



**MARINE BIOTECH: WHAT CAN CANADA ACCOMPLISH IN THE
NEXT 10 YEARS?
HOW CAN WE GET THERE?
NRC MARINE BIOTECH WORKSHOP**

NOÉMIE GIGUÈRE
RIMOUSKI, QUÉBEC
NOVEMBER 10, 2020



THE TMQ NETWORK



61
members

20
cities

9
Qc regions

55%
private

+10
countries





TMQ AXES OF INTERVENTION



PROMOTION AND OUTREACH

- > Prominence and visibility at the provincial, national and international levels
- > Promotion of network expertise
- > Enhancement of attractiveness of innovative maritime sectors
- > Presentation of industry events

RESEARCH AND INNOVATION

- > Stimulation of research and innovation culture
- > Liaison and cooperation between industry and research
- > Development and consolidation of multidisciplinary partnerships
- > Support and implementation of collaborative projects that spur greater industry involvement

SECTORAL DEVELOPMENT

- > B2B and development of business networks
- > Facilitation, dissemination of information and sector intelligence
- > Organization of activities with a focus on continuous learning and competitiveness

MARINE BIOTECHNOLOGY

Biotechnology is the application of scientific and engineering principles to the **processing of materials by means of biological agents** to produce goods and services (OECD).

Marine biotechnology is defined as the **industrial use of resources that are of marine origin**.

With a multitude of potential fields of application, marine biotechnology is rapidly expanding worldwide. Quebec is home to a number of businesses and research centres that are finding new uses for marine biomass and by-products of the marine product processing sector.

GLOBAL BIOTECHNOLOGY MARKET

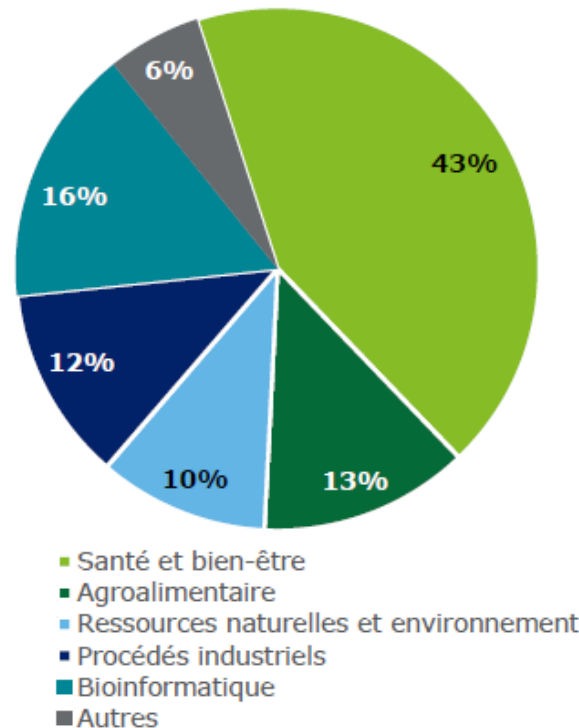
Market share – world revenues from biotechnologies (2017)

- Health and well being (43%)
- Agrifood (13%)
- Natural resources and environment (10%)
- Industrial bioprocesses (12%)
- Bioinformatics (16%)
- Others (6%)

****MARINE BIOTECH IS A BIOTECH SUBSECTOR**

The biotech industry at a glance

Part des revenus biotechnologiques
mondiaux par secteur d'activité, 2017



Taille du marché
mondial en 2017

409,3
milliards \$

Taille du marché
mondial anticipé
en 2025

727,1
milliards \$

Taux de croissance
annuel composé
2016-2025

7,4 %

Market size in 2017
(billion)

Expected market
size in 2025
(billion)

Compound annual
growth rate
2016-2025
(billion)

