ECONOMIC IMPACT REPORT 2025

Life Sciences Ontario

In partnership with

Shift HEALTH

November 2025

Table of Contents

1. Executive Summary

From Resilience to Global Leadership

Ontario's life sciences sector has evolved from a high-potential opportunity into a proven economic engine. Driven by the resilience of the ecosystem and the strategic focus of the *Taking Life Sciences to the Next Level* strategy[1], the sector has entered a new era of maturity. However, there is still untapped potential. To secure global competitiveness, Ontario must now pivot from building infrastructure to fueling scale.

The Sector by the Numbers (2023)

The data confirms that life sciences is a central pillar of Ontario's economy:

- **Economic Scale:** Generated at least $74.6 billion in revenue.
- **Employment:** Supported 101,004 direct jobs (and over 650,000 under the expanded definition).
- **Footprint:** Comprises 6,940 establishments across the province.
- **Innovation:** Achieved a 58% patent grant rate (2nd highest in Canada).
- **Talent:** Trained 40% of Canada's physical and life sciences graduates.

Strategic Assessment: Strengths vs. Gaps

While the foundation is strong, this report identifies key gaps that are preventing Ontario from realizing the full economic potential of the life sciences sector. Two structural barriers prevent Ontario from leading globally:

1. **The Capital Conundrum:** Despite the size of the sector, Ontario lags domestic peers in attracting venture capital (VC) to the life sciences sector. Ontario secures only $32.9 per capita in life sciences VC investment, significantly trailing Quebec ($55.3) and British Columbia ($44.2). This has created a "funding desert", particularly for seed-stage and scale-up companies.
2. **The Commercialization Bottleneck***:* While research quality and patent granting rates are high, Ontario's patent output per capita trails the United States. The low volume of patents likely reflects untapped potential to translate academic discovery into protected assets with commercial potential.

[1] Taking Life Sciences to the Next Level

The Path Forward: A "Phase 3" Strategy

To bridge the gap between current success and future potential for global leadership, a bold "Phase 3" life sciences sector strategy focused on two critical priorities is needed.

1. **Launch a Capital Strategy to Win:** The province must actively de-risk investment to close the life sciences venture capital gap. This includes establishing a dedicated Ontario Life Sciences Venture Fund-of-Funds or co-investment program to support early-stage innovation and scaling companies.
2. **Build "All-In" Commercialization Infrastructure:** To ensure Ontario realizes the full commercial potential of life sciences research and discovery, Ontario can embed dedicated commercialization experts—specializing in IP strategy, regulatory affairs, and market access—directly within research institutions to aggressively pull innovations to market.

The infrastructure is built, and the talent is in place. By acting immediately to address the capital and commercialization gaps, Ontario can strengthen its position as a top-tier global life sciences hub, delivering robust economic growth and health security for the province.

2. Introduction

Ontario's life sciences sector

Ontario's life sciences sector spans the full continuum of human, agricultural and environmental health (Figure 1)[2]. It is comprised of diverse organizations and companies that bring together scientific disciplines, R&D, and technology-based products and services to contribute to biohealth, bioenergy, bioindustry and agribiotechnologies. This view of life sciences underpins the focus of this study, ensuring that our economic assessment reflects the full breadth of Ontario's life sciences ecosystem.

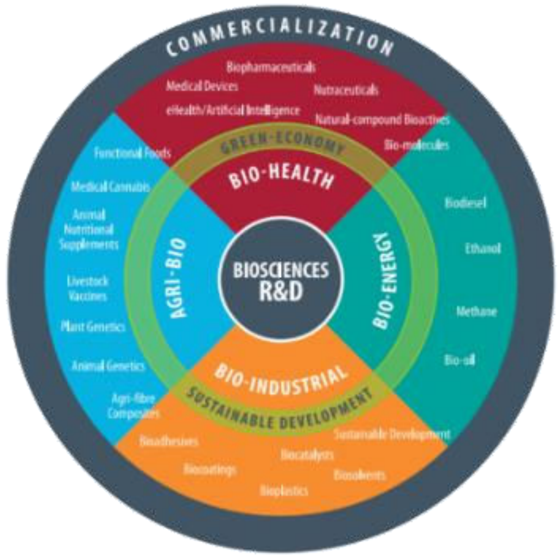


Figure 1. The life sciences sector and its sub-sectors.

A proven driver of Ontario's economy with room to grow

Beginning in 2015[3] and then updated in 2019[4], Life Sciences Ontario published an analysis of the economic contribution of the life sciences sector in Ontario, quantifying the measurable impact and characterizing the ongoing potential of this sector to foster a more prosperous Ontario. As reported in the 2019 report[4], *Accelerating Prosperity: The Life Sciences Sector in Ontario*, Ontario's life sciences sector:

- Comprised 6,100+ establishments generating $56.8 billion in revenue
- Contributed $27 billion in direct economic output, ranking as the 11th largest sector in the provincial economy
- Employed ~90,000 workers, placing Ontario among the top-5 North American jurisdictions by employment and providing wages that were ~25 percent higher than the provincial average
- Supported—directly and indirectly—1 in 13 Ontario jobs

While these fundamentals established life sciences as both a high-value contributor and a strategic growth platform for Ontario, *Accelerating Prosperity*[4] also pointed to the opportunity to reap greater health, economic and innovation potential from Ontario's life sciences sector. It called for strategic prioritization and investment to address critical gaps in the innovation ecosystem, including the need for greater access to risk capital, recruitment of experienced life sciences leaders, enhanced commercialization supports, and investments and other supports to accelerate scaling of small and medium-sized enterprises.

---

[2] BioTalent: Bio-economy Facts

[3] Life Sciences Ontario Sector Report 2015

[4] Accelerating Prosperity: The Life Sciences Sector in Ontario

From pandemic lessons to provincial priority

Taking Life Sciences to the Next Level – Ontario's Strategy, Phase 2

Goal 1. Advancing research and development

Goal 2. Unlocking new streams of capital

Goal 3. Supporting the existing ecosystem

Goal 4. Adopting a culture of innovation

Since 2019, the COVID-19 pandemic laid bare the importance of a resilient life sciences ecosystem to Ontario's health and economic security, and the pivotal importance of cross-sector and cross-ministry collaboration to pandemic preparedness and response. Building on these lessons and leveraging the dedicated advocacy of sector champions, Ontario has elevated life sciences as a provincial priority. *Taking Life Sciences to the Next Level*[5]—Ontario's life sciences strategy—sets a course to transform Ontario into a world-class hub for life sciences and biomanufacturing. Phase 1 of the strategy focused on domestic supply chain resilience, expanded biomanufacturing, commercialization capacity and innovation adoption. Phase 2 will build on the successes of Phase 1, bringing sharper focus to creating 85,000 high-value jobs in the life sciences sector by 2030 (a ~25 percent increase over 2020 levels) and positioning Ontario as a globally competitive life sciences hub.

Provincial commitments are backing this ambition. Notably, in 2024 Ontario invested $146M as part of the second phase[6] of the life sciences strategy to boost research capacity, accelerate clinical trials, fuel startups and help emerging companies grow. The 2025 provincial budget[7] includes over $220M in new investments for life sciences initiatives, such as the Ontario Research Fund to build research infrastructure and fund projects and the Life Sciences Innovation Fund to support early-stage companies commercializing made-in-Ontario medical technologies. The launch of the Ontario Funding Accelerated for Specific Treatments (FAST) system[8] and the Health Innovation Pathway[9] (HIP) to accelerate adoption of new health technologies is creating a regulatory environment that is more attractive to product developers and investors. In parallel, biomanufacturing capacity is expanding, anchored by major private and public investments: Sanofi's $800M investment[10] in a vaccine facility in Toronto, Novel Biotechnology's[11] manufacturing platform (LSIF funding), and the province's $45M investment[12] in

[5] Taking Life Sciences to the Next Level

[6] News Release: Ontario launches next phase of the life sciences strategy

[7] 2025 Ontario Budget: Chapter 1, Section B

[8] Funding Accelerated for Specific Treatments pilot program

[9] Ontario Health: Health Innovation Pathway

[10] Sanofi Opens New Advanced Vaccines Facility

[11] Ontario Supporting Innovation in the Life Sciences

[12] Ontario Driving Homegrown Innovation in Key Sectors

biomanufacturing infrastructure through the Canadian Biomanufacturing Cooperatives as part of the Canadian Pandemic Preparedness Hub (CP2H).

