

The fermentation challenge: Models that could work for Canada and abroad



Shelley King
Natural Products Canada



Barbara M Campbell
Natural Products Canada



Vikram Pandit
Phycus Biotechnologies



Dr. Hamid Noori
The Cultivated B



Dr. Scott Farrow
Solar Biotech Canada



Scaling Up™ 2023

The Future is Now

NPC

NATURAL
PRODUCTS
CANADA



\$1 TRILLION OPPORTUNITY

**The demand for naturally-derived
solutions is driving massive global
growth projections.**

**All figures in CDN*

\$67B

**Water & Waste
Treatment**

\$175B

**Bioproducts &
Sustainability**

\$15B

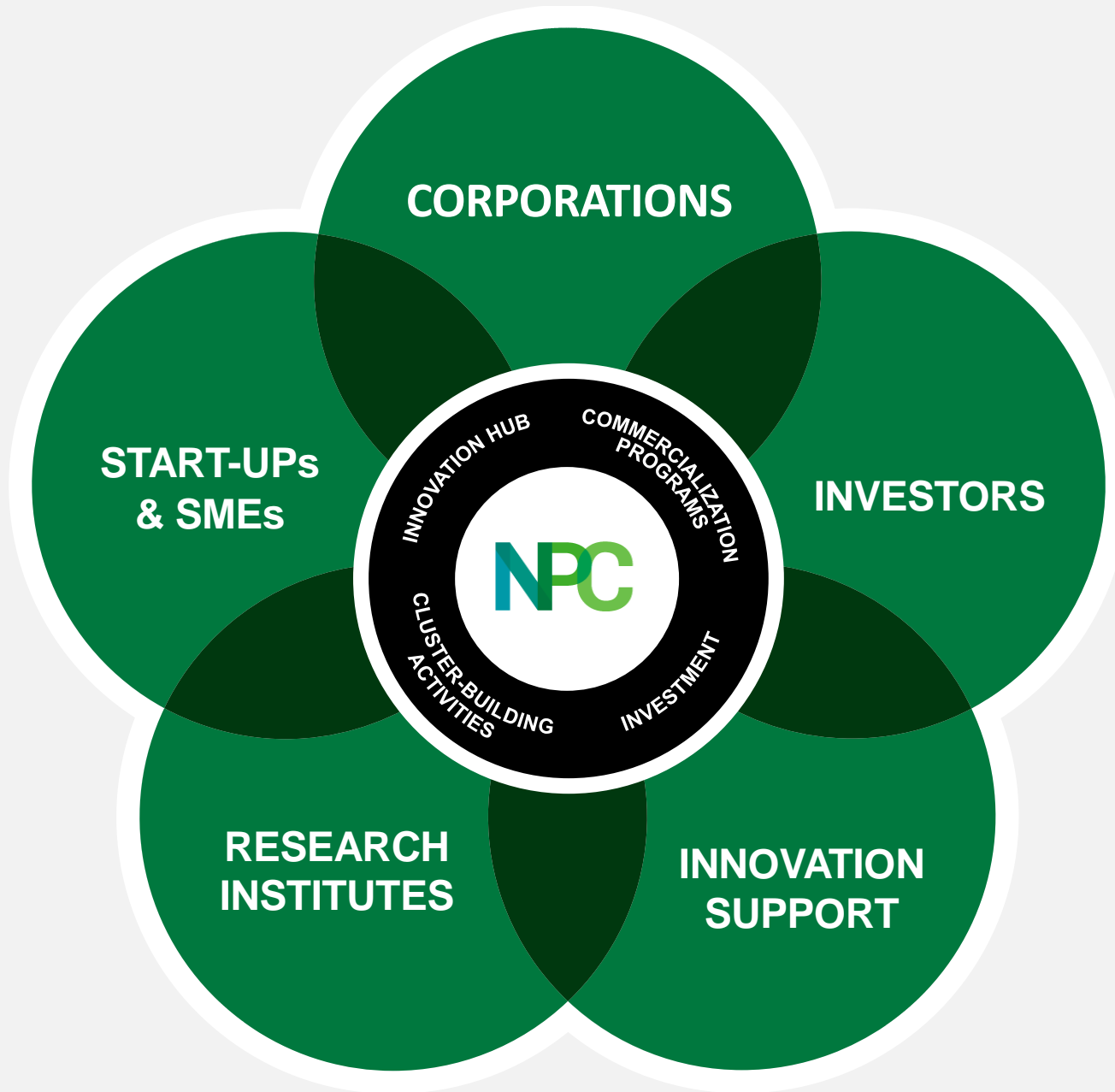
**Food Production
& Value Added
Agriculture**

