

Blueprint for a Coordinated Ontario Life Sciences Strategy



“Ontario has all the ingredients but lacks a recipe.”

Kevin Lynch, vice-chair, BMO Financial Group

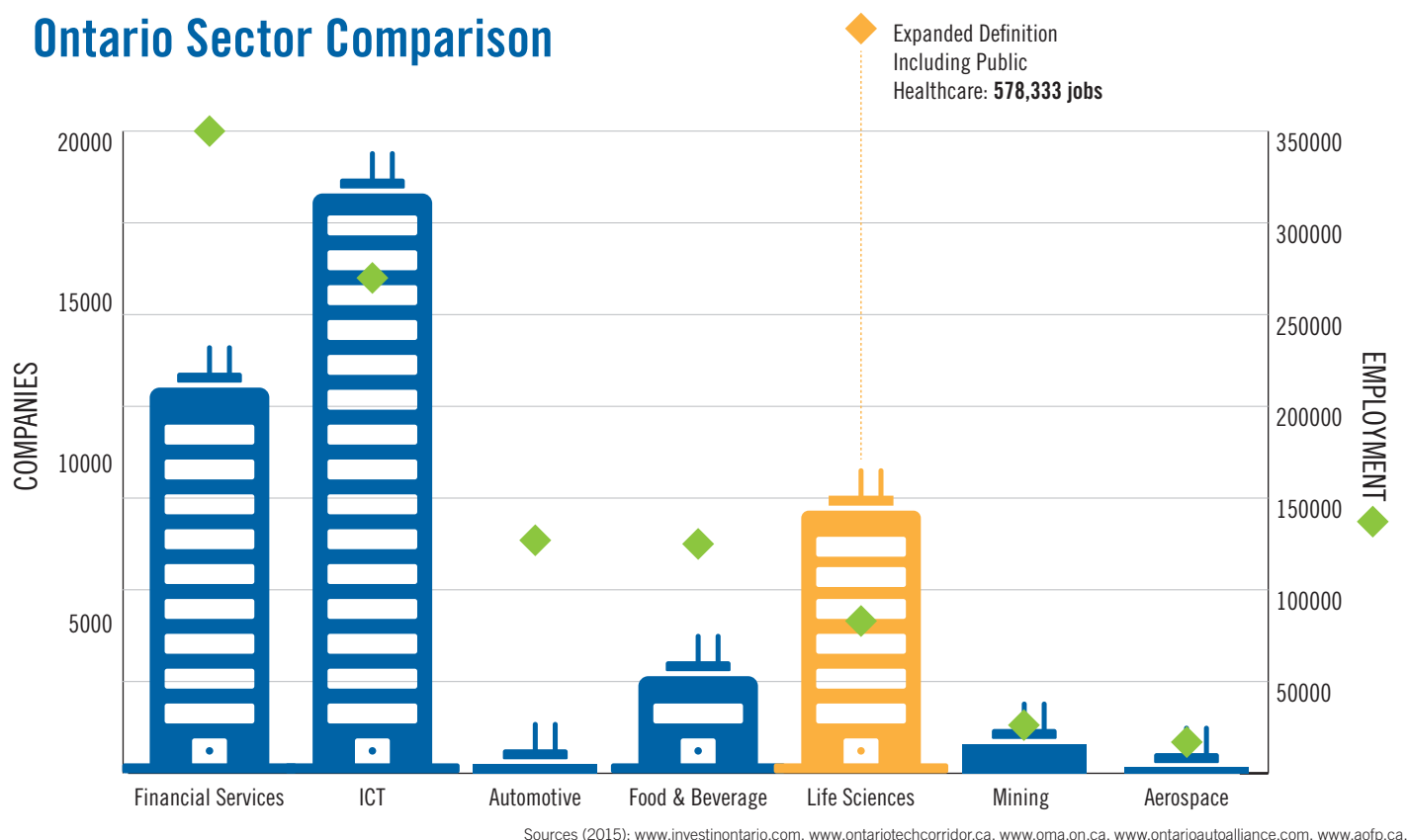
Blueprint for a Coordinated Ontario Life Sciences Strategy

Ontario has the talent, science, and infrastructure to grow globally-competitive companies and create high-value jobs for Ontarians. But with all our strengths and investments in science, why does Ontario lack homegrown, billion-dollar biotech success stories? As Kevin Lynch, vice-chair, BMO Financial Group put it, “Ontario has all the ingredients but lacks a recipe.” Why – and what can we do about it?

