



Building skills for Canada's bio-economy

Growing the bio-economy

YOUTH IN FOCUS



BIOTALENT CANADA

BioTalent Canada™ is the HR partner of Canada's bio-economy and a catalyst for growth. Our engagement with employers, associations, post-secondary institutions, immigrant serving agencies and service providers has built a dynamic network that is strengthening skills, connecting job-ready talent to the industry and creating opportunities. Visit biotalent.ca for more information.

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President's Message

Stop me if you've heard this before: the Canadian bio-economy is on the rise. We, at BioTalent Canada, say it all the time. In fact, it's our mission to support that growth.

There are a lot of factors that will determine whether or not Canada's biotech industry hits some very lofty goals. And no doubt, many of these factors can lead to a short-term boom. But the most important determinant for sustained growth will be the cultivation of world-class talent.

A major focus at BioTalent Canada is helping Canadian employers identify and access talent. On the flip side, we're also focused on making youth aware of the vast career opportunities that exist in the Canadian bio-economy. Our wide array of resources and programs drive that focus.

Growing the bio-economy: youth in focus shines a light on three of our youth-focused wage subsidy programs—Career Starter, Science Horizons, and the Science and Technology Internship Program – Green Jobs (STIP). These programs provide employers with funds that open the doors of opportunity to Canada's emerging young professionals.

These young graduates are eager to get their careers off the ground. The wage subsidies alleviate many of the financial burdens that any new hire can cause. You'd be amazed at how much value youth can bring to a company—be it a start-up or an enterprise. But there's a hesitancy that exists with bringing inexperienced and untested talent onboard.

But we shouldn't mistake inexperience for ineptitude. Canada's youth are among the best educated in the world. And trust me, international organizations know that and continue to make efforts to lure them away. Young people bring new ideas, infectious energy, and fresh perspectives. In fact, employers tell us all the time the positive impact youth make to their organizations—stories you can read on our website. We need our most precious resource to stay in Canada and help grow our biotech sector. They're the future innovators and leaders.

This report is another resource BioTalent Canada offers its stakeholders. It details our programs, how they work, and where they fit in the biotechnology ecosystem. Employers and participants share the tangible positive effects these programs have had on their companies and careers, respectively. There's statistics and data to support the stories.

I'd like to thank all the employers and employees who participated in this programs and the report who took the time to share their story. They brought life to the data and put a face on the numbers. I'm so happy that our programs impacted their organizations and careers.

We welcome any feedback you might have on this report. We are constantly seeking ways to improve our programs in an effort to secure the future of Canada's bio-economy.



A handwritten signature in black ink, appearing to read 'R. Henderson', written in a cursive style.

Rob Henderson,
President and CEO, BioTalent Canada



Table of contents

President’s Message **1**

About this report: Bringing young talent into the bio-economy **4**

About the bio-economy: An ever-evolving economic engine **6**

Impact story: Creating lifesaving technology straight out of school **10**

Results overview: Launching youth careers, supporting business strategies **12**

Program results – Career Starter: Opening doors for barriered youth **14**

Impact story: Rejuvenating Quebec’s Lower North Shore with jobs for youth **18**

Program results – Science Horizons Youth Internship: A platform for real-world experience **20**

Impact story: Making a splash as a clean water champion **24**

Program results – Science and Technology Internship Program –
Green Jobs: Resourceful talent working with Canada’s natural resources **26**

Impact story: Helping a Canadian environmental remediation company get the job done **30**

Conclusions and recommendations **32**

Are you ready to make a big impact?



Here's a better path to your future in Canada's bio-economy!

- 1) Be part of our most excellent Student Work Placement Program;
- 2) Up your game with our Essential Skills and Technical Skills Fundamentals courses.



Get the BioReady™ Edge

Email Joanne at jjordan@biotalent.ca

biotalent.ca/essential | biotalent.ca/technical



ABOUT THIS REPORT:

Bringing young talent into the bio-economy

Bio-economy companies urgently need workers with the full range of skills to achieve organizational business and innovation goals, but many lack the resources to recruit and onboard effectively. At the same time, youth eager to break into the sector often don't have the real-world experience employers require so they can hit the ground running. This report looks at three youth-focused BioTalent Canada wage subsidy programs and the impacts they've had, with recommendations on how to leverage their successes for the ongoing benefit of young workers and bio-economy firms.

Career Starter

For youth at risk of disconnecting from the bio-economy workforce or who face additional barriers to employment¹

Science Horizons

For recent graduates of science, technology, engineering or math (STEM) programs interested in working in the environmental sector

Science and Technology Internship Program (STIP)—Green Jobs

For youth interested in natural resource-based STEM jobs linked to the green economy

All three programs use the Employment and Social Development Canada definition of "youth" as people aged 15–30.

¹ For the full list of eligible barriers, see biotalent.ca/CareerStarter



All three programs aligned with the federal government priorities outlined in the 2020 Speech from the Throne and Canada's Youth Policy, helping young Canadians gain the skills, support and opportunities to join the workforce and flourish.² They were designed specifically to make it easier for organizations to hire young workers while easing the way for youth into bio-economy jobs.

The programs have also responded to the Fall 2018 Health and Biosciences Economic Strategy Table (HBEST) report, which called out the need to attract more young workers to the sector earlier in their schooling and careers to help companies innovate and keep up with constant technological change.³

“ The Career Starter program allowed me to work in a meaningful, environmental and biological position after getting laid off from another [due to] Covid-19. I'm thankful that I am now much further ahead in my career because of Career Starter!”

– Marc Apduhan, Career Starter participant

Why young talent matters

Past labour market information reports have found that many bio-economy companies have shortages of skilled and experienced workers and lack the capital to recruit to fill the gaps. Rapid and continual advances in research and technology have also led to skills shortages even among existing staff. Early results from our upcoming labour market information study⁴ show that recruitment in the bio-economy remains a challenge.

These gaps, expected to last until at least 2024,⁵ have made it hard for firms to reach their full potential and could hinder Canada's ability to be a leading player in the global bio-economy. At BioTalent Canada, we've also heard from sector players that the bio-economy needs younger, next-generation workers to avoid a management crunch as older workers retire and there are too few experienced personnel ready to take their places.

In light of these urgent requirements, BioTalent Canada is committed to helping connect bio-economy opportunities to graduates with the right skills, and to align education in the biosciences and other STEM fields with industry needs. The programs featured in this report have been a key part of that effort.

² “Canada's Youth Policy”, Government of Canada. <https://www.canada.ca/en/youth/programs/policy.html>

³ “Report of Canada's Economic Strategy Tables: Health and Biosciences”, Government of Canada. [https://www.ic.gc.ca/eic/site/098.nsf/vwapj/ISEDCHHealthBioscience.pdf/\\$file/ISEDCHHealthBioscience.pdf](https://www.ic.gc.ca/eic/site/098.nsf/vwapj/ISEDCHHealthBioscience.pdf/$file/ISEDCHHealthBioscience.pdf)

⁴ Watch for our updated bio-economy LMI coming in 2021.

⁵ “Report of Canada's Economic Strategy Tables: Health and Biosciences”, Government of Canada. [https://www.ic.gc.ca/eic/site/098.nsf/vwapj/ISEDCHHealthBioscience.pdf/\\$file/ISEDCHHealthBioscience.pdf](https://www.ic.gc.ca/eic/site/098.nsf/vwapj/ISEDCHHealthBioscience.pdf/$file/ISEDCHHealthBioscience.pdf)



ABOUT THE BIO-ECONOMY:

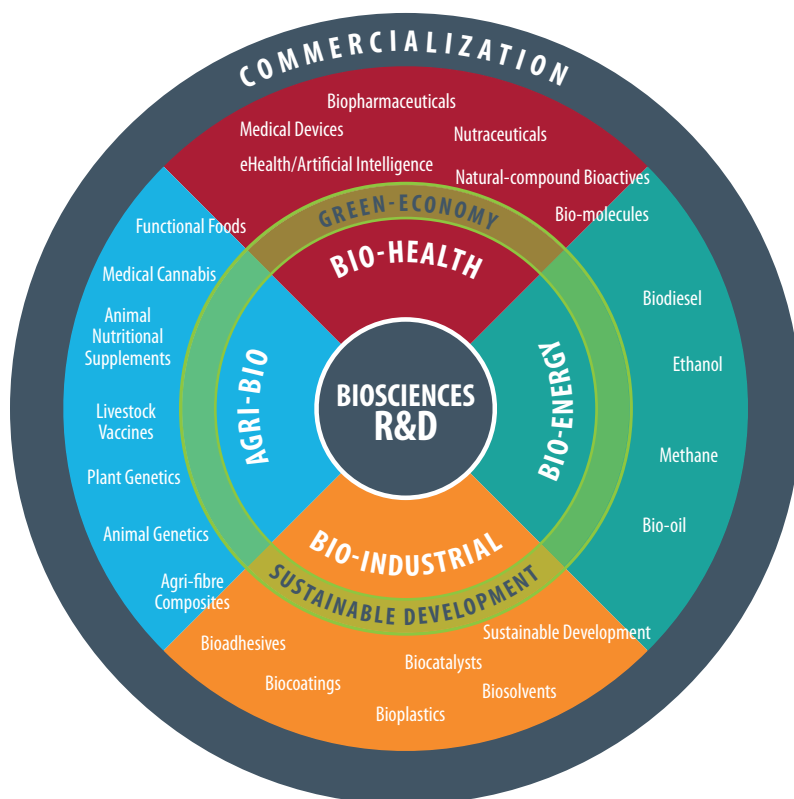
An ever-evolving economic engine

The bio-economy's need for skilled, talented youth is as vast as the bio-economy itself — which includes businesses and research organizations engaged in everything from biofuels and agricultural genetics to eHealth and bioplastics. What they have in common is a focus on inventing, developing, producing, commercializing and using primarily bio-based products, bio-based production processes and/or biotechnology-based intellectual property, using resources from agriculture, forestry, fisheries/aquaculture, organic waste, and aquatic biomass.

The scope of the bio-economy is continually being redefined as research and innovation advance across multiple engineering fields and scientific disciplines in the bio-health, bio-energy, bio-agriculture and bio-industrial industries. These four sectors are all rooted in their own research and development and have connections to the “green” or sustainable economy. (For a complete definition of the bio-economy based on BioTalent Canada's most recent labour market research, see the highlight box on page 7.)

The bio-economy has also become increasingly vital to the future of the country given its unique capabilities to tackle challenges of climate change and provide diagnostics, treatments and vaccines for diseases such as COVID-19.

Making the most of those capabilities demands a deep, qualified pool of next-generation talent, both homegrown and from abroad.



Supporting the bio-economy from the roots up

BioTalent Canada has been actively engaged in helping the country's bio-economy meet its skills and human resources needs since 1997. That support includes labour market research, mechanisms for professional skills development and recognition, and programs that help companies find and retain the talent they need, including job matching and targeted wage subsidies:

Labour market information

Data collection for our latest labour market study started in 2020 and continued into 2021, and is being evaluated in the context of COVID-19. The full study will be published in 2021 to give an accurate, up-to-date picture of the skills requirements, talent supply and future HR needs of Canada's bio-economy.

Learn more: biotalent.ca/LMIStudy

National Occupational Standards

Our National Occupational Standards provide standardized competency profiles for a range of bio-economy occupations, helping companies plan for recruitment, succession and professional development.

Learn more: biotalent.ca/NOS

Essential and Technical Skills Fundamentals courses

Our online courses help bio-economy workers strengthen essential skills such as critical thinking, communication and document use as well as technical skills in good laboratory practices, scientific report writing, quality assurance/quality control and more.

Learn more: biotalent.ca/courses



The bio-economy: A definition

The bio-economy is defined as the economic activity associated with the invention, development, production, and use of primarily bio-based products, bio-based production processes and/or biotechnology based intellectual property. The bio-economy includes the use of resources from agriculture, forestry, fisheries/aquaculture, organic waste, and aquatic biomass. The field is multidisciplinary in that it cuts across bio-health, bio-energy, bio-agriculture (agri-bio), and bio-industrial (chemicals and materials) sub-sectors. These four sub-sectors are all rooted by their own foundations of Research and Development and all have products, process or intellectual property that are involved in the "green" or sustainable development economy as well, to a greater or lesser extent. The bio-economy, sub-sectors share a common objective: the commercialization of resultant bio-products, processes and/or intellectual property. BioTalent Canada's vision is that the Canadian bio-economy is people focused, a career of choice and a key driver of the Canadian economy.

Skills recognition

The BioSkills Recognition Program helps internationally educated professionals have their skills and credentials verified, making it easier for them to apply to bio-economy jobs in Canada.

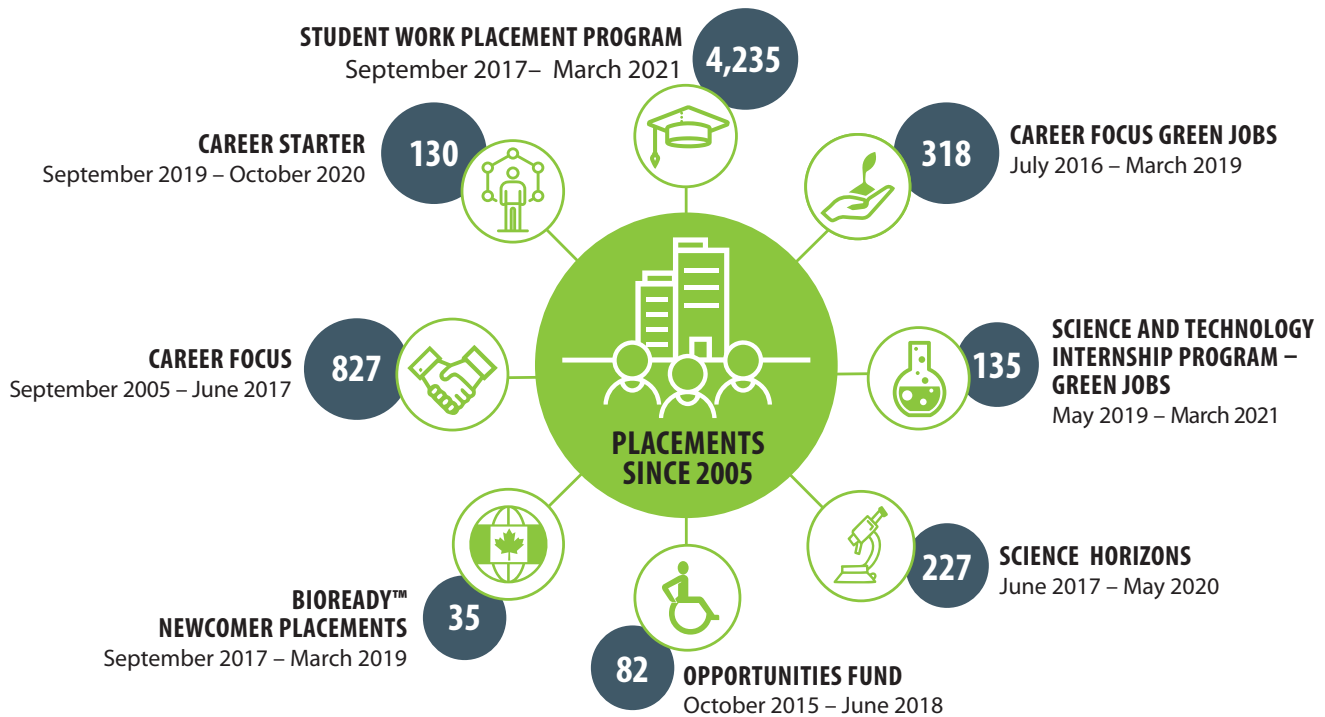
Learn more: biotalent.ca/get-started

Career placements and wage subsidy programs

Since 2005, our wage subsidy and career placement programs have helped more than 5,000 students, new graduates and newcomers gain valuable work experience, often a critical step toward a bio-economy career.

Learn more: biotalent.ca/wagesubsidies

FIGURE 1. Work placements since 2005



Numbers as of March 31, 2021

Job posting and matching

The PetriDish™ is a national, bilingual job board dedicated to bio-economy positions — complemented by our BioSkills Match™ talent database, which allows bio-economy employers to search for qualified candidates.

