

Overview of Quebec's RNA Therapy Sector

October 2025



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The results presented are primarily based on data collected by the consulting firm Innovitech as part of a study conducted in spring 2025. They have been supplemented with additional information obtained directly from the various stakeholders within the ecosystem.

Introduction & context

The COVID-19 pandemic revealed the strategic potential of RNA therapies, notably through the success of mRNA vaccines. This breakthrough highlighted the importance of having local research, development, and manufacturing capabilities. Since then, the governments of Quebec and Canada have increased their investments in research infrastructure, innovation, industrial partnerships, talent development, and the attraction of biotechnology companies.

RNA therapies are an emerging class of treatments whose active ingredient is based on RNA (ribonucleic acid). While messenger RNA (mRNA) has become well known to the general public thanks to COVID-19 vaccines, other RNA-based modalities also hold significant therapeutic potential, including siRNA, miRNA, ASO, long non-coding RNA, and RNAs used in CRISPR-Cas gene-editing tools, among others.

Quebec has established itself as a particularly dynamic hub in this field, thanks to a robust ecosystem that brings together a critical mass of researchers, universities, research institutes, university platforms, companies, and support organizations, while benefiting from substantial financial investments (Figure 1).

This report provides an overview aimed at mapping Quebec's ecosystem, identifying its strengths, and highlighting its potential contributions and international impact. The results presented are primarily based on data collected by the consulting firm Innovitech as part of a study* conducted in spring 2025. They have been supplemented with additional information obtained directly from the various stakeholders within the ecosystem. The findings of this overview will be updated regularly to reflect a comprehensive and current picture of the sector.

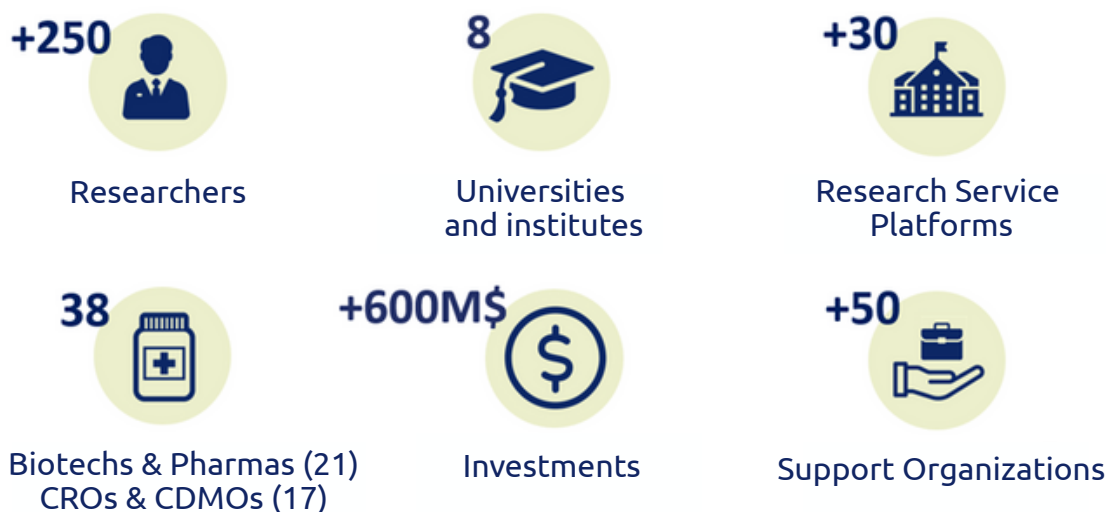


Figure 1. Snapshot of Quebec's RNA Therapy Ecosystem
Visit the AReNA website for more information.

An ecosystem built on three complementary sectors

QUEBEC-BASED LIFE SCIENCES SUPPORT ORGANIZATIONS ACTIVE IN RNA THERAPIES

Although Quebec's RNA therapy ecosystem relies primarily on public research, industry, and support organizations (Figure 2), this report will focus mainly on the first two sectors. The sector nevertheless benefits from the support of most Quebec-based organizations that more broadly promote innovation in the life sciences (Figure 3). While their contribution is not always specific to the RNA therapy field, it remains essential for the development of a competitive niche.

