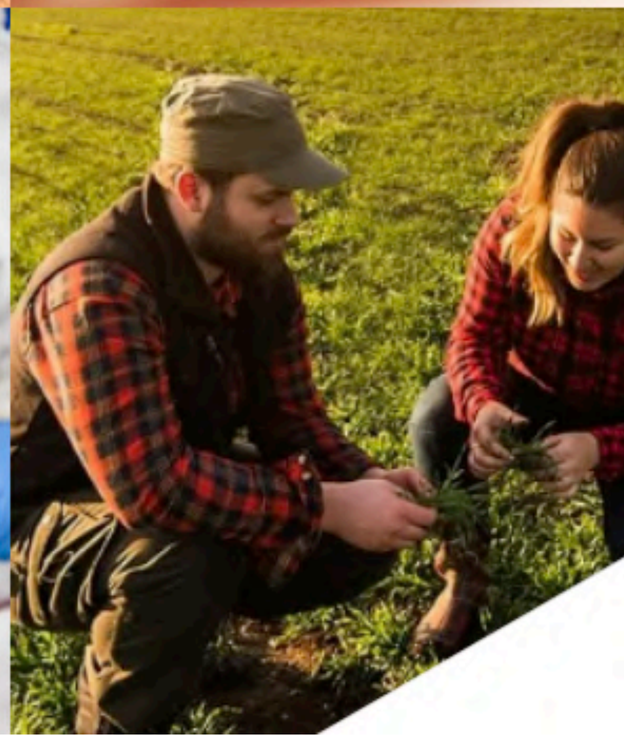
BIOTECHNOLOGY & FOODTECH

wagralim
APPETITE FOR INNOVATION

DigitalFoodLab
BE PART OF THE FUTURE

Today,

We have three goals:

- **Have an overview of the different intersections of the FoodTech and Biotech ecosystems.**
- **Have a discussion with industry insiders and experts on how biotechnology can be leveraged in the agrifood supply chain from the idea to mass adoption.**
- **Answer your questions!**

Use the Q&A tool to ask questions, we'll have a dedicated time to answer them

DigitalFoodLab

Hello,

I am Matthieu Vincent, co-founder of DigitalFoodLab.

We help leading organisations to become or stay leaders of the future of food.

After our experience as entrepreneurs, we are now consultants, experts and board members of startups.

DigitalFoodLab

Our mission is to help our clients to be part of the future of food

Exploration

Ecosystem study

Workshops & presentations

What is happening?

Bespoke watch

Scouting

Strategy

Innovation strategy

Opportunity screening

How to benefit from innovation?

M&A and investments

CVC due diligence

50+ clients

Cargill, Nestlé, Danone, bel, Limagrain, Metro, MSCI, Coca-Cola, Crédit Mutuel Equity, Food & Bio Cluster Denmark, Carrefour

Some of our territories: alternative proteins, functional ingredients, agtech, decarbonisation, new brands, digital retail/restaurant, healthy ageing.

1 Definitions

What are we talking about?

DigitalFoodLab

BE PART OF THE FUTURE

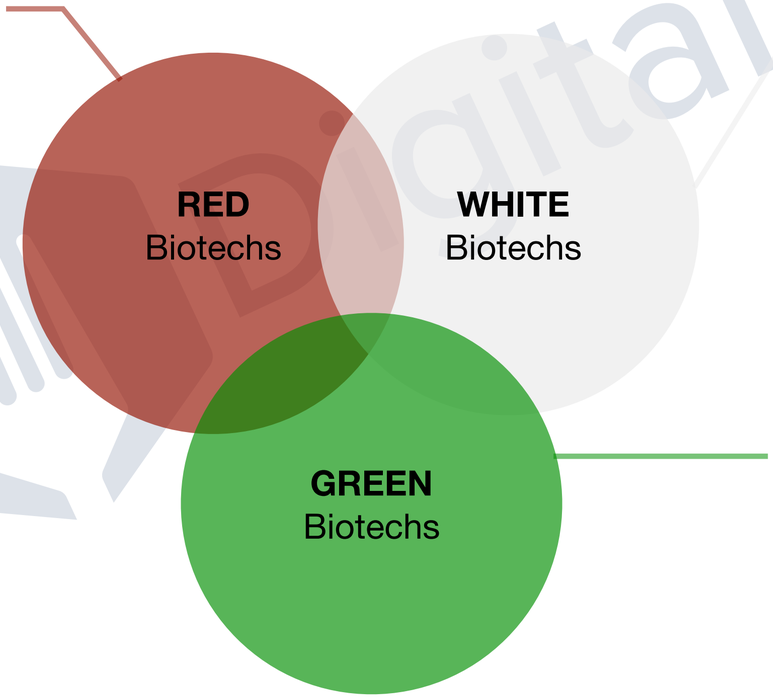
1 - Biotech

Definition (OECD): application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services.