A dynamic global context: pressures and prospects

As Ontario accelerates this "hard pivot" to the life sciences, geopolitical dynamics are creating new pressures and new opportunities. Tariffs on pharmaceuticals and medical devices imported into the U.S., together with drug pricing reforms, could dampen investor appetite and pressure margins for Canadian innovators. At the same time, shifting academic cultures and constrained U.S. biomedical research funding may drive a talent inflow to Ontario, creating opportunities to attract researchers, founders and firms seeking stable, innovation-friendly environments. Ontario is not alone seizing the life sciences opportunity: the Life Sciences Vision[13] (2021-2030) in the UK included over £2 billion in public funding for key priorities including genomics, clinical trials and health data infrastructure; and the France 2030 Plan[14] allocated €7.5 billion for health innovation. Life sciences is a competitive global landscape—other provinces and nations are similarly driving ambitious strategies. But Ontario has the foundational building blocks for a thriving life sciences ecosystem and every reason to believe in its potential for growth, global leadership and substantial economic impact.

This report: An update on the life sciences sector's economic contribution to Ontario

Consistent with prior reports, this study compiles the most recent data on the structure, profile and economic contribution of Ontario's life sciences sector to the provincial economy. Comparison of recent data to past tells a story of where and how the province's life sciences sector is growing and changing. This study also draws attention to critical opportunities to amplify impact so Ontario can fully realize the health, economic and innovation dividends of life sciences. The metrics presented here will help track progress as Ontario advances life sciences as a strategic priority and driver of competitiveness.

[13] The Life Sciences Vision, UK

[14] Healthcare innovation 2030

3. Current Economic Contributions

Ontario's life sciences sector generates a broad spectrum of economic value for the province. Beyond direct metrics like revenue and employment, these contributions encompass GDP, labor income, government tax revenue, and critical impacts on investment attraction, talent development, innovation, and quality of life. The following section is dedicated to quantifying a specific subset of these benefits—focusing on revenues, employment, and wages—and tracking the sector's progress relative to the figures presented in our previous report[15].

Generating at least $74.6 billion in revenue in 2023, Ontario's life sciences sector serves as a critical economic driver for the province.[16] The sector comprises 6,940 companies employing 101,004 people, with a total payroll of approximately $7.7 billion (averaging $65.5K annually) (Table 1). However, the sector's footprint is even larger when applying the expanded definition.[17] Under this broader scope, the industry encompasses nearly 128,000 establishments and supports over 650,000 workers, boosting the total payroll to a substantial $36.6 billion.

Table 1: Overview of Ontario Life Sciences Sector

	Life Sciences	Expanded Definition[2]	Total
Establishments	6,940	113,698	120,638
Employment	101,004	650,215	751,219
Average Annual Salary	$76,668	$56,314	$132,982
Estimated Payroll	$7.74B	$36.62B	$44.36B

Source: Refer to Appendix.

When examining key subsectors, a few notable trends can be discerned (Table 2). Drugs and Pharmaceuticals was the largest subsector within life sciences, generating 55 percent of the sector's revenue followed by the Medical Devices and Equipment sector (28%), and the Agricultural Feedstock and Chemicals sector (17%). Drugs & Pharmaceuticals was the largest employer (33,434 jobs), though Medical Devices & Equipment had strongest job growth (17.9%) since the last report. Research, Testing & Medical Laboratories was the largest contributor to the total number of establishments with 3,276 and had the strongest growth (26.4%) since the last report[15].

---

[15] Accelerating Prosperity: The Life Sciences Sector in Ontario

[16] In contrast to the previous report, recent revenue data for the Research, Testing and Medical Laboratories was not available. Economic data for the medical cannabis sector was not available.

[17] Includes: hospitals, ambulatory health care services, health and personal care stores, fruit and vegetable preserving and specialty food manufacturing, dairy product manufacturing, bakeries and tortilla manufacturing, breweries, wineries and distilleries.

Table 2: Economic Contributions by Subsector

	Revenue ($B)	Establishments	Employment
Drugs & Pharmaceuticals	$41.11B	744	33,434
Research, Testing & Medical Laboratories	N/A	3,276	27,815
Agricultural Feedstock & Chemicals	$12.62B	517	8,675
Medical Devices & Equipment	$20.93B	2,403	31,081

Source: Refer to Appendix

4. Sector Trend Analysis

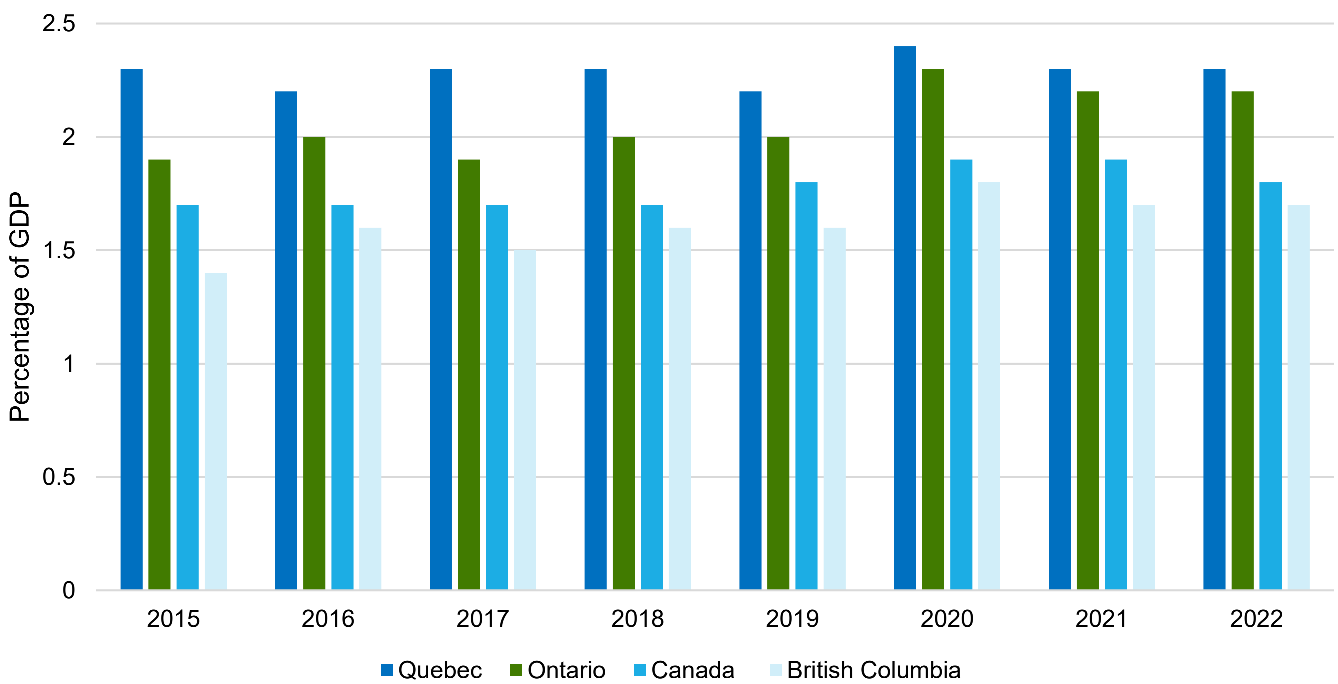
The long-term growth and competitiveness of the life sciences sector are fundamentally driven by three core pillars: R&D investment, a highly skilled talent pool, and robust access to capital. This section provides a longitudinal analysis of Ontario's performance across these crucial metrics, including intellectual property generation. By examining these trends, this study seeks to identify specific strategic actions—spanning public policy, collaboration, and investment—that can decisively strengthen the sector's economic impact.

R&D INVESTMENTS AND INTELLECTUAL PROPERTY

Expenditures on Research and Development represent a crucial long-term investment in a sector's future. By dedicating resources to R&D, the life sciences industry demonstrates its commitment to driving innovation and creating new knowledge, ultimately boosting its productivity and global competitiveness.

Ontario spent 2.2 percent of its GDP on R&D in 2022, representing an approximately 16 percent increase since 2015[18]. This outperforms the Canadian spend of 1.8 percent, though it lags slightly behind Quebec's (2.3 percent) (Figure 2). It should be noted this data represents R&D from all sectors and not Life Sciences exclusively.