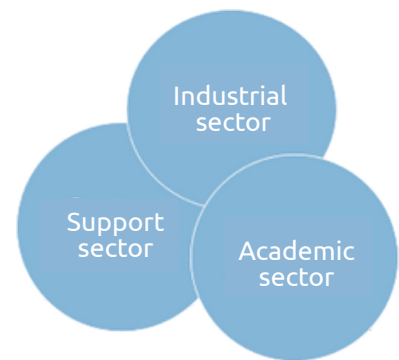


Figure 2. Key Components of the RNA Therapy Sector

Number of Organizations Supporting the Ecosystem

Total number of organizations: 55

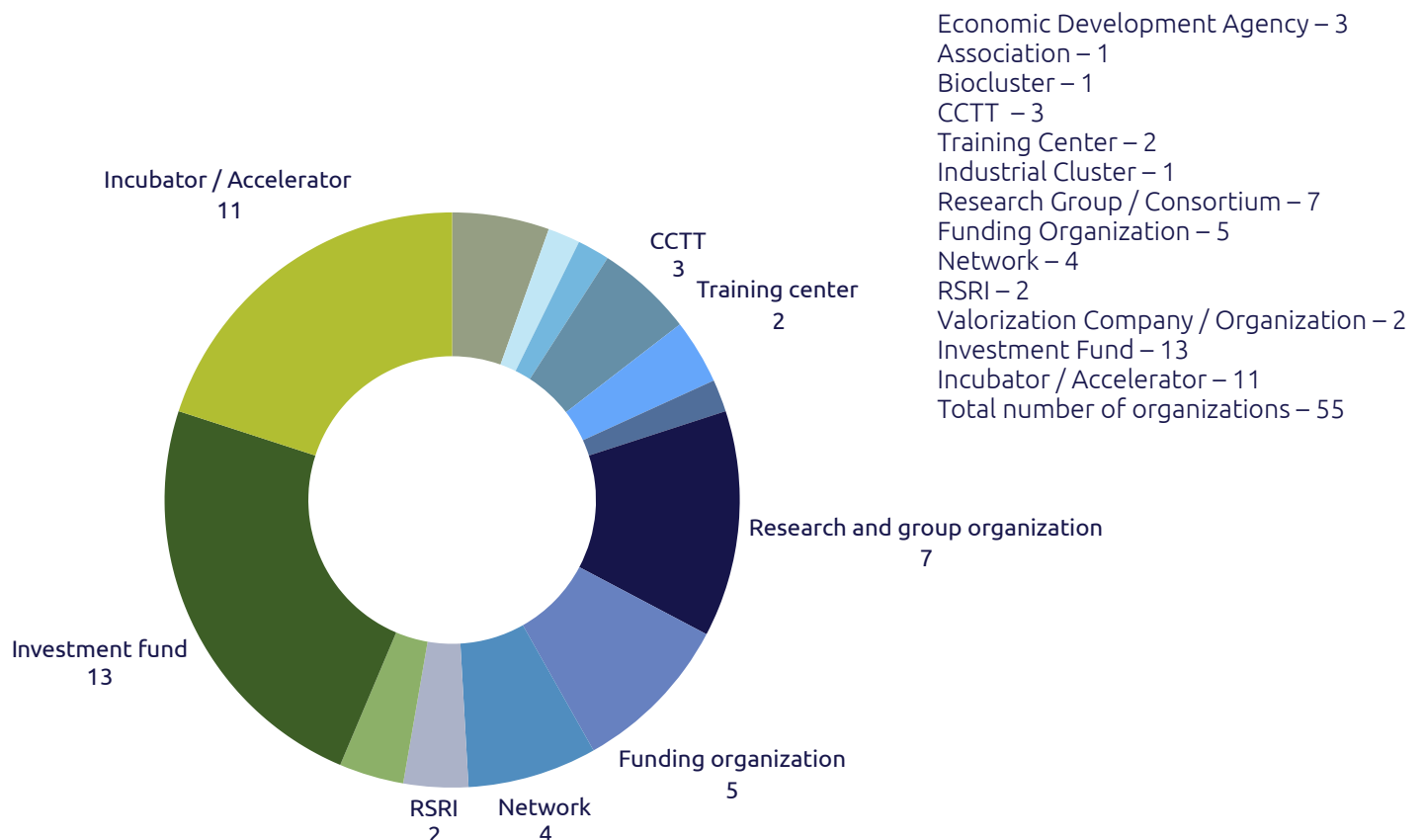


Figure 3. Distribution of the 55 Organizations Supporting the RNA Therapy Sector

STRATEGIC RNA INITIATIVES AND CONSORTIA

At the same time, consortia and structured initiatives, both in Quebec and at the Canadian level, help strengthen the province's global leadership in RNA research and innovation:

AReNA

A Quebec initiative that brings together the RNA therapy ecosystem to strengthen its international competitiveness.

ARN Quebec

A strategic consortium addressing major global health and environmental challenges through RNA research and innovation.

From DNA to RNA (D2R)

A research initiative led by McGill University aimed at rapidly expanding the therapeutic arsenal for precision medicine by leveraging genomic discoveries and harnessing the flexibility of RNA therapies for the benefit of all.

RNA Canada ARN

Established in 2023, this pan-Canadian non-profit consortium brings together over 300 laboratories across more than 20 universities, along with industry partners. Its mission is to coordinate RNA research, funding, and training nationwide.

Word-class public research

RNA RESEARCH LABORATORIES



laboratories

Quebec stands out for the density and vitality of its RNA research. There are 252 active RNA research laboratories in the province, representing 60% of the 420 laboratories identified across Canada. Among them, several focus exclusively on RNA therapies. Others, working in complementary fields such as chemistry or bioinformatics, provide essential contributions to the development and innovation of RNA therapies. This concentration highlights the strategic role of Quebec's university research.

These various laboratories contributing to the advancement of RNA therapy research are affiliated with Quebec's major universities—[Université de Montréal](#), [Université de Sherbrooke](#), [Université du Québec à Montréal \(UQAM\)](#), [Université Laval](#), [McGill University](#), and [Polytechnique Montréal](#)—as well as world-class research centers and institutes such as the [Institut National de la Recherche Scientifique \(INRS\)](#), the [Montreal Clinical Research Institute \(IRCM\)](#), and [CEGEP de Shawinigan](#) (Figure 4).