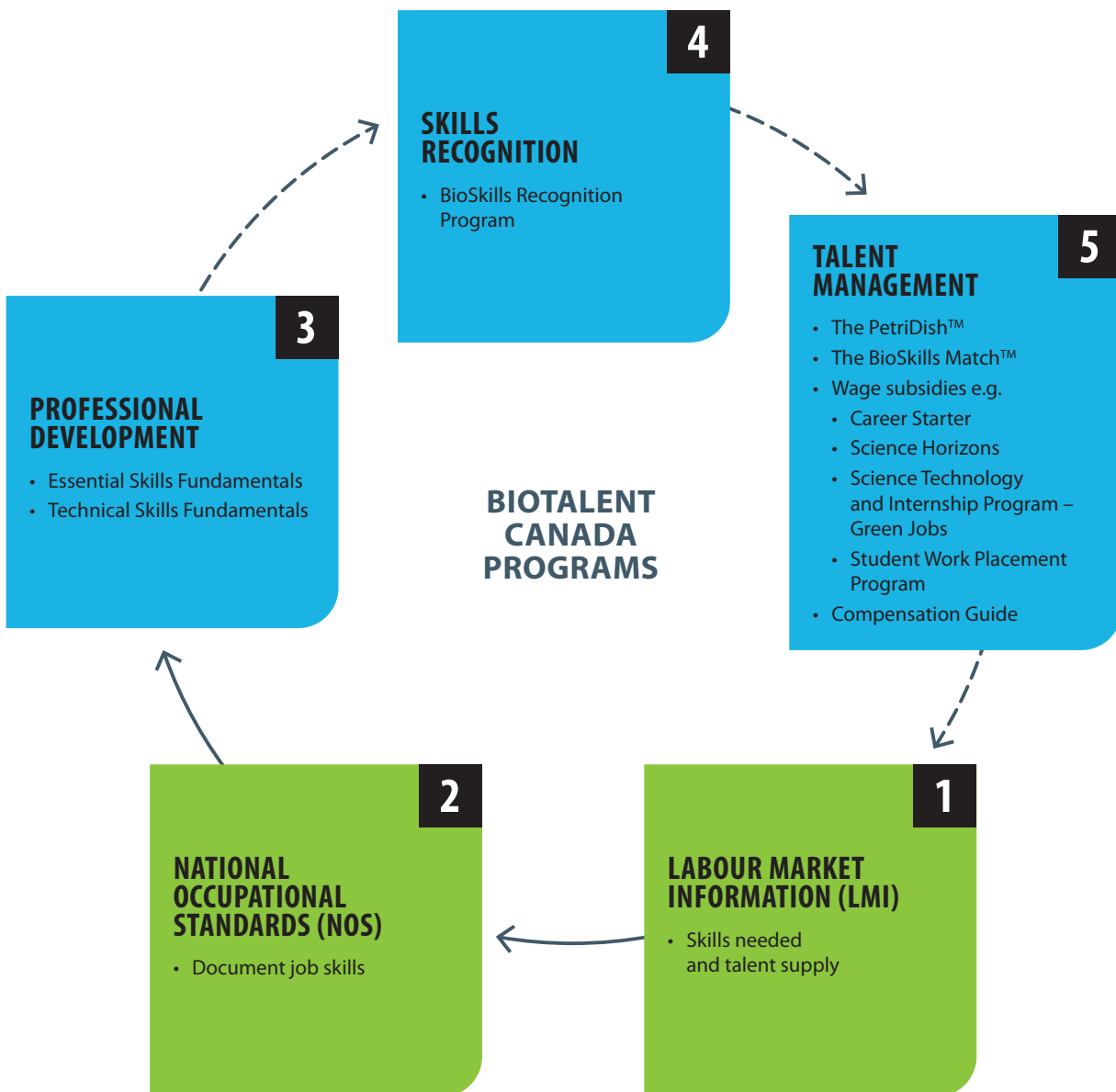
Learn more: petridish.ca and biotalent.ca/BioSkillsMatch

Compensation Guide

Our annual National Biotechnology Compensation Guide, which is now fully bilingual and available digitally, keeps employers informed about the market value of specific occupations, making it easier for them to attract and retain top talent.

Learn more: biotalent.ca/compensationguide

FIGURE 2. BioTalent Canada programs



Evidence-based foundation upon which programs and services are created

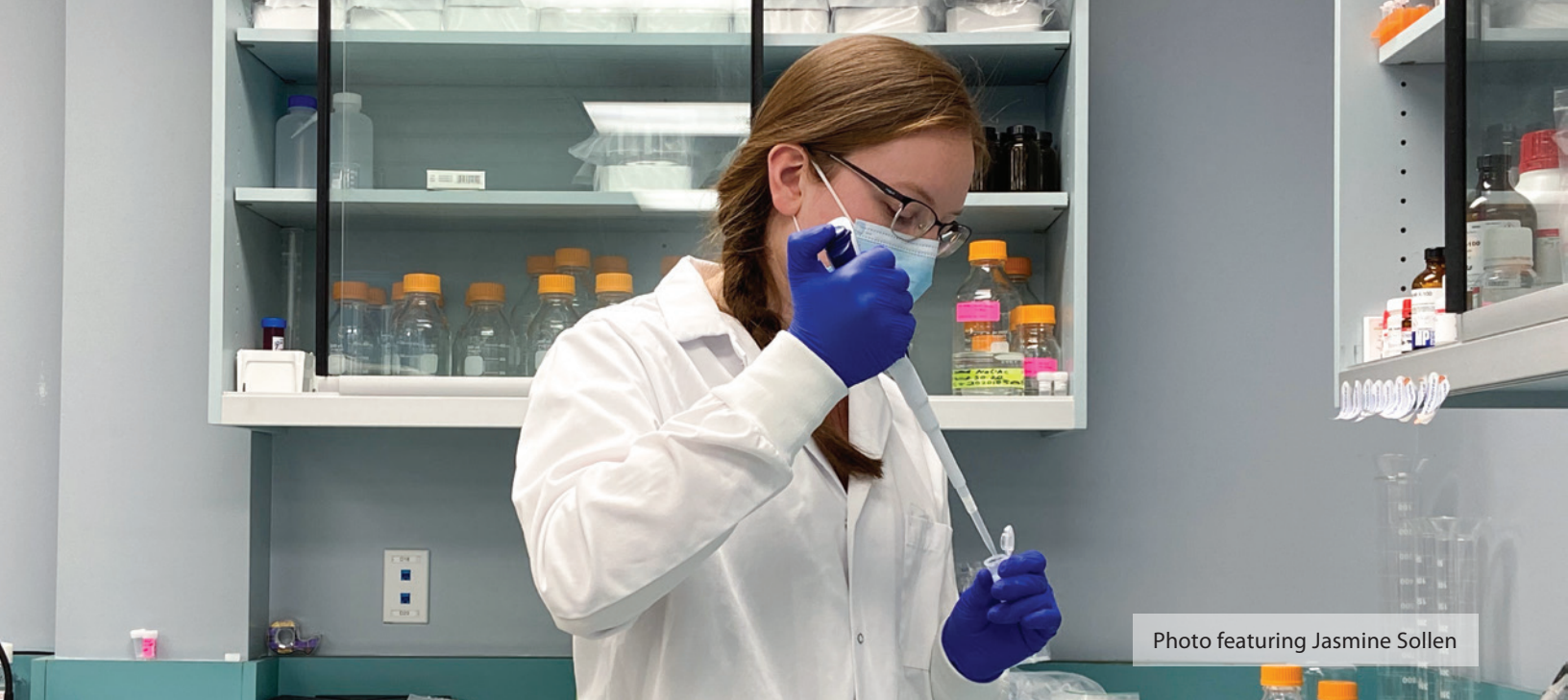


Photo featuring Jasmine Sollen

IMPACT STORY:

Creating lifesaving technology straight out of school

Sometimes the benefits of a wage subsidy go far beyond what anyone imagined. Just ask Jasmine Sollen. Hired straight after graduating from the University of Guelph thanks to a BioTalent Canada **Career Starter** subsidy, she's led the development of a potentially lifesaving COVID-19 antigen test that's fuelled the growth of a Canadian bio-economy startup.

As a second-year student, Sollen helped create an environmental monitoring polymerase chain reaction (PCR) solution with her professor, Mario Thomas. The highly accurate, portable technology was originally designed for environmental monitoring, able to detect the DNA of endangered or invasive species in water samples. It was later adapted to support the food safety efforts of the Canadian Food Inspection Agency.