Figure 2: Research and Development as a Percentage of GDP



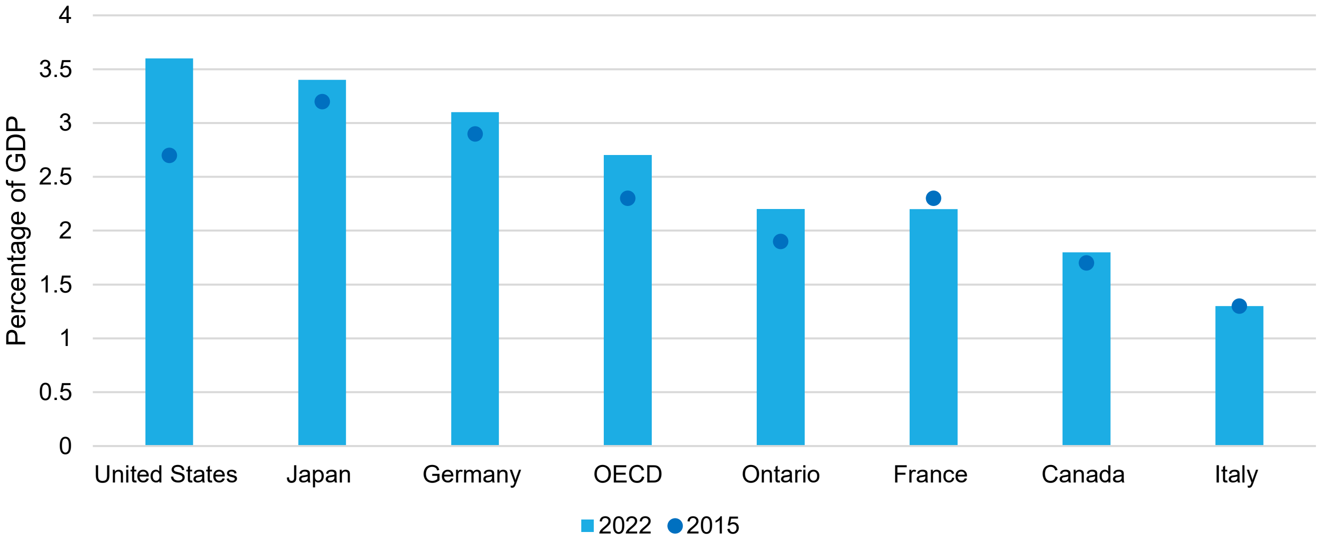
Source: Statistics Canada Table: 27-10-0359-01

[18] Life Sciences Ontario Sector Report 2015

While Ontario fares relatively well in Canada, from a global perspective Ontario's investment in R&D as a percentage of GDP is below the OECD average of 2.7%, and well-below that of the USA, Japan and Germany (Figure 3).

Source: Statistics Canada Table: 27-10-0359-01

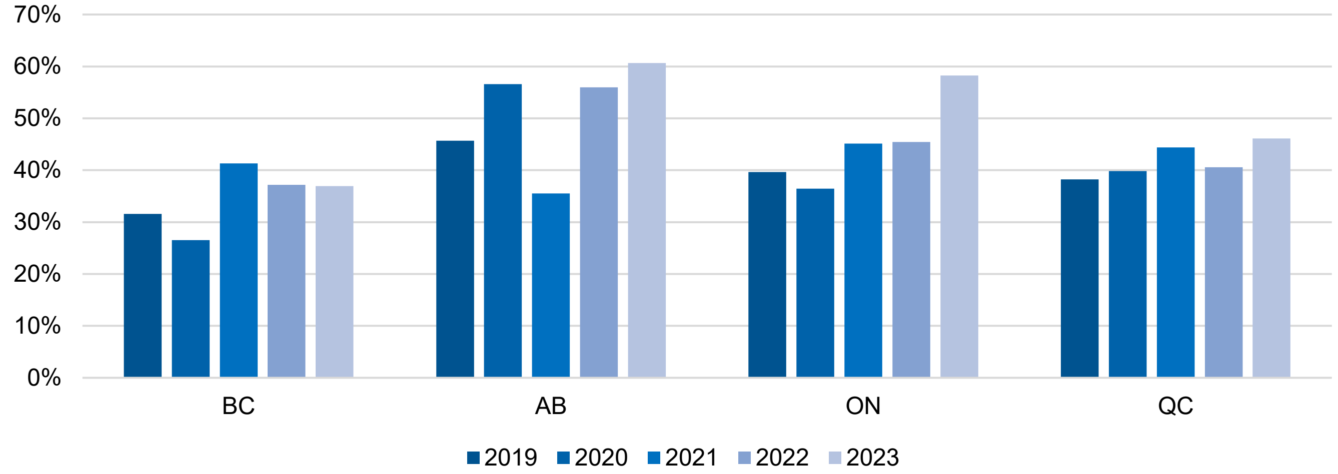
Figure 3: Research and Development as a Percentage of GDP Compared to OECD Countries



Intellectual Property

One measure of the success of the investment in research and development is the generation of intellectual property (IP), patentable discoveries or inventions. By looking at the number of patent applications submitted, and the proportion successfully granted an indication of commercial potential and competitiveness or can be obtained.

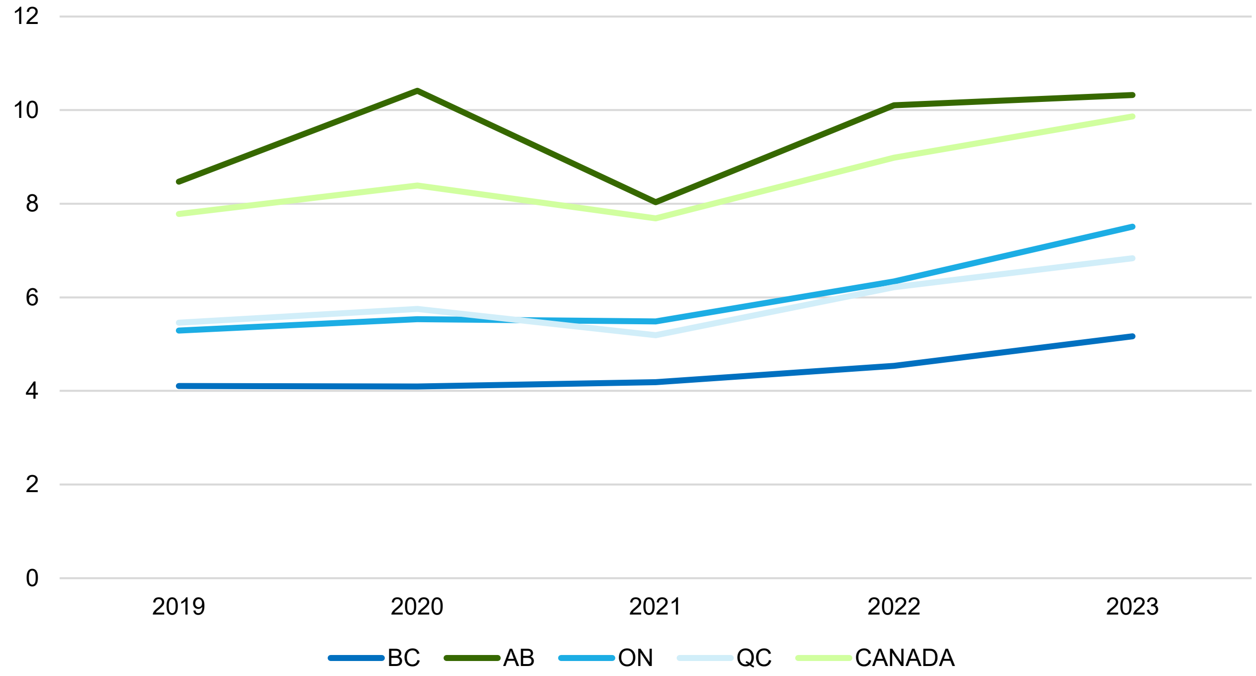
Figure 4: Patents Granted as a Percent of Patent Applications



Source: Canadian Intellectual Property Office (CIPO): Patent statistics 2019-2023

Between 2019 and 2023, there has been a general upwards trend in the percent of patents granted in Canada (Figure 4). Ontario is second in the country in patents granted as a percent of patent applications (58%; 2023), falling behind Alberta (61%; 2023), but surpassing the third-ranked province, Manitoba (56%; 2023, data not shown). Ontario's patent rate has declined slightly, from 67 percent in 2015. It should be noted this data represents R&D from all sectors and not Life Sciences exclusively.

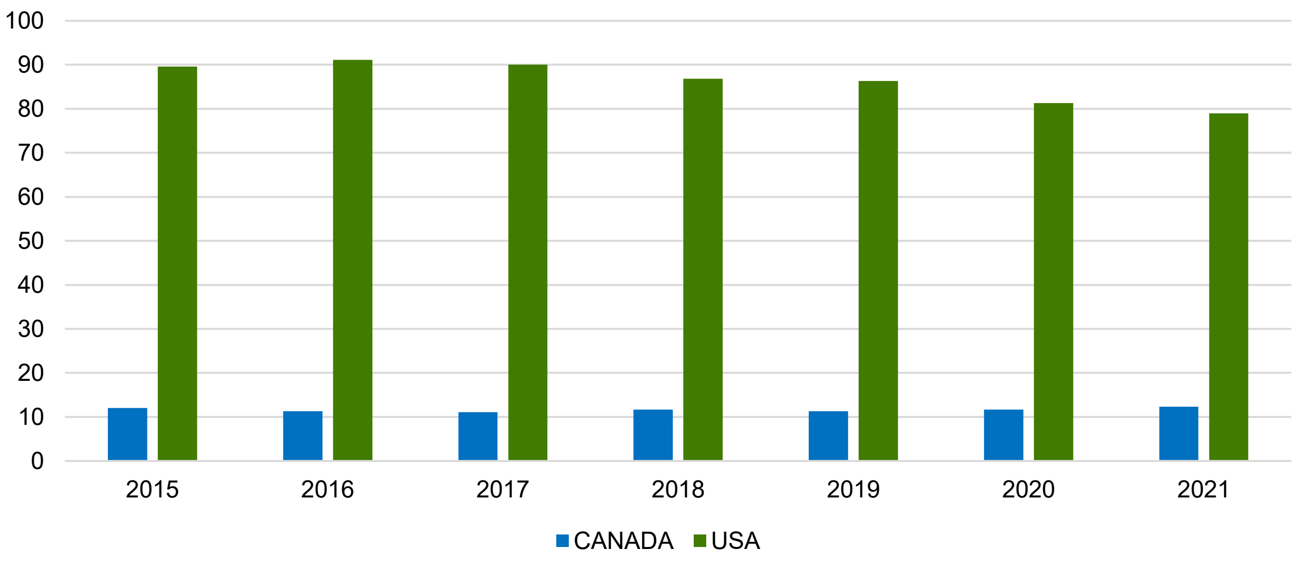
Figure 5: Patents Awarded per 100,000 People - Canada