Number of research laboratories

Total number of laboratories : 252

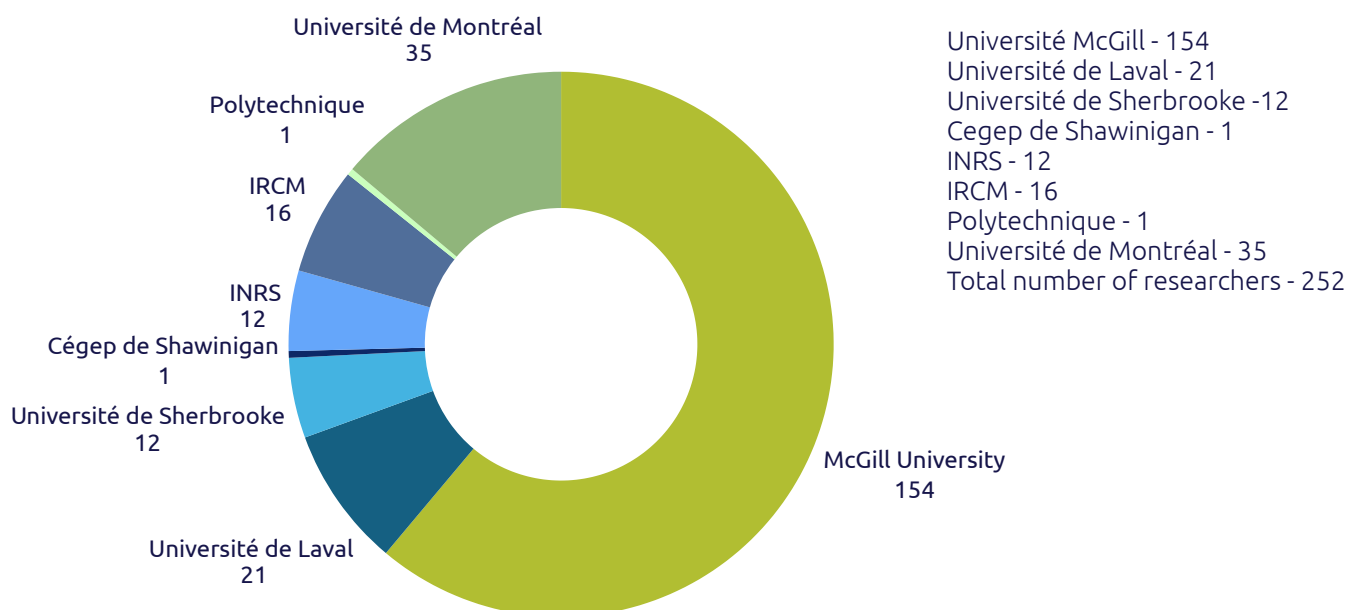


Figure 4. Distribution of the 252 Research Laboratories Across Quebec Institutions

STATE-OF-THE-ART PLATFORMS

Quebec benefits from an outstanding support infrastructure for the development of RNA therapies, available through its universities and public research institutes. There are 33 platforms (Figure 5) offering specialized services, ranging from bioproduction to sequencing, as well as formulation and animal biology platforms. Some are entirely dedicated to RNA technologies, including:

- The Quebec RNA Therapy Development and Production Network ([DePTAQ](#)), driven by AReNA, which relies on the [Sidney-Altman Therapeutic RNA Hub](#) at the IRCM, the [Therapeutic mRNA Platform](#) at McGill University's RNA Science Centre, and the [RNomics Platform](#) at the Université de Sherbrooke.
- The Prime Editing Platform and the RNA Nanoparticle Production Platform at Université Laval, which focus respectively on cell therapies via RNA delivery through lipid nanoparticles and on the microfluidic production of LNP-RNA.

In addition, services developed by several College Centers for Technology Transfer (CCTTs), previously listed among support organizations, further enrich the range of tools available to companies by facilitating the transfer of processes, practices, and innovative products, while also helping to train a highly skilled and creative workforce. Notable examples include [CERASP](#), [CNETE](#), and [TransBIOTech](#).

All of these infrastructures position Quebec's universities and institutes as key players in establishing a world-class RNA technology ecosystem.

Number of service platforms

Total number of service platforms : 33

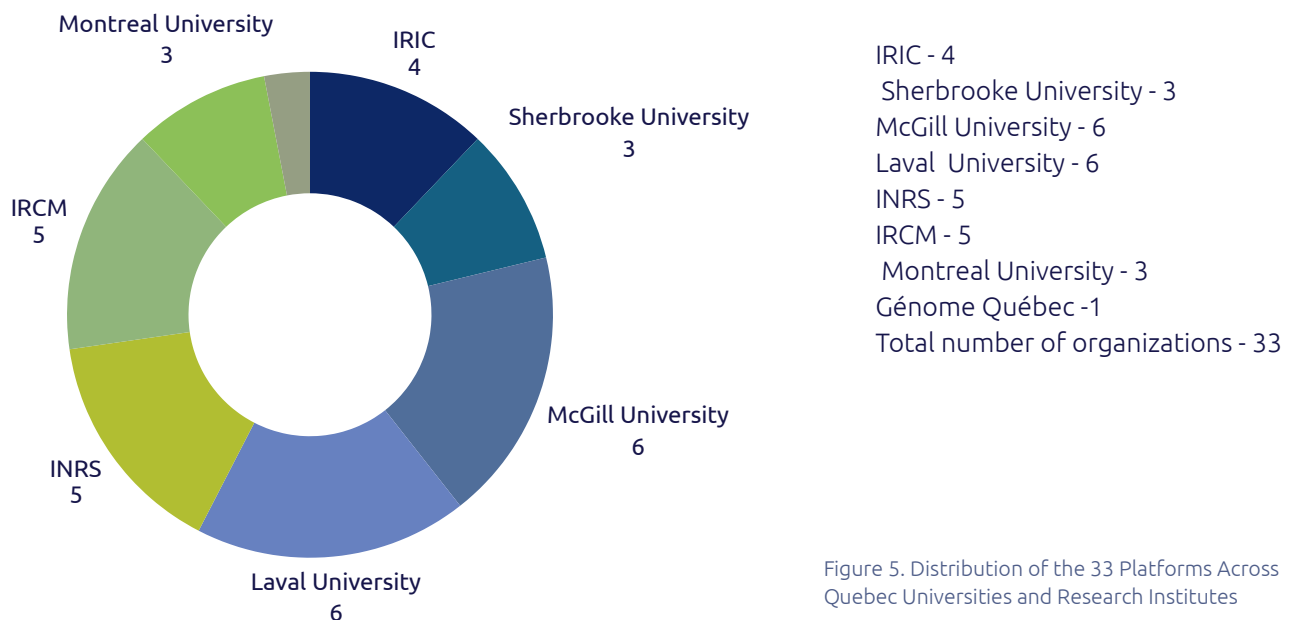


Figure 5. Distribution of the 33 Platforms Across Quebec Universities and Research Institutes

A HISTORIC FINANCIAL COMMITMENT TO PUBLIC RESEARCH AND INNOVATION

Since the late 2000s, RNA therapy research and innovation have experienced unprecedented growth in Quebec. This momentum is clearly reflected in the evolution of public funding awarded, as shown in the graph below (Figure 6).

