



Building skills for Canada's bio-economy

OPENING THE DOOR

Building Careers for New Grads in Biotech

Salary and Demographic Profile



Canada's Research-Based
Pharmaceutical Companies



Les compagnies de recherche
pharmaceutique du Canada

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PRESIDENT'S MESSAGE

Skilled and talented people fuel the innovation and growth of Canada's bio-economy. Each year, our industry welcomes hundreds of new college and university graduates in all areas of the industry, eager to enter the workforce. The cost of hiring new grads is often a challenge for companies in biotech. So much so, in our recent Labour Market Study, a majority of biotech companies we surveyed across Canada stated their greatest business challenges as "access to capital," followed closely by "access to talent."

The Career Focus federal wage subsidy program addresses both these challenges directly. Funded by the federal government's Youth Employment Strategy, it opens the door for new graduates to their first biotech job and at the same time, helps firms in the industry offset the cost of on-boarding.

This report is a compilation of the salary and demographic profiles of new graduates in Canada's biotechnology sector. It gives a snapshot of hiring trends regionally and nationally, and can serve as a guide for students who plan to enter the biotech job force, and for employers to use to ensure their recruitment and compensation programs remain current and competitive.

I am pleased to say that with the funding support of the federal government, since 2005 BioTalent Canada has successfully given over 400 new graduates their first jobs in biotech. It is by far BioTalent Canada's most successful program to date.

With the continued support of federal, provincial and municipal governments, BioTalent Canada is committed to helping new graduates continue to make a substantive contribution to Canada's vibrant bio-economy.



Rob Henderson,
President and CEO, BioTalent Canada

BIOTALENT CANADA

BioTalent Canada is the HR partner of Canada's bio-economy. As an HR expert and national non-profit organization, BioTalent Canada focuses on building partnerships and skills for Canada's bio-economy to ensure the industry has access to job-ready people. Through projects, research and product development, BioTalent Canada connects employers with job seekers, delivers human resource information and skills development tools so the industry can focus on strengthening Canada's biotech business.

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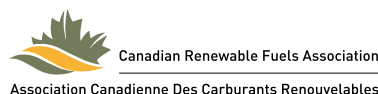
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OPENING THE DOOR

Building Careers for New Grads in Biotech

Salary and Demographic Profile

BioTalent Canada is a national non-profit organization devoted to extensive research in Canada's bio-economic labour market.

From 2013-15, BioTalent Canada worked with biotech companies across the country to place new graduates from Canada's universities and colleges in their first private sector jobs through the Career Focus wage subsidy program.

The program is designed to off-set the on-boarding and training costs a company incurs by hiring an un-tested candidate for the first time. The program has been a resounding success for the industry and for new graduates.



Grads often leave school for the first time only to discover that most employers want a year of relevant private sector work experience before they'll be considered as a viable hire. How does a new grad secure a year of work experience without a year of work experience? It's a classic catch-22.

"As a startup company, every penny counts. These types of initiatives really help us to push beyond what we could do on our own."

Derek Glennie, VP Engineering,
Spartan Bioscience Inc.



CANADA'S BIO-ECONOMY

THE INDUSTRY IN BRIEF

Canada's bio-economy is largely divided into four sub-sectors of the broader bio-economy (see Figure 1-1). The majority of Canada's biotech companies appear to be concentrating on biotech R&D. Over 80% of Canada's biotech companies are small or medium sized enterprises when measured both by number of full-time employees and also by total gross revenue. For new graduates wishing to enter this sector, it can be difficult to identify and connect with these companies – but these are the companies that are hiring.

Biotechnology innovation is a classic example of this sector's contribution to the Canadian knowledge economy.

The bio-economy can be defined as the economic activity associated with the invention, development, production, and use of products and processes that are based primarily on biological resources.¹ The bio-economy includes the use of resources from agriculture, forestry, fishery-based biomass, and organic waste. The field is multidisciplinary in that it cuts across health, energy, agriculture, chemicals, and materials industries.

Similarly, biotechnology involves the comingling of basic sciences (such as biochemistry, molecular biology, genetics, immunology, microbiology, pharmacology, fermentation, and agriculture) with various engineering fields related to biotechnology applications.

¹ See OECD 2009. *The Bio-economy to 2030: designing a policy agenda*. Chapter 1. OECD: Paris

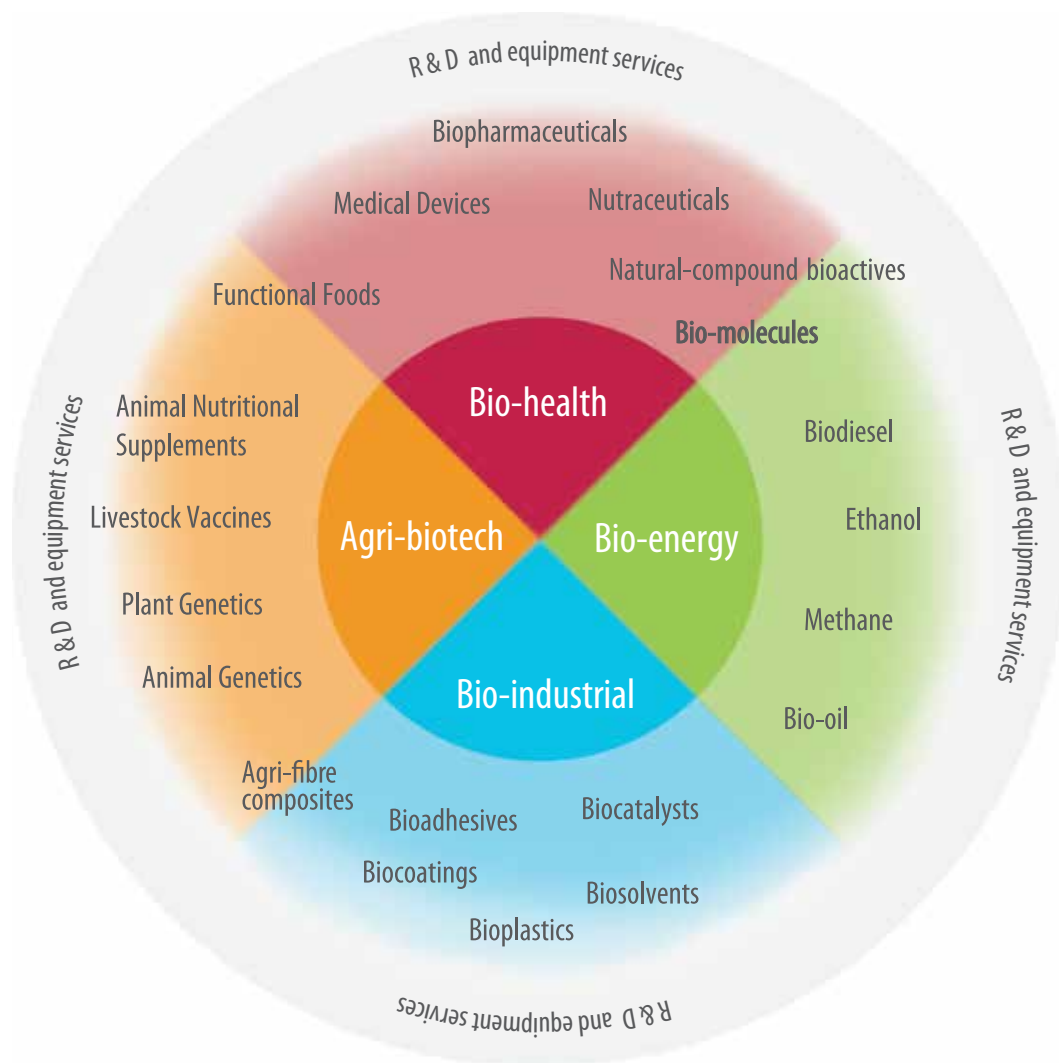


Figure 1-1: Sectors of the Bio-economy and Example Products, *BioTalent Canada*, 2015