When a company — Precision Biomonitoring — was created to commercialize the PCR solution, Sollen was named one of five co-founders. Thomas says they knew they wanted to hire her when she finished her degree: the BioTalent Canada Career Starter subsidy made it possible for the cash-conscious startup.

"We originally tried a BioTalent Canada co-op program but it didn't apply to Jasmine as a grad. So BioTalent Canada recommended Career Starter," Thomas explains. "She met all the criteria and we received confirmation very quickly. It's a great program."

Sollen's team raised the profile of Precision Biomonitoring when their entry in the multinational XPRIZE "Fight COVID-19" competition made the shortlist of 200 semifinalists.

A timely pivot

Sollen thought she'd be working on environmental technology when she rejoined the Precision Biomonitoring team after graduation. But Thomas, now CEO, had already adapted the PCR technology to test for COVID-19 and realized Precision Biomonitoring might also be able to develop a rapid antigen test as well. Since Sollen's focus had shifted over the years to biomedical toxicology, she had the right skills mix for the company's new priority. Thomas put her in charge of a team tasked with developing the antigen testing solution.

"At first it was really intimidating, but it was nice to be given ownership of a project so early, to have the chance to lead the team," Sollen says. "I had to think about structure and tracking progress, which was very cool."

Structure was a particular challenge in the pandemic context: all work was done remotely at first; it wasn't until August 2020 that the team was able to be in the lab together. But in just a month and a half, they'd already started to see results, and very quickly the project became the company's number-one priority.

When Thomas learned of the international XPRIZE "Fight COVID-19" competition, he thought the antigen testing project was a perfect fit. In a few short weeks, the team assembled an application and was invited to participate. They had three weeks to generate preclinical analytical data, detection limits and test sensitivity, generating their first data and validating the prototype in the process. The team's entry was one of 200 semifinalists out of 1,000 submissions from 35 countries.

"The XPRIZE competition was a huge milestone: we realized, 'This is going to work,'" Mario says. "From then on, we accelerated."

“ We see BioTalent Canada as real partners who understand why we're doing this and why we need support. They bring more value than just administrative process.”

– Mario Thomas, Precision Biomonitoring

Growth spurt

Precision Biomonitoring's COVID-19 antigen-testing technology is due for global commercial launch in April 2021. As development intensified throughout 2020, the company grew exponentially from five to 35 employees. Eight positions were filled with the help of BioTalent Canada youth wage subsidy programs, five of them converting into permanent full-time roles.

"I love BioTalent Canada because their programs are so simple to use," says Thomas. "We see them as real partners who understand why we're doing this and why we need support. They bring more value than just administrative process."

Hiring with the help of subsidies allowed Precision Biomonitoring to meet its business goals and also to attain ambitious diversity targets: 70 percent of its total workforce is female, and the same proportion are people from visible minority backgrounds.

While Sollen is about to shepherd her first technology through a global product launch, she's really more curious about what comes next.

"This has been a tremendous opportunity. I don't know what my next project will be, but I'm excited to find out and to delve even deeper into the biomedical applications of our technology."





RESULTS OVERVIEW:

Launching youth careers, supporting business strategies

All three youth wage subsidy programs filled to capacity, a sign that bio-economy employers across Canada are hungry for support. From the way the programs were used, it seems clear organizations see subsidies not only as ways to meet short-term HR requirements but also to carry out longer-term, higher-value hiring strategies.

Most placements led to full-time employment

As BioTalent Canada has seen with previous wage subsidy programs, more than three-quarters of youth placements converted into permanent full-time employment.⁶ This suggests employers used the subsidies as a bridge to meeting long-term staffing needs versus satisfying discrete project requirements.

85% of placements
converted into full-time
jobs for youth

That conclusion is reinforced by the fact that 25–35% of employers have used Career Starter, Science Horizons and STIP — Green Jobs to hire multiple youths. Placements outnumbered employers by more than 60 across the full set, indicating that many firms saw the opportunity to use the subsidies to build overall capacity in pursuit of their business goals.

Most subsidies were used to fund positions for six months, with the average placement duration being 26.6 weeks and all youth employed on a full-time basis at 37.5 hours per week. The longest placement was 63 weeks.

⁶ Based on post-placement survey results, with an average response rate of 72% across all three programs.

Employers hired for roles outside of “pure” biotechnology

A further sign that employers have used the subsidies to support their business goals and strategies is the range of positions hired for, with many falling outside “traditional” bio-economy laboratory and fieldwork roles, including marketing and communications, software development, customer experience, manufacturing and more.

Small and medium-sized organizations have been the main users of the subsidies

The overwhelming majority of participating organizations (88%) have fewer than 100 employees. Most have fewer than 20. This reflects the sector’s overall concentration of small and medium-sized businesses — companies without the scale, time or money to hire and train young workers without subsidized offsets. Those interviewed for this report said they especially appreciated how easy the programs were to use.

80.7% of Canadian bio-economy companies have fewer than 50 employees⁷

“ This program allowed me to gain exciting, relevant work experience with a highly respected company in a part of the country where it is difficult to find stem employment.”

– Sarah Fancy, Science Horizons participant



⁷ "Sequencing the Data", BioTalent Canada. <https://www.biotalent.ca/reports/labour-market-information-report-2013/>



PROGRAM RESULTS – CAREER STARTER:

Opening doors for barriered youth

The **Career Starter** program was created to boost bio-economy hiring of youth facing barriers to employment. Those barriers can take many forms, and are experienced by a wide range of youth including women, Indigenous people, people with disabilities and newcomers to Canada. These groups and others — LGBTQ2+ youth, visible minorities, and those who have been not in employment, education or training (NEET) for more than four months — often face barriers that risk driving them away from pursuing careers in the bio-economy. The COVID-19 pandemic exacerbated many of these barriers and dramatically increased the number of youth who qualified as involuntarily NEET.

Career Starter helped bring down barriers by providing a 50% wage subsidy (up to \$20,000) for job placements of three to nine months. The program also offered internal job coaching and mentoring, relocation support, and access to online presentation skills and other courses, compensation guides, and the BioSkills Recognition

Program, as well as an onboarding checklist and other tools for the employer. From September 2019 to October 2020, 130 youth participated in the Career Starter program, and 113 of them were hired permanently in their fields after the end of their placements.

Career Starter At-a-Glance 2019–2020



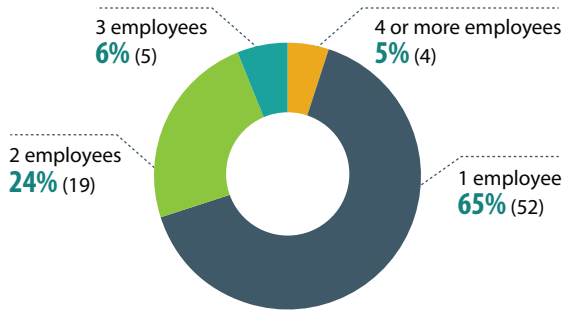
FIRMS WITH FEWER THAN 50 EMPLOYEES TOOK ON THE MOST PLACEMENTS



AVERAGE PLACEMENT LENGTH

25 WEEKS

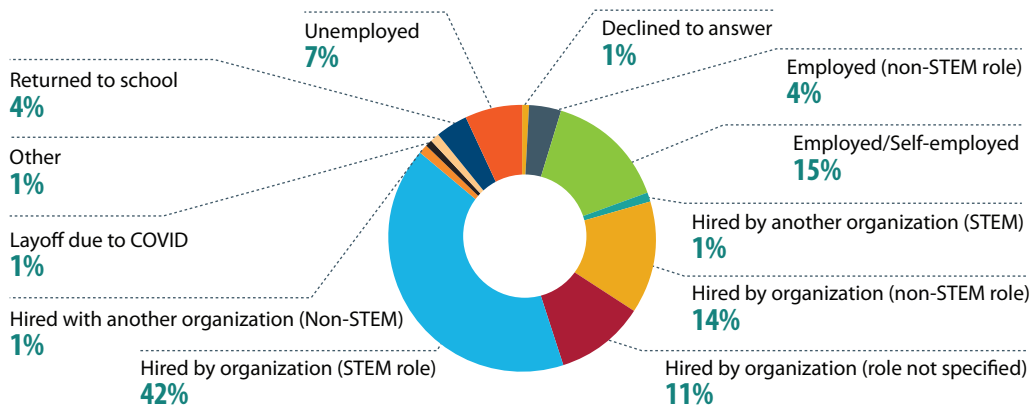
35% OF EMPLOYERS HIRED MORE THAN ONE YOUTH



PLACEMENTS BY PROVINCE/TERRITORY



PLACEMENT OUTCOMES



Percentages do not equal 100 due to rounding.

