BioIndustry in Alberta

An Expanded State of the Industry Report for 2005

Prepared for National Biotech Week
September 26 - 30, 2005

bio alberta

celebrate IMAGENENATION célébrez

www.imagenenation.ca

TABLE OF CONTENTS

BioAlberta is a private, not-for-profit industry association, representing Alberta's growing bioindustry sector. The association has more than 130 members, including producers, users, researchers, and supporters of biotechnology activities in Alberta. On behalf of its membership, BioAlberta promotes increased awareness and support for the growth of Alberta's industry.

BioAlberta is a member of the Biotech Accord, which includes other bioindustry development organizations across Canada, and the national bioindustry organization, BIOTECanada.

Acknowledgements:

A report of this scope is the product of many people, and we gratefully acknowledge all who contributed to this project.

Thanks to the departments of Alberta Economic Development and Alberta Innovation and Science for their assistance in company identification. This report could not have been prepared without the cooperation of the corporate members of Alberta's bioindustry, and we are grateful to all the respondent companies for their time, information, and cooperation.

The report was championed by Ryan Radke, BioAlberta's Vice-President of Operations and Programs. Amanda Au, BioAlberta's University of Alberta Commerce Co-Operative Program Student provided the support on the ground for collecting and compiling the information.

BioAlberta 2005

INTRODUCTION

During the past six years, various players in Alberta have laid the foundation for a successful bioindustry. Companies in the province are working in areas that will have tremendous impact on health, agriculture, a wide variety of other industries, and as a result, on the overall economy.

Alberta is one of the strongest research centers in Canada. This is an industry that is founded on the province's world class research institutions, its robust economy and financial wealth, and unsurpassed entrepreneurial spirit.

The technology foundation of Alberta's bioindustry is based at the University of Alberta, the University of Calgary, and the University of Lethbridge. Nearly all of the bioindustry firms in the province are founded on technologies developed at these institutions. Support for cutting-edge research is provided by organizations like the Alberta Heritage Foundation for Medical Research, the Alberta Agricultural Research Institute, the Alberta Ingenuity Fund, and the Alberta Science and Research Authority.

Alberta's industry has primarily developed through technology spin-offs from its universities and the commitment of their founders to live and work in the province. This report clearly outlines the tremendous growth in the number of companies in the past five years, and also that, although this is a nascent industry, there has been steady movement through the development cycle.

Looking to the future, our companies are on the verge of discoveries that will have a lasting impact on Albertans, Canadians, and people globally. A continued focus on research excellence is critical, matched by a commitment to innovation, collaboration, and commercialization.

However, for the Alberta bioindustry to achieve its full potential, the foundations of our current success need to be strengthened. We need to provide a competitive environment in which the companies we create can grow and thrive. This environment will include:

- robust and supportive tax and fiscal policies designed specifically for research intensive businesses,
- programs to attract high quality people,
- development of a robust venture-capital industry,
- a focus on improved access to, and commercialization of, technology.

The bioindustry is well on its way to becoming a key component of Alberta's economy, and has a significant current and potential impact on the health and quality of life of all Albertans.

This report presents the current state of the bioindustry in Alberta in 2004-2005: size and scope of the industry, employment, revenue/income/financing, and stage of development.

HISTORY AND METHOD

In late 2003, BioAlberta joined forces with the Government of Alberta to conduct an online survey of the health and bio industries. This was conducted in the summer of 2004, when BioAlberta developed a 12 - question survey intended to supplement the initial survey. This follow-up survey targeted the 61 core biotechnology companies then operating in the province. Of the 61 companies, data was received from 53, generating an outstanding response rate of 87%.

This year's report is significantly different from last year's report. **It has been expanded to include a more diverse bioindustry definition**. This year, BioAlberta expanded its base of targeted companies to include not only core biotechnology companies, but also medical devices and industrial bioproducts companies. One hundred and six companies were contacted in total, and data was received from 88 respondents, generating a response rate of 83%. Starting in April 2005, a survey was formed using ten key industry questions, and was conducted via telephone, e-mail, and in person.

For this report, a bioindustry company was defined as a commercial entity headquartered in Alberta, involved any of the following sectors:

- health biotechnology
- agricultural biotechnology
- functional foods and nutraceuticals
- bioinformatics
- environmental biotechnology
- medical devices
- industrial bioproducts.

To ensure a proper bioindustry perspective on the industry analysis, the following organizations were not included as targets for the report:

- Universities and colleges
- Research institutes and associations
- Service and supply companies (e.g. law, accounting, lab supplies)
- Consulting companies (where consulting was the company's sole business model)

Additional information was collected and supplemented by accessing company websites, industry directories, annual reports, and online sources.

All data has been presented in aggregate form to preserve company confidentiality. In certain cases, companies have chosen not to answer certain questions (e.g. revenue, investment, or financial questions). In some cases, approximations and extrapolations were made from the data collected and are as accurate as possible for aggregate industry purposes.