Source: Canadian Intellectual Property Office (CIPO): Patent statistics 2019-2023

Ontario (7.4; 2023) performs relatively well compared to the rest of Canada in patents on a per capita basis, lagging only Alberta (10.3; 2023) (Figure 5). Patent performance per 100,000 people has declined slightly since 2015, but has been growing steadily over the past three years.

Figure 6: Patents Awarded per 100,000 People - Canada and US



Source: Our World in Data

Perhaps unsurprisingly, the US significantly surpasses Canada by nearly ten-fold in terms of patents granted per capita (Figure 6). While Canada—and Ontario—see strong rates of patents awarded (Figure 4), the low levels of patents awards per capita suggest that there is untapped potential. This may be due to the maturity of the ecosystem in the United States, characterized by its scale, research funding, entrepreneurial support, and access to capital for driving innovation.

ACCESS TO CAPITAL AND RELATED CHALLENGES

Life science is among the technology sectors where extensive research and development precedes market success. This sector is considered high-risk due to the substantial capital required during R&D and the long timelines before returns materialize. Securing adequate funding is critical for companies to move from breakthrough research to commercial readiness. In addition, the timing and origin of venture capital investment play a pivotal role in driving growth within this field.

Total Venture Capital (VC) Investment

Overall, Canada's venture capital investment has grown in recent years (Table 3). Venture capital investment in 2023 ($6.9B) was 64% higher than the average VC investment of the five years spanning 2015-2019 ($4.2B). This growth outpaces the global average—15% growth—for the same period.

Table 3: Total VC Investment: Canada vs Global

	Average VC Investment 2015-19	2023	% Growth
Canada	$4.2B	$6.9B	64%
Global	$247.8B	$285.5B	15%

Source: BDC: *Canada's Venture Capital Landscape, May 2024*

Although there has been growth in total Canadian venture capital investment from 2017 to 2023 to 2024, both in total and on a per capita basis, Ontario's total venture capital resources, which are now consistently higher than 2017, have recently declined from 2023 to 2024 (Table 4).

Table 4: Total VC Investment: Ontario vs Canada

	2017			2023			2024		
	Total VC ($B)	Per Capita	% of Total	Total VC ($B)	Per Capita	% of Total	Total VC $(B)	Per Capita	% of Total
Canada	4	$109	N/A	6.9	$172	N/A	7.9	$191	N/A
Ontario	1.4	$99	35%	3.3	$211	47.80%	2.5	$155	31.60%

Source: 2017 Data: *Accelerating Prosperity: The Life Sciences Sector in Ontario*; 2023 & 2024 Data: CVCA: *Canadian Venture Capital Market Overview, 2024*

This growth in *total* venture capital investment for all of Canada and generally in Ontario may be attributed to the creation of targeted support programs, such as the Venture Capital Catalyst Initiative[19] (VCCI; 2021), and Venture Ontario (2009) and its Ontario Venture Capital Fund[20]. The impact of these investments on the life sciences sector, however, has not been significant: recent analyses[21] published by Life Sciences Ontario, indicate that the life sciences sector requires greater access to early-stage capital, ideally from Canadian investors (see Figure 8, below).

[19] Venture Capital Catalyst Initiative

[20] Venture Ontario: Ontario Venture Capital Fund

[21] LSO: Catalyzing Ontario's Life Sciences Economy

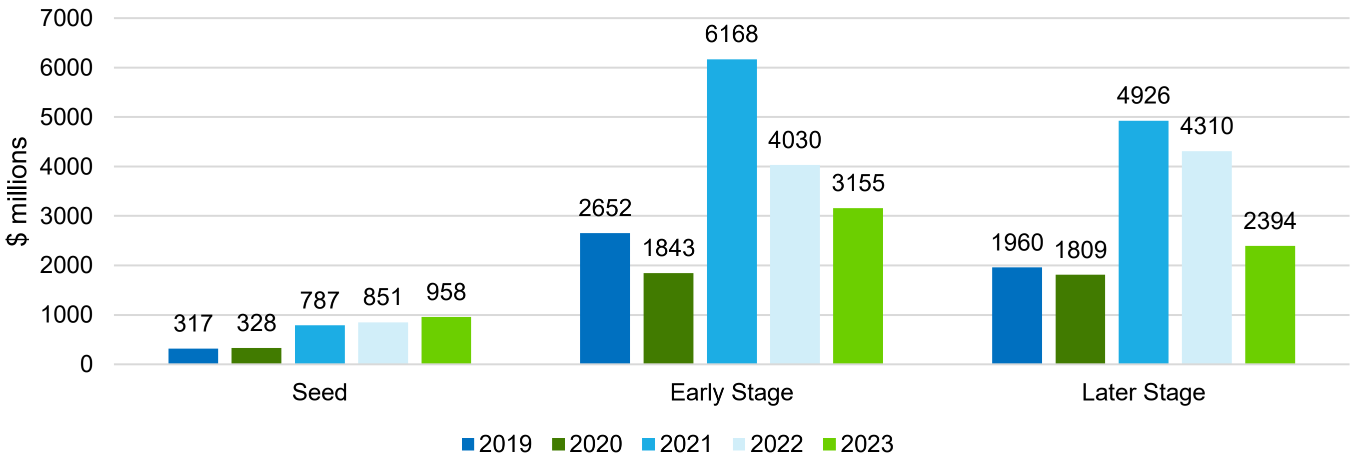
While Ontario accounts for a significant portion of Canada's total venture capital investment, its share declined from 47.8 percent in 2023 to 31.6 percent in 2024. On a per capita basis, Ontario exceeded the national average in 2023 but fell below it in 2024.

Venture Capital Investment by Stage of Growth

In BIOTECanada's pre-budget 2024 submission[22], a call is made to grow Canada's biotech ecosystem by building on the success of the VCCI I and II and establishing a dedicated $1 billion life sciences venture capital fund to support the full Canadian life sciences innovation continuum including early and seed-stage investment. It also calls for a competitive Canadian investment pool to support the scaling of companies emerging from the biotech ecosystem via a life sciences fund-of-funds. Looking at venture capital investment by stage of growth, reinforces the importance of these objectives.

Source: 2019 Data: CVCA: *Canadian Venture Capital Market Overview, 2023;* 2020-2023 Data: CVCA: *Canadian Venture Capital Market*