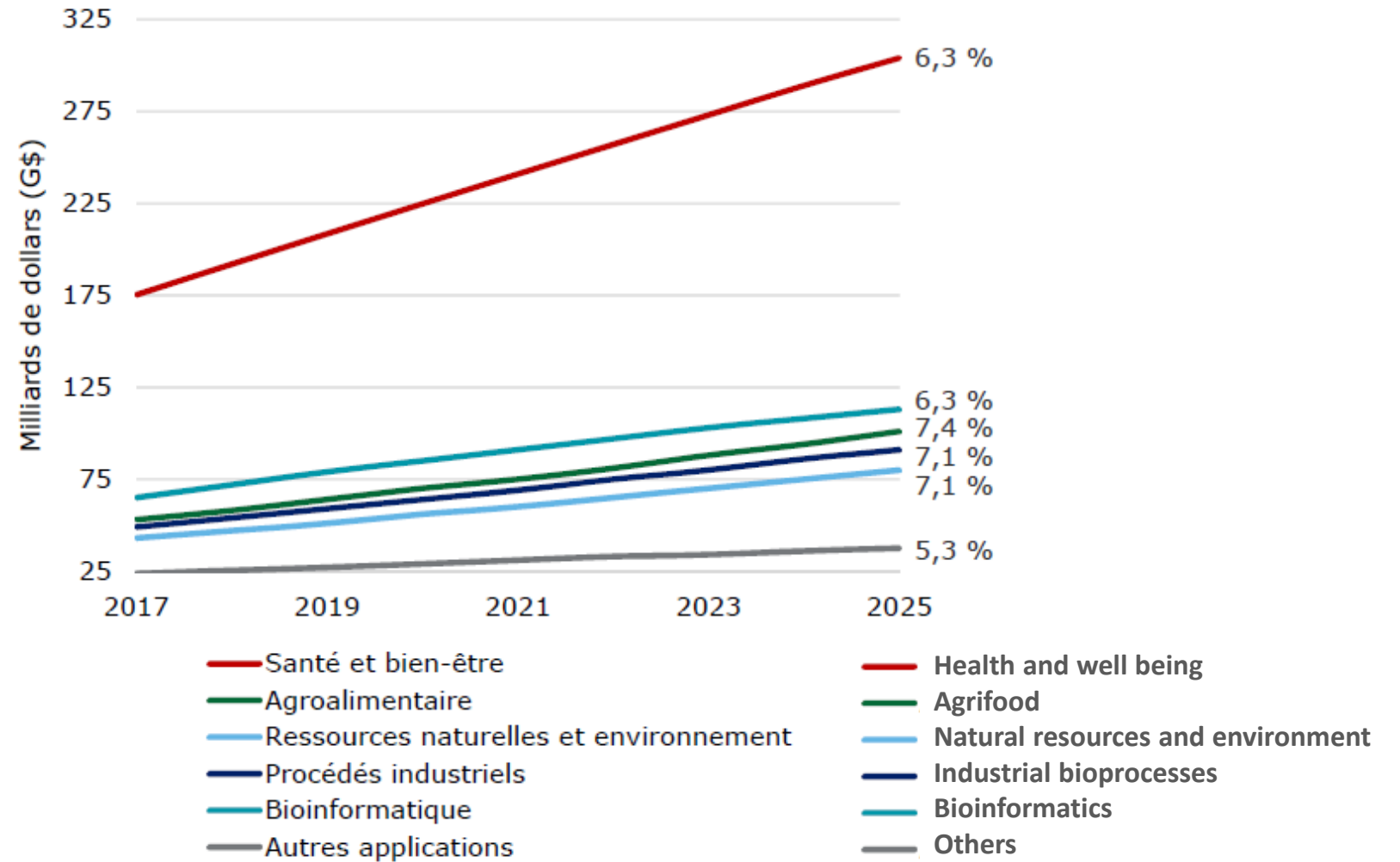


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Market Study MBRC-SOPER, 2018



MORE UNDERSTANDING OF
 THE MARKET...