OVERVIEW – QUICK REFERENCE

Industry Composition

- Alberta is home to more than 100 bioindustry companies
- 61 of those are involved in health biotechnology
- 20 are involved in industrial bioproducts
- 19 are involved in agricultural biotechnology

Employment

- More than 3,316 employees work directly in Alberta's bioindustry
- Total impact of the province's bioindustry on employment could be as high as 19,896 jobs[1]

Financial Outlook

- Alberta's bioindustry companies produced revenues of approximately $386 million in 2004
- The total investment activity for those companies was approximately $112 million in 2004

Product Development

- 44 companies reported products in the research and development stage
- 30 companies have an established product on the market

Partnerships and Alliances

- The growth and development of the bioindustry is illustrated by 13 companies reporting entering into new partnerships/alliances in 2004

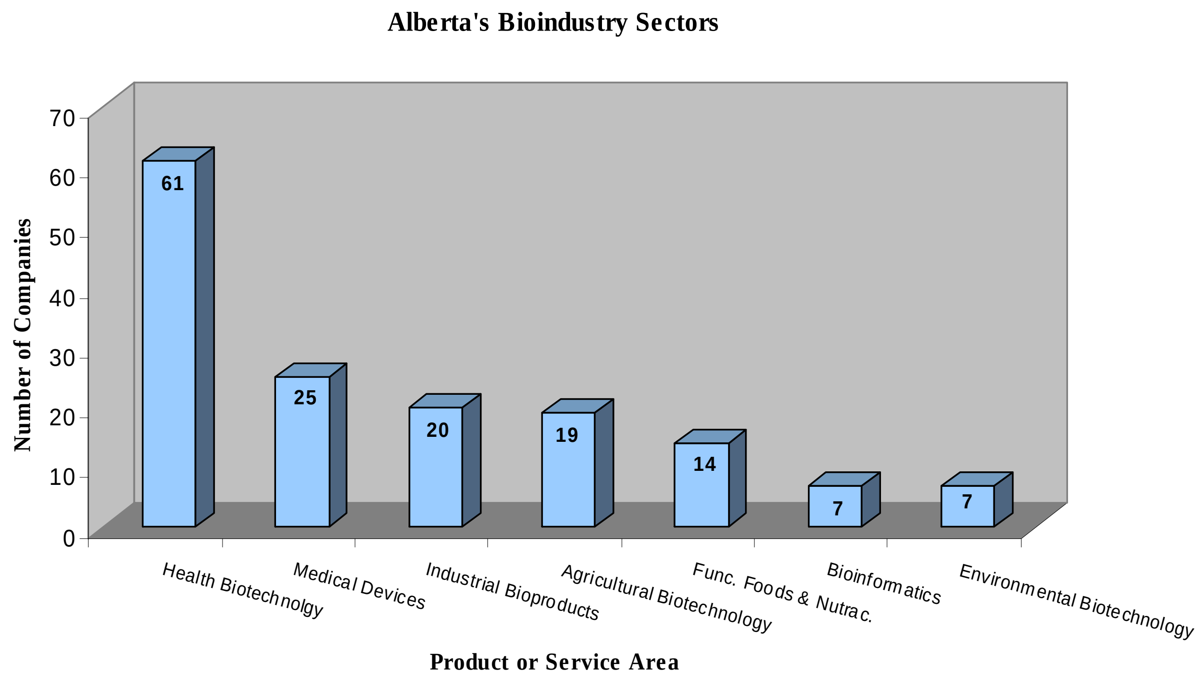
[1] Using a 6x employment multiplier for the biotechnology industry. Source: Milken Institute, Biopharmaceutical Industry Contributions to State and U.S. Economies, October 2004. This report states that "indirect" jobs in companies that support the biopharmaceutical industry (suppliers, financers, contractors, etc.) can increase the total employment by more than six-fold.

DATA

Industry Composition

Sectors[2]

Alberta’s strength in health biotechnology continues to be evident, according to this year’s survey. Sixty-one companies responding to this survey identified themselves as health biotechnology companies. However, of the 88 respondents, 51 indicated they are multi-sectoral companies. For example, a company could be categorized as both a health biotechnology company and a functional foods and nutraceuticals company.



As seen in the table, the health biotechnology sector was strongest in both 2004 and 2005. However, agricultural biotechnology and functional foods and nutraceuticals companies more than doubled.

2004 Breakdown		2005 Breakdown	
Health Biotechnology	40	Health Biotechnology	61
Agricultural Biotechnology	8	Agricultural Biotechnology	19
Bioinformatics	6	Bioinformatics	7
Functional Foods and Nutraceuticals	5	Functional Foods and Nutraceuticals	14
Environmental Biotechnology	2	Environmental Biotechnology	7
		Medical Devices	25
		Industrial Bioproducts	20

Quick Facts:

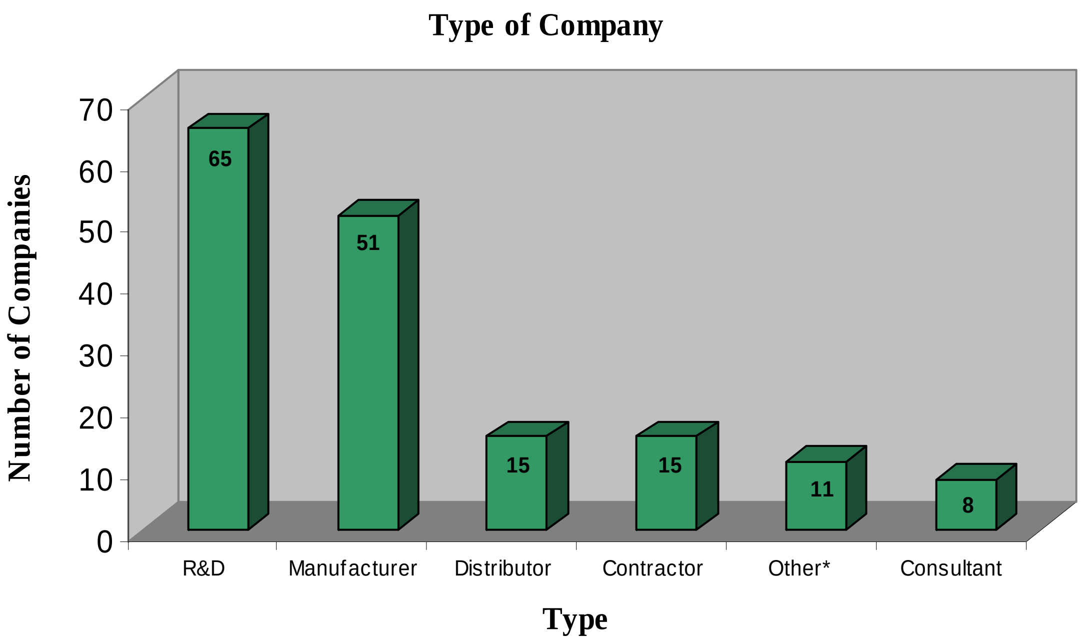
- Of the 61 health biotech companies, 37 indicated involvement in research and development.
- Of the 25 medical devices companies, 11 indicated involvement in research and development.

---

[2] Chart numbers do not add up to number of respondents due to companies identifying multiple sectors for themselves

Type of Company[3]

Of the 88 respondents, 56 companies identified themselves as having business activities in multiple classifications. This demonstrates that bioindustry companies are creating diversified business models to strengthen themselves. 74% consider themselves, among other classifications, research and development companies.



**Other category includes clinical development, contract research labs, licensing, marketing, operations and finance, pharmaceutical development, process development, supplier, and software/application developer.*

Quick Facts:

- Of the 65 companies that classified themselves as R&D, 47 were part of the health biotech sector
- Of the 51 companies that classified themselves as manufacturers, 29 were part of the health biotech sector, 10 were part of the medical devices sector, and 9 were part of the agricultural biotech sector.

[3] Chart numbers do not add up to number of respondents due to companies identifying multiple classifications for themselves

Employment

A total of 3,316 people were reported to be employed directly within Alberta's bioindustry, including management, researchers, and administrative staff.

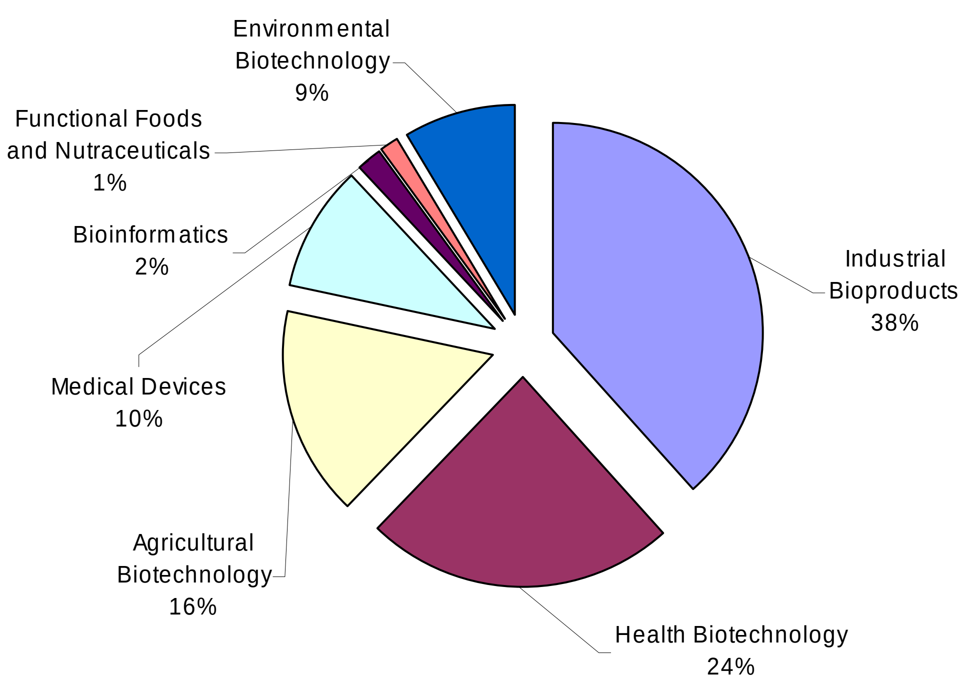
Sector Breakdown

- 38% work in industrial bioproducts companies.[4]
- 24% work in health biotechnology companies
- 16 % work in agricultural biotechnology companies.