POSITIONS FILLED (BY TYPE)

Roughly 100
different types

of positions were filled,
including:

- Agronomist
- Business analyst
- Content creator
- Greenhouse assistant
- Junior engineer
- Medical illustrator
- Product designer
- Software developer
- Soil carbon sequestration analyst



LEVEL OF EDUCATION

Most not specified

1 post-secondary incomplete

5 university degrees



AVERAGE PARTICIPANT AGE
25



AVERAGE SALARY
\$48,219



AVERAGE SUBSIDY
\$16,236



PARTICIPANTS FROM UNDER-REPRESENTED GROUPS

- Persons with disability: **6**
- Newcomers to Canada: **11**
- Indigenous: **5**

DISABILITY

- Yes: **6**
- No: **114**
- No answer or decline: **10**

NEW IMMIGRANT

- Yes: **10**
- No: **110**
- Declined to answer: **10**

INDIGENOUS GROUP

- First Nation: **1**
- Métis: **1**
- Non-status: **1**
- Registered off-reserve: **2**
- Declined to answer: **16**
- N/A: **109**



GENDER

FEMALE: **59**

MALE: **67**

LGBTQ2+: **2**

DECLINED TO ANSWER: **2**



VISIBLE MINORITY

Yes:

66

No:

55

Declined to answer:

9



OFFICIAL LANGUAGE

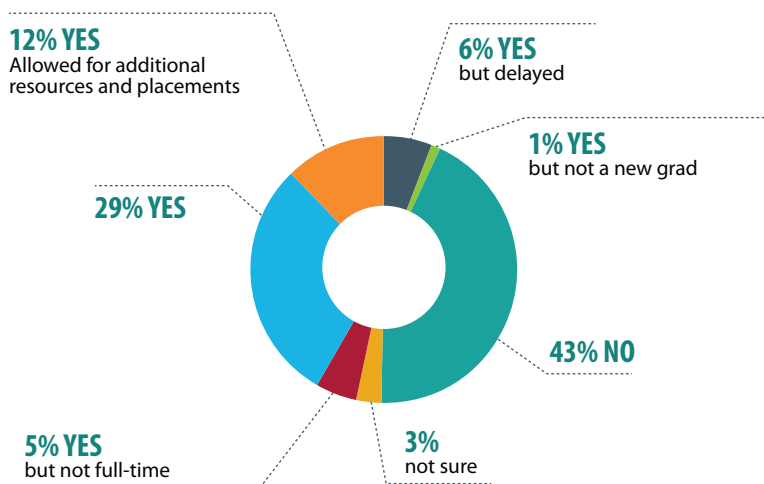
English:

127

French:

3

WOULD THE POSITION HAVE BEEN CREATED WITHOUT THE SUBSIDY?*



Note: Includes data up to March 31, 2021. Percentages do not equal 100 due to rounding.



100% OF EMPLOYERS

WOULD USE ANOTHER BIOTALENT CANADA SUBSIDY PROGRAM*

Numbers are based on program data from 130 Career Starter placements, except those marked with *, which are based on responses to a post-placement survey with a 100% response rate (n=130).



Photo featuring Kristopher Fequet

IMPACT STORY:

Rejuvenating Quebec's Lower North Shore with jobs for youth

Of all the places Kristopher Fequet thought he might find a job after graduating from university, back home in Quebec's remote Lower North Shore wasn't one of them. But the push to build a local bio-economy combined with a Career Starter wage subsidy paved the way for him to put his degree to work right where he grew up — and to contribute to the revitalization of his home town.

"With my degree in chemical engineering and biochemistry, I figured I'd end up out in the Alberta oil sands. I never imagined there'd be something here at home," Fequet says.

A phone call toward the end of his final semester at the University of Ottawa from Coasters Association Director of Operations and Innovation Kimberly Buffitt changed his outlook.

Coasters offered Fequet a well-paying job as an engineering and R&D manager at its Northern Research Centre along with additional financial support to pursue a master's degree while he worked. He'd get to do what he loves most, designing chemical processes to support a new bioproducts processing plant on the Lower North Shore.

"It was literally an offer too good to refuse," Fequet says.

“ I figured I'd end up out in the Alberta oil sands. I never imagined there'd be something here at home.”

– Kristopher Fequet

Persistence pays off

The Coasters Association's mandate is to strengthen the economic vitality of the Lower North Shore. Research more than a decade ago probed why the region's economy wasn't moving forward, especially after hundreds of industrial feasibility studies. A big part of the answer turned out to be a lack of people with graduate degrees. BioTalent Canada's LMI research has shown that 70–92% of graduates stay in the region where they study — a challenge for remote communities with few post-secondary institutions of their own.⁸ That prompted the Coasters Association to prioritize creating opportunities for young people to come back, raise families and contribute to their communities.

Young people in Northern communities used to believe their only professional choices at home were to be a nurse or a teacher. The growth of a regional bio-economy is changing that, built around distinctive local natural resources such as cloudberries, lingonberries, sea cucumbers and algae.

As Director of Operations and Innovation, Buffitt says she's determined to draw young people back. "I phone them one-on-one. I'll phone the families. I start when they're midway through their programs, before they lose their attachment to the region."

Since a plane ticket to the Lower North Shore from southern Canada averages about \$3,000, Buffitt says it takes at least \$15,000 to make the return home worthwhile. When she learned about BioTalent Canada's youth wage subsidies for bio-economy jobs, she was excited to apply, using them to staff a range of roles. In addition to Fequet, Coasters hired a marketing communications intern, a bio-development business coordinator, a research support officer and more. All are now in permanent positions.

With the wage subsidy, Coasters was able to offer salaries that made it feasible for candidates to return to the Lower North Shore, where flights average about \$3,000.

The gateway to global experience

The Lower North Shore's special mix of bio-resources has attracted some very large nutraceutical and cosmetics companies to the region. Fequet recently found himself preparing the local plant for an audit by one of the world's best-known cosmetics brands.

The research being done to develop the bio-economy has drawn attention from experts as far away as Finland and Russia.

"When people think about research in the North, they think about melting ice," says Buffitt. "The reality is far more diverse, and we're just starting to scratch the surface of what's here and what we can do with it."

Her ultimate hope is that building a successful bio-economy in the region will jumpstart a cycle in which commercial investors are attracted by the local talent, encouraging them to invest and create even more opportunities for young workers.

The impacts of youth on the Lower North Shore go beyond developing local industry. Buffitt says one community had three of its young people return: within a year, they'd gotten involved in local government and led a project to replace outdated wells with a modern water filtration system.

Buffitt and Fequet both agree that longer-term wage subsidies would do even more for northern communities in Canada.

"Up here, it can take a long time to get projects going, get supplies and equipment in place," Fequet says. "The more time you have, the more you can accomplish."

⁸ "Academic Bonds: Examining the ties that bind STEM grads to their school", BioTalent Canada. https://www.biotalent.ca/wp-content/uploads/BioTalentCanada_Academic-Bonds-15DEC2020.pdf



PROGRAM RESULTS – SCIENCE HORIZONS YOUTH INTERNSHIP:

A platform for real-world experience

Despite the skills shortages they face, many bio-economy companies hesitate to hire new graduates with little or no work experience, contributing to a nearly 18% unemployment rate for Ontario Science graduates aged 20–24 in 2019.⁹ Paid internships are an effective way for recent graduates to gain valuable real-world experience — and for employers to benefit from the fresh perspectives and in-demand skills of new talent with less risk.

To help expand Canada’s green economy, the **Science Horizons Youth Internship** provided a wage subsidy of up to 70% (to a maximum of \$15,000) for full-time internships of six to nine months in environmental STEM positions linked to the green economy. To be eligible, participants had to be under 30 and graduated from a post-secondary STEM program within the past three years.