Global trend by industrial segment - 2017-2025



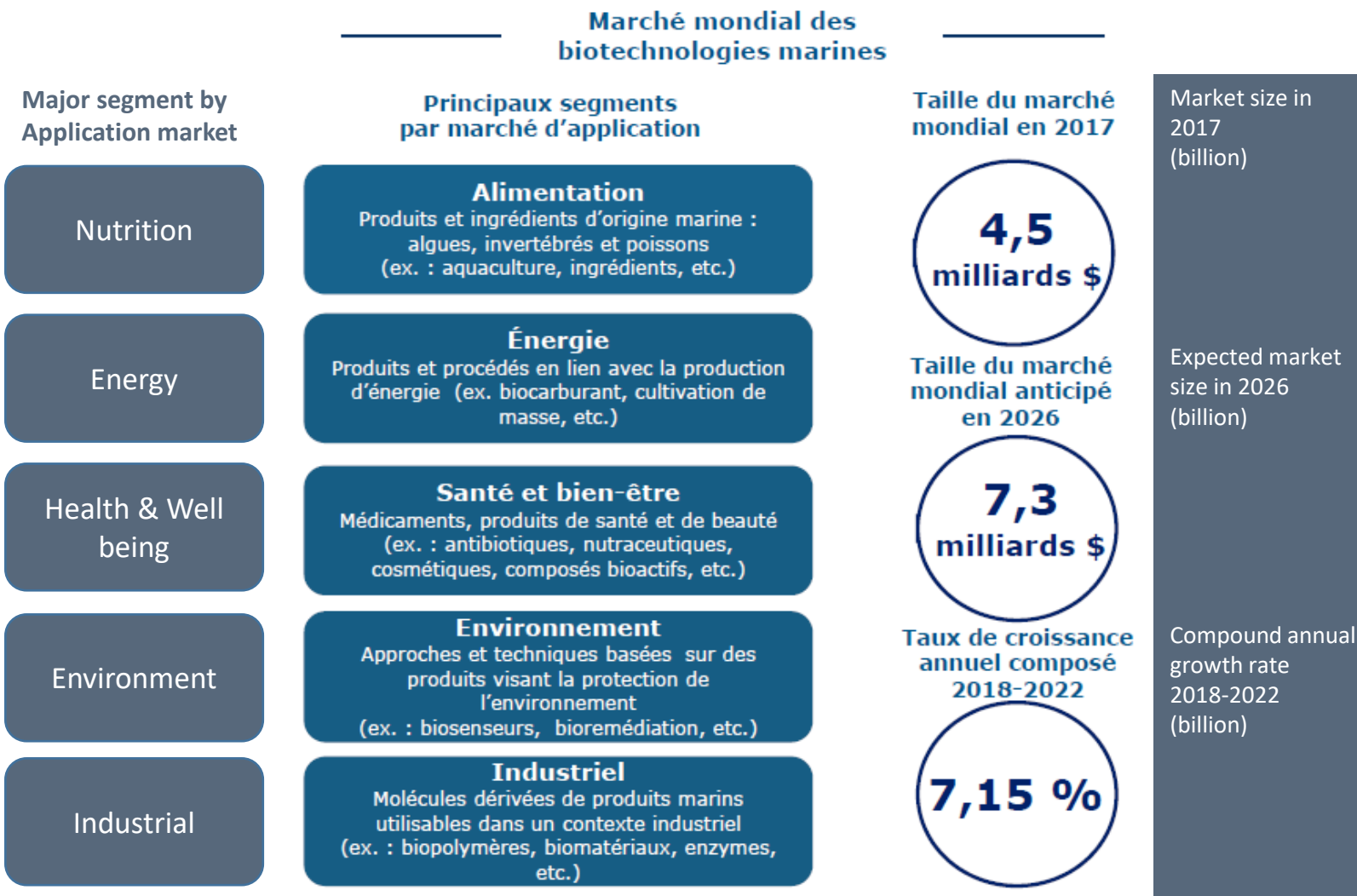


The marine biotech industry at a glance

GLOBAL MARINE BIOTECHNOLOGY MARKET

An emerging subsector

Marine biotech represent less than 2% of the whole biotech market



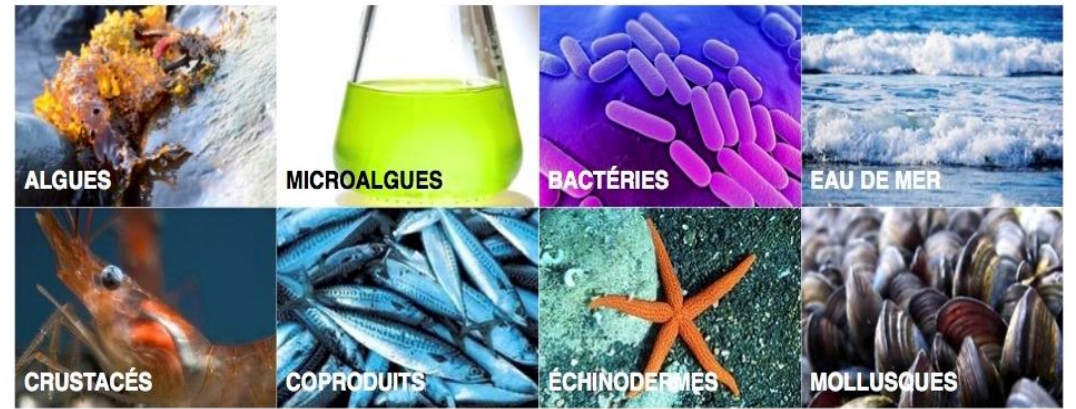
Many source of marine material

Algae, Microalgae, Bacteria,
 Sea Water, Crustaceans, Byproducts,
 Echinoderms, Shellfish