The Need for a Coordinated Life Sciences Strategy

- Life Sciences and the bioeconomy drive our healthcare system, agriculture, and food supply, protect our environment, and represent the greatest opportunity for economic growth in Ontario.
- A comprehensive strategy will harness this opportunity, setting a clear target to create a made-in-Ontario global success story in life sciences. It will build a dynamic and value-focused life sciences sector, driven by:
 - A favourable, internationally competitive business environment for life sciences.
 - Alignment with the Ontario health system (and beyond) toward building a sustainable, world-class health care system.
 - Alignment with key regional and partner strategies (including TO Health’s Cluster Action Plan and OCC’s Health Transformation Initiative), while securing provincial support in advocating to the federal government on national policy issues.

Ontario Sector Comparison



The Life Sciences Sector's Economic Impact

LSO's industry-first Life Sciences Sector Report found that Ontario's life sciences sector generates the following economic benefits:

- Employs approximately **83,000** highly-skilled workers at more than **5,600** establishments.
- Generates approximately **\$40 billion** in annual revenues, contributing approximately **\$38.5 billion** to Ontario's Gross Domestic Product (GDP).
- Ranks among the top clusters in North America, and within the **top ten** by employment and the **top three** by number of establishments.
- Outpaced the provincial job growth average by nearly **10 per cent** between 2001 and 2013, showing resilience during the 2008 economic downturn.

What's Holding Us Back

- Access to financial resources to develop companies beyond the startup phase.
- Existing programs are often resource-limited and address niche aspects of our sector without consideration for how they will fit into a coordinated, overarching strategy with a clearly defined vision for Ontario life sciences.
- Government often associates the life sciences sector with the public health budget and publicly-funded research and thus sees the sector as high cost with low ROI. However, the facts are:
 - Life sciences encompasses key economic drivers including health, food, agriculture, bio-economy, forestry, genomics, and other areas.
 - More than 90% of the government's ~\$1B Jobs & Prosperity Fund went to two sectors: IT and Automotive. Life sciences received less than 3%¹ despite being identified as a priority economic sector.

¹ Ontario Open Data, Sept. 21, 2016, MEDG

- Life sciences employment growth has outpaced the Ontario average by ~10% over the past decade.²
- Life sciences jobs pay approximately 25% more than the Ontario average. These are high quality, high value jobs.²
- Despite our investments in education, our employment rate lags by more than two per cent of the OECD average;³ Ontario's youngest science graduates face a startling unemployment rate of 18.9 per cent.²
- While the NASDAQ Biotechnology Index returns are double that of the NASDAQ Composite over the past decade, here in Canada life sciences is consistently one of the least invested-in sectors on the TSX.⁴

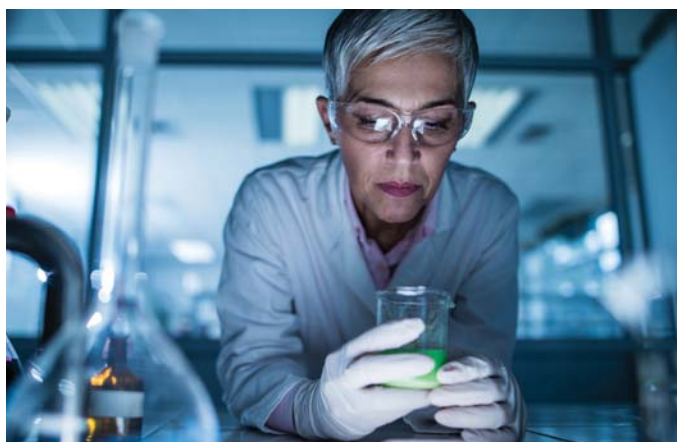
The Life Sciences Opportunity

The economic growth potential for Ontario's life sciences sector is massive. Indeed, it is repeatedly identified as our strongest opportunity to secure our future prosperity. The new Ontario Investment Office and Chief Investment Officer demonstrate a move from a defensive economic strategy (ie. recovery and retention) to a more **forward-looking, competitive position focused on opportunities for economic growth.**

- Life Sciences represents the **largest** of these opportunities. In the US, two biotech companies, Amgen and Celgene, have a combined market capitalization of US \$242B, rivalling the entire Canadian mining sector listed on the TSX (over 1,200 companies with a market cap of US \$244B)⁵.