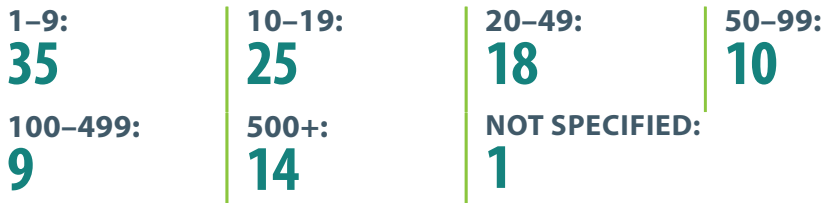
From August 2019 to March 2021, 121 youth participated in the Science Horizons program. As of the publication of this report, 79 had been hired permanently after the end of their placements.

⁹ “Accelerating Prosperity: The Life Sciences Sector in Ontario”, Life Sciences Ontario. https://lifesciencesontario.ca/wp-content/uploads/2019/03/LSO-Economic-Study_Final-Report_28FEB2019.pdf

Science Horizons At-a-Glance 2019-2021



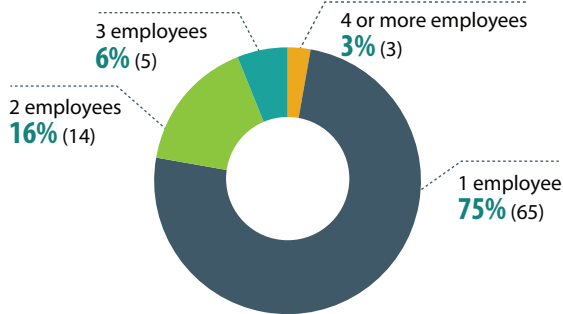
FIRMS WITH FEWER THAN 50 EMPLOYEES TOOK ON THE MOST PLACEMENTS



AVERAGE PLACEMENT LENGTH

29 WEEKS

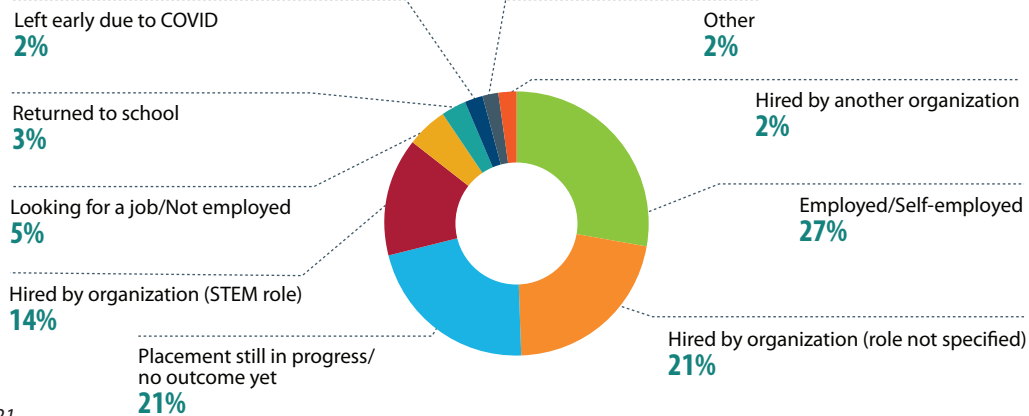
25% OF EMPLOYERS HIRED MORE THAN ONE YOUTH



PLACEMENTS BY PROVINCE



PLACEMENT OUTCOMES



*as of March 31, 2021

Percentages do not equal 100 due to rounding.

POSITIONS FILLED (BY TYPE)

More than

100 different types

of positions were filled, including:

- 3D CAD Designer
- Biochemical quality assurance technician
- Digital marketing coordinator
- Hydrologic modeling analyst
- Mining technologist
- Project coordinator
- Science Illustrator and Educational Animator
- Shellfish technician



LEVEL OF EDUCATION

Bachelor's degree:

82

Diploma:

15

Master's Degree:

23

PhD:

1



AVERAGE PARTICIPANT AGE

24



AVERAGE SALARY

\$45,097*



AVERAGE SUBSIDY

\$13,105*



PARTICIPANTS FROM UNDER-REPRESENTED GROUPS

- Persons with disability: **5**
- Newcomers to Canada (within 5 years): **4**
- Indigenous: **5**

DISABILITY

- Yes: **4**
- No: **114**
- Declined to answer: **2**

NEW IMMIGRANT

- Yes: **4**
- No: **109**
- Declined to answer: **8**

INDIGENOUS GROUP

- Métis: **1**
- Non-status: **1**
- Declined to answer: **4**
- N/A: **115**

*As of March 26, 2021



GENDER

FEMALE: **65**

MALE: **54**

DECLINED TO ANSWER: **2**



VISIBLE MINORITY

Yes:

34

No:

79

Declined to answer:

9



OFFICIAL LANGUAGE

English:

112

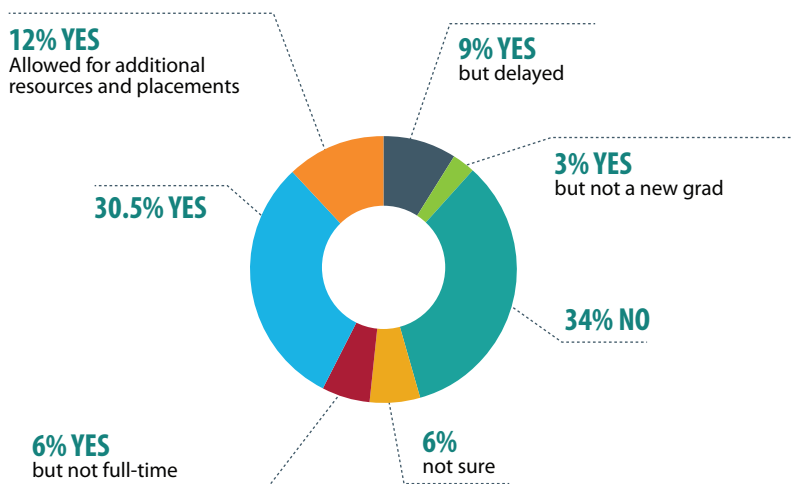
French:

6

Declined to answer:

3

WOULD THE POSITION HAVE BEEN CREATED WITHOUT THE SUBSIDY?*



Note: Includes data up to March 31, 2021. Percentages do not equal 100 due to rounding.



100% OF EMPLOYERS

WOULD USE ANOTHER BIOTALENT CANADA WAGE SUBSIDY PROGRAM*

Numbers are based on program data from 121 Science Horizons placements, except those marked with *, which are based on responses to a post-placement survey with a 87% response rate (n=171).



Photo featuring Juno Garrah

IMPACT STORY:

Making a splash as a clean water champion

When hands-on summer programming got shut down by COVID-19 restrictions, Water Rangers’ new hire Juno Garrah took the outdoors online and helped the organization reach a wider audience than ever before. It was the first of many impacts she’s had since joining the non-profit with the help of BioTalent Canada’s **Science Horizons Youth Internship Program**.

Water Rangers helps protect Canadian waterways by providing “citizen scientists” with affordable test kits to do their own local water quality monitoring. Its educational programming gets kids out in the field to practice sample collection, and teaches them how to read and understand the results without having to go to a lab.

The summer programs are an integral part of Water Rangers’ work, says Water Rangers founder and executive director Kat Kavanagh, and bringing Juno on to support that effort was key.

“As a small social enterprise, we wouldn’t have been able to hire Juno without the BioTalent Canada subsidy — and we wouldn’t have adapted to the new format without her creative thinking,” Kavanagh explains. “Youth like Juno bring a different kind of energy for change that can really help push you along.”

Garrah set up Water Rangers’ virtual programming by converting her backyard — which edges onto the Ottawa Valley’s Mississippi River — into a live outdoor studio. The online format made it possible to engage kids as far away as Northern Ontario, Saskatchewan, BC and the Northwest Territories, expanding their traditionally local audience.

“It took some experimenting, but now we do all our programs online or over Zoom,” she says.

By shifting educational programs to an online format, Water Rangers extended their reach, engaging with kids from Northern Ontario, Saskatchewan, BC and the Northwest Territories.

From sample collection to data aggregation

When summer programming wrapped up, Garrah turned her attention to the Water Rangers' data platform, where users of the organization's do-it-yourself water monitoring kits upload their results. She spent the fall and winter developing protocols to transfer the data automatically to DataStream, an aggregator that combines community, academic and government research into Canada's most comprehensive water quality dataset.