Red Biotech:

Medical / health-related applications, notably on:

- Cancers
- Immunology
- Personalised health



White Biotech:

Use of micro-organisms in production processes, such as:

- Food ingredients
- Packaging
- Materials

Green Biotech:

Agriculture applications, notably:

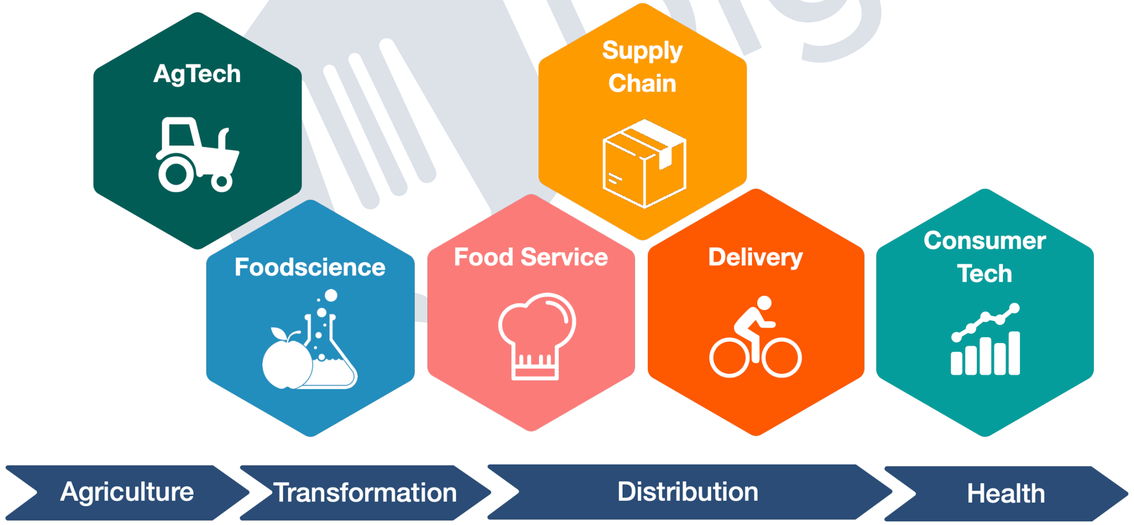
- Bioinputs (biostimulants, biopheromons…)
- Crops
- Animal health & feed

DigitalFoodLab

2 - FoodTech

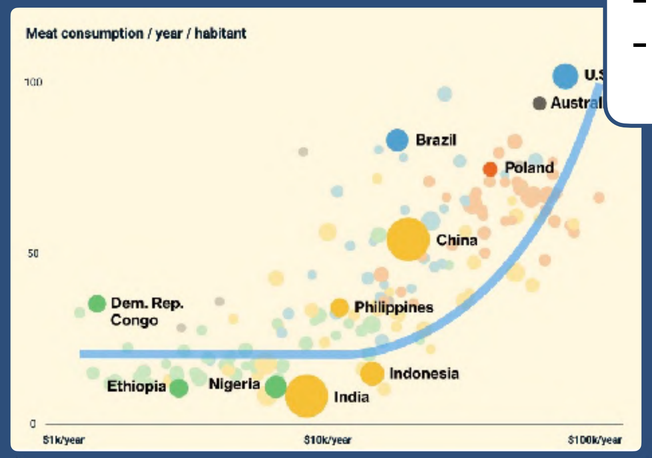
Startups creating the future of food

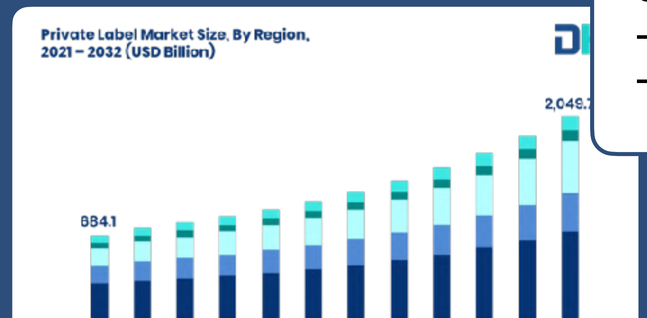
“FoodTech is the ecosystem made up of all the agrifood entrepreneurs and startups (from production to distribution) innovating in terms of products, distribution, marketing or business model.”



DigitalFoodLab

What are the challenges that FoodTech tries to answer?