- Export markets represent a huge opportunity for life sciences. The recent Barton Report indicated that export markets in agriculture and food will be our lead opportunity for contribution to the GDP⁶.
- More than 55 per cent of Ontarians have a college or university degree³ – 25 per cent greater than the OECD average. Life sciences can help create more knowledge-based jobs for our highly-educated workforce, along with positions in advanced manufacturing and industry.
- Innovation in our health care system will be essential to long-term economic sustainability and better health for Ontarians, enabled by scientific advances, data, and digitized health experiences.
- The life sciences sector is also key to developing technologies to reduce greenhouse gas emissions and help control climate change.

Life Sciences' Role in Innovation



Innovation has been repeatedly identified as the key to solving the biggest challenges that our province faces, including:

- A strong and competitive economy.
- A sustainable public healthcare system.
- Environmentally sustainable energy, materials, and fuels.
- Safe and healthy food for all.
- The life sciences sector is unique in that it plays a significant role in all these areas.
- We need to address Ontario's systemic commercialization challenge by developing a coordinated strategy to convert our life sciences assets into economic and social prosperity.

² Life Sciences Ontario Sector Report 2015

³ Reference: Statscan, 81-59-x: Population aged 25 to 64 with college or university education and their employment rate, Canada, provinces and territories, and selected OECD countries, 2009

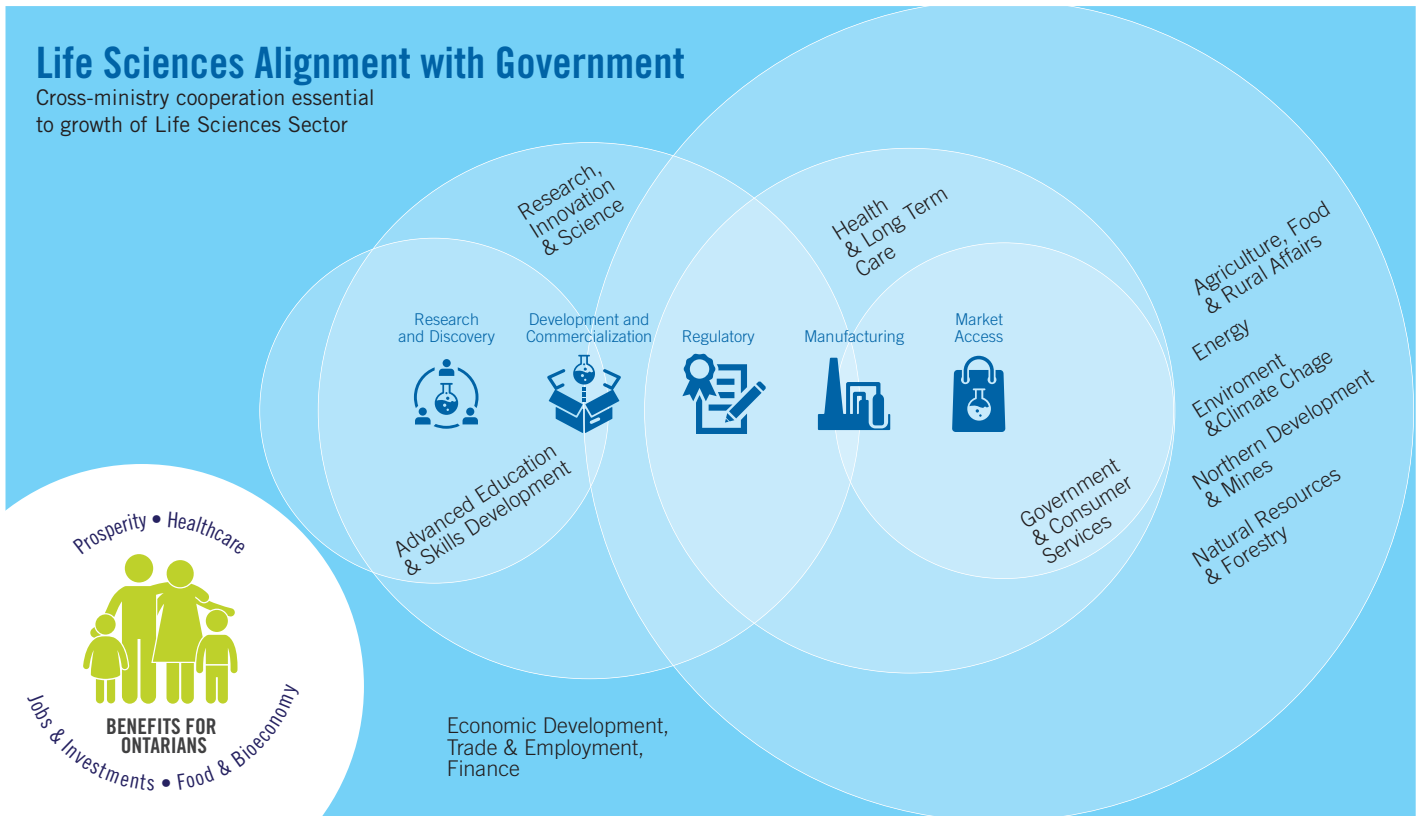
⁴ MiG Report 2008-2016 and NASDAQ.com (NBI vs COMP)