MARINE BIOTECH

Various market applications

Aquaculture, Animal feed,
 Nutraceutical and nutrition,
 Cosmetic, Pharmaceutical,
 Biomaterials, Bioplastics, Biofuels,
 Biofilm, Enzymes, Fertilizer,
 Bioremediation



Utilisation des ingrédients marins vers différents marchés





QUEBEC MARINE
BIOTECHNOLOGY



Marine biotechnologies in Quebec: a few statistics



27

Businesses specializing in
marine biotechnologies



700+

Jobs



6+

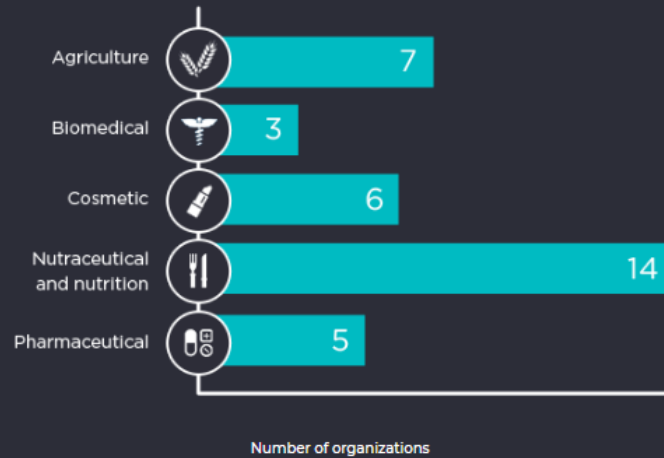
Fields of application



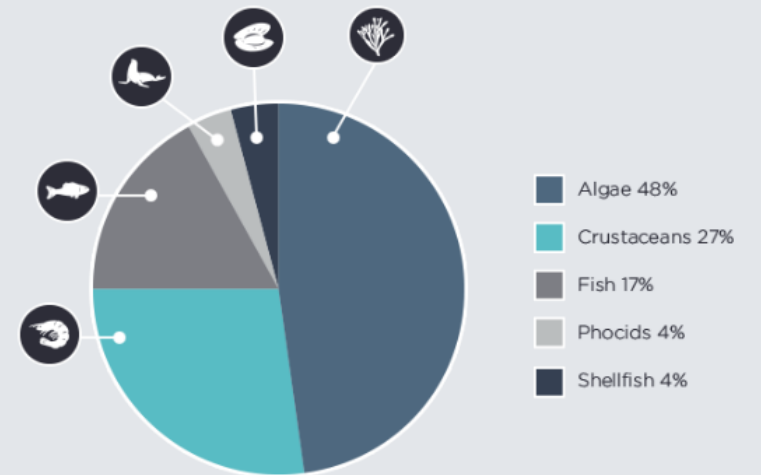
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University and research
centres

