Other, Please Specify:	15540		\$,000
			\$,000
Total	15550		\$,000

Collaborative Arrangements

Cooperative and collaborative arrangements involve the active participation in projects between your company and other companies or organizations in order to develop and/or continue work on new or significantly improved biotechnology processes, products and/or services. **Pure contracting-out work is not regarded as collaboration.**

16. a) Was your firm involved in biotechnology-related cooperative/collaborative arrangements with other companies or organizations in 2003?

16000 2 No ► Go to question 17

1 Yes ► Provide the number of arrangements by purpose and partner type:

Arrangement Purpose		Number of Arrangements by Partner Type			
		Biotech Firm 0	Non-biotech Firm 1	Academic Institution/ Hospital 2	Government lab or agency 3
Knowledge not available internally	16100				
Access outside scientific expertise	16110				
Cost reduction related to:					
R&D activities	16120				
Regulatory/Clinical affairs	16130				
Production	16140				
Precursor to a formal agreement	16150				
Reduce risk/exposure	16160				
Other, Please Specify	16170				
Total number of arrangements	16180				

Collaborations with foreign partners

16. b) In 2003, was your firm involved in biotechnology related cooperative/collaborative arrangements with other **foreign** companies or organizations?

16200 No ► Go to question 17

Yes ► In the table below, check collaboration/cooperation arrangements by each type and their geographic location:

Country/Region	Partner Type				
	Biotechnology Firm	Non-biotechnology Firm	Academic Institution/Hospital	Government lab or agency	Other
USA 16210	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Europe 16220	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asia 16230	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, Please Specify 16240	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Reasons for allying with foreign partners

c) Rate the following purposes in your decision to form a collaborative/cooperative arrangement with a **foreign partner** (located outside of Canada):

Arrangement Purpose	Importance				
	Low 1	2	3	4	High 5
Knowledge not available internally 16300	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access outside scientific expertise 16310	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost reduction related to:					
R&D activities 16320	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulatory/Clinical affairs 16330	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Production 16340	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Precursor to a formal agreement 16350	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce risk/exposure 16360	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, Please Specify 16370	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Intellectual Property

17. a) Does your firm have biotechnology related patents or pending patents?

17000 No ► Go to question 18

Yes ► How many?

Indicate the distribution of biotechnology related patents and pending patents your firm has by patent office:

	Canadian Intellectual Property Office (CIPO) 0	U.S. Patent & Trademark Office (USPTO) 1	European Patent Office 2	Other 3
Existing Patents 17100				
Pending Patents 17110				

b) Provide the number of unique patent applications your company submitted in:

	Number
Year 2002 17200	
Year 2003 17210	

18. a) Did your firm grant biotechnology related intellectual property (IP) rights to another firm?

¹⁸⁰⁰⁰ ² No ► Go to question 18b)

¹ Yes ► For each type of intellectual property instrument listed below please indicate the number of IP rights granted by country and the total income received from IP licensing in 2003.

Intellectual Property Instrument		Number with Canadian firms 0	Number with USA firms 1	Number with other country firms 2	Revenue from IP licensing in 2003 3
Licensing Agreement	18100				\$,000
Patent assignment	18110				\$,000
Technology Transfer Agreement	18120				\$,000
Other, Please Specify	18130				\$,000

b) Did your firm obtain biotechnology related intellectual property rights from another firm?

¹⁸²⁰⁰ ² No ► Go to question 19

¹ Yes ► Complete the following table:

Intellectual Property Instrument		Number with Canadian firms 0	Number with USA firms 1	Number with other country firms 2	Cost to your firm of obtaining IP in 2003 3
Licensing Agreement	18300				\$,000
Patent assignment	18310				\$,000
Technology Transfer Agreement	18320				\$,000
Other, Please Specify	18330				\$,000

Section 6 - Firm Characteristics and Financial Profile

Revenues and Research and Development (R&D) Expenditures

19. Please complete the following table. If information is not available please provide a carefully considered estimate. Report for fiscal years and in thousands of dollars (\$,000's). If '0' (ZERO) please indicate, do not leave blanks.

		2002 0	2003 1	2005 Forecast 2
Total Firm Revenues (all sources)	19000	\$,000	\$,000	\$,000
% of revenues from Biotechnology	19010	%	%	%
Total R&D spending	19020	\$,000	\$,000	\$,000
Total spending on Biotechnology R&D	19030	\$,000	\$,000	\$,000
% of Biotechnology R&D spending contracted out	19040	%	%	%

Raising Capital

A great deal of attention has focused on the ability of biotechnology firms to raise capital and the challenges of raising capital. Questions in this section are intended to collect information in order to address this critical issue facing the biotechnology sector.