⁵ Valuations as of October 2017

⁶ Advisory Council on Economic Growth: Unleashing the Growth Potential of Key Sectors, 2016

The Need for a Pan-Government Strategy

- A successful life sciences strategy must cross the mandates of many provincial ministries. Coordinating a common vision for the entire provincial government is required from the top down (or centre out) to achieve success.



Essential Elements of a Life Sciences Strategy

1. **PROMOTION OF ONTARIO'S LIFE SCIENCES SECTOR** as a major jurisdiction that is open for business locally, nationally, and globally, in cooperation with the Ontario life sciences community and its partners. Specifically, the province should:
 - i. **DEVELOP** a multi-ministry approach to benchmarking, metrics, and promotion with dedicated annual funding that:
 - Supports research and reporting to benchmark Ontario's life sciences industry (e.g. health economics).
 - Supports asset maps, web portals, and searchable databases that facilitate access to Ontario's life sciences assets.
 - Develops a strategic approach for coordinated presence at key conferences (ex. BIO Convention).

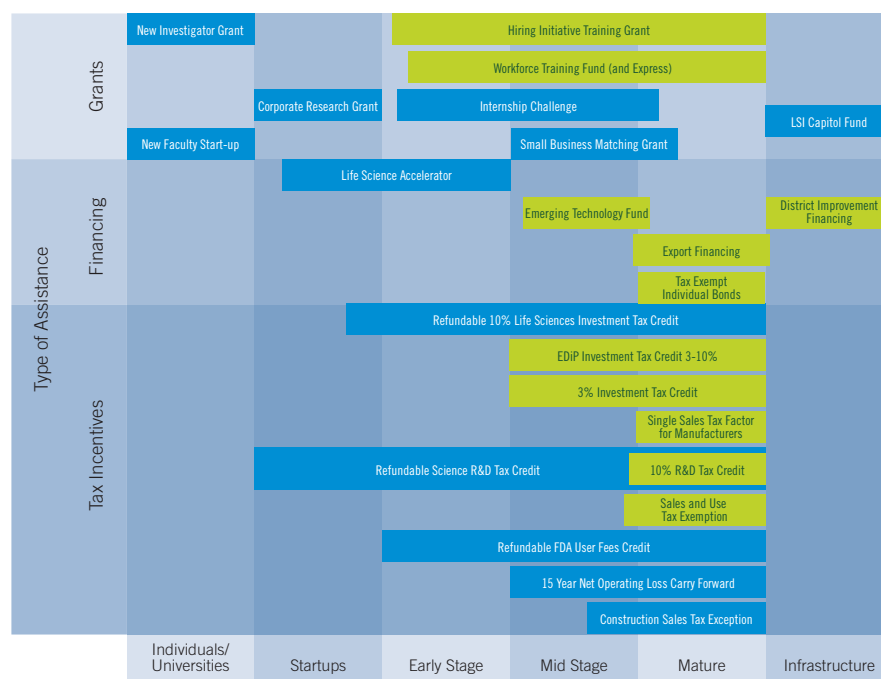


ii. **REVIEW, COORDINATE / MAP and PACKAGE** existing programs across ministries to promote available support to develop and grow life sciences innovation, including commercialization support across the province.

iii. **CREATE VIABLE** intake pathways for life sciences innovators and investors, with a customer-service-oriented approach that ensures easy navigation of programs across ministries and multiple levels of government.

iv. **ALIGN** with other key life sciences districts, such as the Quebec life sciences strategy and Massachusetts \$1B Life Sciences Initiative, in order to leverage partnership/development opportunities, and share best practices.