ABOUT CAREER FOCUS

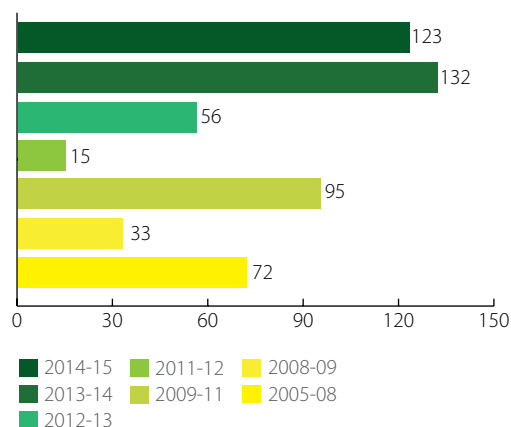


Figure 2-1: Career Focus Wage Subsidy Program Placements, *BioTalent Canada*, 2015

ABOUT CAREER FOCUS

For many new graduates, landing a job without extensive work experience is a challenge. Yet without that first biotechnology position, the necessary experience will never come. BioTalent Canada's Career Focus Program paves the way to employment by helping offset the costs of orientation, integration and skills development.

The Career Focus Program is a wage subsidy program, funded by the federal Youth Employment Strategy, for bio-economy employers to hire the talent they need and for recent graduates to gain the work experience they require – by subsidizing a portion of the salary of a recent graduate.

EMPLOYER BENEFITS

Through the Career Focus Program biotech employers are able to:

- Meet their staffing needs with less financial risk
- Grow their business
- Access a pool of eager-to-learn new workers
- Develop new talent within their companies

BENEFITS FOR NEW GRADUATES

Through the Career Focus Program participants are able to:

- Gain real-world work experience in biotech
- Establish a network of bio-economy contacts
- Develop personally and as a bio-economy professional
- Approach potential employers with a subsidized wage offer in hand once they are eligible

CAREER FOCUS SUCCESS

The Career Focus Program has been an extremely successful program for both employers and new graduates with over 400 placements since 2005.

Figure 2-2: Pre-participation Employment Status, *BioTalent Canada*, 2015

	Unemployed	Student	Employed	No Answer
Participants	33.5%	34.3%	28.3%	3.9%

Figure 2-3: Post-participation Employment Status, *BioTalent Canada*, 2015

	Unemployed	Student	Employed with Same Company	Employed with Different Company
Participants*	5.1%	5.1%	67.7%	22.2%

* Due to rounding, percentages do not necessarily equal 100%.

Eighty-nine-point-nine percent (89.9%) of participants were employed full-time post-program. Ninety-five percent (95%) of participants were either employed or returned to school; surpassing previous year's participant program success.

Part of the success of this program has been the overall industry engagement as seen in the following report and on the BioTalent Canada website, where some participating organizations talk and share news about the Career Focus Program. For more success stories, visit www.biotalent.ca/success.

The Career Focus Program is a fantastic initiative and is administered beautifully. I have only gratitude for allowing Bio and our participants to be a part of such an important program that will certainly improve Canada's position in the global biotech realm.

Jeremy deWaard,
Director of Collections,
Biodiversity Institute of Ontario
Employer

EMPLOYERS

Eighty-eight employers participated in the Career Focus Program from 2013-2015.



NEW GRAD PROFILE

The program has provided me with the perfect balance of structure and non-structure to pursue my interests and passions. My employer has done an outstanding job of mentoring me and guiding me through the complex world of biotech and corporate structure.

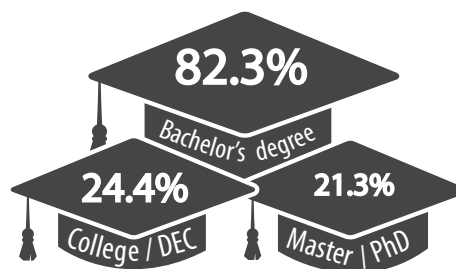
Michael G.
Participant

BIO-ECONOMY NEW GRADUATE PROFILE

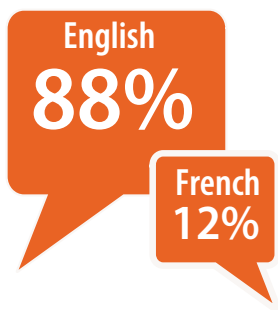
The average new graduate entering the Canadian bio-economy for the first time with wage subsidy funding has a 3 in 5 chance of being female and is on average 25 years old. Odds are she speaks English fluently with a 13% chance she speaks only French. Before entering the program there was a 34% chance that she was either unemployed or had a 34% chance she had just graduated and was looking for her first work-placement that would make good use of her university or college education.

As a condition of entry into the Career Focus wage subsidy program, all participants must have recently completed some form of post-secondary education. As such, there is an 82.3% chance that this new graduate has a bachelor's degree, 24.4% chance she has a college diploma or Diplôme d'Études Collégiales (DEC) and 21.3% chance that she's got a master's, doctoral or post-doctoral degree.

The typical graduate participated in the program for 6.3 months and had a 95% chance of continued full-time employment or returning to school. With a success rate this high, employers should consider revising their estimate of a full year of work experience required. This data suggests that 6-7 months of practical work experience is sufficient to learn the day-to-day skills necessary to be successful in a post-education work environment.



First language



NEW GRADS ENTERING BIOTECH THROUGH CAREER FOCUS



Unemployed

CAREER
FOCUS



Employed full-time

Figure 3-1: New Grads Entering Biotech Through Career Focus, *BioTalent Canada*, 2015

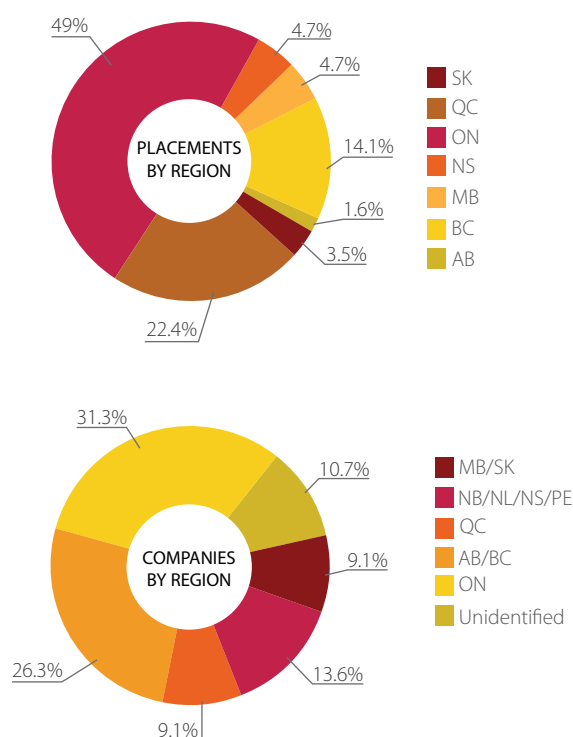


Figure 3-2: Comparison of Location of Placements for New Grads with National Industry Job Placements, *BioTalent Canada*, 2015

PLACEMENT LOCATION

Figure 3-2 shows the percentage of participant placements broken down by region and is compared to the data from BioTalent Canada's *Sequencing the Data* national labour market study report of bio-economy companies across Canada. Although about one third of bio-economy companies are found in Ontario, nearly half of all Career Focus Program placements were in that province. Low participation is particularly evident in eastern Canada where the share of participant placements was significantly lower than would be expected given the eastern share of the number of bio-economy companies.