Fields of application

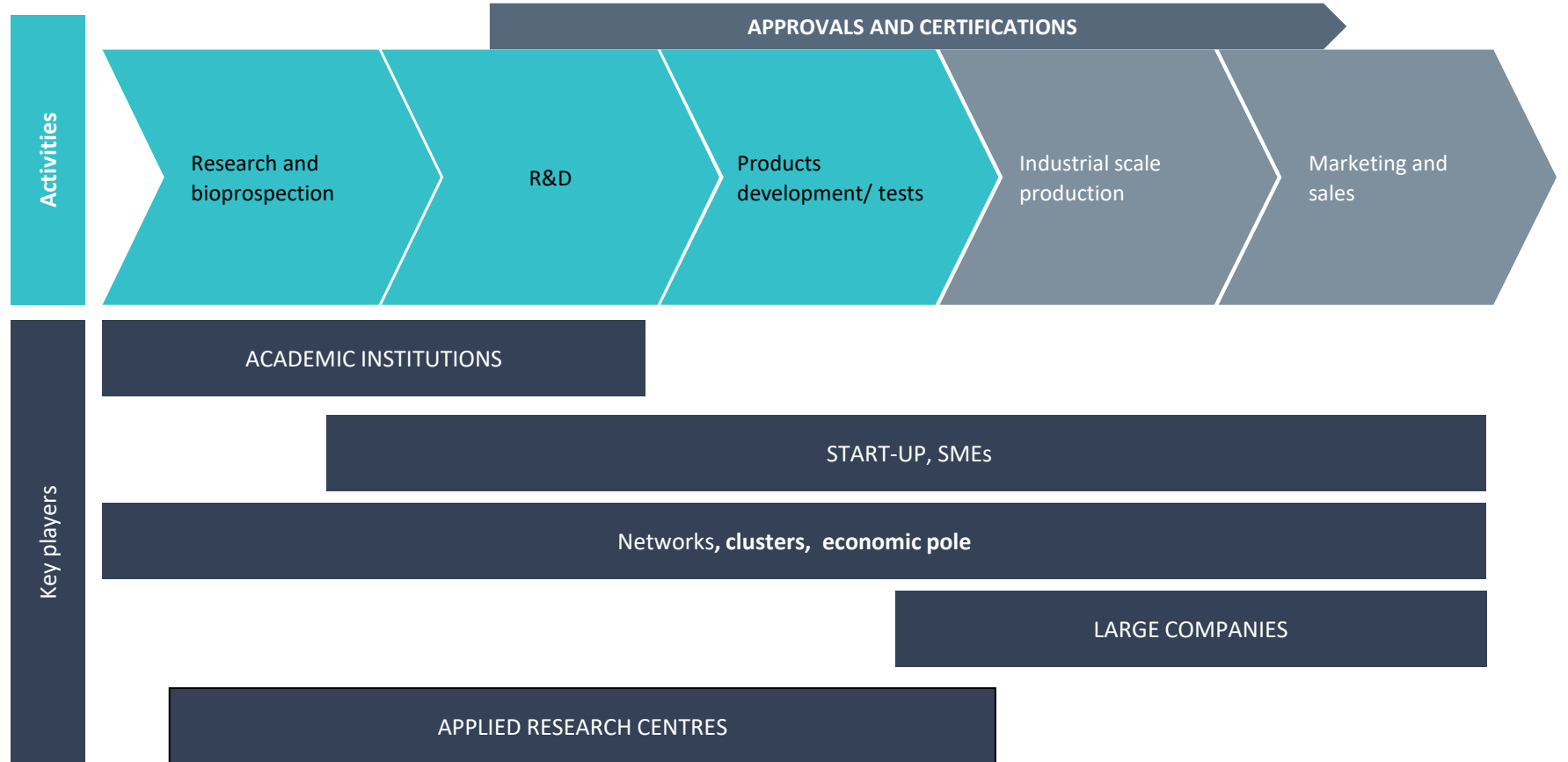


Marine biomass sources





VALUE CHAIN OF BLUE BIOTECHNOLOGY



MARINE BIOTECH:
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THERE?

MARINE BIOTECH: WHAT ARE THE CHALLENGES?

Marine biomass

- Biodiversity and bioprospection
- Discovery and preservation
- Supply stability
- Development of production method

Marine biotech market

- Emerging sector
- Increasing development vs Sustainable resource valorization
- Collaboration of the whole value chain
- Targeting maximal value: no waste

Proof of concept

- Need of accelerating tools
- Financing
- Control of production costs
- Enhancing commercialization

Long term vision

- To foster project development support
- To promote knowledge acquisition, production and development

MARINE BIOTECH: WHAT ARE THE CHALLENGES?

Regulation

- Cost of tests, qualifications and certifications
- Necessity of harmless, quality, claim vs commercialization and customer acceptance
- To be considered at the beginning of the product development vs target market

Integrated value chain

- From fishermen, to producers and processors, to R&D entities, to start-ups and SMEs, to distributors, and consumers
- Coordination of the value chain stakeholders to accelerate its development and access to market

Workforce and expertise

- Cutting-edge sectors
- Access to qualified staff
- Skill development

Government policies

- Government implication and interest = cluster success
- Official strategy to support the sector



A WAY TO ADDRESS CHALLENGES AND CREATE SYNERGIES

- Bringing together and mobilizing around shared objectives
- Creating a conducive environment for the development of businesses and organizations
- Bridging the gap between industry and research
- Foster the success of the cluster at the national and international levels



Outcomes and advantages?