Quebec researchers alone have received over CAD 300 million in grants since 1997, provided by a multitude of provincial, federal, and even international funding organizations supporting both fundamental and translational research in partnership with industry (Figures 7a and 7b). More than half of this amount comes from the CAD 165 million CFREF grant awarded to McGill University in 2022 for the DNA-to-RNA (D2R) initiative. Other major funders include:

\$300M
Grants

- CQDM (Quebec Consortium on Drug Discovery)
- NSERC (Natural Sciences and Engineering Research Council)
- FRQ (Québec Research Fund)
- Genome Quebec
- CIHR (Canadian Institutes of Health Research)
- CFI (Canadian Foundation for Innovation)
- NIH (National Institutes of Health, États-Unis)

Government grants

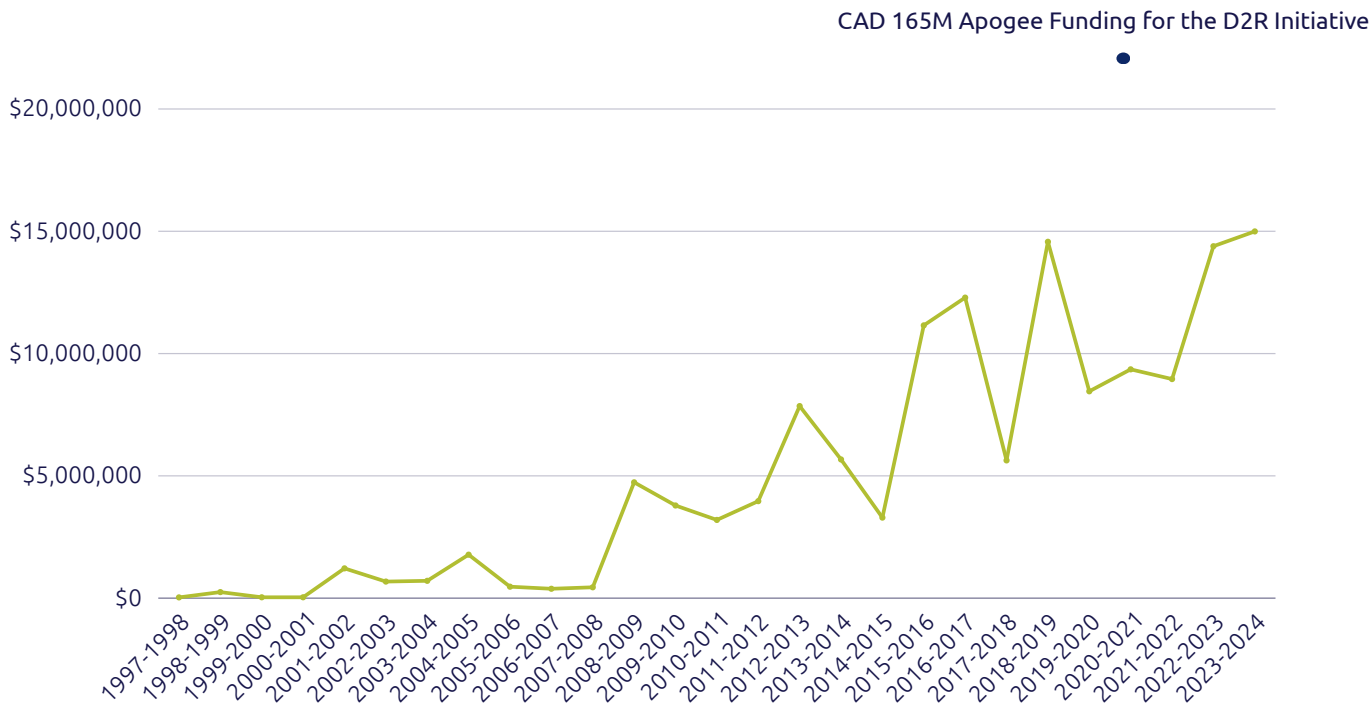


Figure 6. Evolution of Government Grants (Quebec and Canada) Related to RNA Therapies Awarded to Quebec Laboratories Since 1997. Note: This graph excludes the CFREF funding granted to McGill University in 2022 to adjust the scale.

Government Grants

Grants	Amount	%
CFREF	\$ 165 307 034	53.68%
CIHR	\$ 97 962 309	31.81%
CFI	\$ 25 784 656	8.37%
FRQ	\$ 8 318 784	2.70%
Génome Québec	\$ 4 943 100	1.61%
NSERC	\$ 2 842 943	0.92%
Médicament Québec	\$ 1 500 000	0.49%
NIH	\$ 723 643	0.23%
CQDM	\$ 543 314	0.18%
Other	\$ 50 000	0.02%
Total awarded	\$ 307 975 783	100.00%

Figure 7. Distribution and Amounts of Government Grants Awarded Between 1997 and 2025.