Impact of:
- food on climate
- climate change on agriculture

Concentration on:
- Ingredients
- Private label brands

Drivers of change

Climate

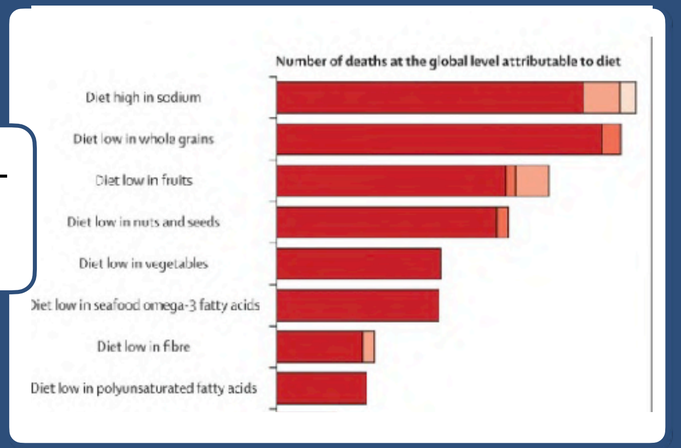
Ageing population

Value distribution

Health

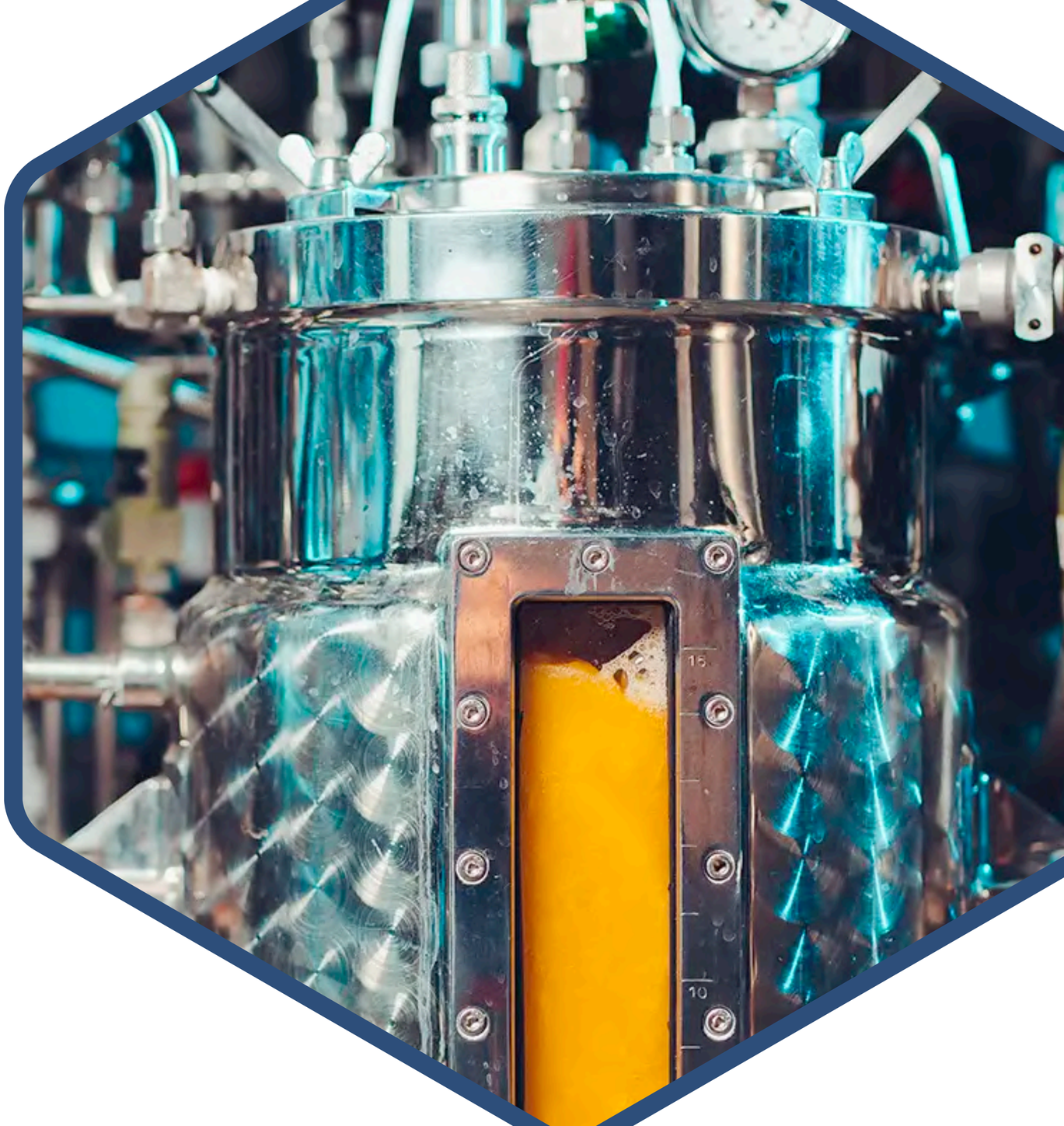
Peaking and ageing population

Increase in non-communicable diseases



2 Biotech x FoodTech

Where are the two ecosystems intersecting?