Anecdotal feedback from those outside central Canada suggests there is a perception that national programs tend to be reserved for Ontario companies and that non-Ontario companies will be uncompetitive in the review process of their applications for subsidies. This suggests more communication of the program and its simple application process may be required across the country.

EDUCATION

It is important to note that one of the criteria of the Career Focus Program is that participants must be between the ages of 15 and 30 at the time of start of the placement, and they must have completed the post-secondary education requirement (either at least a degree or diploma) within the past three years. They must also not currently be enrolled in further studies and willing to work full-time.

Notably, the number of years often required to complete a doctoral or post-doctoral degree likely means that many applicants to the program would be ineligible due to the 30 year old upper age limit. The average age of a Canadian post-doctoral graduate is 34².

Two data-sets were captured – the participant's most recent education and their previous. Some participants had more than two diploma/degrees but this number was limited and thus data not collected on more than two levels of education.

The previous level of education of most of the graduates that participated in the program was most likely to be a bachelor's degree with a distant second being the college diploma or diplôme d'études collégiales (DEC) as seen in Figure 3-3. A handful of applicants had more advanced degrees. There was a much more even distribution of education types at the most recent level of education as seen in Figure 3-4. About a third of participants had acquired a bachelor's degree most recently, while a quarter each had secured a master's degree or a college diploma.

² The 2013 Canadian Postdoc Survey: *Painting a Picture of Canadian Postdoctoral Scholars*, p.12, The Canadian Association of Postdoctoral Scholars/L'Association Canadienne de Stagiaires Postdoctoraux (CAPS - ACSP) and Mitacs, October 2013

For those applicants that completed a bachelor's degree, 48.3% went on to complete a master's degree, and 25.9% chose to complete a college diploma (Figure 3-5). For those applicants that completed a diploma/DEC, 60% went on to complete a bachelor's degree and 32% opted to complete a second diploma/DEC (Figure 3-6).

The number of years of education the participants have completed in order to begin an entry-level position in the biotechnology industry demonstrates the importance of programs such as the Career Focus wage subsidy program to help bridge them from academia to the private sector. This data reinforces what HR managers reported to BioTalent Canada in 2013 concerning the advanced educational requirements by occupational function that can be found in Figure 2-1 of the *Sequencing the Data* report.

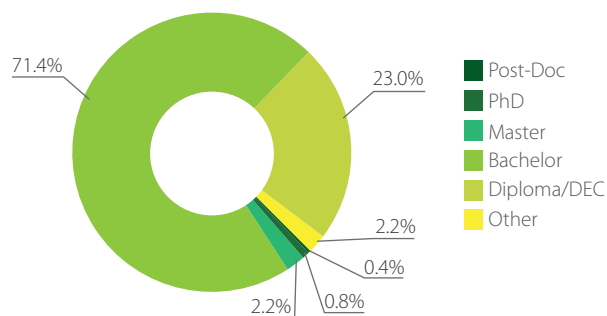


Figure 3-3: Previous Education of New Grads, BioTalent Canada, 2015

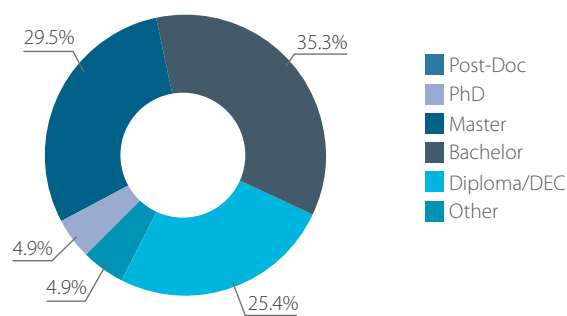


Figure 3-4: Most Recent Education of New Grads, BioTalent Canada, 2015

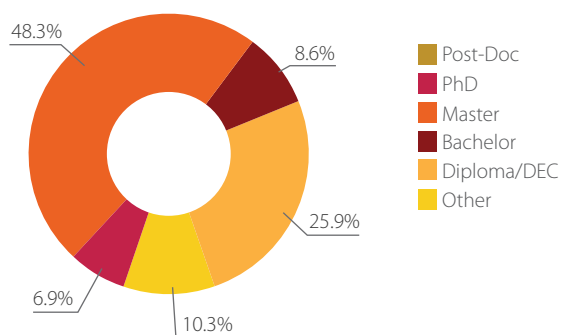


Figure 3-5: Most Recent Education After Bachelor's Degree, BioTalent Canada, 2015

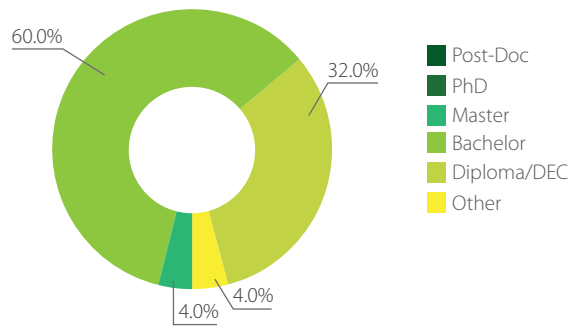


Figure 3-6: Most Recent Education After Diploma/DEC, BioTalent Canada, 2015

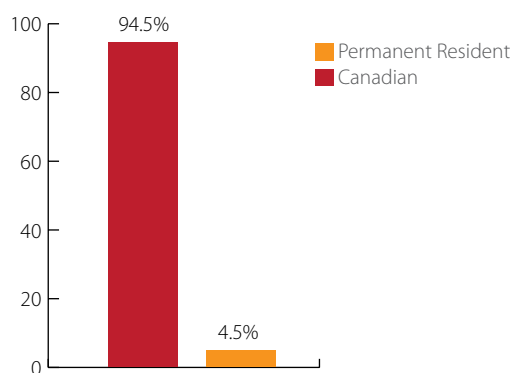


Figure 3-7: Citizenship Status of New Grads,
BioTalent Canada, 2015

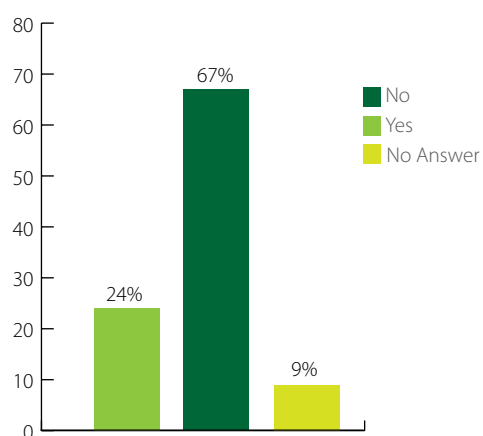


Figure 3-8: Part of a Visible Minority Group of New Grads,
BioTalent Canada, 2015

CITIZENSHIP

In order to participate in the Career Focus Program, all participants had to be either Canadian citizens, permanent residents or refugees with recognized status in Canada. While there were no refugees identified as part of the program, the clear majority of participants were Canadian citizens with a select few permanent residents (Figure 3-7).