Figure 7: Canadian Venture Capital Investmed by Stage of Development

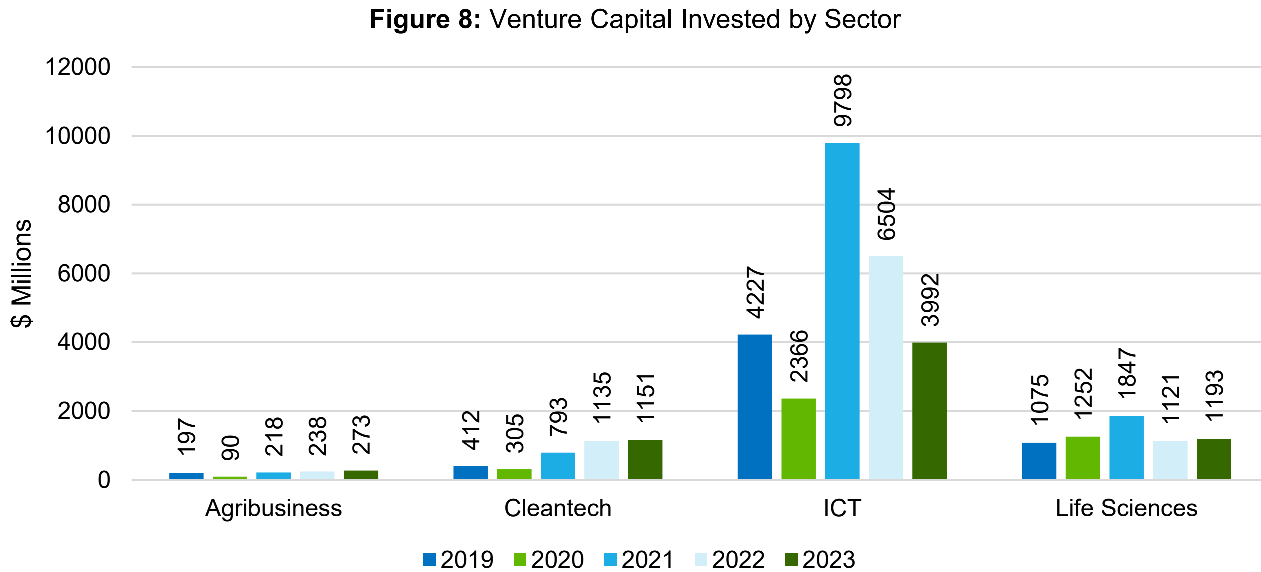


Overview, 2024

In 2023, nearly half of Canadian venture capital investment went to companies in early-stage development. The remainder was distributed among pre-seed (2%), seed stage (14%), later stage (35%), and growth equity (1%) (Figure 7). For life sciences startups, the limited seed funding is particularly challenging given higher product development risks, substantial R&D costs, strict regulatory requirements, and a longer path to market compared to many other sectors.

[22] BIOTECanada: 2024 Pre-Budget Consultation

Venture Capital Investment by Sector

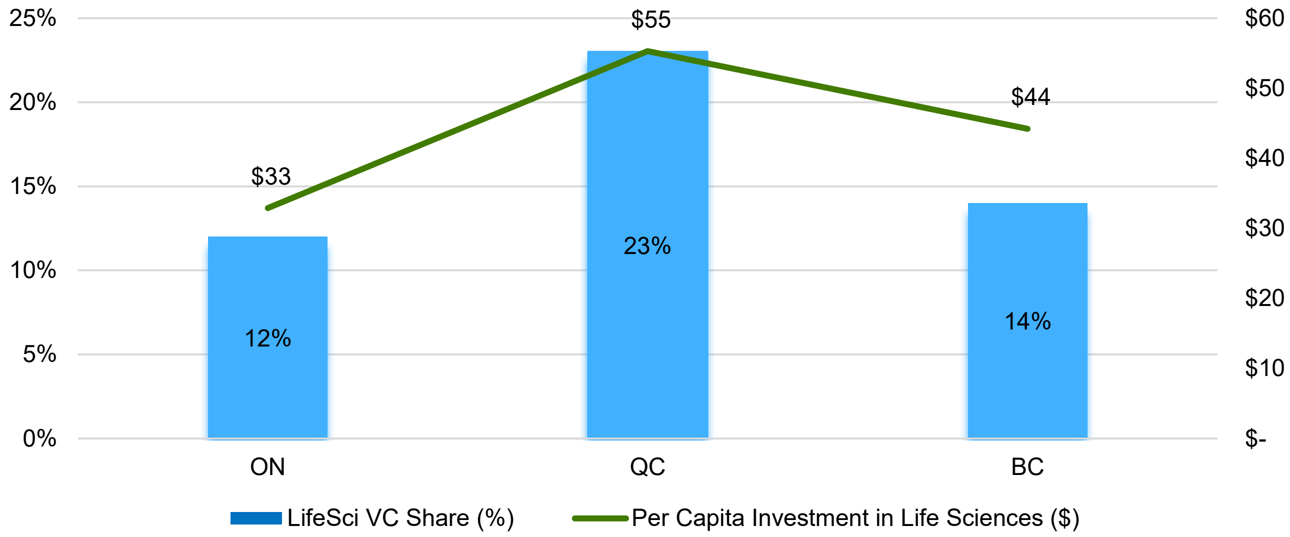


Since the post-pandemic period (2020–21), venture capital investment in life sciences has seen modest growth, rising from $1,121 million in 2022 to $1,377 million in 2024. Within Canada, life sciences rank second only to the ICT sector in attracting VC funding (Figure 8).

Source: 2019 Data: CVCA: *Canadian Venture Capital Market Overview, 2023;* 2020-2023 Data: CVCA: *Canadian Venture Capital Market Overview, 2024*

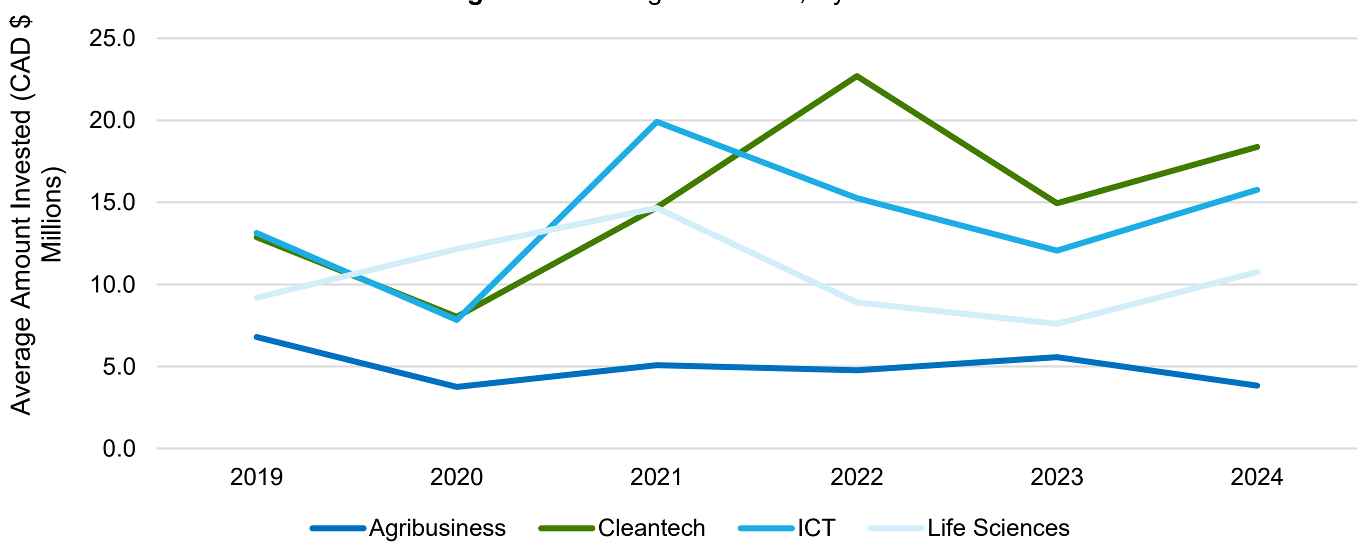
The average share of VC dollars flowing to life sciences over 2019-2023 in Ontario (12%) lags Quebec (23%) and BC (14%). Similarly, the average per capita investment in life sciences in Ontario ($32.9) lags Quebec ($55.3) and BC ($44.2) over the same period.

Figure 9: Life Sciences VC Funding: Sector share and per capita investment (5-Year Average 2019-2023)



Source: *Adapted from LSO: Catalyzing Ontario's Life Sciences Economy*. Uses StatsCan and BDC data.

Figure 10: Average Deal Size, By Sector



Source: 2019 Data: CVCA: *Canadian Venture Capital Market Overview, 2023;* 2020-2024 Data: CVCA: *Canadian Venture Capital Market Overview, 2024.* 2024 data may be incomplete.

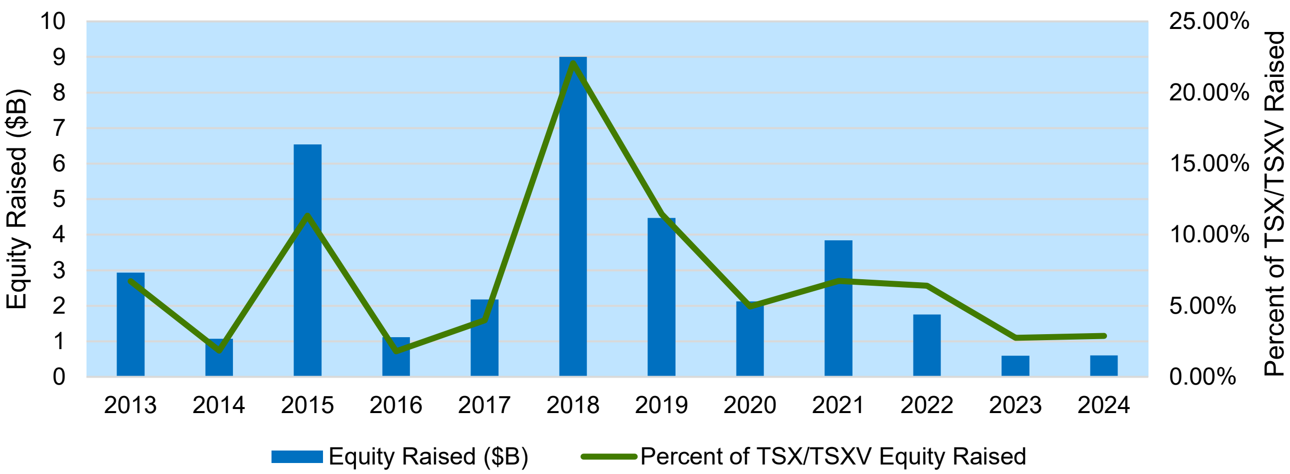
Average deal size varies across sectors (Figure 10). Reflecting the overall trend in life sciences venture capital, deal sizes in this sector peaked at $12.2 million in 2020 and $14.7 million in 2021, then declined to $8.9 million in 2022 and $7.6 million in 2023, before rebounding to $10.8 million in 2024.