20. a) Did your firm **attempt** to raise capital for biotechnology related purposes in 2003?

20000 No ► Go to question 20f)

1 Yes ► Why did you attempt to raise capital? Indicate each category that applies to your firm:

20010 R&D purposes/Expand R&D capacity

20020 Repay current investors

20030 Commercialize current R&D projects

20040 Clinical/regulatory expenses

20050 Develop production/manufacturing capability

20060 Other, Please Specify:

b) Were you successful in raising capital?

20100 No ► Go to question 20d)

1 Yes ► How much capital did you raise in 2003? ► 20110

c) Did you reach your target?

20200 No ► Go to question 20d)

1 Yes ► Go to question 20e)

d) What reasons did the **lender** give in limiting or refusing your request for capital?

Check all that apply.

- | | | |
|--|-------|--------------------------|
| Biotechnology product/process not sufficiently developed | 20310 | <input type="checkbox"/> |
| Biotechnology product line or portfolio limited in scope | 20320 | <input type="checkbox"/> |
| Insufficient specific management skills/expertise | 20330 | <input type="checkbox"/> |
| Capital not available due to market conditions | 20340 | <input type="checkbox"/> |
| Further product development or proof of concept required | 20350 | <input type="checkbox"/> |
| Lender does not fund development projects | 20360 | <input type="checkbox"/> |
| Other, Please Specify | 20370 | <input type="checkbox"/> |

e) What sources provided funding?

What sources provided funding?		% of total raised from each source?
Canadian based Venture Capital	20400	%
American based Venture Capital	20410	%
Conventional sources (i.e. banks)	20420	%
Angel Investors/Family	20430	%
Government sources	20440	%
Private placement	20450	%
IPO (Initial Public Offering)	20460	%
SPO (Secondary Public Offering)	20470	%
Collaborative arrangements, alliances	20480	%
Other, Please Specify	20490	%
_____		%

20. f) Do you plan on raising capital in 2004?

20600

2 No ► Go to question 21

1 Yes ► How much do you plan to raise? ► <\$1,000,000

1

20610

\$1,000,000-\$5,000,000

2

>\$5,000,000

3

Tax Incentives

21. a) In the past 5 years did your firm apply for benefits for biotechnology related activities under the Scientific Research and Experimental Development (SR&ED) tax program?

21000

1 Yes ► How much did you apply for in 2003?

21010 \$ _____ ,000

► How much did you receive in 2003?

21020 \$ _____ ,000

► Go to question 21b)

2 No ► Why?

Complexity of application process

21110 1

Uncertainty of eligibility

21120 2

Did not meet eligibility requirements

21130 3

Other, Please Specify:

21140 4

b) Have any of your SR&ED credits expired?

21200

2 No

1 Yes

22. Did your firm apply for any provincial R&D tax benefit or incentive?

22000

1 Yes

2 No ► Why did you not apply?

Complexity of application process

22010 1

Uncertainty of eligibility

22020 2

Did not meet eligibility requirements

22030 3

Other, Please Specify

22040 4

Imports & Exports

23. Did your firm export biotechnology products?

23000

2 No ► Go to question 24

1 Yes ► Please complete the following table. Report for fiscal years and in thousands of dollars (\$,000's). If '0' (ZERO) please indicate, do not leave blanks.

		2002	2003	Forecast for 2005
		0	1	2
Total Exports Revenues (all sources)	23100	\$ _____ ,000	\$ _____ ,000	\$ _____ ,000
% export revenues from Biotechnology	23110	%	%	%
Regional Distribution				
% export revenues to US	23200	%	%	%
% export revenues to Europe	23210	%	%	%
% export revenues to Asia	23220	%	%	%
% export revenues to other regions	23230	%	%	%

24. Did your firm import biotechnology products?

24000

No ► Go to question 25

Yes ► Please complete the following table. Report for fiscal years and in thousands of dollars (\$,000's). If '0' (ZERO) please indicate, do not leave blanks.

	2002 0	2003 1	Forecast for 2005 2
Total Import Expenditures (all sources) 24100	\$,000	\$,000	\$,000
% import expenditures from Biotechnology 24110	%	%	%
Regional Distribution			
% import expenditures to US 24200	%	%	%
% import expenditures to Europe 24210	%	%	%
% import expenditures to Asia 24220	%	%	%
% import expenditures to other regions 24230	%	%	%

Section 7 - Bioproducts

A bioproduct is defined as "a commercial or industrial product (other than food or feed) made with biological or renewable domestic agricultural (plant animal) marine or forestry materials, such as, bio-energy (heating and electricity), bio-fuels (ethanol and bio-diesel), bio-chemicals, fiberboard, textiles, bio-plastics and other biomaterials".