\$57B

**Animal Health &
Nutrition**

\$618B

**Health, Nutrition &
Wellness**



CANADA'S NATURAL PRODUCT INNOVATION CLUSTER

The Cluster facilitates the development and commercial success of innovative natural products through:

- Strategic advice and commercialization programs
- Networking and introductions
- Engaged, collaborative members

OUR ROLE

Leadership
Strategic Supports



NATURAL
PRODUCTS
CANADA



ADVISORY SERVICES

Business and technical advice,
including introductions & referrals



COMMERCIALIZATION PROGRAMS

Strategic expertise and supports to address
growth and market hurdles



CLUSTER-BUILDING

Events and initiatives to advance
emerging or regional opportunities



INNOVATION HUB

Access to the right people, products
and partnerships



INVESTMENT FUND

Dedicated investment fund and expertise
to develop and de-risk opportunities

OUR TRACK RECORD

3.8K

1.5K

13

63

64X

Engaged community

**Opportunities
assessed and
supported**

**Investments in
Canadian companies**

**Companies supported
through
Commercialization
Programs**

**\$64+ for every
\$1 committed**



NATURAL
PRODUCTS
CANADA

FERMENTATION OPPORTUNITY REPORT

Study Methodology

- Fall 2022
- Literature Review
- 25 in-depth interviews
- Stakeholder Survey (75 participants)



10 KEY TAKEAWAYS

1. Fermentation capacity is lacking at the demonstration level (in Canada and globally)

2. Fermentation capacity is missing at the commercial level (in Canada and globally)

3. Canadian start-ups cannot find what they need in Canada (and are going elsewhere)

4. Downstream Processing (DSP), a critical and highly specialized complement to fermentation, is lacking across the country

5. Financial/investment models are critical at all stages

10 KEY TAKEAWAYS

6. IP plays an important role

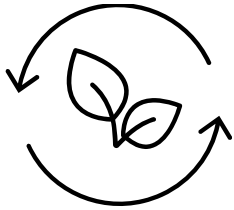
7. Expertise/HR is a critical gap (in Canada and globally - training/recruitment/retention plans are critical)

8. Regulatory and Policy needs to understand and leverage the many facets of the fermentation opportunity

9. The majority of end products in Canada are ingredients; biobased chemicals; and biobased materials

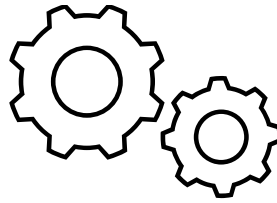
10. Canada needs a coordinated approach to seize this tremendous fermentation strategy

WHY THE GROWING INTEREST?