- Collaborative research projects
- Increasing competitiveness
- Sharing of resources and information
- Neutral environment allowing discussions

THANKS TO



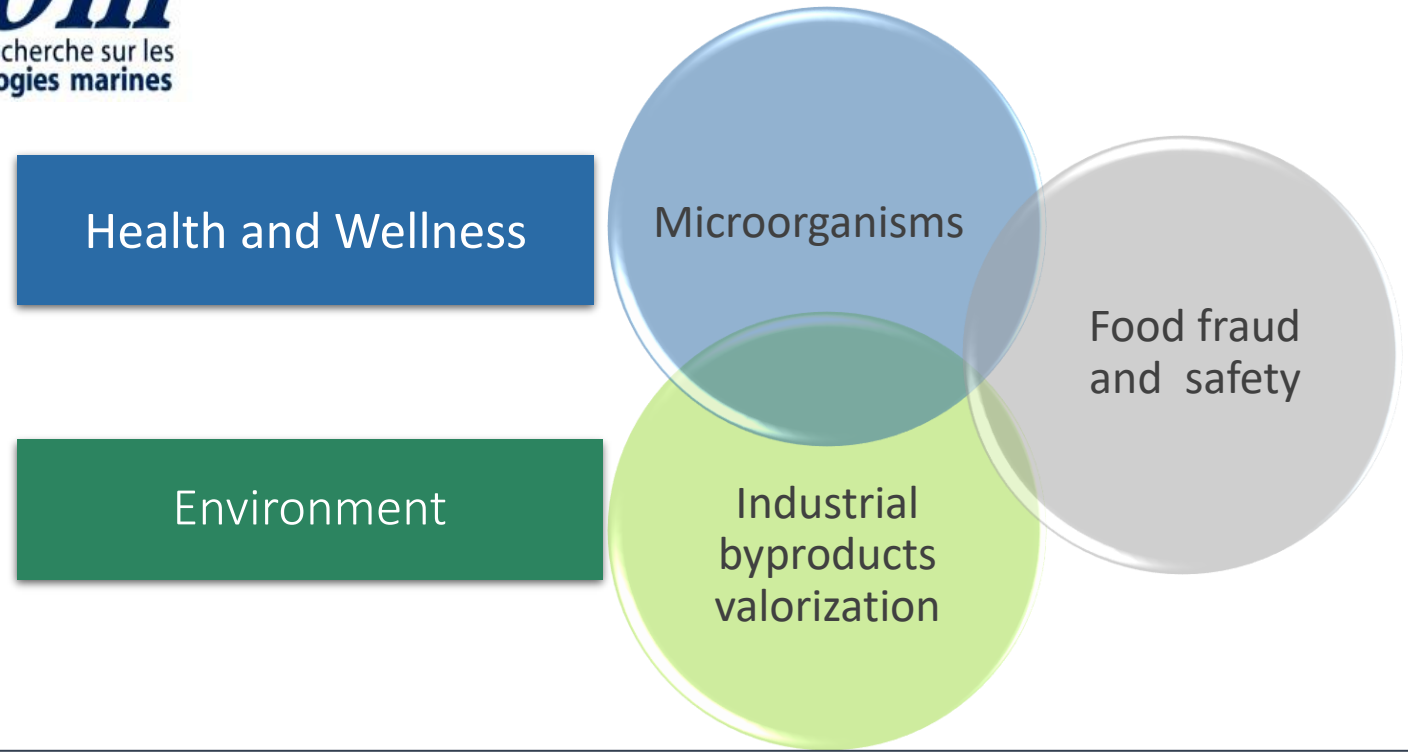
Marine Biotechnology Research Center

www.crbm.ca

A multidisciplinary team of 36 people

- Clinical microbiology
- Cellular biology
- Chemical characterization
- Molecular biology and genomics
- Industrial microbiology and fermentation
- Process and extraction
- Marine biology
- Feasibility study and Market study – Regulatory guidance- technology survey
- Quality assurance/ Quality control
- Technical support

A GMP certification for pharmaceutical R&D and analytical development projects since 2005.



The CRBM's mission is to support and contribute to growth in the marine biotechnology sector through research, scientific development and industrial transfer activities, particularly in life sciences.

NOÉMIE GIGUÈRE
EXECUTIVE DIRECTOR
NGIGUERE@TMQ.CA

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