



**Economic Information Observatory**  
a regional cooperation project between  
**Atlantic Canada and Saint-Pierre and Miquelon, France**

## Biotechnology for the Health Sector



Atlantic Canada (p.1-4)

Saint-Pierre and Miquelon / France (p. 5-8)



## Biotechnology in Atlantic Canada

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The term **“Biotechnology”** as defined by Health Canada is “used to describe the use of biological processes to make products, in contrast to purely chemical processes. Biotechnology has been in practice for centuries and includes such traditional applications as the use of yeast in making beer, as well as modern applications like recombinant DNA techniques to improve crops.”

### Standards and Control

Biotechnology and the three associated product categories (health products, food products and environmental and industrial products) are regulated by Health Canada and its international partners, whose work (testing, evaluation, compliance checks and law enforcement, monitoring and follow-up) ensure a common approach to the regulation and monitoring of products on the market.

Biotechnology plays an increasingly significant role in healthcare, diagnostics and clinical treatment of various diseases, thanks to such biological products as vaccines, recombinant proteins, hormones, growth factors and enzymes, genetic and cellular therapy products; biotech is also becoming increasingly heavily involved in pharmaceuticals, in the development of medical devices, or even in the energy and food sectors. Over the course of the years, Canada has established its reputation worldwide as an important player in biotech R&D and innovation. Just as instrumental as they been at the beginning of the last century, in developing insulin or our understanding of DNA's role in heredity, Canadian researchers today continue to drive biotechnology into a new era, with such milestone achievements as the world's first commercial test flight fueled entirely by biofuel, in 2012. Ranked second among G7 countries in 2006 by KPMG for clinical testing and medical product testing cost-effectiveness, and ranked as the 10th largest pharmaceutical industry in the world, Canada aims to position itself as the world's third largest biotech industry in the world by 2025—TOP 3 BY 2025.

### Biotechnologies and Health Sciences in Canada

manufacturing, transforming, utilizing or tapping the properties of biological materials

#### Industrial Sectors:

- Agri-food
- Biomed and Health
  - Therapeutics and diagnostics
  - Pharmaceutical and biopharmaceutical engineering
  - Nutraceuticals
- Marine biotechnology
- Energy and biofuels

### Canadian pharmaceutical and biopharmaceutical industry

- 10th largest market in the world
- 27 000 workers
- \$8.87 billion in pharma and biopharma product exports
- \$5.4 billion contributing to the national GDP
- 71.6% of exports shipped to the USA
- 10% of total Canadian R&D investments

### Canadian sales of medications

|      | patented       | non-patented  |
|------|----------------|---------------|
| 2015 | \$15.2 billion | \$9.4 billion |
| 2005 | \$11.5 billion | \$4.8 billion |