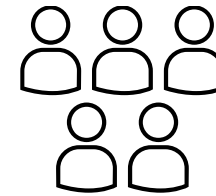
SUSTAINABILITY

Produce proteins or products with lower impact to environment



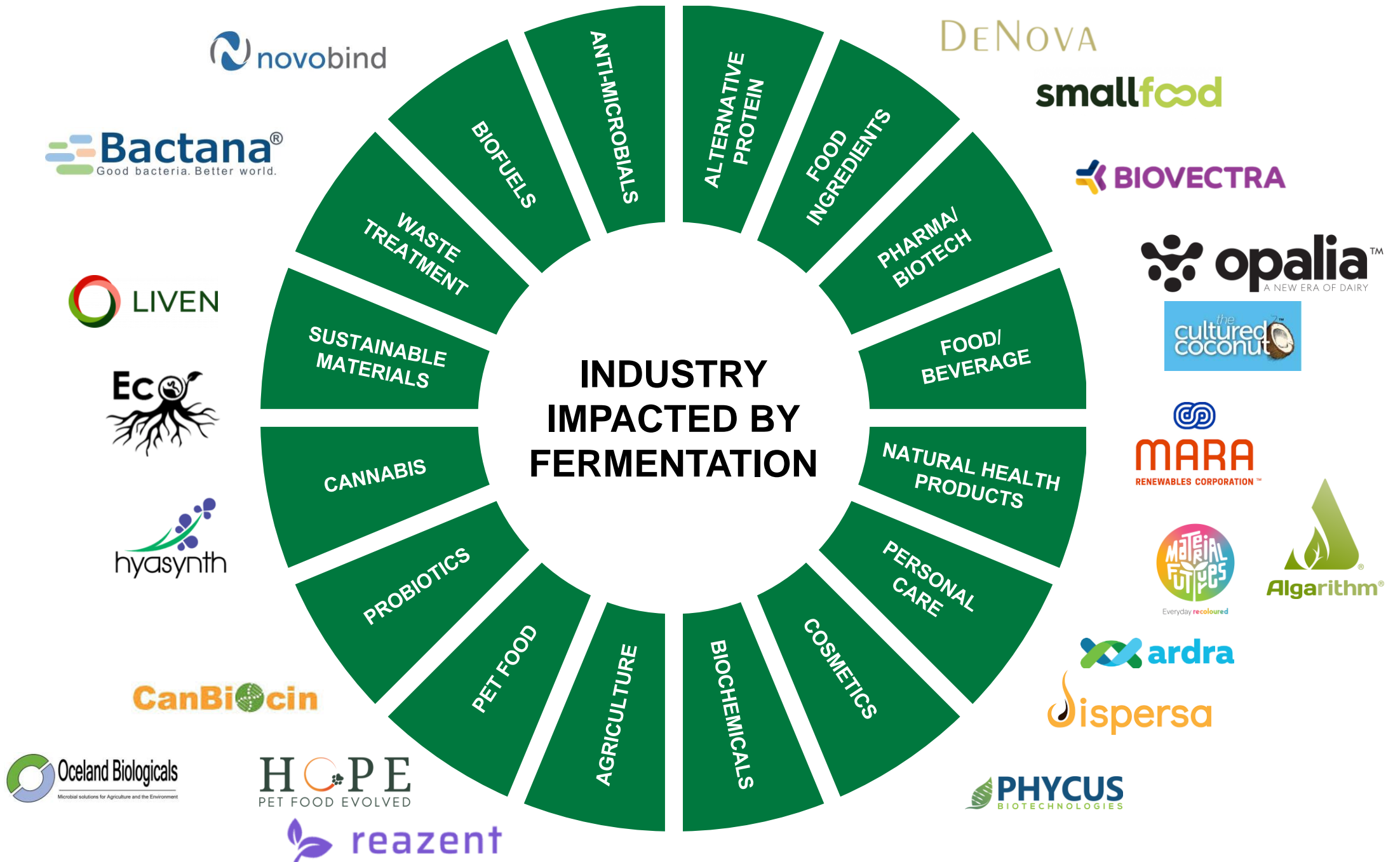
EFFICIENCY