- Excluding the one industrial bioproducts firm that employs 1100, the average company size of Alberta bioindustry firms is 25.4 employees.

- 42 companies have fewer than 10 employees.
- 27 companies have between 10 and 50 employees.
- 8 companies have between 50 and 100 employees.
- 11 companies have more than 100 employees.

Bioindustry Employees Per Sector



[4] One industrial bioproducts company employs 1100 employees.

The aforementioned data does not include government, research organizations, universities, and service and support firms, which do employ a number of bioindustry staff. Director of Regional Economics of the Milken Institute, Ross DeVol, reports that "indirect" jobs in companies that support the biopharmaceutical industry (suppliers, financers, contractors, etc.) and "induced" jobs created as a result of the earnings of those employees, increase the total employment by more than six-fold. Taking this into account, the total employment in Alberta could be as high as 19, 896.[5]

500 More Jobs in 2005

Alberta's Comparative Bioindustry: 2004 vs. 2005

(Medical devices and industrial bioproducts sectors excluded for the purpose of comparison with last year's data)

2004 Total Employment	1,255	**2005 Total Employment**	1,784

With the exclusion of medical devices and industrial bioproducts as categories, employment, compared to last year, increased by 42.16%.

.

Quick Facts:

- 47 companies reported hiring plans within the next year, for a total of 225 new positions (including researchers, technicians, and administrative staff)

[5]. Source: Milken Institute, Biopharmaceutical Industry Contributions to State and U.S. Economies, October 2004

Financial Outlook

Revenue Generation

2005 Breakdown	
Agricultural Biotechnology	$ 212,700,000
Health Biotechnology	$ 113,251,000
Medical Devices	$ 46,765,000
Industrial Bioproducts	$ 10,780,000
Other	$ 2,200,000
Grand Total	**$ 385,696,000**

Companies were asked to estimate revenues for their last fiscal year. Thirty-three respondent companies disclosed revenues of approximately CDN $386 million. Publicly traded companies were the main source of these revenue numbers.

15% Increase in Bioindustry Revenues

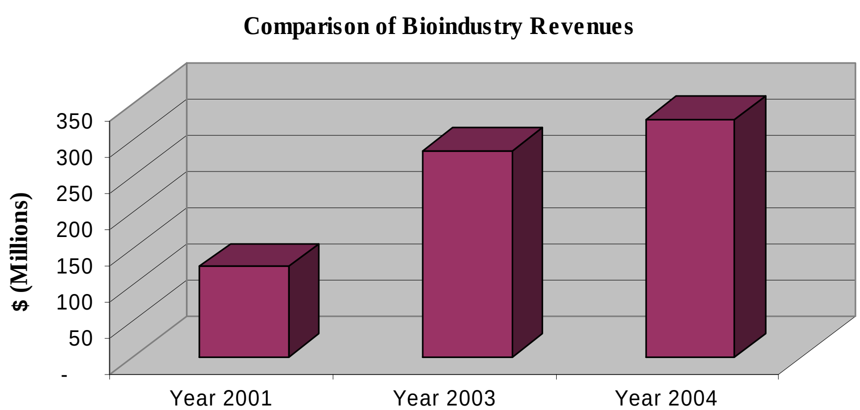
Alberta's Comparative Bioindustry: 2004 vs. 2005

(Medical devices and industrial bioproducts sectors excluded for the purpose of comparison with last year's data)

Industry revenues have continued to grow in the past few years. In 2001, Statistics Canada reported that Alberta revenues were estimated to be approximately CDN $125 million. In 2004, companies responding to the survey reported revenues for their last fiscal year to be approximately CDN $285 million.

With the exclusion of the industrial bioproducts and medical devices categories, reported revenues this year reached approximately CDN $328 million, an increase of 15% over the previous year. The largest section of reported revenues came from agricultural biotechnology companies, with a total of CDN $212.7 million. Publicly traded companies were the main source of all revenue numbers. However, because many companies did not disclose their revenues, the revenue generation of Alberta's bioindustry is clearly higher than what is reported.

2005 Breakdown	
Agricultural Biotechnology	$ 212,700,000
Health Biotechnology	$ 113,251,000
Functional Foods and Nutraceuticals	$ 1,250,000
Bioinformatics	$ 500,000
Environmental Biotechnology	$ 450,000
Bioindustry Total	**$ 328,151,000**



Quick Facts:

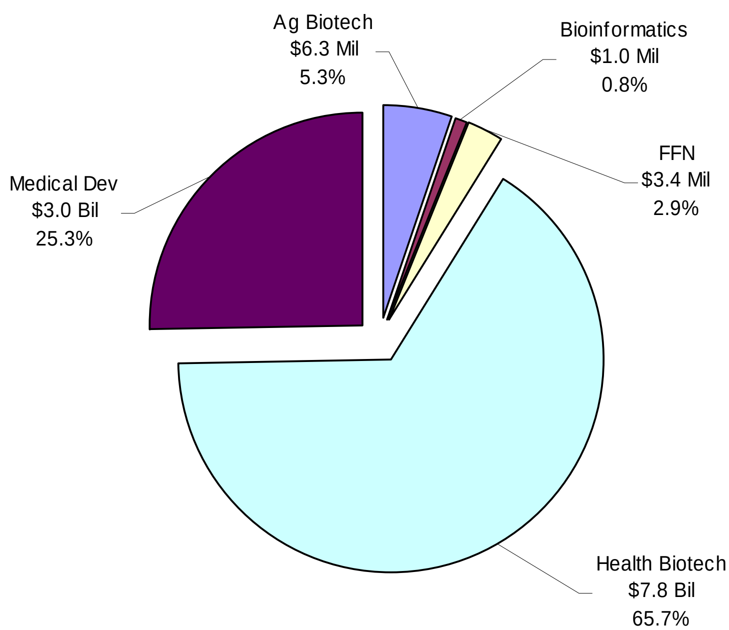
- The largest portion of reported revenues came from the agricultural biotechnology sector, (55.2%). The next largest portion came from the health biotechnology sector, with 29.4% of the reported revenues.

Potential Market Size

Companies were asked to estimate the current Canadian market size and global market size for their range of products and services.

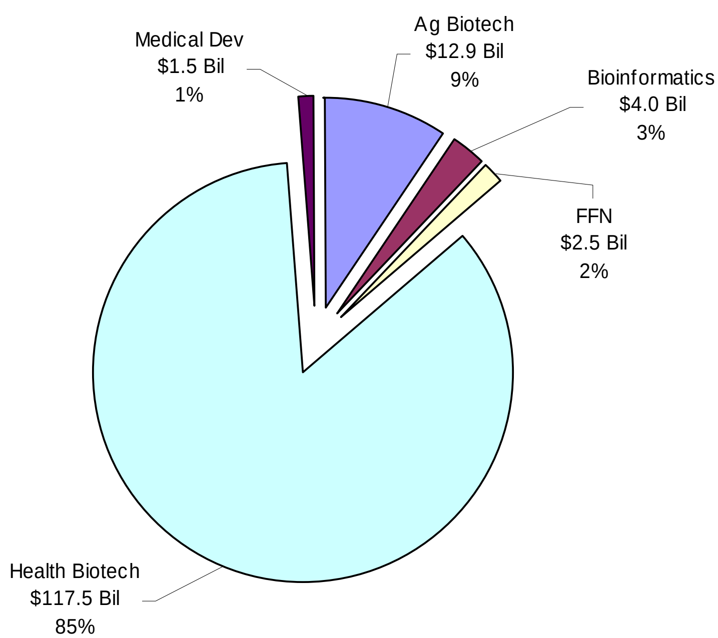
The estimated Canadian market size is CDN $11.9 billion. The largest segment is health biotechnology at CDN $7.8 billion.

Projected Canadian Market Size (All Companies)



The estimated aggregate global market size is CDN $138.4 billion. The largest section within the global total is also health biotechnology, at CDN $117.5 billion showing an even larger portion of the total market share in Canada or Alberta.

Projected Global Market Size (All Companies)

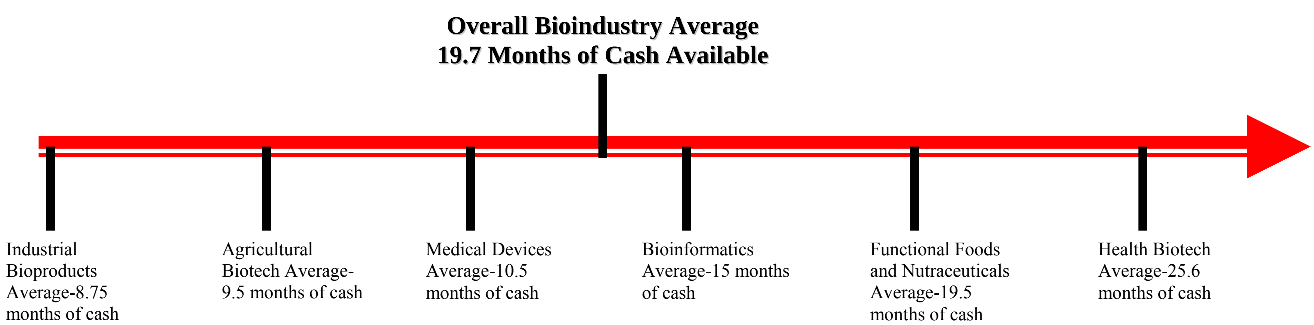


Cash On Hand

In the bioindustry, a company's cash position is often strained, due to the high costs of doing business, conducting research, and extended product development timelines. Alberta bioindustry companies were asked how many months of cash were available to them, (assuming no new investment or revenue).

The health biotechnology sector is strongest, with the ability to survive for approximately 25.6 months. The functional foods and nutraceuticals sector and the bioinformatics sector are also relatively strong, with, 19.5 and 15 months of cash on hand, respectively.

Alberta Bioindustry Sector Averages



Quick Facts:

- The increasing financial health of the industry was shown by the overall cash on hand industry average increasing from 15 months last year to 19.7 months for the current year.