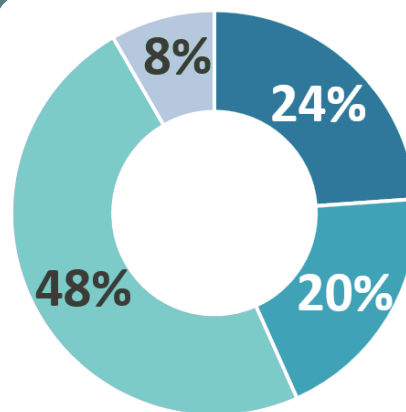
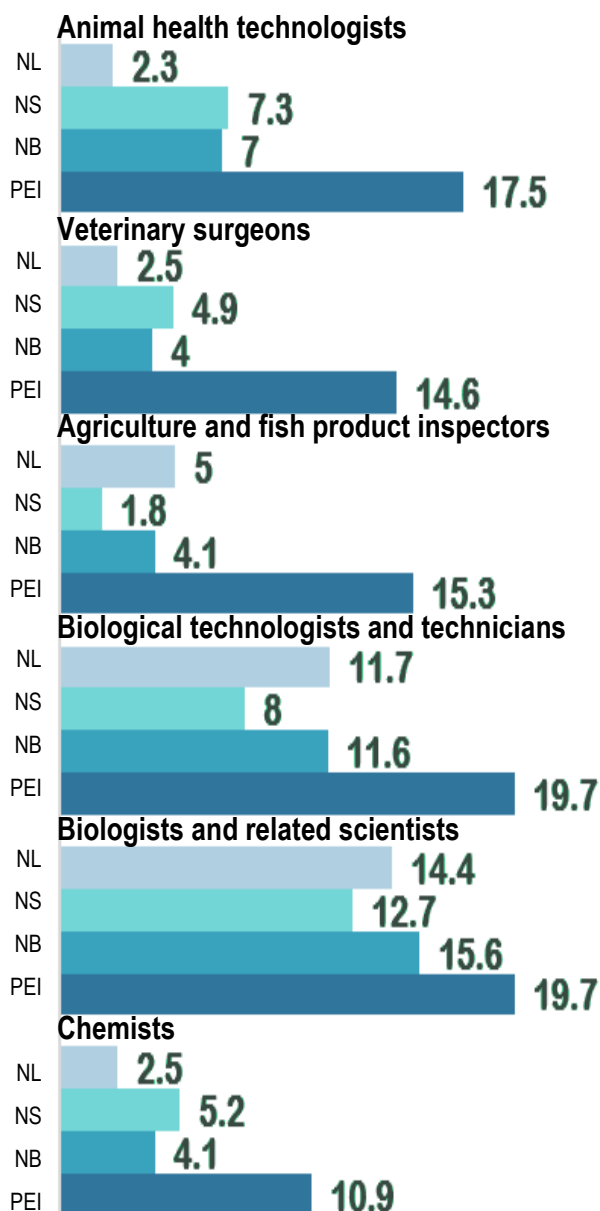
**Sources and useful links :** Canadian Food Inspection Agency, <http://www.inspection.gc.ca/>; Atlantic Canada Opportunities Agency, <http://www.acoa-apeca.gc.ca/>; BIOTEC Canada, <http://www.biotech.ca/>; Centre for Health and Community Research, <http://chcresearch.ca/>; Craig L. Dobbin Genetics Research Centre, <http://www.med.mun.ca/>; Environment and Climate Change Canada, <http://www.ec.gc.ca/>; Institute of Biomedical Engineering, <http://www.unb.ca/>; Genome Atlantic, <http://genomeatlantic.ca/>; KPMG Competitive Alternatives, <http://www.kpmg-institutes.com/>; Innovation, Science and Economic Development Canada, <http://www.ic.gc.ca/>; Natural Products Research Group, <http://www.unb.ca/>; Health Canada, <http://www.hc-sc.gc.ca/>; Springboard Atlantic, <http://springboardatlantic.ca/>; Statistics Canada, <http://www.statcan.gc.ca/>.

# Biotech Sector Overview (Key Numbers)

Canadian R&D spending in new technologies, such as biotechnology and nanotechnology, is estimated to be slightly over \$400 million, representing 3% of all industrial R&D spending nationally. R&D spending in medical biotechnologies levelled off to just below \$300 million and represented a little over three quarters (75%) of the \$380 million allocated by commercial companies to biotechnology-related R&D spending. Atlantic Canada accounted for 2% of Canadian business R&D spending in the pharmaceutical sector, in 2015.

## Density of industrial activity in terms of workforce, by province

Number of professionals working in bioscience-related professions for every 10 000 workers on the labor market



## The Canadian Biotech Industry in 2016

### Number of businesses

Biotechnology – total : 629  
 Biotech - Therapeutics : 147  
 Biotech - R&D : 243  
 Biotech – Other : 239

### Private vs. Public Ownership :

SME : 84%  
 Public Corporations: 10%

### Workforce, in % :

1-10 workers : 20.5%  
 11-50 workers : 42.5 %  
 51-200 workers : 20.5%  
 Over 200 workers : 16.4%

## Number of Biotech / Health Sciences Companies in Atlantic Canada, in 2016

|     |    |                                                                                                            |
|-----|----|------------------------------------------------------------------------------------------------------------|
| PEI | 43 | human, animal and fish health; nutrition; industrial biotechnologies                                       |
| NB  | 35 | biotechnologies for forestry, fisheries, agriculture, health sciences                                      |
| NS  | 87 | functional foods, nutraceuticals, pharmaceutical and agricultural products; marine biotechnology           |
| NL  | 15 | marine biotechnology - fisheries, aquaculture, marine organisms in cold ocean environments; human genomics |

## Registration of Canadian Patents

According to the most recent economic studies of the OECD, an average of 628 patents were granted per year to organizations and individuals for a range of health technologies (human, animal or waste treatment), between 2003 and 2010, including

|                         |     |
|-------------------------|-----|
| Biotechnologies         | 232 |
| Medical technologies    | 161 |
| Pharmaceutical products | 220 |

### Canada's Int'l Ranking, End of 2010 :

4th rank in biotechnology  
 7th rank in medical technology  
 6th rank in pharma product patents



## Success Stories

## Biotechnology sector ecosystem

7. Mature biotech companies

6. Investors focused on growth (risk capital)

5. Support (technology transfer from universities; incubators; accelerator; investors)

4. Biotech Startups

3. Angel investment  
2. Intellectual property  
1. InnovationSource : [www.biotech.ca](http://www.biotech.ca)

## PEI

**BioVectra Inc.**<http://www.biovectra.com/>

Therapeutic products and ingredient development for the pharmaceutical and biotechnological industries on the global scale.