Life Sciences in the Public Equity Market

Between 2013 and 2024 on the TSX and TSXV exchanges, the life sciences sector accounted for as little as 1.8% of equity raised in 2016 and as much as 22% in 2018 (Figure 11). The variation in total equity raised by the life sciences sector and the proportion of equity raised on the TSX/TSXV may be attributed to large equity rounds. For example, there were only 9 new listings in the life sciences sector in 2023.[23], which contrasts the 25 new listings in life sciences in 2018.[24], one of which was an impressive $5.1B private placement for Canopy Growth Corporation (Q4 2018).

Source: *TSX/TSVX The MiG Reports 2013-2024.*

Figure 11: Life Sciences Equity Raised on TSX/TSXV

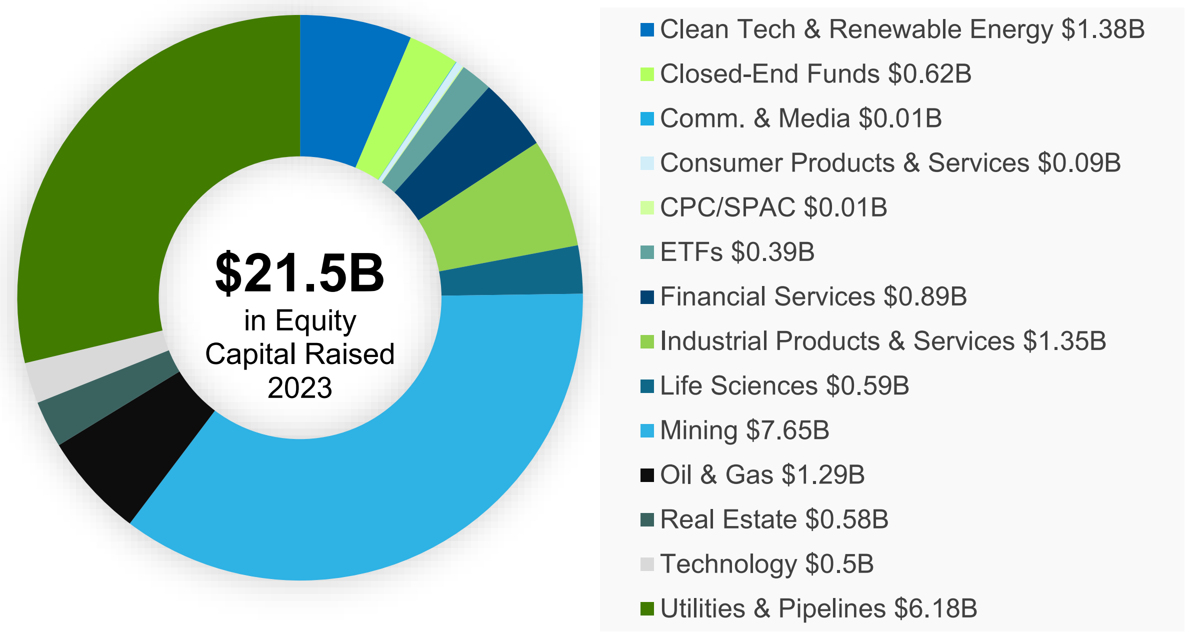


In terms of equity capital raised across Canadian sectors, life sciences ranks as the eighth largest on the TSX/TSXV, trailing well behind mining, utilities and pipelines, clean tech, renewable energy, and other industries (Figure 12).

[23] The MiG Report – December 2023

[24] The MiG Report – December 2018

Figure 12: Equity Capital Raised by Sector (TSX/TSXV) 2023



Source: *TSX/TSVX The MiG Report 2023*

ACCESS TO TALENT POOL AND RELATED CHALLENGES

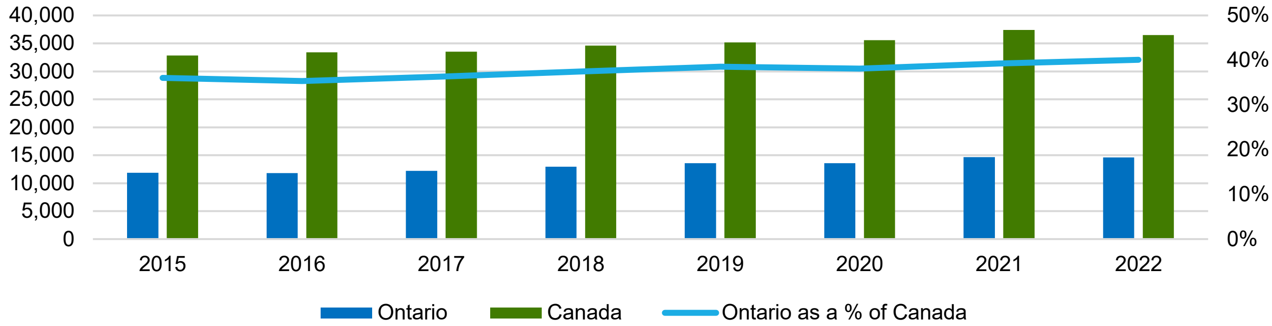
The life sciences sector requires a deep, specialized talent pool to sustain its trajectory of innovation and growth. The technical competencies essential for this field are primarily cultivated in universities and higher education institutions, which produce the graduates needed to fill critical roles. In the context of this report, we measure the overall available talent base by tracking the volume of university science degrees awarded, recognizing that this serves as a key indicator of the capacity for specialized, skilled employment.

Enrolment in Life Sciences Disciplines

Over the last decade, Ontario has outperformed the Canadian average in terms of per capita enrollment in the physical and life sciences at the undergraduate level.

In 2022, postsecondary graduates from physical, life sciences and technologies programs in Ontario totaled 14,619, representing 40% of Canada's total (Figure 13). The number of graduates in Ontario increased by 27 percent since 2015, well exceeding the 11 percent increase for all of Canada during the same period.

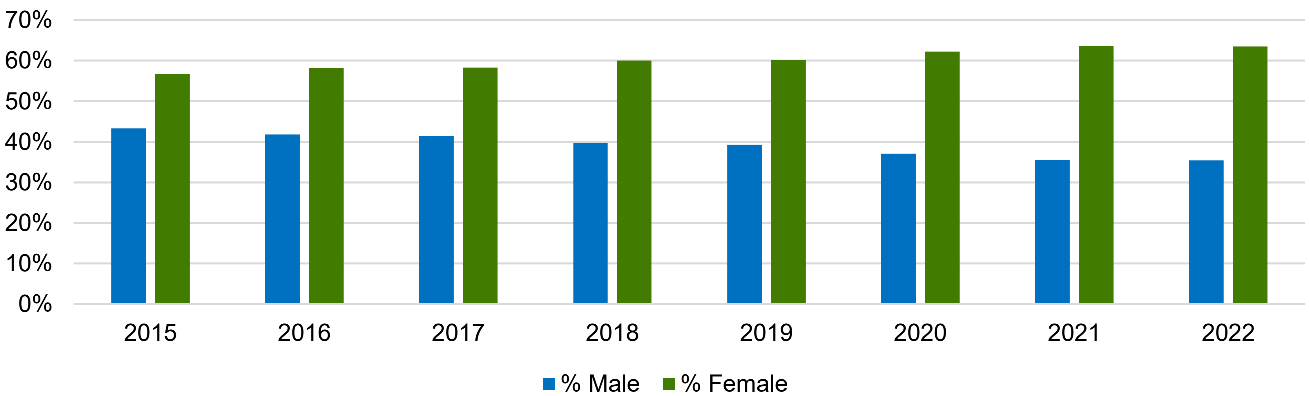
Figure 13: Ontario Physical and Life Science Graduates



Source: Statistics Canada Table 37-10-0012-01

Women continue to comprise the majority of life sciences graduates (63 percent in 2022) in Ontario (Figure 14).