VISIBLE MINORITIES

It was optional for participants to respond to this question. However, most applicants did respond and fully one-quarter identified as being a member of a visible minority group (Figure 3-8). Since Statistics Canada data from the 2011 National Household Survey³ suggest that one fifth of Canada's population self-identify as a member of a visible minority group, there is proportionate representation of visible minority groups in the Career Focus Program.

LANGUAGE

About 20% of all participants are fully bilingual in Canada's two official languages with the majority speaking English only (Figure 3-9). Only 6% of participants are unilingual French. According to the 2011 Statistics Canada household survey, the overall number of participants that have identified themselves as fluent in French is less than to the 30.1% of French speakers in the Canadian population. Participation of French speakers in the Career Focus Program is therefore under-represented in the country as a whole.

The wage subsidy program allows AES to invest in high-potential graduate students.

The trained participants can contribute by working for AES or by working on the application of our products.

Tiemin Huang, CEO,
Advanced Electrophoresis Solutions Ltd.,
Employer

³ <http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/2011001/tbl/tbl2-eng.cfm>

Figure 3-9: Official Language of Choice, *BioTalent Canada*, 2015

	English	French	Both
Official Language of Choice	88%	12%	
Ability to Speak Language	74%	6%	20%
Ability to Write Language	74.3%	6%	19.7%

AGE

Due to the age limits established as part of the program (15-30) it is difficult to draw comparative data from the program to Statistics Canada grouped data. The average age of participants was 25 (Figure 3-10). This age may be slightly higher for starting out in an entry-level career due to the number of years of education required in order to enter the industry for the first time.

Figure 3-10: Age of Participant, *BioTalent Canada*, 2015

	21-24	25-31
Career Focus Participants*	52.4%	47.6%

*The youngest participant was 21 years old and the oldest turned 31 over the course of the program (participants could not be over 30 years old at the time of intake).

The Career Focus Program helped me find full-time employment in my field of study, which was biotechnology. The program allowed me to find a position where I can gain practical experience in the biotechnology industry and also apply the knowledge I acquired in school.

Sanah B.
Participant

This program has had a tremendous impact for MANTECH. A full-time marketing person has allowed MANTECH to almost immediately start using social media as a sales tool. We quickly saw an increase in leads which directly impacts potential sales. As well, our products/technologies are now the topic of discussions with a wide variety of individuals that we never before had contact from which is helping MANTECH's brand reach potential users from a broader range of industries. Kathleen's knowledge and expertise has provided this.

Lynn Menegotto, HR,
MANTECH Inc.
Employer



NEW GRAD SALARIES

This is the type of program the government should be funding. It benefits both the employer and recent graduate. It allows the employer to evaluate the performance and productivity prior to making a more significant investment. I believe it is an invaluable experience/opportunity for the “intern” to get their foot in the door.

Dianne Beveridge, President,
AYVA Educational Solutions Ltd.
Employer

NEW GRADUATE SALARIES

The salary ranges for new hires in this sector are significant. The highest-paid new graduate made \$80,000 as a visualization developer with a bachelor of sciences degree. By comparison, the lowest paid starting salary was \$21,500 as a Technical Writer – also with a bachelor of sciences degree. The average starting salary was \$37,632. For those people that saw an increase in their salary, over the duration of the program, the average salary increase was \$1,677. By comparison, based on the 2013 Statistics Canada National Graduate Survey, median starting salary for a Bachelors graduate was \$57,000 for all new graduates in the country.

SALARY INCREASE

Figure 4-1: Salary Increase, BioTalent Canada, 2015

	Average	Lowest	Highest
Salary Increase	\$1,677	- \$20,000	\$14,020
Salary Increase Without Outliers *	\$2,423	\$370	\$7,750

* Two salaries acted as significant outliers in the data. As such, those two salaries at top and bottom were removed since they had such a significant impact on the average data to arrive at the salary information.

GENDER

Fifty-six-point-nine percent (56.9%) of program participants were female. According to Statistics Canada (2012) workforce survey, 59% of science graduates leaving university or college for the first time are women. The program is clearly representative of the graduates entering the labour market. Unfortunately, female graduates starting salaries are \$6,728 less than their male counterparts. The gap between male and female salaries is similar in this program and sector to Canada as a whole, further investigation as to why women are consistently making less than men is necessary.

Figure 4-2: Starting Salary Based on Gender, *BioTalent Canada*, 2015

	Average	Lowest	Highest	Median ⁴
Female	\$34,847	\$21,500	\$68,000	\$51,200
Male	\$41,575	\$21,500	\$80,000	\$57,000

* Statistics Canada, National Graduate Survey - Profile of Undergrads (BSc or BA equivalent), 2013

The Career Focus Program has helped me by opening the door for me to get hired in the industry that I am interested in working in, while giving me valuable experience in my field.

Kevin T.
Participant

VISIBLE MINORITIES

People who chose to self identify as being a member of a visible minority group are making slightly less than their non-minority counterparts (\$1,167). These numbers are so close however, that it is possible with a larger sample size there would be no significant difference.

Figure 4-3: Salary Based on Visible Minority Status, *BioTalent Canada*, 2015

	Average	Lowest	Highest
Visible Minority	\$36,706	\$21,500	\$60,000
Non-Minority	\$37,873	\$21,500	\$80,000

CITIZENSHIP

There is also little discrepancy between those people who are Canadian citizens and permanent residents in Canada. Permanent residents actually make \$1,371 more annually than their Canadian counterparts. With more data, this discrepancy may very well disappear.

⁴ 2013 Statistics Canada National Graduate Survey

AVERAGE SALARY

The average salary of

new biotech grads with a Bachelors degree is \$15K less than the National Median.

Without the program, I likely would not have been able to secure a full-time position at Tipi Mountain. This funding has allowed me to work with my employer to develop a position that is relevant to the business and in line with my field of interest.

Taylor W.
Participant

EDUCATION

Generally as a rule in this sector, participants with post-graduate degrees tended to have higher salaries. Doctoral and post-doctoral graduates consistently started at significantly higher salaries than their peers in this sector.

It is of particular interest to note that for those students that completed both a bachelor's degree and a college diploma/DEC, they typically made less than their counterparts that completed only a bachelor's degree or only a college diploma/DEC. This seems counter-intuitive and suggests further research from a larger dataset is required to understand what specifically these students studied compared to their peers who completed only one degree/diploma/DEC.

Even students that completed two bachelor's degrees performed less well on average than their peers who completed a single bachelor's degree.

Figure 4-5: Salary Based on Level of Education, *BioTalent Canada*, 2015

	Average	Lowest	Highest	Median*
Bachelor Only	\$37,806	\$21,500	\$80,000	\$53,000
Diploma/DEC Only	\$35,622	\$26,390	\$72,000	\$41,600
Bachelor and Diploma/DEC	\$34,509	\$24,200	\$56,345	
Diploma/DEC and Bachelor	\$33,705	\$26,390	\$63,597	
Master	\$40,001	\$26,390	\$60,000	\$70,000
PhD/Post-Doc	\$49,655	\$37,584	\$60,000	\$75,000
Two Bachelor Degrees	\$33,242	\$27,202	\$40,000	

* Statistics Canada, National Graduate Survey, 2013

REGION

Regionally, participants that entered the program in Ontario and British Columbia/Alberta had higher salaries than participants in other provinces. It is of particular interest to note that in Quebec, salaries for the program were lower on average than in the other provinces.