**Neurodyn Life Sciences Inc.**<http://www.neurodyn.ca/>

Identification, validation and development of natural compounds in prescription medications and natural products related to the early treatment of neurological diseases.

**Somru BioScience Inc.**<http://somrubioscience.com/>

Original antibody technology used in research, diagnoses and therapeutic applications.

**Island Abbey Foods**<http://islandabbeyfoods.com/>

Specialty health products and certified medicinal products.

## NB

**Biomolecules for Life Inc.**<http://www.biomoleculesforlife.com/>

Natural products with nutraceutical properties made using marine organisms aimed at reinforcing the immune system.

**Chatham Biotec Ltd.**<http://chathambiotec.com/>

Added-value nutraceutical and pharmaceutical ingredients made with locally harvested materials and used in treating cancer.

**Mycodev Group**<http://mycodevgroup.com/>

Production and commercialization of chitosan, a highly polyvalent pharmaceutical ingredient used in different applications including cancer treatment, nasal sprays and contact lenses.

**Soricimed Biopharma inc.**<http://www.soricimed.com/>

Biopharmaceutical company stemming from university research, dedicated to the production of soricidin (paralytic bifunctional peptide), applied in pain management and in treating cancer

## NS

**AGADA Biosciences Inc.**<http://www.agadabio.com/>

Development of orphan drugs; preclinical tests; murine model research; cellular assays; biomarker applications

**Appili Therapeutics Inc.**<http://www.appilitherapeutics.com/>

Development of new treatments for infectious diseases, including Clostridium difficile bacterium and antibiotic-resistant nosocomial infections.

**Les Algues Acadiennes Itée**<http://www.acadianseaplants.com/>

Harvesting, management, cultivation and processing of marine plants for the food, health, nutraceutical and pharmaceutical industries.

**IMV Immunovaccine**<https://www.imvaccine.com/>

Development of cancer immunotherapies and infectious disease vaccines.

## NL

**Sequence Bio Inc.**<https://sequencebio.com/>

Human genome sequencing used in the detection of biological anomalies.

**Food FirstNL**<http://www.foodfirstnl.ca/>

Food safety specialist in Newfoundland and Labrador.

**NewLab Clinical Research Inc.**<http://www.rdeetnl.ca/industries-cles/>

Specialized clinical trials; genetic research; pharmaceutical, holistic medicine and cosmeceutical applications. Company owns a database of over 28 000 patients.

**IC SPA Products Inc.**<http://www.ossetra-global.ca/>

Utilization of pure iceberg water in skincare product formulations and innovative use of natural molecules found in high-antioxidant berries, seaweed, shellfish, glacial mud or plants.



# Biotech Sector Networks

## NATIONAL BIOTECH INDUSTRY ASSOCIATION

### BIOTECCanada

<http://www.biotech.ca>

Canadian national association incorporated in 1987, regrouping biotechnology companies, teaching institutions, biotechnology regional centers and related organizations. Mission: to represent the field of biotechnology in Canada. Sectors covered: healthcare, agriculture, environment.

## HEALTH SCIENCES AND BIOTECH PROVINCIAL ASSOCIATIONS

### Prince Edward Island BioAlliance (Charlottetown, PEI)

<http://www.peibioalliance.com>

Association created in 2005. Mission: to foster growth in the bioscience industries by bringing together business leaders, researchers and government agencies.

### BioNB (Fredericton, NB)

<http://bionb.org/fr>

Organism created in 1996. Mission: to promote bioscience in NB and to serve as a bridge for technology transfer between different public bodies and private sector companies. Annual presentation of the New Brunswick Bioscience Achievement Award

### BioNova (Halifax, NS)

<http://www.bionova.ca>

Association created in 1993. Mission: to promote the bioscience industry and its achievements. BioInnovation Challenge: competition and support for the launching of startups and life science researchers. Organizer of BioPort (see EVENTS section).

### NATI-Newfoundland and Labrador Association of Technology (St. John's, NL)

<http://www.nati.net/>

Created in 1993. Mission: to advance the technology sector by providing support to the advanced technology industry in a range of sectors, including the biotechnology sector.