"Wetlands and shorelines that protect waterways are degrading or disappearing as a result of climate change," Kavanagh says. "And we still see runoffs from farming going directly into the water. Bringing as much data together as possible helps give an accurate and actionable picture of water quality across the country."



The "desk job" experience

The opportunity to work a "desk job" developing the data-transfer software was a valuable part of the Science Horizons placement, Garrah says. "Most of my jobs before had been more physical and outdoor-based. Working in an office with a team is totally different. Being involved in planning and coordinating is great experience I can apply as I move forward in my career."

“ This was a great place to land right out of school. Having a year-long contract gave me time to settle in and find my role so I could really contribute.”

– Juno Garrah

The full-year length of the placement was also crucial, she says. "Contracts in ecology and conservation are usually shorter, so this was a great place to land right out of school. Having a year-long contract gave me time to settle in and find my role so I could really contribute."

Water Rangers is now looking for funding to keep Garrah on permanently, Kavanagh says, so they can continue to capitalize on her passion for freshwater protection.

"The sheer abundance of freshwater in Canada makes it impossible for governments to test it all, and since good data are needed for informed policy decisions, enlisting citizen scientists is key," she says. "We need champions like Juno to get the word out."



**PROGRAM RESULTS – SCIENCE AND TECHNOLOGY
INTERNSHIP PROGRAM – GREEN JOBS:**

Resourceful talent working with Canada's natural resources

Companies working on environmental solutions while contributing to economic growth need access to skilled talent. Paid internship programs minimize the risk to small and medium-sized biotechnology companies of hiring youth with little experience. They also increase the pool of qualified candidates available to all bio-economy employers and help create jobs that benefit the environment.

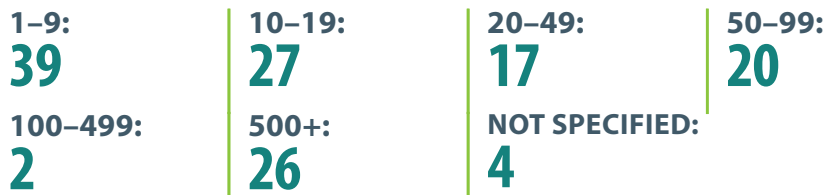
To help employers build Canada's green economy, the **Science and Technology Internship Program – Green Jobs** provided a wage subsidy of up to 75% (to a maximum of \$22,500 per year) for new hires in natural resource-based STEM positions linked to the green economy. Youth furthest from employment, including those from northern and remote communities, were eligible for an increased subsidy.

From May 2019 to March 2021, 135 youth participated in the Science and Technology Internship Program – Green Jobs. As of the publication of this report, 48 had been hired permanently after the end of their placement.

Science and Technology Internship Program – Green Jobs At-a-Glance 2019-2021



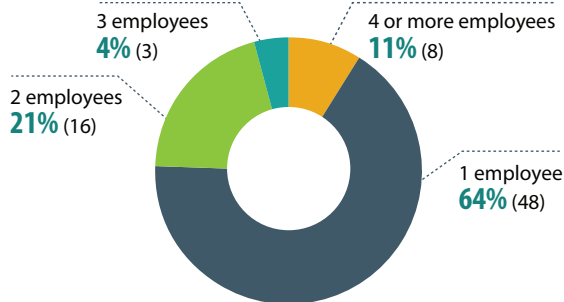
FIRMS WITH FEWER THAN 50 EMPLOYEES TOOK ON THE MOST PLACEMENTS



AVERAGE PLACEMENT LENGTH

25 WEEKS

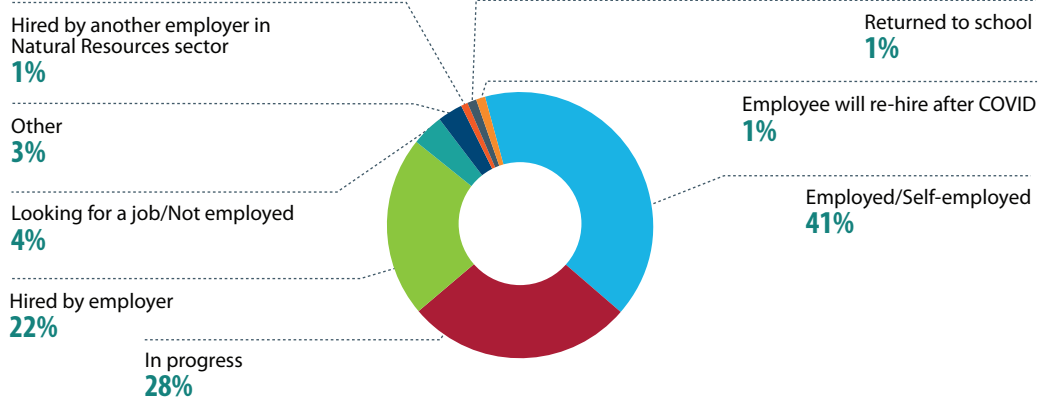
36% OF EMPLOYERS HIRED MORE THAN ONE YOUTH



PLACEMENTS BY PROVINCE/TERRITORY



PLACEMENT OUTCOMES



*as of March 31, 2021

Percentages do not equal 100 due to rounding.

POSITIONS FILLED (BY TYPE)

More than

100 different types

of positions were filled, including:

- Apprentice Electrician
- Civil engineer-in-training
- Computer programmer
- Geotechnical field technician
- Junior videographer
- Junior Videographer
- Mechanical designer
- Research assistant
- Spatial Data Analyst
- UX Research Coordinator



LEVEL OF EDUCATION

Bachelor's degree:

70

Master's or PhD:

12

College certificate/diploma completed:

34

Secondary completed:

9

Master's or PhD Incomplete:

1

Some post-secondary (including CEGEP):

1

Master's degree:

8



AVERAGE PARTICIPANT AGE

25



AVERAGE SALARY

\$47,042*



AVERAGE SUBSIDY

\$16,236*



PARTICIPANTS FROM UNDER-REPRESENTED GROUPS

- Persons with disability: **1**
- Newcomers to Canada (within 5 years): **5**
- Indigenous: **2**

DISABILITY

- Yes: **1**
- No: **131**
- Declined to answer: **3**

NEW IMMIGRANT

- Yes: **5**
- No: **127**
- Declined to answer: **3**

INDIGENOUS GROUP

- Métis: **1**
- Non-status: **1**
- Declined to answer: **3**
- N/A: **130**



PLACEMENT RELATED TO FIELD OF STUDY

- Declined to answer: **3**
- No: **8**
- Yes: **124**

*As of March 26, 2021



GENDER

FEMALE: **61**

MALE: **72**

DECLINED TO ANSWER: **2**



VISIBLE MINORITY

Yes:

33

No:

93

Declined to answer:

9



OFFICIAL LANGUAGE

English:

128

French:

3

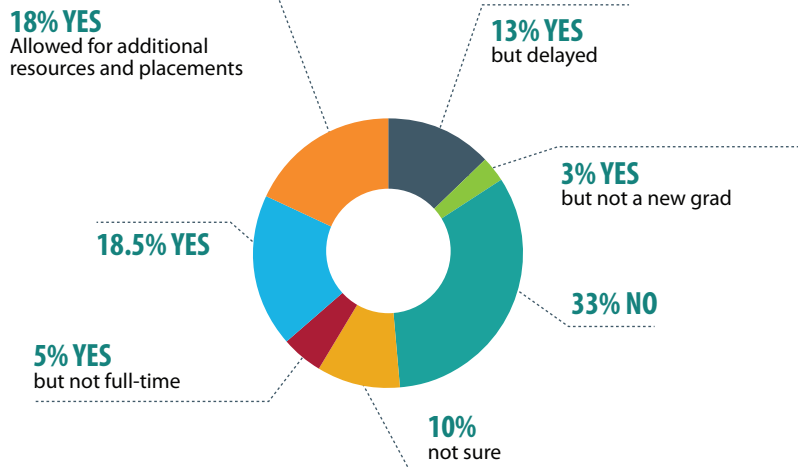
Declined to answer:

2

Other:

2

WOULD THE POSITION HAVE BEEN CREATED WITHOUT THE SUBSIDY?*



Note: Includes data up to March 31, 2021. Percentages do not equal 100 due to rounding.



98% OF EMPLOYERS

WOULD USE ANOTHER BIOTALENT CANADA WAGE SUBSIDY PROGRAM*

Numbers are based on program data from 135 Science and Technology Internship Program – Green Jobs placements, except those marked with *, which are based on responses to a post-placement survey with a 88% response rate (n=119).