Note: Unlike other grants, which are all awarded to specific projects, the total CAD 165M CFREF grant was awarded to McGill University to support the D2R initiative. This funding has since been gradually redistributed across the various D2R programs.



Patents

The increase in research investments in Quebec has, with some delay, translated into the commercialization of innovations from universities and research institutes: as of June 2025, 37 patents related to RNA therapies had been filed by Quebec institutions since 2008. This relatively limited number appears consistent with the still-emerging maturity of the ecosystem and the continued emphasis by researchers on fundamental rather than translational research. However, it does not fully reflect all ongoing commercialization efforts, as many innovations are still in the process of defining their technological and commercial maturation strategies.

Patents

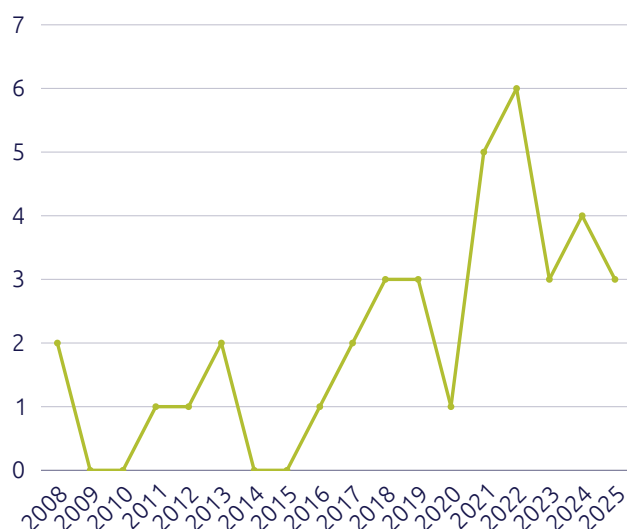


Figure 8. Evolution of Patent Filings Since 2008

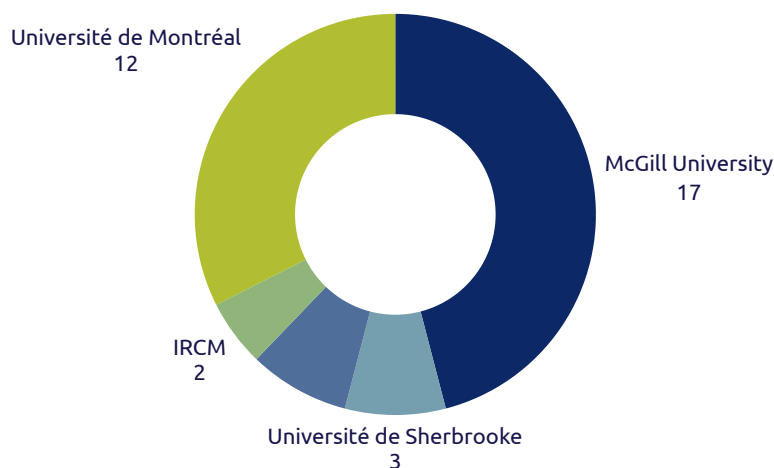


Figure 9. Distribution of Patents Among Public Research Institutions

Strategic consolidation of the industrial sector

COMPANIES ENGAGED IN THE DEVELOPMENT OF RNA-BASED THERAPIES

Quebec has a dynamic and diverse RNA industry, encompassing numerous biotechnology and pharmaceutical companies. Many of these are engaged in the development of new therapies, and the sector also includes globally recognized players such as Moderna.

As of June 2025, there were 38 Quebec-based companies active in the field of RNA therapies (Figure 10). Among them, CROs (Contract Research Organizations) and CDMOs (Contract Development and Manufacturing Organizations) possess expertise spanning the entire value chain: from the discovery of new RNA therapies to preclinical and clinical validation, and ultimately to production.

Number of Companies

Total number of companies: 38

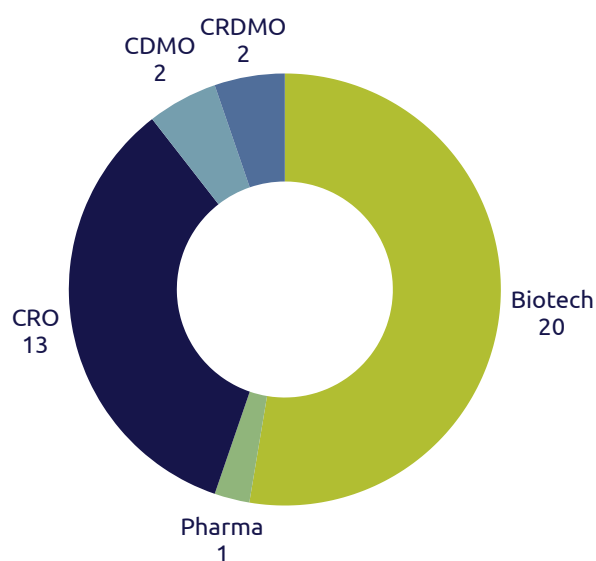


Figure 10. Distribution of the 38 Quebec-Based Companies Active in RNA Therapies by Activity Category

INNOVATION IN THE INDUSTRIAL SECTOR

Innovation is not limited to public research. In the industrial sector, a significant portion of investments is dedicated to research and development (R&D), as shown by data from a survey conducted with several industry players in the sector (Figure 11). These data illustrate both their investments in internal R&D programs and in R&D programs in collaboration with universities, research institutes, or other private organizations.