## PROVINCIAL ACCELERATORS

### Emergence, BioScience Business Incubator, PEI

<https://emergencebioincubator.com/>

Incubator supporting companies in the bioscience industry.

### BIONB VIP, NB

<http://bionb.org/fr/vip/>

BioNB Virtual Innovator Program: tools and resources for the development of startup companies.

### BioNova, NS

<http://www.bionova.ca/projects/>

BioBusiness Accelerator Program: accelerates the commercialization of technologies and products. BioNova Boost: series of workshops focused on innovation and productivity in companies working in the bioeconomy sector.

### Genesis Centre, NL

<http://www.genesiscentre.ca/home/>

Incubator for companies stemming from research at Memorial University. New program to be offered in 2017: MOTR – focused on leadership and entrepreneurial culture, in collaboration with the MaRS Discovery District (Toronto).

## Upcoming Events

### ► Atlantic Biorefinery Conference 2017

Location: Fredericton, NB

Date: June 7-9, 2017

<http://www.atlanticbiorefineryconference.ca/>

Field : Biotechnologies

### ► Vet Health Global 2017

Location: Charlottetown, PEI

Date: June 12-14, 2017

[http://live-bionb.time.ly/event/vet-health-global-2017/?instance\\_id=72111](http://live-bionb.time.ly/event/vet-health-global-2017/?instance_id=72111)

Field: Innovations in the field of animal health

### ► Atlantic Venture Forum 2017

Location: Halifax, NS

Date: June 27-28, 2017

Field: Life science, sustainable technology and IT companies in Atlantic Canada

### ► BIO World Congress/Industrial Biotechnology

Location: Montréal, QC

Date: July 23-26, 2017

<https://www.bio.org/events/bio-world-congress>

Field: Renewable chemical products, synthetic biology, enzymes, food ingredients and biofuels

### ► Myoelectric Controls Symposium 2017

Location: Fredericton, NB

Date: August 14-18, 2017

<http://www.unb.ca/conferences/mec/index.html>

Field: Myoelectric controls and prosthetics

### ► BioPort Atlantic 2017

Location: Halifax, NS

Date: TBA (annual event)

<http://bioportatlantic.ca/#registration>

Field: Life sciences in Atlantic Canada; support for the development of ideas and the commercialization of technologies from young companies

### ► NeuroConX 2018

Location: Charlottetown, PEI

Date: July 8-10, 2018

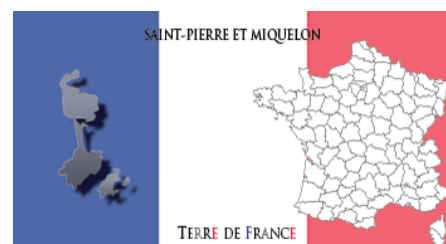
<https://neuroconx.com/>

Field: Therapeutic approaches in the treatment of neurodegenerative diseases

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**Saint-Pierre  
Miquelon  
France métro-  
politaine**



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## Biotech and health



### Overview of technologies for health in France

95% of French biotechnology companies work in human health and 5% in animal health. There are 69 large companies with more than 250 people, of which 38 have over 5000. The vast majority of companies are dedicated to the production of products (55%), companies providing services account for 28% of the total in this sector, and 17% of the companies are "mixed". On average, each person in France consumes €516

**33 000** Number of employees

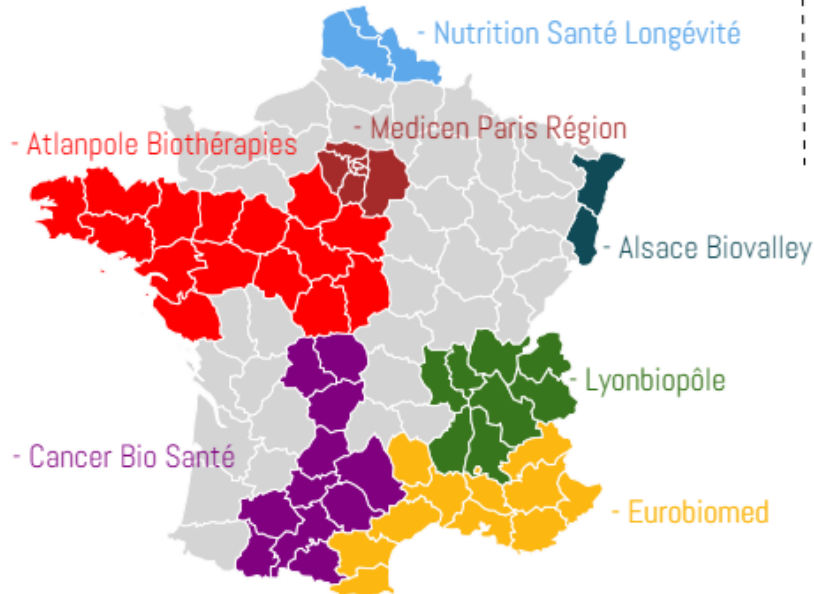
**521** Number of biotechnology  
for health companies in  
France (2014)