25. Does your firm currently make or develop any bioproduct?
(Refer to the table below for examples of bioproducts).

25000

No ► Go to question 29

Yes ► In the table below, indicate the number of bioproducts your firm currently has for each stage of development.

Bioproducts	Number of bioproducts by development stage		
	R&D 0	Proof of concept/product development 1	Approval/ In production/ On market 2
Bio-fuels (ethanol, bio-diesel) 25100			
Bio-energy (heating and electricity) 25110			
Bioprocessing-based bioproducts (using enzymes and bacteria) 25120			
Bio-pharmaceuticals/bio-sensors/ biocatalysts/biochemicals 25130			
Bio-plastics 25140			
Biopesticides/biofungicides/bio-herbicides 25150			
Fiberboard/Agri-fiber panels 25160			
Other bioproducts or biomaterials, Please specify 25170			

Current Use of Renewable or sustainable feedstock/materials

26. Does your firm use any feedstocks/materials from the following list to develop or make bioproducts?

26000

² No ► Go to question 27

¹ Yes ► In the table below, indicate the renewable or sustainable feedstocks/materials used by your firm. Please check all that apply.

Biomass crops and trees / crop residues	26010	1 <input type="radio"/>
Forestry products/slash and mill waste	26020	2 <input type="radio"/>
Marine and aquaculture materials/products	26030	3 <input type="radio"/>
Animal products/waste/manure	26040	4 <input type="radio"/>
Industrial waste	26050	5 <input type="radio"/>
Municipal waste	26060	6 <input type="radio"/>
Other sustainable/renewable materials (Please specify)	26070	7 <input type="radio"/>

Financial Profile

27. Please complete the following table. If information is not available, please provide a carefully considered estimate. Report for fiscal years and in thousands of dollars (\$, 000's). If "0" (ZERO) please indicate "0", do not leave blanks.

	2002	2003	2005 Forecast
	0	1	2
Total firm revenues (all sources) 27000	\$,000	\$,000	\$,000
% of total revenues from bioproducts 27010	%	%	%
Revenues derived from bioproduct exports 27020	\$,000	\$,000	\$,000
Total Import expenditures from bioproducts 27030	\$,000	\$,000	\$,000
Total R&D expenditures on bioproduct development 27040	\$,000	\$,000	\$,000

Human Resources in Bioproducts Development

28. Please complete the table below. For the purpose of this question, Employees are defined as those workers for whom you completed a Canada Revenue Agency T-4 statement for the 2003 tax year. Include working owners. Do not include students. Only count employees working in Canada. If "0" (ZERO) indicate "0". **If an employee fulfills more than 1 duty, report their primary responsibility. Count each person only once.** Please report typical employment level for 2003.

	Number of employees in 2003
Total number of employees (in Canada) 28000	
Total number of employees with bioproducts-related activities. (Includes scientific research and direction, technicians, regulatory/clinical affairs, production, finance/marketing, management activities, etc.) 28010	
Total number of full-time employees with bioproducts-related activities (50% or more of their time spent on bioproducts-related activities) 28020	
Total number of part-time employees with bioproducts-related activities (less than 50% of their time spent on bioproducts-related activities) 28030	

Strategies Used in 2003

29. In the table below rate the significance of each of the following strategies on your firm's performance in 2003.

		Importance				
		Low 1	2	3	4	High 5
Knowledge development strategies						
Captured and used knowledge obtained from other industry sources such as industry associations, competitors, clients and suppliers	29000	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Captured and used knowledge obtained from public research institutions including universities and government laboratories	29010	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Used and updated databases of scientific information	29020	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developed firm policies and practices for knowledge/intellectual property protection	29030	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Developed/encouraged staff education/upgrading	29040	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conducted an Intellectual Property Audit to ensure protection of products and processes at all stages of development	29050	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business strategies						
Increased firm size through acquisition, merger or joint venture	29100	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Downsized operations of the firm	29110	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entered product trials/adapted products or processes for increased market penetration	29120	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Began new research & development project	29130	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Expanded into foreign markets	29140	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, Please Specify:	29200	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

30. Approximately, how many hours did you spend collecting the data and completing this questionnaire?

Hours

Comments

**Thank you for your assistance.
 Return the questionnaire in the accompanying self addressed prepaid envelope.**