Reduce variability and scaling requires smaller food print than agriculture

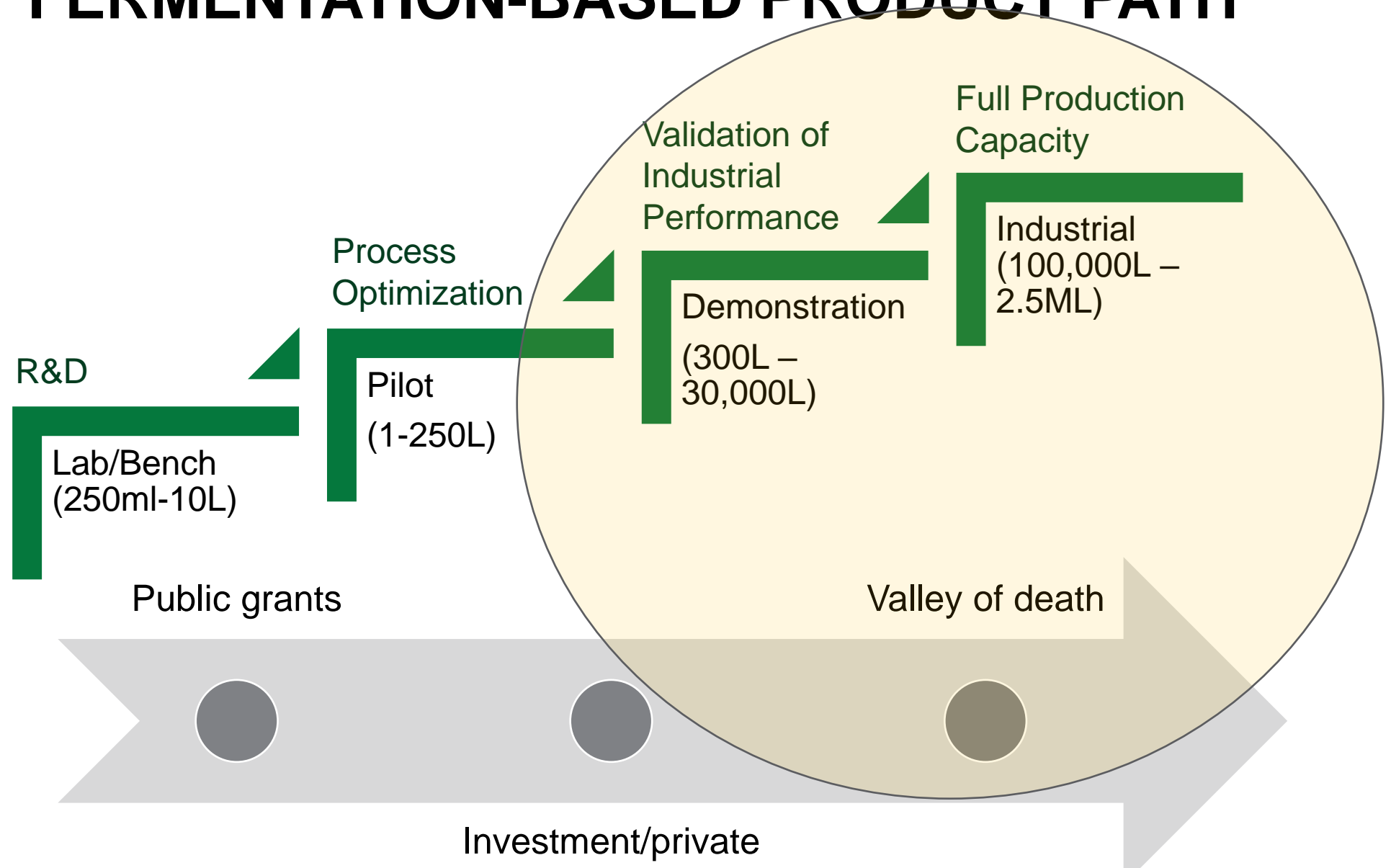


FUTURE NEED

Population is growing fast with projected 8.5B humans in 2030 and 10B in 2050.