**7** Number of competitiveness  
clusters in France

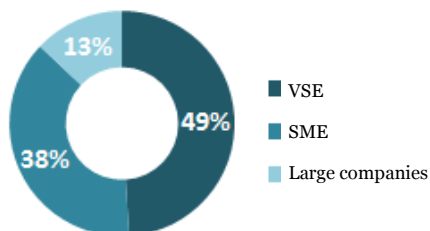
**6** Number of IHU (university  
hospitals) in France

**2.8** Sales by biotechnology  
Billion€ companies in France

**1** Number of health-related  
technological research institutes  
in France



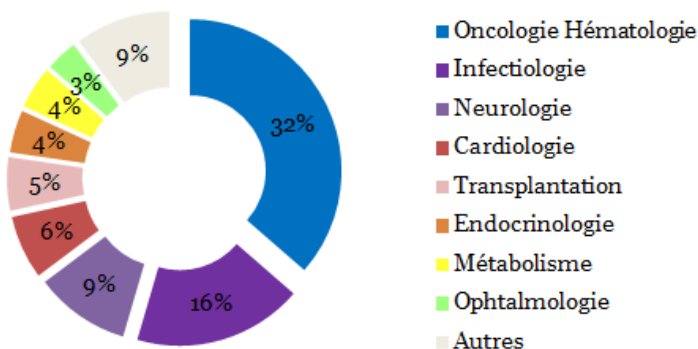
### Typology of Biotech Companies



### Business directories :

- ⇒ [www.usinenouvelle.com/article/e-sante-50-start-up-made-in-france.N388919](http://www.usinenouvelle.com/article/e-sante-50-start-up-made-in-france.N388919)
- ⇒ [www.usine-digitale.fr/annuaire-start-up/start-up-biotech-et-sante/](http://www.usine-digitale.fr/annuaire-start-up/start-up-biotech-et-sante/)
- ⇒ [www.france-biotech.org/bdd-des-entreprises/les-experts/](http://www.france-biotech.org/bdd-des-entreprises/les-experts/)

### Aire thérapeutique d'intérêt :



Only therapeutic areas representing more than 3% of companies having this product were taken into account

Source: LEEM ; IMS Health

Collaboration



# Focus on competitiveness Clusters



Biotechnologies for health

## Nutrition Health Longevity - NHL Cluster

### Strategic Priorities

- ⇒ **Health** : preventive, diagnostic and therapeutic solutions applicable to lifestyle diseases (cardiovascular and metabolic, neuro-degenerative, IBD)
- ⇒ **Food** : protection of health and well-being through a safe, healthy and sustainable diet (innovations in health and well-being, food safety, sustainable development)

[www.pole-nsl.org/](http://www.pole-nsl.org/)

## Alsace BioValley

Assists with the development of companies in the health sector in Alsace through personalized support in searching for new markets in the field of "pharma / biotech" and "medical technologies".

[www.alsace-biovalley.com/fr/](http://www.alsace-biovalley.com/fr/)

## Lyonbiopole

### Strategic Priorities:

- ⇒ human medicine
- ⇒ veterinary medicine
- ⇒ in vitro diagnostics
- ⇒ medical devices and medical technologies

[www.lyonbiopole.com/](http://www.lyonbiopole.com/)

## Medicen Paris région

### Missions of the Cluster :

- ⇒ **Developing growth** and employment in profitable markets, involving all players in the sector to promote transfer of innovative technologies
- ⇒ **Strengthening international competitiveness** of the French "health and leading-edge health technology" sector
- ⇒ **Helping to increase the attractiveness** of the Ile-de-France region and the vitality of its health-care sector

[www.medicen.org/](http://www.medicen.org/)

## Eurobiomed

EUROBIOMED (South of France) is the catalyst for the development of the health sector from basic research to market. This cluster provides resources and offers solutions for businesses and research organizations in the health sector to help them innovate, finance, develop and achieve their strategic and business objectives to ultimately improve the treatment and the lives of patients.