Figure 14: Ontario Physical and Life Science Graduates by Gender

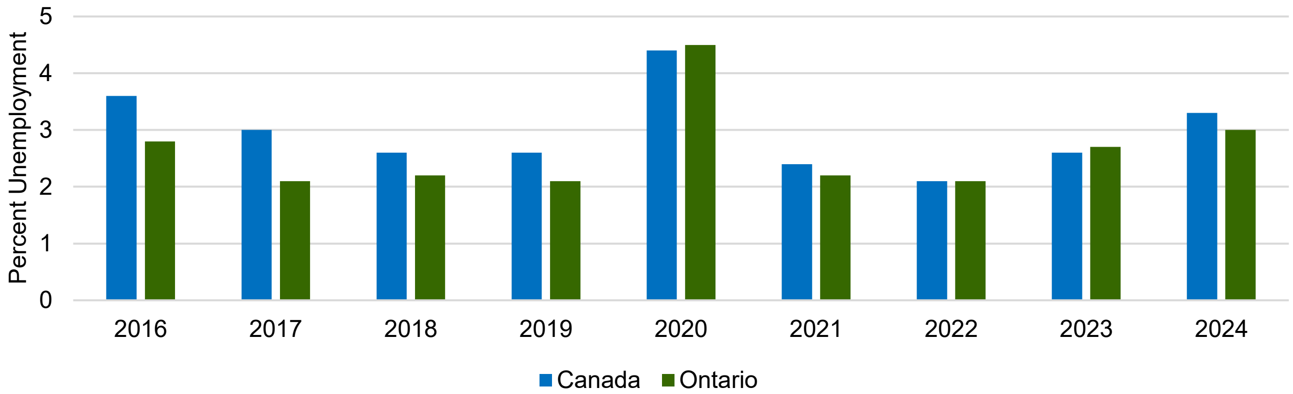


Source: Statistics Canada Table 37-10-0012-01

Unemployment in Life Sciences Occupations

Ontario's unemployment in natural and applied sciences occupations fell from a pandemic peak of 4.5 percent (2020) to a low of 2.1 percent (2022), before edging up to 3 percent in 2024, closely tracking the national unemployment rate of 3 percent in 2024 (Figure 15).

Figure 15: Unemployment Rate for Natural and Applied Sciences Occupations



Source: Statistics Canada Table 14-10-0416-01

5. Conclusions & Opportunities

The Life Sciences Sector in Ontario Today: Unprecedented Growth & Strategic Momentum

Ontario's life sciences sector is no longer just a high-potential area; it is a proven, powerful engine of economic growth. The data in this report confirm that the sector has entered a new era of maturity and scale, demonstrating significant expansion since our 2019 report[25]. With revenues of at least $74.6 billion and employment of over 101,000 jobs, the sector has solidified its role as a critical pillar of the provincial economy and one with significant untapped potential.

This success is not accidental. It is the direct result of the sector's resilience and the province's deliberate prioritization through the *Taking Life Sciences to the Next Level* strategy[26]. The investments made during Phase 1 and Phase 2—anchored by major public and private commitments from Sanofi[27], the Life Sciences Innovation Fund (LSIF)[28], and the Ontario Research Fund[29]—have successfully built a powerful foundation and created undeniable momentum. The question is no longer *if* Ontario's life sciences sector is a core asset, but how we power it to position Ontario as a global leader for the next decade.

Ontario's Strengths and Critical Gaps

This report's data provide a clear view of Ontario's competitive landscape in the context of the life sciences sector. While the foundational strengths are formidable, persistent, structural gaps are hindering Ontario's ability to compete at the highest global level.

Foundational Strengths: The Pillars of a Thriving Ecosystem

The strength of Ontario's life sciences sector is derived from three unassailable pillars. First, we have a robust talent pipeline, producing 40 percent of Canada's physical and life sciences graduates. Second, we have a demonstrated R&D commitment, with provincial R&D spending at 2.2 percent of GDP—a strong figure in the Canadian context that is trending upwards. Third, this talent and investment are driving high potential innovation: Ontario ranks second in the country for the percentage of patent applications successfully granted, a testament to the creativity and research excellence within the province. These strengths illustrate that the province's prioritization of the sector is having an impact.

---

[25] Accelerating Prosperity: The Life Sciences Sector in Ontario

[26] Phase 2 – Taking Life Sciences to the Next level

[27] Sanofi Opens New Advanced Vaccines Facility

[28] Life Sciences Innovation Fund

[29] Ontario Research Fund

Critical Gaps: The Path to Global Leadership

Despite these strengths, the data reveal two critical, interconnected gaps that are preventing are preventing Ontario from realizing the full health and economic potential of the life sciences sector:

1. **The Capital Conundrum:** A clear barrier to Ontario's global leadership is access to capital. Despite the scale of our economy and our strong performance in research and IP generation, Ontario's life sciences sector struggles to attract its proportional share of venture capital. We significantly lag key domestic competitors, with a per capita life sciences VC investment of $32.9, compared to Quebec's $55.3 and British Columbia's $44.2. Furthermore, Ontario's overall share of Canadian VC has declined. This points to a critical need for capital aligned with the right growth stages: the sector currently faces a "funding desert" at the seed stage to de-risk early innovations, alongside a gap in growth capital necessary to scale companies globally from within Ontario.

2. **The Innovation-to-Commercialization Bottleneck:** While Ontario invests heavily in R&D and demonstrates world-class academic excellence, there remains unrealized potential to better convert this investment into globally competitive, commercial assets. Nearly ten-fold lower, our patent output per capita significantly trails that of the United States. This contrast highlights a major opportunity: given the quality of our research, we must "think bigger" with the resources, people and skills needed to translate our world-class discoveries into protected, marketable intellectual property at a global scale.

The Path Forward: A Bold "Phase 3" Strategy to Secure Global Leadership

The successes of Phase 1 and Phase 2 of the provincial strategy have built the engine. However, this report's data clearly show that to compete globally, a "business as usual" approach will not be sufficient.

The next stage, a "Phase 3" of the provincial strategy[30], must be bold, targeted, and decisive. It requires the provincial government to evolve from a foundational partner to an active, strategic partner committed to winning on the world stage. This "Phase 3" must be built on the data and relentlessly focused on closing the specific gaps identified in this report.

- **Recommendation 1: Launch a "Phase 3" Capital Strategy to Win the Global Race.** Access to capital will be key. The data on our VC gap is a clear call to action. The provincial government must become an active capital partner to de-risk and catalyze private investment. This includes bold measures like establishing a dedicated, large-scale Ontario Life Sciences Venture Fund-of-Funds or a co-investment program specifically designed to bridge the high-risk, early-stage "funding desert" that our innovators face.

- **Recommendation 2: Build an "All-in" Commercialization Infrastructure.** To be bold and compete globally, we must fix the commercialization bottleneck. A "Phase 3" strategy must move beyond funding discovery and build

[30] Taking Life Sciences to the Next Level

the infrastructure to aggressively *pull* innovations to market. This means embedding dedicated, provincially-supported resources—experts in IP strategy, regulatory affairs, and market access—directly within our research institutions to convert our R&D spending into valuable, protected global assets. In the face of increasing global competition, Ontario needs public policies that support accelerated commercialization.

- **Recommendation 3: A Call for Continued, Active Partnership.** This report is a call for continued vigilance and ambition. The provincial government has been a critical partner in the sector's success. While Phases 1 and 2 successfully established a world-class infrastructure, the objective of "Phase 3" must be to provide the resources and strategic environment necessary to apply that infrastructure for global competitiveness.

Closing

The opportunities are immense, and the time for decisive action is now. Ontario has successfully built a sector that can compete; the challenge of "Phase 3" is to provide the strategic, targeted, and bold support required to win. By addressing the critical capital and commercialization gaps identified in this report, Ontario can secure its position as a world-leading life sciences hub, capturing the immense economic and health dividends for all citizens of the province.

6. Appendix: Supplementary Methodology

Table 1: Methodology Notes:

Establishment counts are derived from Statistics Canada tables 33-10-0806-01 (Canadian Business Counts, with employees, December 2023) and 33-10-0807-01 (Canadian Business Counts, without employees, December 2023). Employment estimates are calculated using four-digit NAICS employment data from Statistics Canada table 14-10-0202-01 and adjusted using multipliers based on business size centroids derived from Statistics Canada table 33-10-0806-01. Payroll estimates are calculated using average weekly earnings from Statistics Canada table 14-10-0204-01, multiplied by 50 weeks and adjusted employment levels. Average annual salary is calculated as total estimated payroll divided by total employment. All data reflect 2023. Additional details on calculations can be found below.

Table 2: Methodology Notes:

Establishment counts are derived from Statistics Canada tables 33-10-0806-01 (Canadian Business Counts, with employees, December 2023) and 33-10-0807-01 (Canadian Business Counts, without employees, December 2023). Employment estimates are calculated using four-digit NAICS employment data from Statistics Canada table 14-10-0202-01 and adjusted using multipliers derived from business size centroids based on Statistics Canada table 33-10-0806-01, to estimate six-digit NAICS activity. Revenue estimates are derived from four-digit NAICS manufacturing data from Statistics Canada table 16-10-0117-01 and wholesale trade data from Statistics Canada table 20-10-0077-01, with revenues allocated to detailed subsectors using the same employment-based multipliers. Revenue data are not available for Research, Testing & Medical Laboratories. Additional details on calculations can be found below.