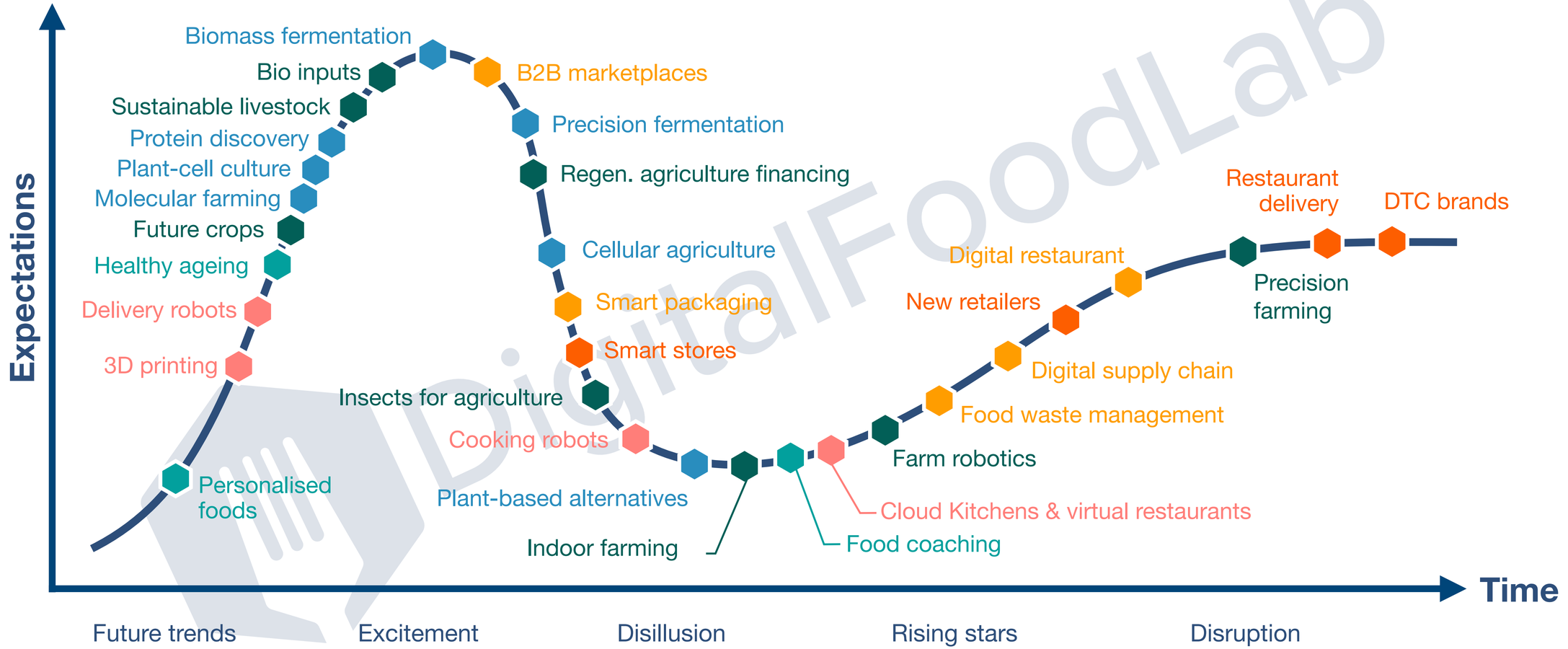


DigitalFoodLab

BE PART OF THE FUTURE

DigitalFoodLab

What are the trends shaping the future of food?

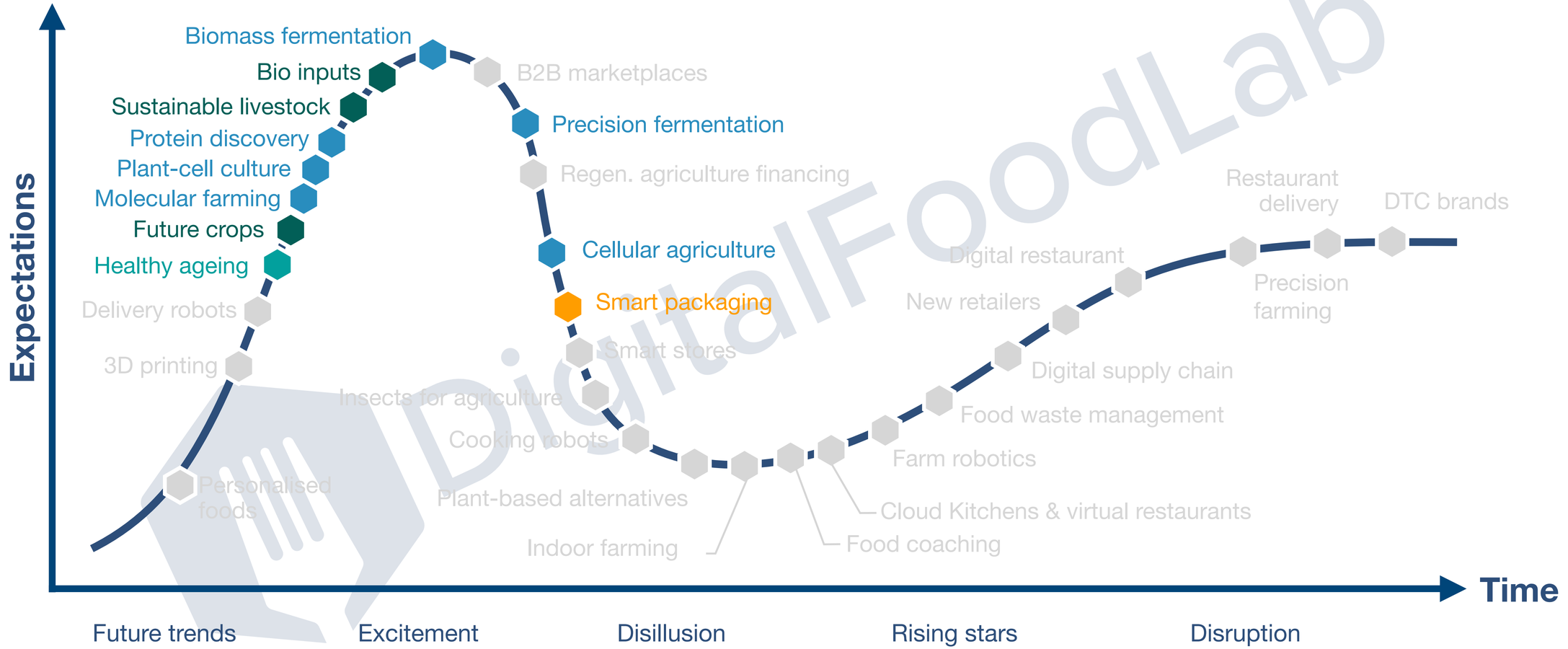


Mega trends

- Sustainable ingredients
- Resilient farm
- Food as medicine
- Digital retail
- Smart supply chain
- Food Automation

DigitalFoodLab

What are the trends connecting AgriFoodTech & Biotech?