R&D Investments

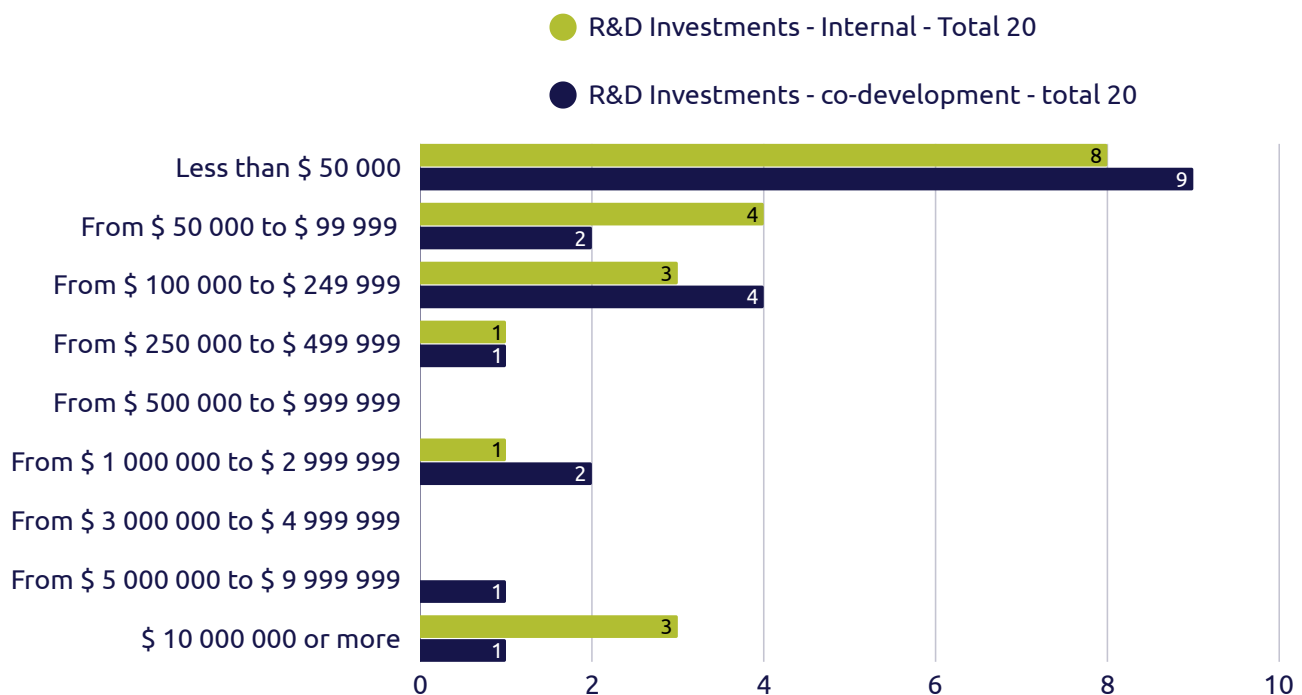


Figure 11. Distribution of Investments by Range Made by Surveyed Companies (n=20) in Internal or Collaborative R&D Programs

The survey also provides information on the amounts of funding received by these companies since their founding, including government grants, venture capital, private partnerships, angel investors, banks, and other sources (Figure 12).

Funding Received

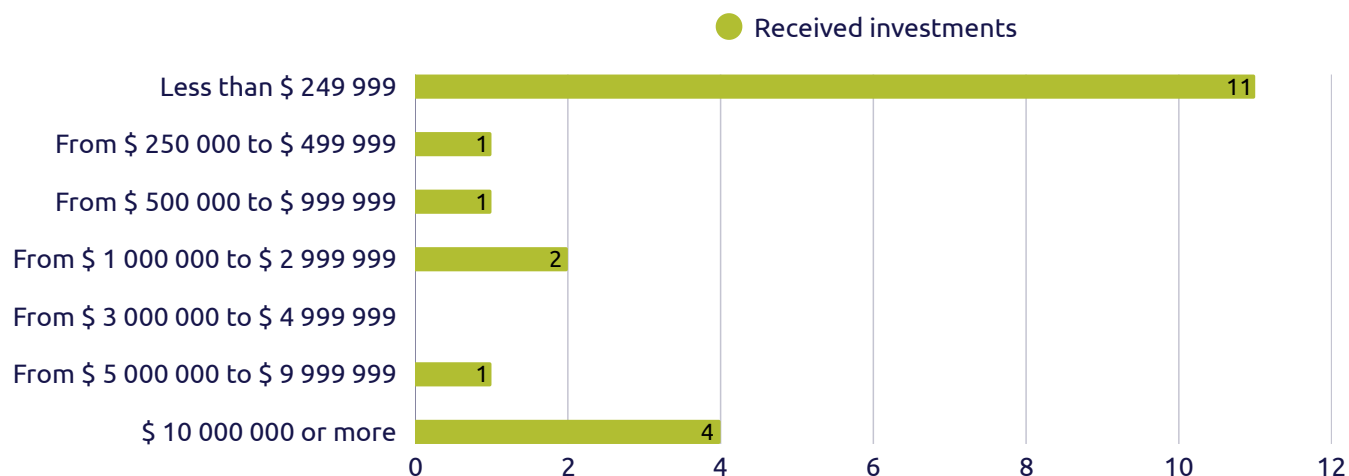


Figure 12. Distribution by Range of Private and Public Funding Received by Surveyed Companies (n=20).

The distribution of funding received and investments made by these companies clearly reflects the sector's level of maturity: a small number of mature players have raised substantial funds — up to CAD 10 million or more — enabling them to invest heavily in the development of their technologies (Figure 11). The majority of companies, however, remain young and have more limited investment capacity.