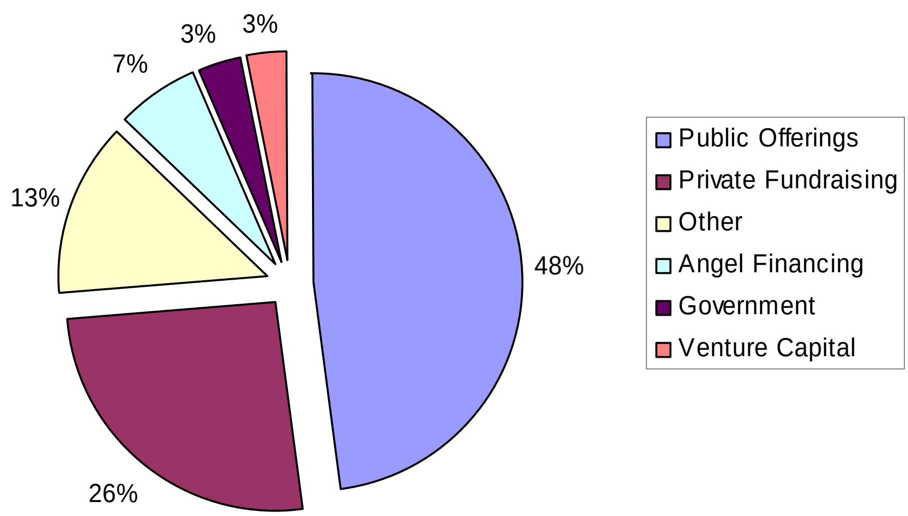
Investment[6]

The investment climate for Alberta's bioindustry has been steadily improving.

- 26 companies reported securing investment in the past year. 21 of these companies disclosed dollar amounts totaling CDN $112.1 million.
  - 15 companies reporting new investments were from the health biotech sector, totaling CDN $108.9 million.
  - 5 companies reporting investment were from the functional foods and nutraceuticals sector, totaling CDN $3 million.

- 9 companies raised a total of CDN $53.6 million through public offerings
- 11 companies raised a total of CDN $29.1 million through private fundraising.
- 9 companies were able to secure funds from more than one source.

Method of Investment



28.1% Increase in Bioindustry Investment

Alberta's Comparative Bioindustry: 2004 vs. 2005

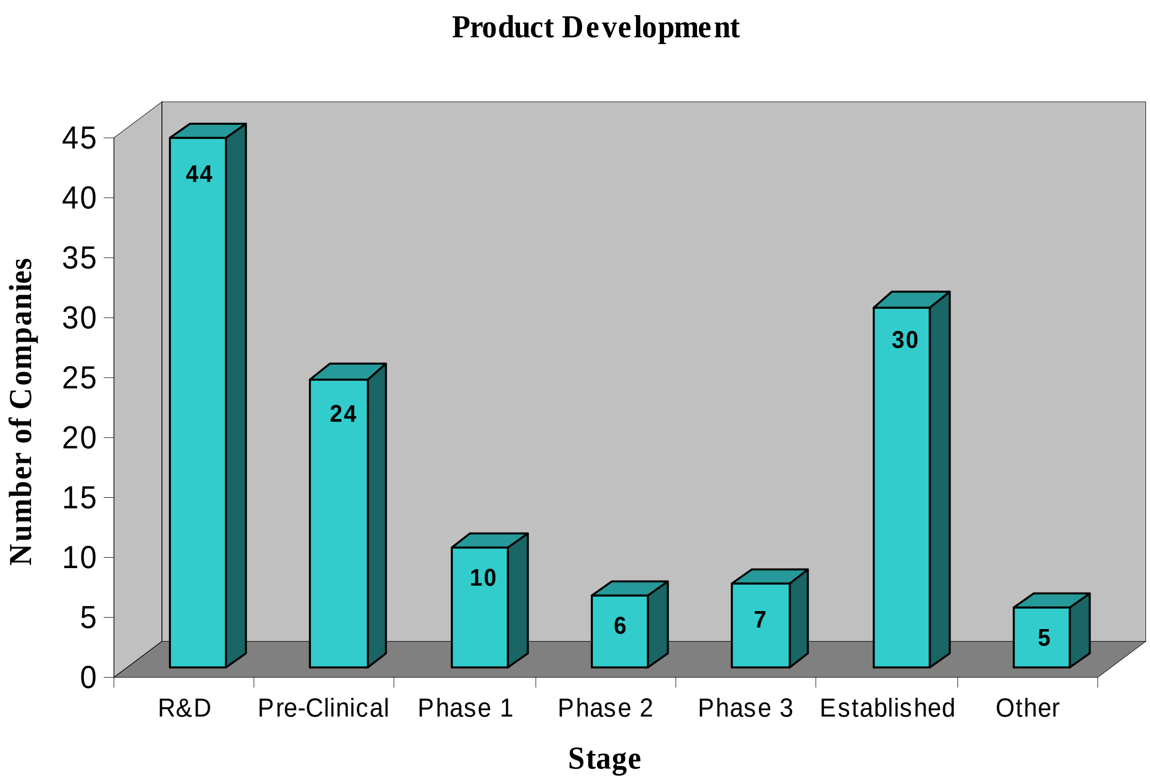
(Medical devices and industrial bioproducts sectors excluded for the purpose of comparison to last year's data)

- BioAlberta reported 18 bioindustry companies secured investment of approximately $87.4 million in 2003.
- 25 bioindustry companies reported securing investment totaling approximately $111.97 million in 2004.