Figure 4-6: Salary Based on Region, *BioTalent Canada*, 2015

	Average	Lowest	Highest	Median*
British Columbia/Alberta	\$38,416	\$24,965	\$63,597	\$28,280
Ontario	\$40,611	\$21,500	\$80,000	\$31,290
Quebec	\$32,607	\$24,480	\$68,000	\$28,920
Manitoba/Saskatchewan	\$37,790	\$27,040	\$58,200	\$35,702
Atlantic (Nova Scotia Only)	\$27,584	\$24,200	\$40,000	\$27,290

* Statistics Canada, National Graduate Survey, 2013

PREFERRED OFFICIAL LANGUAGE

While the majority of respondents selected English as their preferred language of communication, 28 respondents from Quebec selected French as their official language of communication and three from Ontario. It is of interest to learn that only 20.1% of respondents in the program identified themselves as being fully bilingual with most of those coming from Quebec as well. Salary information provided seems to indicate that French speakers in the program earned less than English speakers, but it is very possible that this was influenced more by region of work than official language of work.

Figure 4-7: Salary Based on Preferred Official Language, *BioTalent Canada*, 2015

	Average	Lowest	Highest
English	\$38,995	\$21,500	\$80,000
French	\$31,104	\$24,480	\$65,000
Bilingual	\$34,579	\$24,200	\$68,000

PREVIOUS EMPLOYMENT STATUS

As a condition of the program, none of the participants had previous employment in their discipline of study and interest. For those participants that had been employed in other sectors, they tended to earn more, as did those participants that were older demonstrating that employers tend to value previous work experience, regardless of the sector.

Those that identified as students or unemployed before entering their first biotechnology job tended to earn less than their previously employed peers.

Figure 4-8: Salary Based on Previous Employment Status, *BioTalent Canada*, 2015

	Average	Lowest	Highest
Unemployed	\$37,107	\$21,500	\$72,000
Student	\$37,855	\$22,000	\$72,000
Employed	\$38,500	\$23,000	\$80,000

Figure 4-9: Salary Based on Age Group, *BioTalent Canada*, 2015

	Average	Lowest	Highest
21-24 Years Old	\$36,850	\$21,500	\$72,000
25-31 Years Old	\$38,484	\$21,500	\$80,000

The impact has been extremely positive, allowing an 'incubation' period which has facilitated skills development greatly benefiting both employee and employer.

Jennifer Meade, CEO,
Tipi Mountain Native Plants Ltd.
Employer



CAREER PATHS

After graduating from biochemistry, I wasn't too sure what I wanted to do, but moving forward I now have a better idea of what I want and how to get there.

Daniel A.
Participant

THE NATIONAL OCCUPATIONAL CLASSIFICATION

The National Occupational Classification (NOC) is the nationally accepted reference on occupations in Canada. It organizes over 40,000 job titles into 500 occupational group descriptions. It is used daily by thousands of people to compile, analyze and communicate information about occupations, and to understand the jobs found throughout Canada's labour market.

The NOC provides a standardized framework for organizing the world of work in a coherent system. It is used to manage the collection and reporting of occupational statistics and to provide understandable labour market information. The structure and content of the NOC are also implemented in a number of major services and products throughout the private and public sectors⁵.

Standard classifications systems provide a good framework for identifying positions and gathering trend data. In reality, actual job titles may not always fit within a certain job category. Different positions may be grouped together in a category because a clear match cannot be found due to emerging careers such as Bioinformatics Programmer Analyst and Native Plant Ecologist, which fall under the same NOC group. The following figures highlight a few of the differences between the NOC and the actual job titles. This difference may indicate that further updates are required for the NOC system to represent labour-market realities. For a full list of the Career Focus position titles vs. the NOC see Appendix 1A.

⁵ <http://www5.hrsdc.gc.ca/NOC/English/NOC/2011/AboutNOC.aspx>

Figure 5-1: Sample Comparison of NOC Code Titles with Actual Occupation Titles Used in the Biotech Industry

NOC Code	NOC Title	Actual Title
0013	Manager in Communication	Assistant to the COO Corporate Communications Manager
112	HR and Business Services Professional	Recruitment Manager
0114	Other Administrative Services Managers	Account Manager

Figure 5-2: Sample Comparison of NOC Code Titles with Actual Occupation Titles Given

NOC Code	NOC Title	Actual Title
2121	Biologists and Related Scientists	Assay Development Testing Scientist
		Bioinformatics Programmer Analyst
		Environmental Scientist
		Field Biologist
		Food Scientist
		Native Plant Ecologist
		Support Scientist
		Tech Histology
		Technician
		Toxicology Technician

Figure 5-3: Sample Comparison of NOC Code Titles with Actual Occupation Titles Given

NOC Code	NOC Title	Actual Title
2221	Biological Technologists and Technicians	Analyst Immunology
		Aquaculture Technician
		Necropsy Technician
		Research Technician
		Science and Technology Product Specialist

The Career Focus Program has given me enough flexibility to explore my interests and passions, and it has also provided me with the perfect amount of direction and mentorship to ensure that my “exploration” was not ungrounded.

Michael G.
Participant

THE NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM

The North American Industry Classification System (NAICS) is an industry classification system developed by the statistical agencies of Canada, Mexico and the United States. Created against the background of the North American Free Trade Agreement, it is designed to provide common definitions of the industrial structure of the three countries and a common statistical framework to facilitate the analysis of the three economies. NAICS is based on supply-side or production-oriented principles, to ensure that industrial data, classified to NAICS, are suitable for the analysis of production-related issues such as industrial performance.

NAICS is designed for the compilation of production statistics and, therefore, for the classification of data relating to establishments. It takes into account the specialization of activities generally found at the level of the producing units of businesses. The criteria used to group establishments into industries in NAICS are similarity of input structures, labour skills and production processes⁶.

Similar differences between the actual job titles and NOC apply to NAIC as well such as Corporate Communications Specialist and Quality Control and Research Chemist falling under the "All Other Professional Scientific and Technical Services" group. The following Figures highlight a few of the differences between the NAIC system and the actual job titles which may indicate further updates are required for the NAIC system to represent labour market realities.

For a full list of the Career Focus position titles vs. NAIC see Appendix 1B.



BioTalent Canada's Bio-economy Skills Profiles identify the core skills required for careers in biotech.