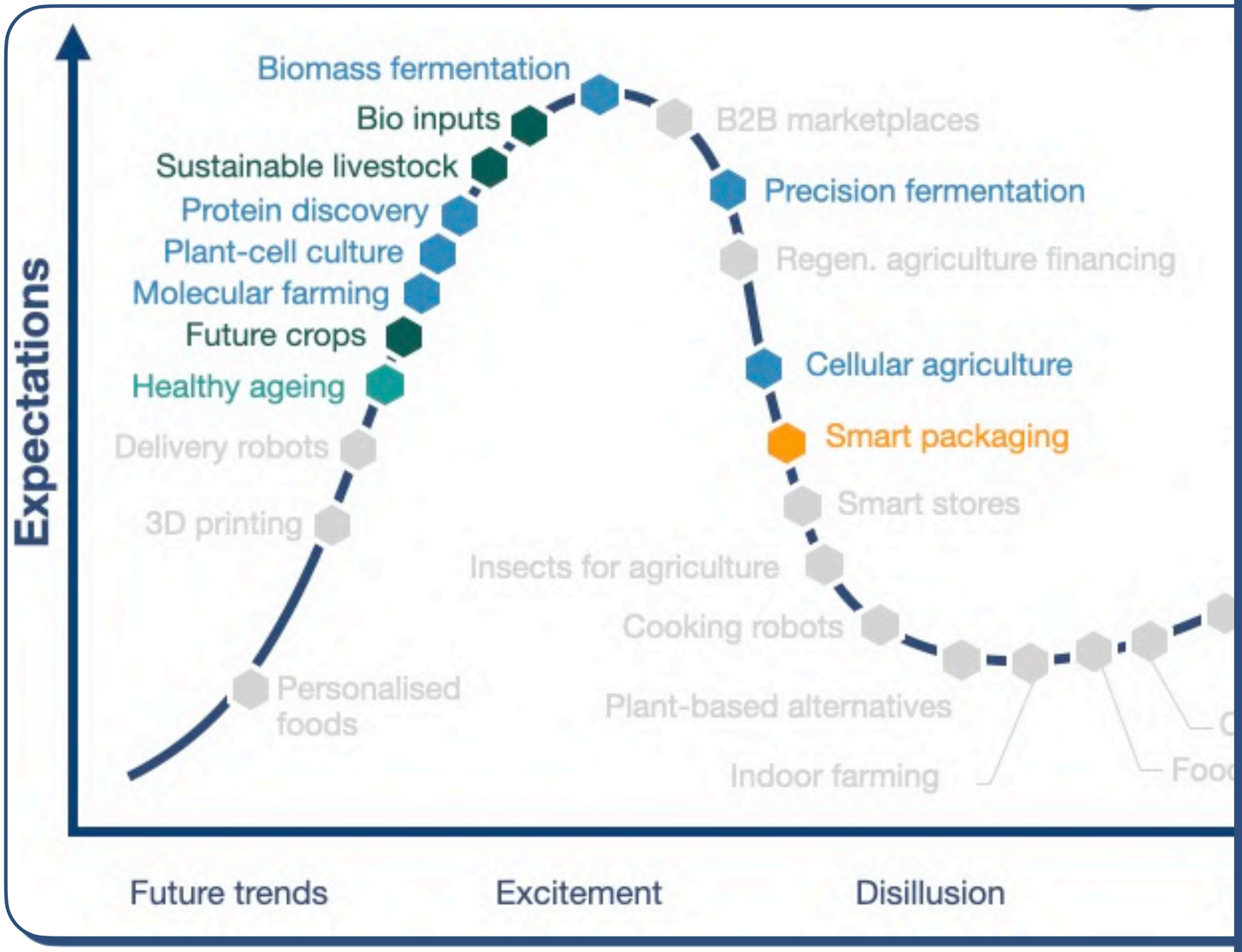


Mega trends

- Sustainable ingredients
- Resilient farm
- Food as medicine
- Digital retail
- Smart supply chain
- Food Automation

DigitalFoodLab

A focus on long-term trends



- Mostly medium to long-term trends
- Many of them are currently rising in importance, explaining why:
  - We are talking about them today
  - It is relevant to consider them for any food company innovaiton strategy

3

Green Biotech

Biotech to invent the future of agriculture

DigitalFoodLab

BE PART OF THE FUTURE

Reduce emissions and make agriculture more resilient

Bioinputs & biostimulants

New crops

Livestock emissions (Methane)

Bioinputs & Biostimulants

A new generation of inputs for a more sustainable agriculture

- Challenge: current nitrogen-based fertilisers account for about **2% of global greenhouse emissions.**

- Solution: **a new generation of fertilisers**: organic, efficient and more sustainable: biofertilisers (less nitrogen required through the use of nitrogen-fixing microbes)

- Unicorns of tomorrow:

APHEA bio — €100M raised for the development of microorganisms for biocontrol and biostimulants.

toopi organics — €20M raised to upcycle human urine as an input in agriculture.

Reducing livestock emissions

Starting with dairy cows

- Challenge: **cows are responsible for a large share of methane emissions**, which has become the main challenge for companies using dairy in their products (from cheese to snacks).

- Solutions:

V0LTA GREENTECH

Identifying solutions such as feed additives or vaccines. Some additives are said to cut by up to 80% of the emissions.

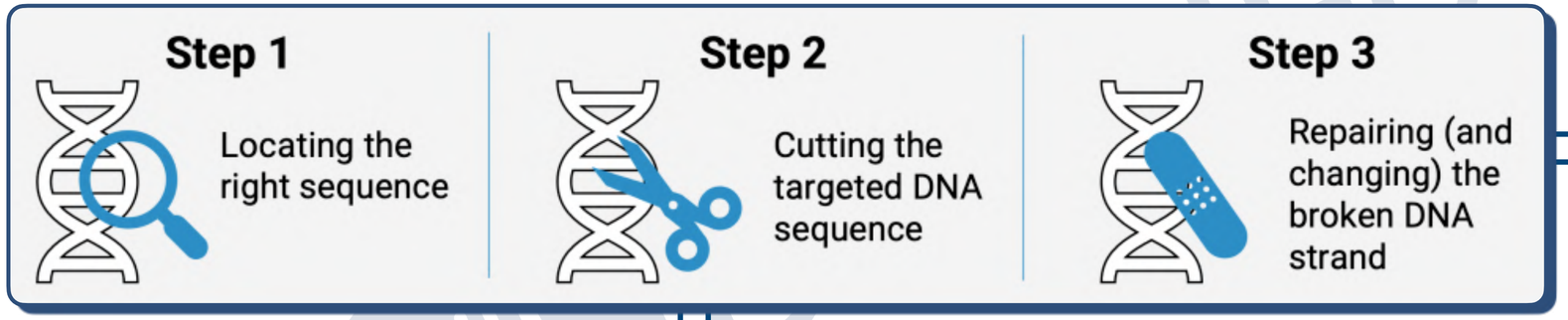
ArkeaBio™

Vaccines to modify the microbiote of cows.