[www.eurobiomed.org/](http://www.eurobiomed.org/)

## Atlanpôle biothérapie

### Strategic Priorities :

- ⇒ **Immunobiotherapies**: research and innovation regarding antibodies, vaccines, immunomodulators and adoptive cell transfer
- ⇒ **Radiopharmaceuticals** "ISOTOP4LIFE": research and production of innovative medical radioisotopes
- ⇒ **Regenerative medicine** : developing innovative solutions as alternatives to organ shortages and for immunological monitoring of transplant patients
- ⇒ **Innovative technologies for biotherapies** (biomarkers, vectors, medical devices, instrumentation, experimental models, processes, software solutions ...)

[www.atlanpolebiotherapies.com/](http://www.atlanpolebiotherapies.com/)

## Cancer bio santé

### Strategic Priorities:

- ⇒ **Boost employment** (development of innovative collaborative projects, promotion of high value-added technology sectors and the gathering together of talent)
- ⇒ **Improve the attractiveness of territories** (bringing together skills and partners, fostering the establishment of high-level research teams and external companies)
- ⇒ **Pool scientific and technological resources**
- ⇒ **Attract financing** (especially public funds, to carry out R & D projects)

[www.cancerbiosante.fr/fr/](http://www.cancerbiosante.fr/fr/)

## Moving Forward: Key Technologies 2020 or How to Prepare for the Industry of the Future

Key Technologies 2020 is specifically aimed at business leaders wishing to diversify their activities or launch new initiatives. 19 technologies are related to health. For more information, visit this website: [www.entreprises.gouv.fr/politique-et-enjeux/etude-technologies-cles-2020?tech=sante](http://www.entreprises.gouv.fr/politique-et-enjeux/etude-technologies-cles-2020?tech=sante)

# Future and Biotech



## Biotech / Health Innovation Skills Plan 2020 - Source LEEM

According to the LEEM (association of pharmaceutical companies in France), the needs in the biotechnology professions and the needs for biotechnology skills in France by 2020 are determined by three development factors that are expected to shape this sector in future years :

- ⇒ The maturity and dynamics of the scientific progress of each of the ten major Biotechnology / Health Innovations families, from which the therapies of tomorrow will emerge (see below)
- ⇒ The development of new approaches for research and production
- ⇒ The unique challenges and dynamics of each company.

## Maturity of technology in 2016 of the ten main Biotechnology / Health Innovations families: Maturity based on the availability of products on the market