It is evident that all these companies engage in collaborative research to develop their innovations (Figure 11), likely due to Quebec's favorable environment, which encourages and facilitates such collaboration. For investments exceeding CAD 10 million, R&D is predominantly conducted internally, whereas for investments between CAD 50,000 and less than CAD 10 million, it is more evenly split between internal R&D and co-development R&D.

This industrial innovation dynamic has so far (as of October 2025) resulted in 37 patents filed, 2 technologies in clinical trials, and 12 technologies commercialized.

Concrete Results and Expanding Expertise

SIGNIFICANT INVESTMENTS TO DRIVE THE DEVELOPMENT OF NEW THERAPIES

As mentioned previously, some Quebec-based companies developing innovations in RNA therapies have completed significant fundraising rounds, illustrating the sector's growing momentum.

The example of Feldan Therapeutics, a clinical-stage biotechnology company, perfectly illustrates this trend. After an initial CAD 12.5 million Series A funding round in 2018¹, Feldan Therapeutics confirmed investor interest by securing a second CAD 21 million Series B round in 2024².

The company developed the Feldan Shuttle, a peptide-based technology that enables rapid and efficient delivery of antisense oligonucleotides (ASOs) into cells. This approach opens the door to new treatments by targeting mechanisms that were previously inaccessible. The company's portfolio focuses particularly on skin and lung diseases. A Phase 1/2a clinical trial is currently underway for the FLD-103 treatment against basal cell carcinoma (BCC). The funds raised will be used to complete this study and offer an alternative to surgery.

Similarly, Epitopea, founded in 2021 in Montreal and Cambridge (UK), develops anti-cancer immunotherapies based on its CryptoMap platform, which identifies novel tumor antigens called Cryptigens. These antigens enable the design of ready-to-use RNA-based cancer vaccines. The company completed a CAD 13.6 million seed funding round in 2022³, followed by a USD 31 million pre-Series A round in 2024⁴. This financing will support research on solid tumors and accelerate the development of RNA-based immunotherapies designed to effectively target tumors and extend the duration of clinical responses.

ATTRACTING INTERNATIONAL COMPANIES AND TALENT

Thanks to the quality and maturity of its ecosystem, the province is able to attract various major players in the development and production of RNA therapies.

First, there is Moderna, which chose the Montreal area to establish its new mRNA vaccine manufacturing facility. Backed by a CAD 180 million⁵ investment and financial support from the Government of Quebec, this facility, built in record time, will have an annual production capacity of 100 million doses. The presence of such a major player highlights Quebec's rise in the RNA field, now recognized as a key strategic sector for national pharmaceutical sovereignty.

Another example is the launch of Oligon Therapeutics in late September 2025 by the CTI Life Sciences Fund⁶. A total funding of USD 14 million, provided by CTI, the Fonds de solidarité FTQ, and Investissement Québec, aims to pave the way for a new class of precision siRNA treatments. These partners have enabled Oligon Therapeutics to focus its activities in Quebec.

McGill University's D2R initiative also contributes to strengthening Quebec's attractiveness for scientific talent. As part of this initiative, Dr. Mohamad-Gabriel Alameh, currently a researcher and professor at the University of Pennsylvania and a senior scientist at the Children's Hospital of Philadelphia, will join McGill University full-time. Holding a PhD in Biomedical Engineering from Polytechnique Montréal, he completed a postdoctoral fellowship in the laboratory of mRNA vaccine pioneer Dr. Drew Weissman, with whom he also co-founded successful companies such as AexeRNA Therapeutics — which was acquired by BioNTech — as well as RNA Technologies and Therapeutics, based in Quebec. His research focuses on the design and optimization of genetic material delivery systems, including lipid nanoparticles, as well as the development of next-generation vaccines and RNA therapies.

CLINICAL TRIALS AND APPROVED TREATMENTS

Beyond fundamental and translational research, Quebec is increasingly establishing itself as a preferred location for RNA therapy clinical trials, thanks to its private organizations specializing in clinical research, advanced infrastructure, highly skilled clinical teams, and strong university and hospital networks. This is complemented by the work of CATALIS, a non-profit organization funded by the Government of Quebec, which aims to promote excellence in clinical research in Quebec and facilitate collaboration among life sciences stakeholders to accelerate the development of innovative treatments.

Several recent milestones illustrate this capability:

- (April 2025) – mRNA Clinical Trial for Bladder Cancer: The first patient in Canada received an mRNA-based treatment for bladder cancer at the McGill University Health Centre (MUHC), marking a significant national milestone ([Le Bulletin](#)).
- (March 2025) – Clinical Trial for a Rare Ataxia: The Neuro launched Canada’s first RNA-based clinical trial for a rare ataxia ([Le Neuro](#)).
- (November 2024) – mRNA Clinical Trial for Lung Cancer: Patients at MUHC were among the first in the world to participate in individualized mRNA treatment trials for lung cancer, demonstrating Quebec’s leadership in RNA-based precision medicine ([MUHC](#)).

This attractiveness translates into a significant increase in the number of clinical trials conducted in Quebec by local, Canadian, or international companies (Figure 13). These activities generate substantial economic and social benefits: they attract direct investment, stimulate the biopharmaceutical sector, and create highly skilled jobs. They also strengthen the innovation ecosystem, foster collaboration between industry and public research, and raise Quebec’s international visibility.

From a social perspective, these trials provide patients with early access to innovative treatments, improve the quality of care, and contribute to the training of specialized talent. Finally, the knowledge and infrastructure developed support Quebec’s competitiveness and the sustainability of its healthcare system.