FERMENTATION-BASED PRODUCT PATH





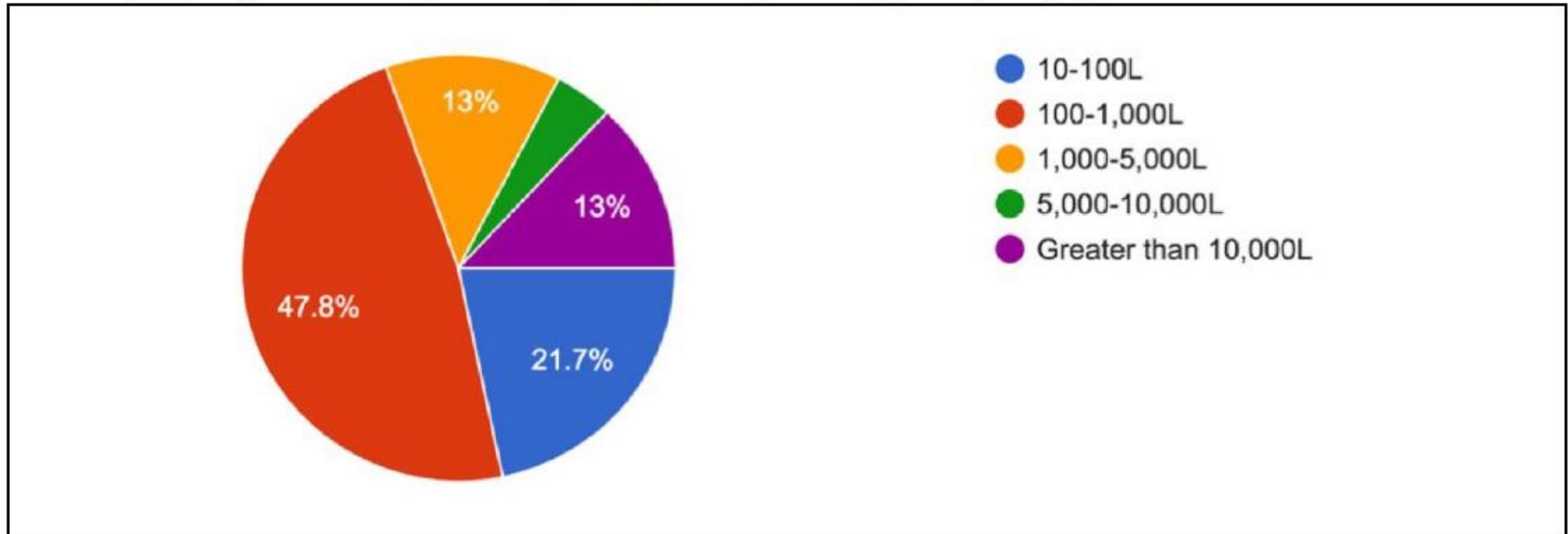
INVESTMENT

“We don't want any of our venture money going into steel, concrete, projects that take 2-years to build. I would say that is absolutely incompatible with venture capital as an asset class. We're investors looking for at least 10x return on our initial investment, and the time between venture capital raises, [is] typically 2 yrs. Let's just say you raise money, and then it takes 2-yrs to build something, you actually don't have time to hit the milestones to hit an inflection point.”

Canadian investor

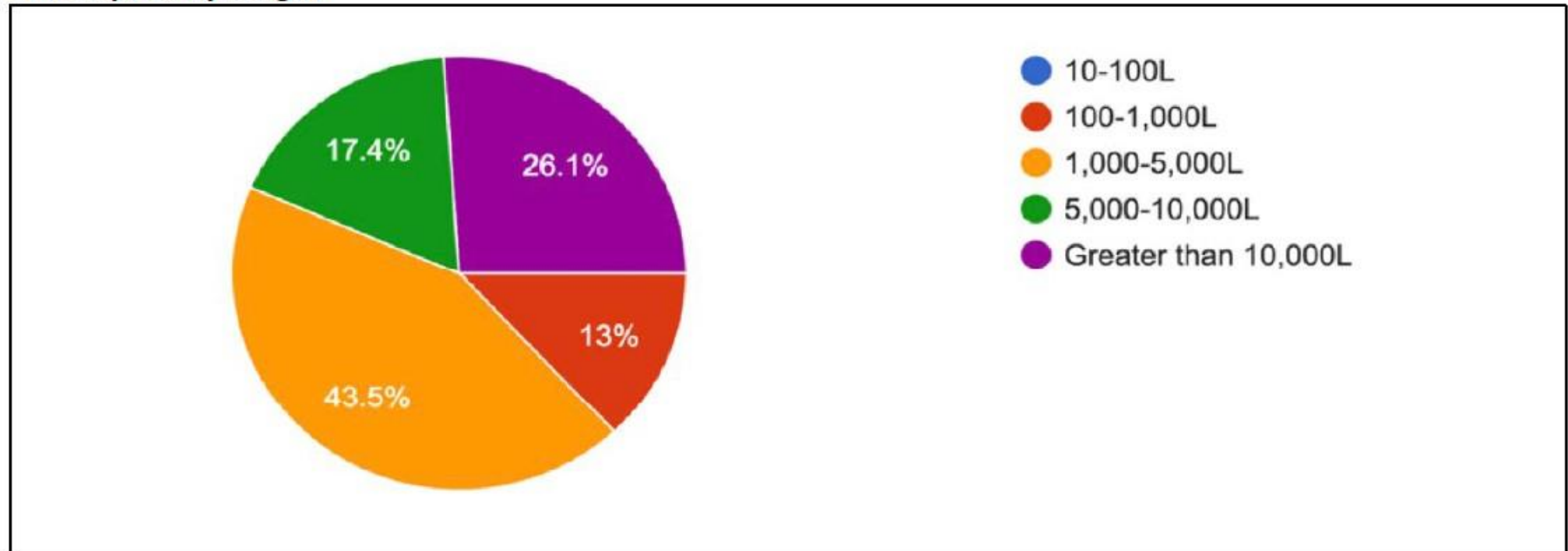
CURRENT START-UP NEED

Fig. 2: In terms of volume of output, what is the scale of fermentation capacity (bioreactor) that you need at this stage of development? [23 responses, start-up/early stage]



EXPECTED START-UP NEED

Fig. 3: In terms of volume of output, what is the scale of fermentation capacity (bioreactor) that you anticipate will be required by your company in the next 12-24 months (1-2 years)? [23 responses, start-up/early stage]



The fermentation challenge: Models that could work for Canada and abroad



Shelley King
Natural Products Canada



Barbara M Campbell
Natural Products Canada



Vikram Pandit
Phycus Biotechnologies



Dr. Hamid Noori
The Cultivated B



Dr. Scott Farrow
Solar Biotech Canada



Scaling Up™ 2023

The Future is Now

NPC

NATURAL
PRODUCTS
CANADA