|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p><b>Biotech platforms for the discovery of innovative therapeutic molecules</b><br/>Many pharmaceuticals (incl. small molecules for targeted therapy) have been discovered via biotechnology platforms.</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R&amp;D</b> : Xentech, Genfit, Hyberigenics, Inflectis bioscience, Neurochlore, Sensorion, Eydo Pharma, Edelris, Enterome, Neuronax, Oncodesign, Domain, Therapeutics, Picoseq, Cytoo, Flamel Tech, IMStar</p>                                       | <p><b>Diagnostic Tests and Personalized Medicine</b><br/>Maturity in some therapeutic areas such as oncology</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R&amp;D</b> : INCa +centre d'oncogénétique (SNG), TCLand Expression, Acobiom, Centre national de génotypage, ImmunID, Aterovax, Promise proteomics, Metafora Biosystems, Genomic vision, BioMérieux, Intégragen, Alamut Visual, Diaxonhit, Damae Medical, Magnisense, Rarecells</p>           | <p><b>Recombinant Proteins</b><br/>Extensive research and commercialized products</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R &amp; D</b> : Vaccines: Sanofi-Pasteur, Vaineva<br/>Therapeutic vaccines: Abivax, Theravectys / Gentical<br/><b>Neovacs Antibodies</b> : Fab'entech, Innate Pharma, LFB, Sanofi-Pasteur, Sanofi Proteins / peptides: Cerenis<br/>Therapeutics, Alizé Pharma, Hemarina, Neuronax, Ipsen<br/>Pherecydes Pharma</p> <p><b>Delivery System</b> : Adocia, Erytech Pharma<br/>Industrialization &amp; Production</p> <p><b>Vaccine</b> : Leader (Sanfi-Pasteur, Valneva)<br/>Antibodies : MabLaunch (Sanofi-LFB), Sanofi, Pierre Fabre, MabDesign</p> <p><b>Proteins / peptides</b> : Ipsen</p> |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|  | <p><b>Gene Therapy</b><br/>Two products approved by the EMA, an extension of gene therapy beyond single-gene disorders</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R &amp; D</b> : Transgène, Généthon, Atlantic gene therapies, Cellectis, CELLforCURE, TxCell, Gensight, AAV Life, Horama, Lysogène, Eyevensys, Sanofi, Bgene, Genoway, Theravectys, Vectalys</p> <p><b>Industrialization &amp; Production:</b><br/>Genethon Bioprod, AFM/BPI, CELLforCURE</p> <p><b>Quality control:</b> CleanCells</p> | <p><b>Cell Therapies</b><br/>Only two therapies marketed but major efforts made towards industrialization</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R &amp; D</b> : iStem, TxCell, CellProthera, CleanCells, Anagenesis, Biotech, CELLforCURE, CTI Biotech, PhenoCell, UniverCell, BioSolutions, Celyad, Genbiotech, Bone Therap</p> <p><b>Industrialization &amp; Production</b> :<br/>CELLforCURE, Novasep, Bio Elpida, EFS / Atlantic Bio GMP</p> | <p><b>Nanobiotechnologies</b><br/>Application of nanotechnologies in the diagnosis, discovery and development of pharmaceuticals</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R &amp; D</b> : Nanobiotix, Ademtec, Flamel Technology, Nano-H, Fluigent, Biomérieux, Affilogic, Nanomedsyn</p>                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>Multi-technology health solutions</b><br/>Combinations of pharmaceuticals + "intelligent DM +/- connected are being developed to bring added value to patients and health professionals</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R &amp; D</b> : Crossject (ZENEO®); MedinCell (BEPO™), Eveon</p> <p><b>Industrialization &amp; Production:</b> Biocorp, Orange, Dassault</p> |
|  | <p><b>Modification of microbiota for therapeutic reasons</b><br/>A young area of research stemming from recent discoveries, the areas of application are still being identified</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R &amp; D</b> : IGR, Mérieux Nutrisciences, Maat Pharma, Enterome</p>                                                                                                                                                                                                          | <p><b>Tissues for medical use</b><br/>A young field coordinating advances in stem cells, signaling and biomaterials</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R &amp; D</b> : Poietis, Univercell, Biosolutions, Genoskin, Novotec, Artios, Aenitis, Biopredic Int., Cytosial BioMed</p> <p><b>Industrialization &amp; Production</b> :<br/>Sterlab (for R &amp; D)</p>                                                                              | <p><b>RNA-based therapies</b><br/>Promise of effectiveness but delivery / transport strategies still need to be optimized</p> <p><b>Companies established in France (non-exhaustive)</b><br/><b>R &amp; D</b> : SeleXel, Eukarys, Genel, Tollys, Sanofi</p> <p><b>Industrialization &amp; Production</b> : Poluplus-transfection</p>                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                  |

Source: LEEM

Source: LEEM

Complete text : [www.leem.org/plan-competences-biotechinnovations-sante-2020](http://www.leem.org/plan-competences-biotechinnovations-sante-2020)



**Start-up and innovations :** la sélection du magazine *Challenges* des 15 start-up où investir en 2016 dans le secteur *Biotech et Santé*