Future crops

A very wide ecosystem of players creating the crops to feed 10 billion humans in a changing climate

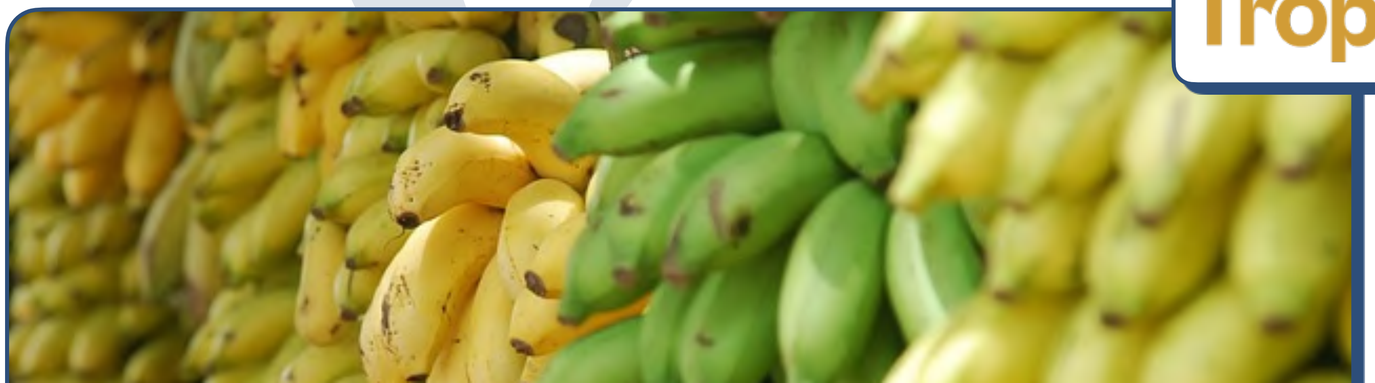
Using new genomic engineering technologies



pairwise

Leafy greens with less bitterness, cherry without pits, better-tasting yellow peas

Tropic



Bananas and other crops adapted to face climate change or to require less inputs

4

White Biotech

Biotech to invent the ingredients of tomorrow

DigitalFoodLab

BE PART OF THE FUTURE

DigitalFoodLab

Use biotech technologies to develop new and sustainable ways to make food ingredients that should have a positive impact on:

- Our health
- The resilience of the supply chain
- Sustainability

Ingredients > proteins

1 - mitigate the impact of meat, dairy, coffee, sugar, cacao cultivation on our planet and on our health

2 - anticipate the growing demand for Western-style diets: meat, coffee, cacao…

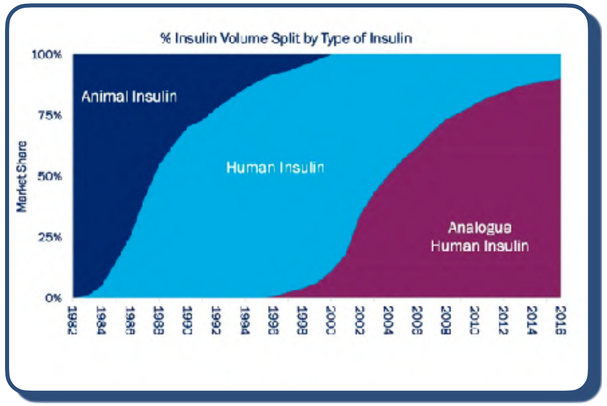
3 - develop new ingredients with « healthy ageing » benefits

1 - The key technology: precision fermentation

DigitalFoodLab

1 - The key technology: precision fermentation

An old and well-mastered technology



Today, it is used to produce massive quantities of dairy, egg and sweet proteins

Where? In the US, Canada and Singapore + UAE/EU/ Korea for production

CHEESE

Corporates + startups

bel for all for good

PERFECT DAY

EGG PROTEINS

Corporates + startups

Unilever

EVERY™ ALL PROTEIN. NO ANIMAL.

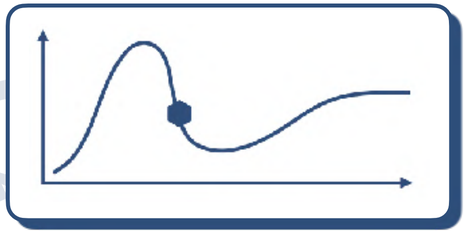
Now, two challenges have to be addressed