Total Business Counts:

Establishment counts are derived from Statistics Canada tables 33-10-0806-01 (Canadian Business Counts, with employees, December 2023) and 33-10-0807-01 (Canadian Business Counts, without employees, December 2023).

North American Industry Classification System (NAICS)	Business counts with employees / December 2023	Business counts without employees / December 2023	Total
Wet corn milling [311221]	3	3	
Oilseed processing [311224]	7	9	
Other basic organic chemical manufacturing [325190]	36	23	
Artificial and synthetic fibres and filaments manufacturing [325220]	10	7	
Chemical fertilizer (except potash) manufacturing [325313]	9	5	
Mixed fertilizer manufacturing [325314]	30	17	
Pesticide and other agricultural chemical manufacturing [325320]	8	17	
Seed merchant wholesalers [418320]	55	56	
Agricultural chemical and other farm supplies merchant wholesalers [418390]	143	79	
AG FEEDSTOCK SUB TOTAL	301	216	517
Pharmaceutical and medicine manufacturing [325410]	172	131	
Pharmaceuticals and pharmacy supplies merchant wholesalers [414510]	244	197	
PHARMA SUB TOTAL	416	328	744
Medical equipment and supplies manufacturing [339110]	572	514	
Professional machinery, equipment and supplies merchant wholesalers [417930]	845	472	
MED TECH SUB TOTAL	1417	986	2,403
Testing laboratories [541380]	403	298	
Research and development in the physical, engineering and life sciences [541710] *Weighting factor x 0.144	966 (139*)	1180 (170*)	
Medical and diagnostic laboratories [621510]	1293	973	
RESEARCH LAB SUB TOTAL	1835	1441	3,276
TOTALS	**3969**	**2971**	**6,940**

*Research and Development in the Physical, engineering and life sciences is created based on a weighted factor from Statistics Canada – Customized Report from 2016 Census – data from 2021 Census was not available to calculate.

Sample Calculation of Employment Weighting Factors for Six Digit NAICS

Employment estimates are calculated using four-digit NAICS employment data from Statistics Canada table 14-10-0202-01 and adjusted using multipliers based on business size centroids derived from Statistics Canada table 33-10-0806-01.

	North American Industry Classification System (NAICS)	1 to 4 employee size	5 to 9 employee size	10 to 19 employee size	20 to 49 employee size	50 to 99 employee size	100 to 199 employee size	200 to 499 employee size	500 and plus employee size	Total Employee Estimate	Multiplier
	Centroid	2.5	7	14.5	34.5	74.5	149.5	349.5	500		
Grain and oilseed milling [3112]	Flour milling [311211]	1 (2.5)	5 (35)	4(58)	9 (310.5)	4(298)	0(0)	0(0)	0(0)	704	0.21
	Rice milling and malt manufacturing [311214]	1 (2.5)	1(7)	0(0)	0(0	2(149)	0(0)	0(0)	0(0)	158.5	0.05
	Wet corn milling [311221]	1 (2.5)	0(0)	0(0)	0(0	0(0)	0(0)	2(699)	0(0)	701.5	0.21
	Oilseed processing [311224]	2 (5)	1(7)	1(14.5)	1(34.5)	0(0)	1(149.5)	1(349.5)	0(0)	560	0.17
	Fat and oil refining and blending [311225]	1 (2.5)	0(0)	0(0)	2(69)	2(149)	2(299)	0(0)	0(0)	519.5	0.16
	Breakfast cereal manufacturing [311230]	4 (10)	1(7)	0(0)	1(34.5)	2(149)	1(149.5)	1(349.5)	0(0)	699.5	0.21
SUB-TOTAL										3,343	

Salary and Payroll Analysis, Data Sources and Methodology

The average weekly salary data is available, mostly at the three-digit NAICS level, from Statistics Canada Table 14-10-0204-01. In some cases, four-digit NAICS level data was available and used. From this, annual average salary was estimated by multiplying by 50 weeks.

Total annual payroll was then estimated by multiplying the annual average salary by the total number of employees. The table below summarizes the data collected

	Average Weekly Salary	Average Annual Salary (Multiplied by 50)	Adjusted Employment	Estimated Payroll
Agricultural Feedstock and Chemicals				
Wet corn milling [311221]	$ 1,147.28	$ 57,364.00	530	$ 30,402,920.00
Oilseed processing [311224]	$ 1,147.28	$ 57,364.00	429	$ 24,609,156.00
Other basic organic chemical manufacturing [325190]	$ 1,601.83	$ 80,091.50	1556	$ 124,622,374.00
Artificial and synthetic fibres and filaments manufacturing [325220]	$ 1,601.83	$ 80,091.50	890	$ 71,281,435.00
Chemical fertilizer (except potash) manufacturing [325313]	$ 1,601.83	$ 80,091.50	629	$ 50,377,553.50
Mixed fertilizer manufacturing [325314]	$ 1,601.83	$ 80,091.50	787	$ 63,032,010.50
Pesticide and other agricultural chemical manufacturing [325320]	$ 1,601.83	$ 80,091.50	332	$ 26,590,378.00
Seed merchant wholesalers [418320]	$ 1,313.71	$ 65,685.50	763	$ 50,118,036.50
Agricultural chemical and other farm supplies merchant wholesalers [418390]	$ 1,313.71	$ 65,685.50	2758	$ 181,160,609.00
Drugs and Pharmaceuticals				
Pharmaceutical and medicine manufacturing [325410]	$ 1,601.83	$ 80,091.50	17055	$ 1,365,960,532.50
Pharmaceuticals and pharmacy supplies merchant wholesalers [414510]	$ 1,535.69	$ 76,784.50	16379	$ 1,257,653,325.50
Medical Devices and Equipment				
Medical equipment and supplies manufacturing [339110]	$ 1,212.00	$ 60,600.00	9920	$ 601,152,000.00
Professional machinery, equipment and supplies merchant wholesalers [417930]	$ 1,750.10	$ 87,505.00	21161	$ 1,851,693,305.00
Research, Testing, and Medical Laboratories				
Testing laboratories [541380]	$ 1,783.23	$ 89,161.50	9307	$ 829,826,080.50
Research and development in the physical, engineering and Life Sciences [541710]	$ 1,999.15	$ 99,957.50	4778	$ 477,596,935.00
Medical and diagnostic laboratories [621510]	$ 1,074.55	$ 53,727.50	13729	$ 737,624,847.50
			101,004	**$ 7,743,701,498.50**

Estimating Revenues for Manufacturing and Wholesale Sectors

Revenue estimates are derived from four-digit NAICS manufacturing data from Statistics Canada table 16-10-0117-01 and wholesale trade data from Statistics Canada table 20-10-0077-01, with revenues allocated to detailed subsectors using the same employment-based weight factors. Revenue data are not available for Research, Testing & Medical Laboratories.

	Manufacturing industries (4-digit NAICS)	Wholesales industries (4-digit NAICS)	Employment Weight	Estimated Revenues
Wet corn milling [311221]	$6,918,556,000		0.21	$1,452,896,760
Oilseed processing [311224]	$6,918,556,000		0.17	$1,176,154,520
Other basic organic chemical manufacturing [325190]	$7,953,282,000		0.31	$2,465,517,420
Artificial and synthetic fibres and filaments manufacturing [325220]	$4,517,678,000		0.22	$993,889,160
Chemical fertilizer (except potash) manufacturing [325313]	$1,103,459,000		0.36	$397,245,240
Mixed fertilizer manufacturing [325314]	$1,103,459,000		0.45	$496,556,550
Pesticide and other agricultural chemical manufacturing [325320]	$1,103,459,000		0.19	$209,657,210
Seed merchant wholesalers [418320]		$9,054,436,000	0.13	$1,177,076,680
Agricultural chemical and other farm supplies merchant wholesalers [418390]		$9,054,436,000	0.47	$4,255,584,920
Pharmaceutical and medicine manufacturing [325410]	$9,326,185,000		1.00	$9,326,185,000
Pharmaceuticals and pharmacy supplies merchant wholesalers [414510]		$47,442,783,000	0.67	$31,786,664,610
Medical equipment and supplies manufacturing [339110]	$2,858,624,000		1.00	$2,858,624,000
Professional machinery, equipment and supplies merchant wholesalers [417930]		$32,852,105,000	0.55	$18,068,657,750
Total Revenue				**$74,664,709,820**

LSO thanks the following sponsors of this report

Life Sciences Ontario

162 Cumberland Street, Suite 310
Toronto Ontario M5R 3N5

admin@lifesciencesontario.ca