| NAME                                 | INNOVATION                                                                                                                                                                                                                                                        | RESEARCH CAPITAL |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <a href="#">VitaDX</a>               | <b>Detect cancer using urine:</b> develop a solution for early diagnosis of bladder cancer.<br><a href="http://fr.vitadx.com/">http://fr.vitadx.com/</a>                                                                                                          | €1.5 M           |
| <a href="#">UNOOC</a>                | <b>Compare prices of pharmaceuticals:</b> direct the user to the nearest least expensive, pharmacy.<br><a href="http://www.unooc.fr/">www.unooc.fr/</a>                                                                                                           | €1 M             |
| <a href="#">Pharmanity</a>           | <b>Reference all pharmacies:</b> site that lists 22,000 pharmacies and 115,000 products, and allows users to check real time availability and prices of the products in a pharmacy.<br><a href="http://www.pharmanity.com/">www.pharmanity.com/</a>               | €0.35 M          |
| <a href="#">PEP Therapy</a>          | <b>Treat cancers:</b> develop molecules that penetrate the cell and specifically block certain mechanisms of the disease.<br><a href="http://www.pep-therapy.com/">www.pep-therapy.com/</a>                                                                       | €5 - 10 M        |
| <a href="#">Mybrain Technologies</a> | <b>Explore the brain to relax it:</b> develop an audio electroencephalogram (EEG) headset.<br><a href="http://www.melomind.com/fr/">www.melomind.com/fr/</a>                                                                                                      | €5 - 15 M        |
| <a href="#">Millidrop</a>            | <b>Revolutionize phenotyping:</b> creation of the "Millidrop Analyzer", a controller allowing a researcher to test 1000 samples in parallel.<br><a href="http://www.millidrop.com/fr/accueil/">www.millidrop.com/fr/accueil/</a>                                  | €2 M             |
| <a href="#">Lemonfab</a>             | <b>Improve well-being in the workplace:</b> Solutions that are fun and innovative to improve well-being at work, in particular through health.<br><a href="http://www.lemonfab.com/">www.lemonfab.com/</a>                                                        | €1 M             |
| <a href="#">Ad Scientiam</a>         | <b>Use a Smartphone to do research and help patients:</b> create tools that allow research and clinical studies to use new possibilities offered by the use of smartphones and connected objects.<br><a href="http://www.adscientiam.fr/">www.adscientiam.fr/</a> | €1 M             |
| <a href="#">Biomodex</a>             | <b>3D for medical training:</b> supported by Dassault, this project consists of using 3D printing to create models for surgeons.<br><a href="http://www.biomodex.com/">www.biomodex.com/</a>                                                                      | €3.2 M           |
| <a href="#">Damae Medical</a>        | <b>Optical imaging for the detection of skin cancers:</b> develop a device capable of detecting cancers by simple contact with the skin.<br><a href="http://www.damaemedical.fr/">www.damaemedical.fr/</a>                                                        | €1.5 M           |
| <a href="#">DreamQuark</a>           | <b>Use Artificial Intelligence to help make a diagnosis:</b> use algorithms to help diagnose rare diseases and screen for certain diabetes.<br><a href="http://www.dreamquark.com/">www.dreamquark.com/</a>                                                       | €5 M             |
| <a href="#">Emiota</a>               | <b>Smart Belt:</b> intended for men, this belt, packed with technology, includes a vibrator which measures the physical activity of the person wearing it.<br><a href="http://www.wearbelty.com/">www.wearbelty.com/</a>                                          | €0.25 M          |
| <a href="#">Hey Doctor</a>           | <b>Social network of health professionals:</b> site for the exchange of information but also for using online services such as the consultation of ads.<br><a href="http://www.heydoctor.fr/">www.heydoctor.fr/</a>                                               | €0.1 M           |
| <a href="#">HorseCom</a>             | <b>Bluetooth headset for horses :</b> create a helmet so that the rider and the horse can communicate<br><a href="http://www.horsecom.io/">www.horsecom.io/</a>                                                                                                   | €5 M             |

Source: [www.challenges.fr/start-up/paris-pionniere-dans-les-start-up-biotech-et-sante\\_29865](http://www.challenges.fr/start-up/paris-pionniere-dans-les-start-up-biotech-et-sante_29865)

### RPM Pilot Project Bonavista-St. Pierre et Miquelon

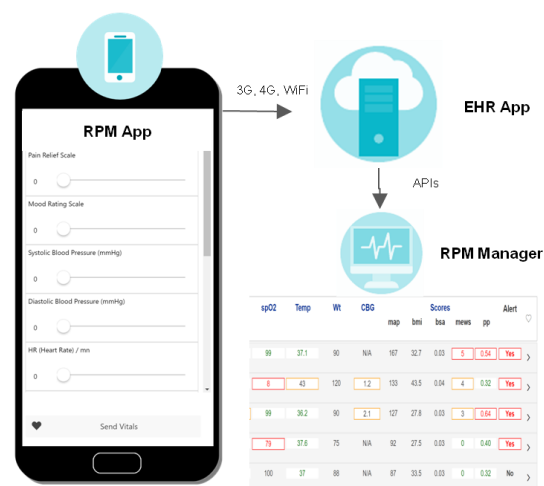
Eastern Health, Canada and the hospital in St. Pierre, France. Project in partnership with Eastern Health in St. John's

This project consists of monitoring patients at home, via a smartphone and a mobile application. The patient provides information on up to 30 health indicators that are analyzed by a computer to identify if an intervention should take place.

Advantages of home monitoring:

- Less overload of family physicians
- Monitoring possible 24/7 // 365
- Reduction in the number of hospital stays
- Reduction in health costs
- Quality of life of the patient (at home)
- Better patient follow-up
- Predictive approach to risk analysis

### Hybrid technologies: Mobile + Web-based



# INTELL-ECHO



Are you seeking business opportunities in this sector?  
CACIMA and FCCC-AN can facilitate your business prospection process and help with establishing new partnerships  
(targeted information and network contacts)

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