Figure 5-4: Comparison of NAICS Codes to Actual Position Titles Given

NAICS Code	NAICS Company Sector	Actual Position
5417	Research and Development in the Physical, Engineering and Life Sciences	Assistant Flavour Technologist (BioScience)
		Chemical Technician
		Customer Service Representative
		Environmental Scientist
		Process Engineer in Training
		Regulatory Assistant
		Research Assistant
		Research Associate
		Research Commercialization Manager
		Research Technician
		Research Technologist

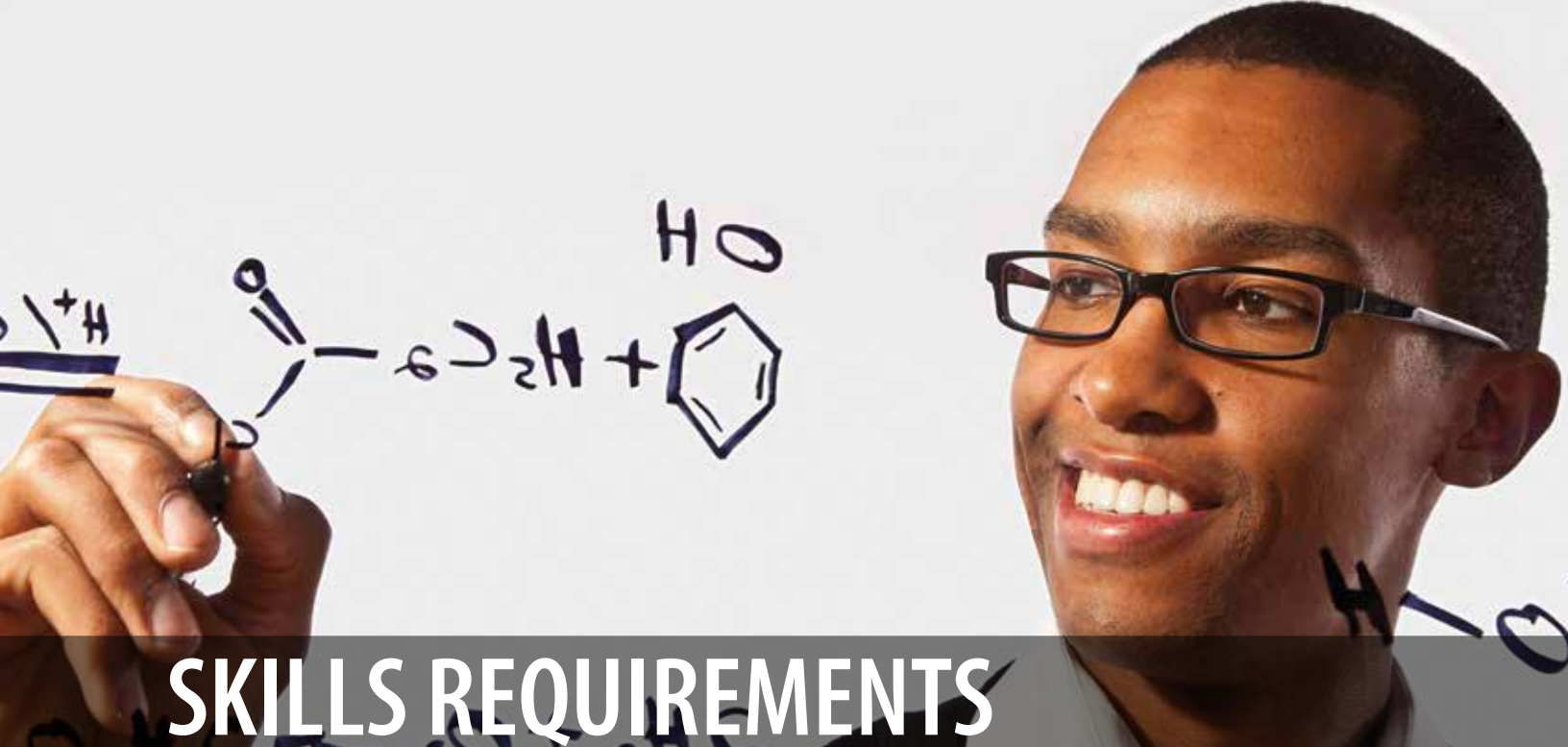
⁶ <http://www.statcan.gc.ca/subjects-sujets/standard-norme/naics-scian/2007/introduction-eng.htm>

Figure 5-5: Comparison of NAICS Codes to Actual Position Titles Given

NAICS Code	NAICS Company Sector	Actual Position
5419	All Other Professional, Scientific and Technical Services	Analyste Immunologie et Chimie Analytique
		Assay Development & Testing Scientist
		Bioinformatics Programmer/Analyst
		Chemist
		Corporate Communications Specialist
		Field Biologist
		Food Scientist
		Marketing Associate
		Native Plant Ecologist
		Quality Control & Research Chemist
		R&D Assistant
		Research Chemist
		Scientist
		Support Scientist
		Systems and Optics Engineer
		Tech Histology
		Technician
		Toxicology Technician



BioTalent Canada's BioCareer Pathways identify where you want to go in the bio-economy workforce.



SKILLS REQUIREMENTS

I have been able to apply the knowledge learned in University to real-life applications in my field of study. Working in a large company has allowed me to learn different aspects of developing flavours, quality control and production. This is valuable knowledge which can be applied to many fields in the food industry. Working under a flavorist has helped me to successfully and efficiently develop flavours and gain knowledge about the food industry.

Natasha R.
Participant

SKILLS AND COMPETENCY REQUIREMENTS

In 2013, BioTalent Canada concluded in *Sequencing the Data* that the single biggest obstacle to company product and/or service development was access to capital, closely followed by a lack of practical, non-academic skills of their full-time employees. The Career Focus Program for many years has supported new graduates in entering their first private-sector biotechnology jobs by offering employers wage subsidies to hire recent graduates. This support through BioTalent Canada from the Government of Canada's Youth Employment Strategy has responded to both of these critical barriers facing the biotechnology industry by providing much needed capital to on-board entry-level candidates who are then trained with the practical skills required in the industry.

Furthermore, the next most significant issue companies identified as a barrier to development was difficulty in identifying and maintaining required skills. With 89% of candidates (see Figure 6-1) staying in the industry after they complete the wage subsidy program, this issue has also been addressed.

Where employers specified a degree in the job description, this table compares the highest level of post-secondary education attained:

Figure 6-1 : Degree Requirement in Job Description vs. Actual Hire
BioTalent Canada, 2015

Degree Specified		Actual Education Completed			
		Diploma/DEC	Bachelor	Master	PhD/ Post-Doc
PhD/Post-doc	2				100%
Master	1			100%	
Bachelor	106	9.43%	67.92%	19.81%	2.83%
Diploma/DEC	32	45.16%	48.39%	6.45%	
Other	110	10.91%	66.36%	20%	2.73%

In many cases, employers did not stipulate a specific degree/diploma requirement, requesting only that candidates had experience in a specific discipline.

By setting goals in the beginning of the program, I was able to focus on particular tasks and activities and associate these directly with my goals. Through this program, I have become more comfortable in the professional working-environment and have learned to make more accurate judgements during tasks dealing with clients and deadlines.

Maida H.
Participant

This program allowed our company to open more positions for recent graduates. Having more employees allowed us to be more competitive and service more customers. It also helped with the "growth pain", having to hire and train employees before being able to sell the services.

Elena Zveaghina, Office Manager,
ERA Environmental Consulting Inc.
Employer

Where employers specified a specific post-secondary education in their job description, they often hired candidates with more education and training than that specified (Figure 6-2).