Photo featuring Sara Battaglia

IMPACT STORY:

Helping a Canadian environmental remediation company get the job done

When COVID-19 struck, Ensero Solutions was in the middle of a massive remediation project at the former Mount Nansen gold and silver mine in the Yukon. With budgets constrained and the company needing more capacity in the field, Chief People Officer Mitch Strom leapt at the chance to bring on two skilled young workers through the BioTalent Canada **Science and Technology Internship Program – Green Jobs**.

Ensero helps mining companies achieve their environmental responsibility goals by supporting environmental assessments and permitting, water treatment, and the remediation of former mine sites. The Mount Nansen project is one of the largest remediation projects in the Yukon — and a big undertaking for the Ensero team. Being able to add the people power of university graduates Talor Osberg and Sara Battaglia is key.

“We wouldn’t have hit a lot of our field goal requirements and commitments without Talor and Sara,” says Strom. “The STIP subsidy really helped during a tough year due to COVID.”

The STIP – Green Jobs program is helping Ensero execute one of the largest remediation projects in the Yukon.

Hands-on field experience

Osberg and Battaglia were drawn to the bio-economy by a mutual love of the great outdoors. Osberg grew up in the Okanagan Valley and did a degree in environmental integrated science and geographic information systems (GIS). Battaglia, from Ontario, earned her environmental engineering degree from the University of Guelph. They both say they were excited by the opportunity to do real, meaningful fieldwork and gain exposure to active mining sites.

“We get to go all over the Yukon — usually for a few days, sometimes up to a week,” says Osberg, whose placement as an environmental technician involved reclamation projects, hydrometry and water quality monitoring.

Battaglia worked primarily on groundwater programs and even helped manage some projects. An engineer-in-training, she says Ensero’s supportive talent-development culture brought a whole other dimension to the work experience. “My very first conversation with my internship supervisor was about my learning goals. Since then I’ve had great mentorship and support for my professional development.”

Both say their field work experience improved their troubleshooting skills. “When you have to rebuild a pump out in the middle of nowhere, you gain a lot of confidence in your ability to figure things out,” Battaglia notes.

“My very first conversation with my internship supervisor was about my learning goals.”

– Sara Battaglia

Learning to do things differently

Osberg and Battaglia are the first candidates Ensero has brought in through a BioTalent Canada wage subsidy program. Beyond supporting their base salaries, the ability to cover some of the additional costs related to Battaglia’s development as an engineer-in-training is especially helpful, Strom says.

While diversity was not an official recruitment goal, Ensero is committed to having a good balance of people from different cultural backgrounds and of male and female workers — so hiring two young women was welcome. The company today is roughly 46% female, well above the bio-economy average of 36%.¹⁰

Ensero also gained some fresh perspective on its recruitment practices by hiring Osberg and Battaglia during the pandemic.

“Sara was able to come into the office for an interview because she was already in the Yukon. We interviewed and hired Talor on video. Some of those techniques may stay in place after the pandemic: where we might have flown someone in before, we’ve learned we can save a lot of costs.”

Both Osberg and Battaglia have been hired on permanently since the end of their placements. In Strom’s words, “That was an easy decision.”



¹⁰ “The Talent Differential: The case for work-integrated learning in the bio-economy”, BioTalent Canada. https://www.biotalent.ca/wp-content/uploads/BioTalentCanada_LMI-The-Talent-Differential-09OCT2020-1.pdf



Conclusions and recommendations

In the span of two years, the Career Starter, Science Horizons and STIP — Green Jobs youth wage subsidy programs have proven to be mutually beneficial to employers and participants. They've helped hundreds of young Canadians gain hands-on experience and start bio-economy careers while enabling companies to recruit new talent, pursue strategic goals and grow — by offsetting the costs of hiring and training. With the majority of placements converting into full-time jobs, the programs have had a measurable impact on bio-economy employment and longer-term innovation capacity.

As the bio-economy evolves, it remains people-focused, a career of choice and a key driver of the Canadian economy, with new specialties requiring fresh talent emerging all the time. All three programs have delivered on what government and industry have long observed: that a diversity of youth perspectives is fuel for innovation. Reflecting on the outcomes and feedback, several recommendations stand out for building on the talent and career development impacts realized to date for both employers and young workers:

1. Continue youth wage subsidies for small and medium-sized businesses.

Programs like these give companies the capacity to take on new hires and migrate them to long-term employment, in some cases, building out whole teams to deliver on key objectives. Ease of use and having a trusted partner such as BioTalent Canada to work with seem to increase employers' enthusiasm for these kinds of offerings. One respondent to the post-placement survey suggested flexible co-pay options with a 75/25 split between the program and the employer might be even more helpful. Others said it would be helpful for programs like these to be available on an ongoing basis.

2. Placements of longer duration might help.

While longer durations are possible in some cases, the average placement for these three programs was six months. Several employers indicated in post-placement feedback that longer periods would be beneficial given the time involved in getting employees trained and in a position to deliver real value, and in mounting certain kinds of bio-economy projects — especially in the North and remote locations that are challenging to equip. There may be an opportunity to extend the standard placement length or to better publicize options for additional funding for longer placements.

3. Promote the availability of subsidies for roles outside the pure sciences.

Companies need for non-scientific and non-engineering staff to support business development, finance, marketing and commercialization. The opportunity to fill these kinds of roles through future wage subsidies should be promoted — so that companies “think beyond the lab coat” and are encouraged to meet their full scope of needs.

4. Give youth real opportunities to contribute.

As the post-placement qualitative feedback and impact stories in this report attest, the youths employed through Career Starter, Science Horizons and Science and Technology Internship Program – Green Jobs have shone in their roles, contributing meaningfully to the companies they've worked for. High-value placements have high-value returns for companies and youth workers alike. Substantial subsidies of longer duration would allow employers to engage youth in these meaningful ways.

5. More can be done to promote diverse hiring.

In light of the low representation of persons with disabilities, newcomers to Canada and Indigenous persons placed, there seems to be an opportunity to offer more targeted incentives to drive the diversification of Canada's bio-economy workplaces.

6. Give youth the opportunity to network.

Several youth participants in the programs said they would have liked the opportunity to network with and meet other participants, or to have some kind of communications vehicle, such as a newsletter, to learn about each other and companies in the sector. Several also said they would have liked more direct communication with BioTalent Canada.

“ This program has allowed me to develop an incredible number of skills in a relatively short period of time. It allowed me to use the knowledge I gained through my undergraduate and post-grad schooling in the workplace, and build on [it] through hands-on experience... [It] has made me a lot more comfortable in this field and confident for future opportunities.”

– Sydney Dawn Hennessy, Science and Technology Internship Program – Green Jobs participant



GATHERING THE DATA

Program data was collected from application forms. Feedback and comments on BioTalent Canada wage subsidy programs were collected from employer and participant surveys after placements were completed. All other data sources are referenced.

ACKNOWLEDGEMENTS

BioTalent Canada wishes to thank all the companies and participants who have been involved in BioTalent Canada's wage subsidy programs, as well as the partners who have supported and promoted the programs. Through their support in hiring new graduates, students, underrepresented groups and internationally educated professionals, these companies have helped to enhance biotech talent potential and strengthen Canada's bio-economy.

BioTalent Canada Partnership Plus Network

Thank you to BioTalent Canada's partners, who support all BioTalent Canada projects, programs and activities.

Platinum

Innovative Medicines Canada

Gold Plus

Stem Cell Network

Gold

Applied Pharmaceutical Innovation
Bioscience Association of Manitoba
BioVectra Inc
Canadian Alliance for Skills
and Training in Life Sciences
Immigrant Employment Council of BC
StemCell Technologies

Silver

Ag-West Bio Inc.
BioNova
Business Wire
Gowling WLG
HealthPartners
Life Sciences Ontario
McGovern Management
Group Inc (MMGI)
PEI BioAlliance

Bronze

ACCES Employment
BioAlberta
Bioenterprise Corporation Canada
BioLAB Business
BioNB
BIOQuébec
Borden Ladner Gervais
Carleton University
City of Mississauga
Enterprise Machine Intelligence
& Learning Initiative
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Engineering Career Centre
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Sanofi Pasteur Limited
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Academic

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Red River College
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