1 - regulation & acceptability in Europe

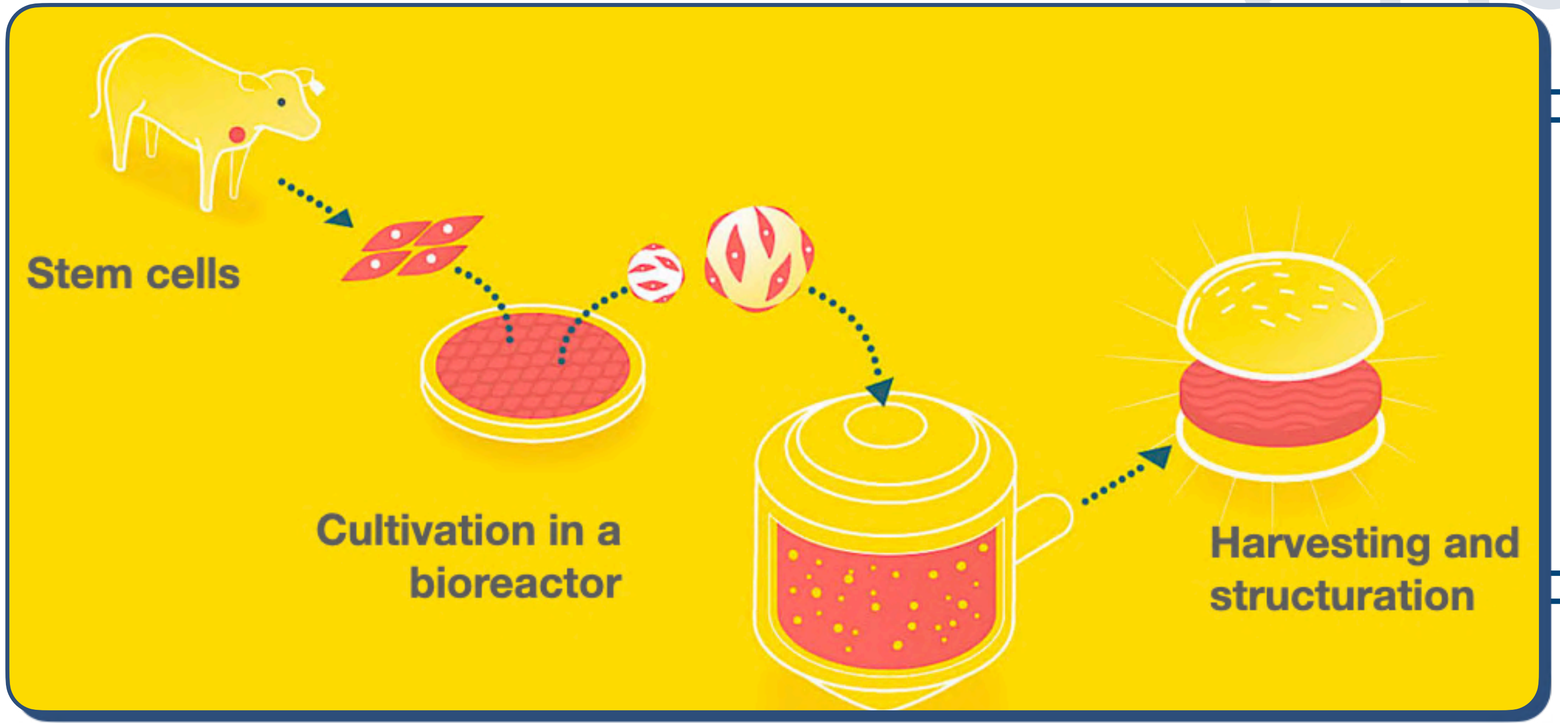
2 - scaling capabilities to have a significant impact and to lower the price.

2025: we expect multiple announcements on sugar alternatives and healthy ageing proteins, much less in the core categories such as dairy proteins.

2 - Cellular agriculture



How? Growing stem cells in bioreactors and using them to recreate complex products.



Meat and fish

Fat & specialty ingredients

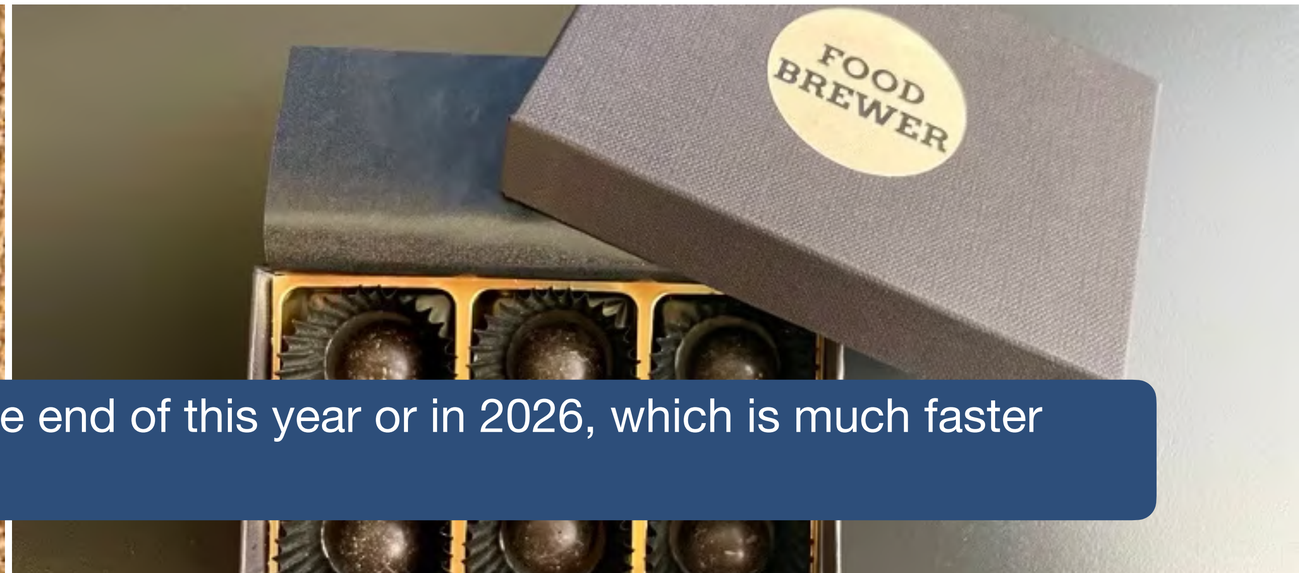
2025: still probably a year of consolidation

3 - Plant-cell culture

What? Using cellular agriculture but for plants instead of animals, notably cacao, coffee, and vanilla.