Figure 6-2: Disciplines in Science Led to the Following Occupations, *BioTalent Canada*, 2015

Discipline in Sciences Specified		Actual Education Completed			
		Diploma/DEC	Bachelor	Master	PhD/ Post-Doc
PhD/Post-doc	2				1-Ecology & Evolutionary Biology 1-Chemistry
Master	1		1-Chemistry		
Bachelor	106	10 -Total 1-Environmental Technician 1-Biotechnology 1-Agriculture 2-Science 2-Business 1-Lab Technician 1-Human Science 1-Chemical Engineer	72-Total 1-Agriculture & Environmental Science 3-Computer Science 1-International Studies 1-Natural Resource Conservation 3-Arts 41-Science 2-Chemistry 3-Biology 6-Applied Science 1-Arts and Science 1-Biochemistry 1-Chemical Engineering 1-Commerce 4-Engineering 1-Food Science 1-Media Studies 1-Medical Science	21-Total 13-Science 1-Engineering 1-Health Science 1-Pathology & Lab Science 1-Biostatistics 1-Computer Science 1-Microbiology and Immunology 2-Applied Science	3- Total 1- Biology 1-Science 1-Pharmacology
Diploma/DEC	32	14-Total 3-Animal Health 1-Animal Technician 1-Bioecology 1-Biotechnology 1-Electrical Industrial Technology 5-Science 2-Pharmaceutical Manufacturing	16-Total 1-Agricultural & Environmental Sciences 4-Biology 1-Medical Sciences 1-Pharmacy 6-Science 2-Biochemistry 1-Labour and Communications	2-Total 1-Microbiology & Immunology 1-Science & Neuroscience	
Other *	110	12-Total	73-Total	22-Total	3-Total

*No educational qualification was specified by the employer - thus no sub-comparison can be made

It has long been known that education in one area can lead to a variety of career opportunities. It is interesting to see the variety of positions Career Focus participants worked in whether they had a bachelor's or master's degree in science. The lists below show science background can lead to a variety of careers.

OCCUPATIONS WITH A BACHELOR'S OF SCIENCE DEGREE

- Account Manager
- Analyst (Biomarkers)
- Analyst Lab
- Assistant Buyer
- Assistant Flavour Technologist (BioScience)
- Customer Service Representative
- Downstream Operator
- Environmental Scientist
- Field Biologist
- Laboratory Assistant
- Laboratory Technician
- Laboratory Technician I
- Laboratory Assistant
- Manufacturing Associate
- Marketing Associate
- Quality Assurance Technician
- Research Assistant
- Research Associate
- Research Technician
- Research Technologist
- Sales Rep
- Technical Writer/Technical Assistant/Laboratory Assistant
- Visualization Developer

OCCUPATIONS WITH A MASTER'S OF SCIENCE DEGREE

- Bioinformatics Programmer/Analyst
- Controlled Substance Officer
- Data Management Specialist
- Inside Sales Representative
- Laboratory Assistant
- Laboratory Technician
- Logistics Coordinator
- Medical Writer
- Product Interface Developer
- Research Chemist
- Research Technician
- Software Developer
- Support Scientist

Without the Career Focus Program I may have not landed a position with Nutrasource. With guidance from my supervisors and other employees within the organization, I've gained more confidence professionally and have obtained valuable experience that will stay with me throughout my career.

Patricia D.
Participant



FINAL THOUGHTS

WOULD THIS POSITION HAVE BEEN CREATED OTHERWISE?

"No. The wage subsidy allowed the company to take the time to properly train the candidate."

Leon Linseman, Accountant,
Bauman Sawmill Inc.

"No, not immediately. At that time we did not have an open position. We only began considering this position due to the subsidy."

Lynn Menegotto, HR,
Mantech Inc.

"Yes. However, this subsidy has greatly helped to free limited resources that has helped with the company growth."

Lew Lim, President & CEO,
Vielight Inc.

"For some participants, we might have been able to hire them without subsidies. However for some others, our departmental budgets were very stretched. Therefore the subsidies had a significant impact on the mandate length, and thus allowing the new grad to contribute more!"

Jody Cohen, Talent Mining Specialist,
Pharmascience Inc.

"No, our company is still a start-up and this subsidy helped us out tremendously!"

Graham Jack, Senior Director of R&D,
Xagenic Inc.

"Possibly not. Although the section was very busy and the work was certainly there, our budgets have been very tight. This funding was a tremendous help!"

Arlene Girardin, HR Specialist,
Atlantic Region, Maxxam Analytics

"As a start-up organization, we operate in a resource constrained environment. Likely, we would have hired for this position, but approximately 9-12 months later. Through Biotalent, we have been able to achieve our corporate milestones much earlier."

Kenneth To, Chief Operating Officer,
ViewsIQ

"It would not have been possible for TMNP to create this position without the subsidy and while we would have wanted to hire Taylor, we would have been able to offer a less stable and significant position."

Jennifer Meade, CEO,
Tipi Mountain Native Plants Ltd.

"No, we would not have created this position without the subsidy because it is too expensive to hire inexperienced grads. We would have looked for someone with experience."

Bedrich Videl, President,
Nucro-Technics

"No, AES, as a start up business, cannot afford to hire a newly graduated student without the wage subsidies."

Tiemin Huang, CEO,
Advanced Electrophoresis Solutions Ltd.

IMPACT FOR ALL

The Career Focus wage subsidy program has had a great impact on new graduates to develop new skills and learn the industry. Employers have been able to access the young talent they need, add resources and grow their companies. All helping to strengthening the available talent pool and Canada's bio-economy as a whole.

APPENDICES

Appendix 1A: Comparison of NOC Code Titles with Actual Occupation Titles Given

NOC	NOC Title	Actual Title
0013	Manager in Communication	Assistant to the COO Corporate Communications Specialist
112	HR and Business Service Professional	Recruitment Manager
0114	Other Administrative Services Managers	Account Manager
212	Life Science Professionals	Research Commercialization Manager
0823	Manager in Aquaculture	Fish Farm Technician
1122	Professional Occupation in Business Management Consulting	Junior Consultant
1123	Professional Occupation in Advertising, Marketing and Public Relations	Marketing & Communications Associate Marketing & Sales Assistant Marketing Associate
1241	Administrative Assistant	Admin Assistant
1254	Statistical Officers and Related Research Support Occupations	R&D Assistant
1254		Research Assistant
1411	General Office Support Worker	Documentation Coordinator
1523	Production Logistics Coordinators	Logistics Coordinator
2112	Chemist	Analyste Immunologie et Chimie Analytique (2) Chemist (2) Quality Control & Research Chemist (2) Research Chemist Scientist
2115	Other Professional Occupations in Physical Sciences	Systems and Optics Engineer
2121	Biologists and Related Scientists	Assay Development & Testing Scientist Bioinformatics Programmer/Analyst Environmental Scientist (5) Field Biologist Food Scientist Native Plant Ecologist Support Scientist Tech Histology Technician Toxicology Technician (7)
2132	Mechanical Engineers	Mechanical Engineer
2133	Electrical and Electronics Engineers	Electrical & Mechanical Engineer
2134	Chemical Engineers	Junior Process Engineer Process Engineer in Training (2)
2141	Industrial and Manufacturing Engineers	Quality Engineer Associate
2148	Other Professional Engineers, N.E.C.	Engineering Intern Executive Intern – Bioenergy
2171	Information Systems Analysts and Consultants	Technical Analyst
2172	Database Analysts and Data Administrators	Data Management Specialist
2174	Computer Programmers and Interactive Media Developers	Business Application Developer Product Interface Developer Software Developer Visualization Developer