Massachusetts \$1B Life Sciences Initiative



Source (2015): www.MassBIO.org

2. EXPANDING ACCESS TO CAPITAL

i. **DEVELOP** policies that support a robust and diverse risk-capital ecosystem that includes start-up capital (venture capital, angel investors, government programs), as well as transformational capital, such as that found on the public capital markets. Specifically, the province should consider:

- **TAX MEASURES** to encourage individuals to invest in innovation areas (ex. flow-through shares, angel investor tax credit, UK enterprise investment scheme).
- **FEDERAL ALIGNMENT** through developing an Ontario Small Business Innovation Research (SBIR) program.
- **EXPANDING EXISTING SR&ED** credits to include small public companies.
- **CREATING A MARKET-DRIVEN**, dedicated life sciences fund with significant capital (\$250M+) to accelerate leading Ontario firms.
- **ACTIVATING CAPITAL** in Ontario pension funds to support Ontario innovators.

3. GROWING OUR TALENT

- ATTRACTING AND RETAINING** senior management talent that can scale up and commercialize Ontario innovation; leveraging current US political climate to attract global and expat talent through income tax incentives.
- ENSURING** science graduates are “market ready” to drive Ontario’s life science economy, by:
 - Creating coop 2.0 programs more like apprenticeship/internships found in Germany.
 - Supporting mentorship programs in life sciences.
 - Ensuring Ontario’s Youth Jobs Strategy is accessible to all science graduates, including PhD and post-docs who often exceed the age limit (29) of these programs.
- CREATING** provincial incentives for professional development (education credits, grants, etc.) and subsidies for management development programs.
- EXPANDING** wage subsidy programs like Career Focus, administered by BioTalent Canada.
- CONVENING** a global advisory panel of Canadian leaders (both here at home and working internationally) to leverage their insights and experience.

4. SUPPORT FOR INNOVATION

- i. **ADVOCATE FEDERALLY** for Intellectual Property (IP) protection on par with internationally-competitive jurisdictions.
- ii. **BECOME** first adopters of Ontario innovation, including government procurement program to adopt Canadian technology, while ensuring compliance with international trade obligations and enabling exports (for example, expanding OHIC beyond medical devices).
- iii. **IMPLEMENT** regulatory supports, including:
 - Reducing duplication/increasing efficiencies for approvals/procurement that align with pan-Canadian trade agreement.
 - Policies that support adoption of innovation (ex. mandating renewable content).
 - Government programs that keep pace with business by quickly assessing and supporting opportunities.
- iv. **SUFFICIENTLY FUND** provincial accelerators and allow them to be market-driven (e.g. less risk-averse).
- v. **EVALULATE** procurement decisions based on value:
 - Consider Ontario footprint of products and impact on the Canadian/Ontario ecosystem (e.g. clinical trials, bench science, industry/academic partnerships).
 - Encourage transparent processes with appropriate government regulation, oversight, and accountability of procurement organizations.
- vi. **ESTABLISH** stronger links to Canadian Trade Commissioner services to help support Ontario companies exporting technology/innovation within Canada and globally (for example, embedding trade commissioners with trade associations, a model successfully implemented with MEDEC).
- vii. **APPLY** key learnings of existing programs like EXCITE and OCHIS and consider expansion to other areas of health innovation and life sciences.
- viii. **ESTABLISH** shared health data repositories with the private sector and other innovators to catalyze new collaborative advances.



In Conclusion

Life Sciences is often touted as the industry of the future – however, we believe our window of opportunity is now. We must actively recognize our life sciences sector as a prime economic growth opportunity and make a strong, bold commitment to developing it. In closing, we call on you – whether you are part of industry, academia, or government – to endorse this plan and serve as ambassadors for the success of Ontario life sciences. Your support has been, and will continue to be, our sector's greatest asset.



About the Authors

This report is authored by Life Sciences Ontario (LSO) with the support of key partner organizations. LSO's mandate is to drive our sector's commercial success through advocacy, promotion, and collaboration with governments, academia, industry, and other life science organizations in Ontario and across Canada. For more information, visit www.lifesciencesontario.ca.

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