[6] As many companies did not disclose details of their investment activities, the total amount of investment in Alberta is clearly higher than the figures above.

Product Development

Alberta's bioindustry companies have multiple projects in various stages ranging from research and development, to being established and commercialized in the marketplace. 44 companies have products currently in research and development while 30 have products that are established in the marketplace.



Quick Facts:

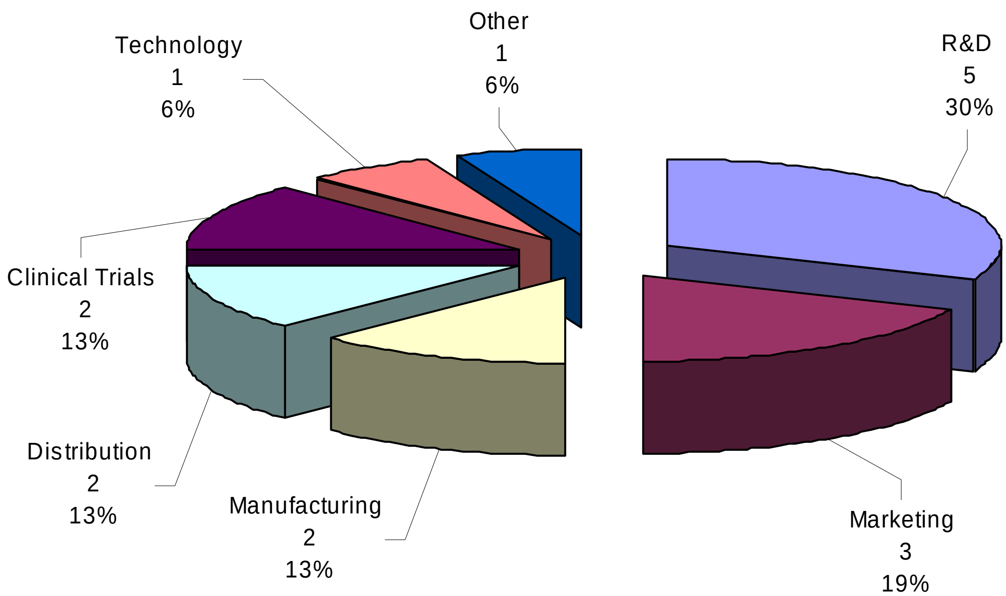
- 26 health biotech companies have products in the R&D stage, and 13 have products in the established stage.
- 6 agricultural biotech companies have products in the R&D stage, and 4 have products in the established stage.

Partnerships and Alliances

13 companies reported entering into new partnerships/alliances in 2004, with a total value of approximately $8.8 million. The top reasons cited for entering these partnerships were R&D and marketing. More than one reason was provided as the rationale in three of the new partnerships.

Of the 13 companies reporting new partnerships and alliances in 2004, seven were involved in health biotechnology, three in functional foods and nutraceuticals, three in industrial bioproducts, two in bioinformatics companies, and one was a medical device provider.

Number of Partnerships and Alliances Reported



APPENDIX I – INDUSTRY SURVEY QUESTIONS

1. **In which product or service area does your company fit? You can choose more than one.**

_____ Health Biotechnology
_____ Agricultural Biotechnology
_____ Industrial BioProducts
_____ Medical Devices
_____ Functional Foods and Nutraceuticals
_____ Environmental Biotechnology
_____ Bioinformatics
_____ Other: specify ____________________

2. **Which of the following most accurately describes your company? You can choose more than one.**

____Manufacturer
____R & D
____Consultant
____Distributor
____Contractor
____Other: specify ______________________

3. How many people does your company employ?

4. Is your company planning to hire employees in 2005-2006? If so, how many?

5. What is the estimated current market size for your company's lead product and/or services in Canada and Globally? ($CDN),

Canada $________________________ Global $_____________________________

6. Please estimate your company's revenues for the last fiscal year ($CDN).

7. At current burn rates, (assuming no new investment and revenue) how many months of cash are available for your company?

8. Please indicate if you have products in the following stages. You can choose more than one.

____ Research and Development
____ Pre-clinical trials
____ Phase I
____ Phase II
____ Phase III
____ Established product on market
____ Other: _________________________

9. Did you raise money in 2004? If so, how much and by what mechanism?

Yes / No

Value:

Possible mechanisms:

____ Venture Capital
____ Public offering of securities
____ Private fund raising
____ Angel financing
____ Government
____ Other specify: ____________________

10. Did you enter into any partnerships or alliances in 2004? If so, what value does the alliance have and what function does it serve?