Appendix 1A: Comparison of NOC Code Titles with Actual Occupation Titles Given

NOC	NOC Title	Actual Title
2211	Chemical Technologists and Technicians	Analyst Analyst (Biomarkers) (3) Analyst lab Assistant Flavour Technologist (BioScience) Chemical Technician (2) Chemistry Preparation Technologist Controlled Substance Officer Lab Analyst (3) Laboratory Analyst Laboratory Assistant QA/QC Technician Research Technologist (2) Technician (Toxicology) Technologist
2221	Biological Technologists and Technicians	Analyst Immunology Aquaculture Technician Necropsy Technician Research Technician (4) Science and Technology Product Specialist
2233	Forestry Technologists and Technicians	Manufacturing Associate Quality Assurance Technician Reagent Manufacturing Lead
2241	Electrical and Electronics Engineering Technologists and Technicians	Electro mecanicien
2252	Industrial Designer	Designer (Dessinateur)
2262	Engineering Inspectors and Regulatory Officer	Regulatory Assistant
2283	Information Systems Testing Technicians	Software Tester
3212	Medical Laboratory Technicians and Pathologists' Assistant	Lab Assistant (3) Lab Technician (2) Lab Technician I Laboratory Associate – IHC Laboratory Clerk Laboratory Technician
3213	Animal Health Technologists and Veterinary Technicians	Animal Technician
3215	Medical Radiation Technologist	Imaging Technologist
3219	Other Medical Technologists and Technician (Except Dental Health)	In Vivo Pharmacology Technician
4011	University Professor and Lecturer	Postdoctoral Fellow
4012	Post-secondary Teaching and Research Assistant	Laboratory Assistant (8)
4163	Business Development Officers and Marketing Researchers and Consultants	Business Development Associate Learning Consultant Marketing Assistant
4165	Health Policy Researchers, Consultants and Program Officers	Research Associate (2)
5121	Authors and Writers	Jr. Medical Writer Medical Writer Technical Writer/Technical Assistant/Laboratory Assistant
6221	Technical Sales Specialist – Wholesale Trade	Forestry Representative Sales Rep (2) Sales Trainee – Alberta

Appendix 1A: Comparison of NOC Code Titles with Actual Occupation Titles Given

NOC	NOC Title	Actual Title
6222	Retail and Wholesale Buyers	Assistant Buyer
6411	Sales and Account Representatives - Wholesale Trade (Non-Technical)	Inside Sales Representative (2)
6552	Other Customer and Information Services Representatives	Customer Service Representative
8432	Nursery and Greenhouse Workers	Cultivation Assistant
9537	Other Products Assemblers, Finishers and Inspectors	Downstream Operator

Appendix 1B: Comparison of NAICS Code Positions with Actual Position Titles Given

NAICS	NAICS Company Sector	Actual Position
1153	Support Activities for Forestry	Forestry Representative
4183	Agricultural Chemical and Other Farm Supplies Merchant Wholesalers	Sales Rep Sales Rep - Alberta Sales Trainee - Alberta
4189	All Other Merchant Wholesalers	Fish Farm Technician
5112	Software Publishers	Technical Analyst
5413	Architectural Services	Electrical and Mechanical Engineer Designer (Dessinateur)
5415	Computer Systems Design and Related Services	Business Application Developer Product Interface Developer Software Developer Visualization Developer Software Tester
5416	Environmental Consulting Services	Junior Consultant Lab Analyst Medical Writer
5417	Research and Development in the Physical, Engineering and Life Sciences	Research Commercialization Manager Research Assistant (2) Environmental Scientist (5) Process Engineer in Training Assistant Flavour Technologist (BioScience) Chemical Technician Research Technologist Research Technician (4) Regulatory Assistant Research Associate Customer Service Representative
5418	Other Services Relating to Advertising	Marketing & Communications Associate

Appendix 1B: Comparison of NAICS Code Positions with Actual Position Titles Given

NAICS	NAICS Company Sector	Actual Position
5419	All Other Professional, Scientific and Technical Services	<p>Corporate Communications Specialist Marketing Associate R&D Assistant Analyste Immunologie et Chimie Analytique (2) Chemist (2) Quality Control & Research Chemist (2) Research Chemist Scientist Systems and Optics Engineer Assay Development & Testing Scientist Bioinformatics Programmer/Analyst Field Biologist Food Scientist Native Plant Ecologist Support Scientist Tech Histology Technician Toxicology Technician (7) Mechanical Engineer Junior Process Engineer Process Engineer in Training Quality Engineer Associate Engineering Intern Executive Intern - Bioenergy Data Management Specialist Analyst (Biomarkers) (3) Chemical Technician Chemistry Preparation Technologist Controlled Substance Officer QA/QC Technician Research Technologist Technician (Toxicology) Technologist Analyst Immunology Aquaculture Technician Necropsy Technician Science and Technology Product Specialist Manufacturing Associate Quality Assurance Technician Reagent Manufacturing Lead Lab Technician Animal Technician In Vivo Pharmacology Technician Postdoctoral Fellow Business Development Associate Learning Consultant Marketing Assistant Research Associate Jr. Medical Writer Technical Writer/Technical Assistant/Laboratory Assistant (2) Cultivation Assistant Downstream Operator</p>
5611	Office Administrative Services Account Manager	<p>Admin Assistant Inside Sales Representative</p>
5613	Employment Placement Agencies and Executive Search Services	Recruitment Manager

Appendix 1B: Comparison of NAICS Code Positions with Actual Position Titles Given

NAICS	NAICS Company Sector	Actual Position
5619	All Other Support Services	Assistant to the COO Marketing & Sales Assistant Documentation Coordinator Logistics Coordinator Assistant Buyer Inside Sales Representative
6215	Medical and Diagnostic Laboratories	Analyst Analyst lab Laboratory Analyst Laboratory Assistant (12) Lab Technician I Laboratory Associate - IHC Laboratory Clerk Laboratory Technician (2) Imaging Technologist
8112	Electronic and Precision Equipment Repair and Maintenance	Electro mecanicien

Biotech Career Resources

- The PetriDish™ Job Board
- Scotiabank StartRight® Biotech Resumé Builder
- BioCareer Pathways
- Bio-economy Skills Profiles
- Bio-economy Skills At-a-Glance
- Bio-economy Career Profiles
- BioSkills Recognition Program
- Alternative Careers
- Courses and Webinars
- Labour Market Information

Visit www.biotalent.ca to learn more.

GATHERING THE DATA

Eighty-eight companies hired 255 of graduates from post-secondary institutions across Canada as part of the BioTalent Canada administered Career Focus wage subsidy program funded by the Government of Canada's Youth Employment Strategy.

The sample group had good representation for regional, education level, gender, self-identified minority group, language profile, age and prior employment status.

When comparing the data from the Career Focus Program, occasionally Statistics Canada data was entered based on the 2011 and 2012 workforce surveys and the 2014 National Graduate Survey as presented in CANSIM.

Lastly, position titles were tied to National Occupation Codes (NOC) most closely aligned with the functions of the positions. Companies where participants worked were tied to the North American Industry Classification System (NAICS) that best represents the function of their industry.

BioTalent Canada wishes to
thank those companies who have participated in the Career
Focus Program. Through their support in hiring new grads,
these companies have helped to strengthen the biotech
industry's talent pool.

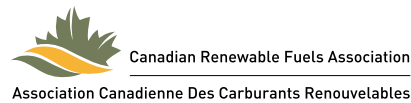
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