Clinical Trials Conducted in Quebec by Quebec-Based, Canadian, and International Organizations

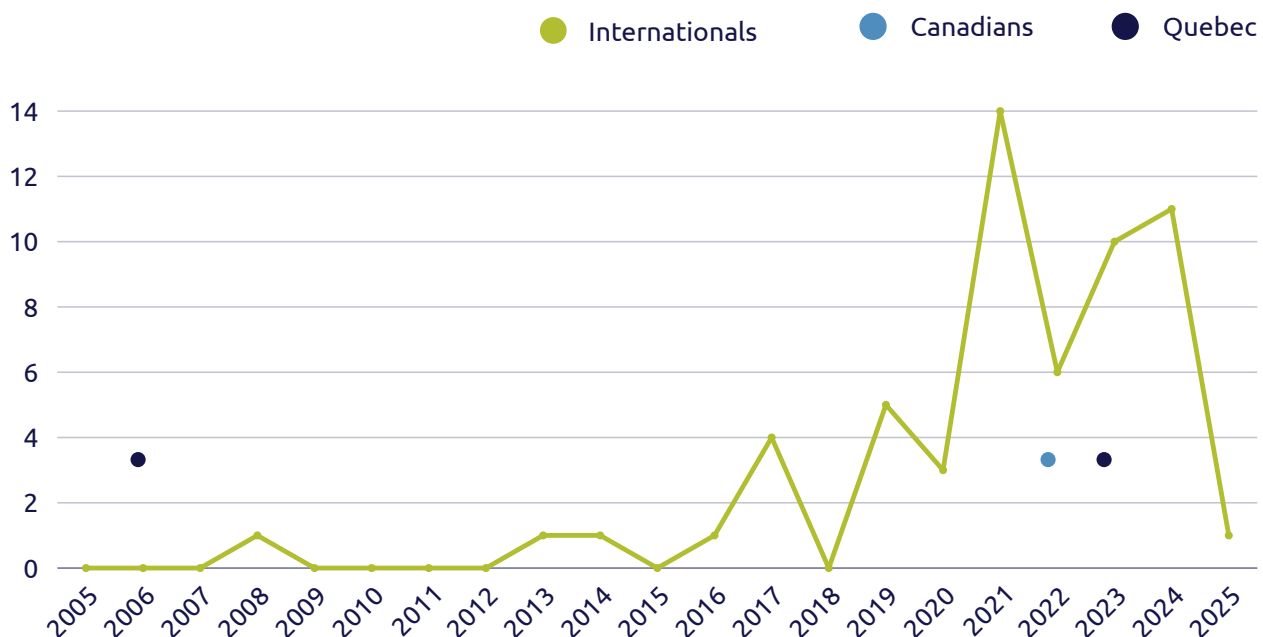


Figure 13. Evolution Since 2005 of the Number of RNA Therapy Clinical Trials Conducted in Quebec

In addition to these clinical trials, Canadian authorities have approved several RNA-based therapies since 2004. By the third quarter of 2024, multiple RNA treatments had received regulatory approval in Canada, including:

- RNA Aptamer: Macugen (2004)
- Antisense Oligonucleotide (ASO): Spinraza (2017), Tegsedi (2018), Waylivra (2018)
- siRNA: Onpattro (2019), Givlaari (2021), Leqvio (2021)
- mRNA: Spikevax (2020), Comirnaty (2020), Spikevax Bivalent (2022)
- Ligand-Conjugated Antisense Oligonucleotide: Wainua (2024)

Sources : [ASGTC](#), [Drug and Health Product Portal](#)

NEW PROGRAMS TO TRAIN THE TALENT OF TOMORROW

The rise of RNA therapies raises the question of training the workforce needed to support this rapidly expanding ecosystem. Until recently, programs offered by educational institutions and various non-profits, such as CERASP, CNETE, CATTI, or CASTL, focused primarily on biomanufacturing processes or advanced therapies in general, without providing training specifically focused on RNA.

Since 2025, several specialized training programs in RNA therapies have become available:

- **Factory-school**: RNA therapy training offered by CASTL. This program provides specialized training paths designed to strengthen the knowledge and skills required for RNA therapy production. The training combines theoretical and practical components, including classroom courses, virtual sessions, and cleanroom exercises. CASTL's programs are accredited by the National Institute of Bioprocessing Research and Training ([NIBRT](#)).
- **College Certification in Advanced Therapy Biomanufacturing**: Offered by Cégep John Abbott in collaboration with Cégep Gérard-Godin and CERASP. This program is designed to train technicians specialized in the production of advanced therapies in a short timeframe, addressing workforce shortages in the life sciences sector and supporting RNA vaccine production.

Conclusion

With its 252 laboratories, 38 specialized companies, over CAD 600 million in investments, pioneering clinical trials, and structured initiatives, Quebec today stands out as a major hub for RNA therapies. Benefiting from a favorable environment in recent months, including increasing interest from foreign companies, the province is at a pivotal moment, possessing all the scientific and industrial assets needed to become a global leader—provided efforts continue to consolidate its position and enhance its international competitiveness.

In the coming years, it will be crucial to maintain investment levels, continue developing a comprehensive service offering that meets the needs of companies developing RNA therapies across the entire value chain, and ensure optimal alignment between research and market requirements. At the same time, this growth will help strengthen supply chains and ensure public health security in the face of potential future pandemic crises.

We warmly thank all the individuals and organizations who contributed to this study through their expertise, data, and constructive exchanges. We also encourage anyone interested in learning more about Quebec's RNA therapy sector to visit ARENA's website and LinkedIn page to stay informed about the latest news and developments.



[Website](#)



[LinkedIn](#)



[YouTube](#)



This study was made possible thanks to the financial support of the Ministry of Economy, Innovation and Energy (MEIE) and the CQDM. We also warmly thank the entire Quebec RNA therapy ecosystem for their support, collaboration, and ongoing commitment to the development of this strategic sector.

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