Yes / No

Value:

Possible Functions:

____ Investment/financing
____ R & D
____ Marketing
____ Clinical trials
____ Manufacturing
____ Distribution
____ Technology
____ Other specify: _____________________

APPENDIX II – ALBERTA BIOINDUSTRY COMPANY LISTING

1 AB Biopharma Inc.
2 ACT Pharma Inc.
3 Advanced Integrated Microsystems (Canada) Ltd.
4 Aims Fine Chemicals Inc.
5 Airgas Canada Inc.
6 Alberta Artificial Limb Inc.
7 Alberta Pacific Forest Industries
8 AltaChem Pharma Ltd.
9 Alta Genetics Inc.
10 Antibe Therapeutics Inc.
11 API Grain Processors
12 API-Nutrition's Enterprise Ltd.
13 Banner Pharmacaps (Canada) Ltd.
14 Bayer CropSciences Canada
15 BioCyDex Inc.
16 BioGem Power Systems Inc.
17 Biomech Designs Ltd.
18 Biomira Inc.
19 BioMS Medical Corp.
20 BioNeutra Inc.
21 BioTools Inc.
22 BioVision Seed Research Ltd.
23 Bortec Biomedical Ltd.
24 Bova Tech Livestock Ltd.
25 Canadian Bio-Systems Inc.
26 Canadian Fibretech Inc.
27 Canadian Hydro Developers Inc.
28 CanBiocin Inc.
29 Canex Genetics Inc.
30 Capsol Inc.
31 Cardiometabolics
32 CEAPRO Inc.
33 Celonex Inc.
34 Centurion Medical Corp.
35 Cevena Bioproducts Inc.
36 Chenomx inc.
37 Clynch Technologies Inc.
38 Cominco-Ag Biologicals
39 Comptronic Devices Ltd.
40 CV Technologies Inc.
41 CyberCell Technologies Inc.
42 Cybernius Medical Inc.
43 CytoStore Inc.
44 Daniels Fine Chemicals Ltd.
45 Dalynn Biologicals Inc.
46 Double T Equipement Manufacturing Ltd.
47 Dow AgroSciences Canada Ltd.
48 Earthrenew Organics Ltd.
49 ECB Enviro North America Inc.
50 Epsilon Chemicals Ltd.
51 EquiTech Corporation
52 Fitter International Inc.
53 Gemini Biochemical Research Ltd.
54 Genie Computer Systems Inc.
55 Global International Quality Medical Research Inc.
56 G-M Pearson Biomedical Waste Specialists Ltd.
57 GrowSafe Systems Ltd.
58 HistoBest Inc.
59 Imaging Dynamics Company Ltd.
60 Innovotech Inc.
61 Isotechnika Inc.
62 JAR Pharmaceuticals Ltd.
63 Kinnikinnick Foods Inc.
64 KMT Hepatech Inc.
65 Madentec Ltd.
66 Maxima Pharmaceuticals
67 MBEC BioProducts Inc.
68 Medical Robotics Corp.
69 Medivet Pharmaceuticals Ltd.
70 Metabolic Modulators Research Ltd.
71 Micralyne Inc.
72 NAEJA Pharmaceuticals Inc.
73 Natural Performance Industries Inc.
74 NemaRx Pharmaceuticals
75 NeuroInvestigations Inc.
76 Neutron Therapy & Imaging Inc.
77 New Era Nutrition
78 Norac Technologies Inc.
79 Norwest Labs
80 Novokin Biotech Inc.
81 NUCRYST Pharmaceuticals
82 Oncodigm Biopharma Inc.
83 Oncolytics Biotech Inc.
84 Organetix Inc.
85 OVO Biotechnica Inc.
86 PBR Laboratories Inc.
87 Primeline Medical Products Inc.
88 PulmoNOx Medical Inc.
89 QRS Phenotyping Inc.
90 QSV Biologics Ltd.
91 RadTag Technologies Inc.
92 Raylo Chemicals
93 Resverlogix Corp.
94 Salpep Biotechnology Inc.
95 SciMed Laboratories Inc.
96 SemBioSys Genetics Inc.
97 Somagen Diagnostics Inc.
98 Stem Cell Therapeutics Corp.
99 Surgical Optics of Canada Ltd.
100 TelePhotogenics Inc.
101 Tenet Medical Engineering Inc.
102 TheraCarb Inc.
103 TS Biotech
104 Tyler Research Corp.
105 United Bioinformatica Inc.
106 ViRexx Medical Corp.

bio alberta

www.bioalberta.com

BioAlberta Patrons

ASRA 10 YEARS OF INNOVATION Alberta Science and Research Authority

Alberta INNOVATION AND SCIENCE

BioAlberta Gold Partners

BENNETT JONES LLP

AVAC Ltd.

Dow AgroSciences

BioAlberta Silver Partners

AstraZeneca

SemBioSys GENETICS INC.

Isotechnika inc.

MERCK FROSST Découvrir toujours plus. Vivre toujours mieux. Discovering today for a better tomorrow.

GLOBAL IQ

BioAlberta Affiliate Partners

Ceapro Inc.

KPMG

Biomira Inc.

Alberta Research Council

University of Alberta – Faculty of Medicine and Dentistry

Monsanto Canada Inc.

University of Calgary – Faculty of Medicine

Genome Prairie

We would like to thank our partners for their support.