Why? To produce ingredients with complicated (environmental, social, political) supply chains.

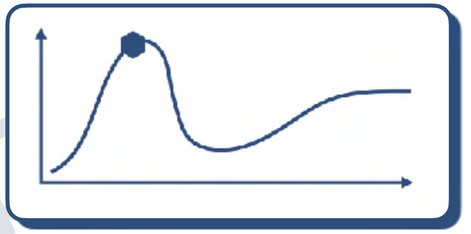
Who? A handful of startups which is moving super fast and which is benefiting from the skyrocketing prices of cacao and coffee + large companies investing/partnering with them (Meiji, Puratos…)



2025: we could see the first products as soon as the end of this year or in 2026, which is much faster than for cellular agriculture.

4 - Biomass fermentation

A new source of protein



How? Cultivate microorganisms like fungi, bacteria, or algae to produce protein-rich biomass.

An “easy to produce” source of protein

Functional ingredients

Meat substitutes

2025: many of the technologies are reaching commercialisation, and we should soon be able to know if (and how) the industry will use these ingredients.

5 - Protein discovery & protein design: creating the proteins we need with AI

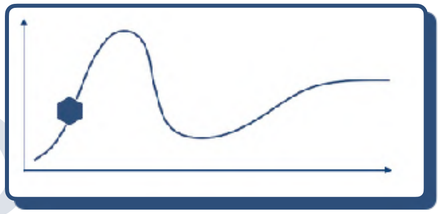
2 approaches:

- **Protein discovery:** scouting natural compounds + using AI to discover proteins that have the properties we desire (sweetening, binding…) + production through synthetic biology.
- **Protein design:** creating with AI new proteins that can precisely match specific needs + production through synthetic biology

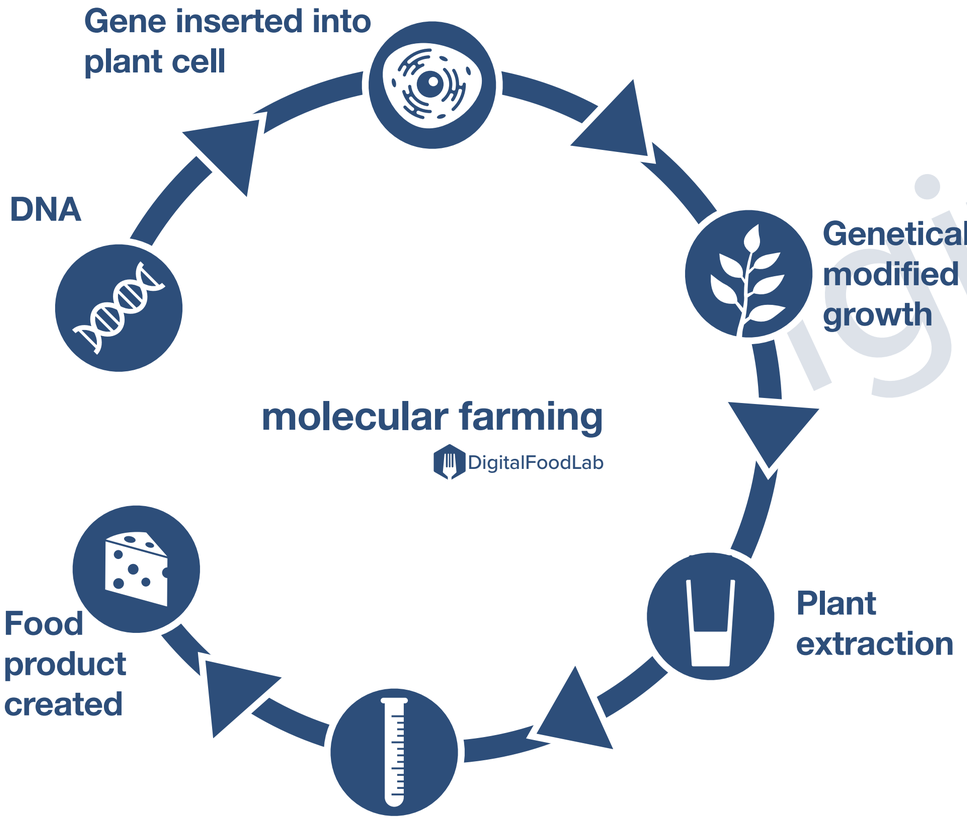
2025: after a boom year, we still expect significant funding + partnership announcements to sustain the race to create the biggest datasets

6 - Molecular farming

Using plants as bioreactors



How? Inserting a gene of interest into a plant to have it produce a desired protein.



2025: experiments are moving forward, but we are still waiting for meaningful data on yields and price.

5 What’s next?

DigitalFoodLab
BE PART OF THE FUTURE

A topic that’s becoming front and center for many large companies

Nestlé bets big on AI and biotech with new deep tech center in Switzerland

May 16, 2025 | Elaine Watson

BIOMANUFACTURING & BIOLOGICALS | CORPORATES | DEEPTECH | EMEA | FOODTECH | NUTRITION & HEALTH | US & CANADA

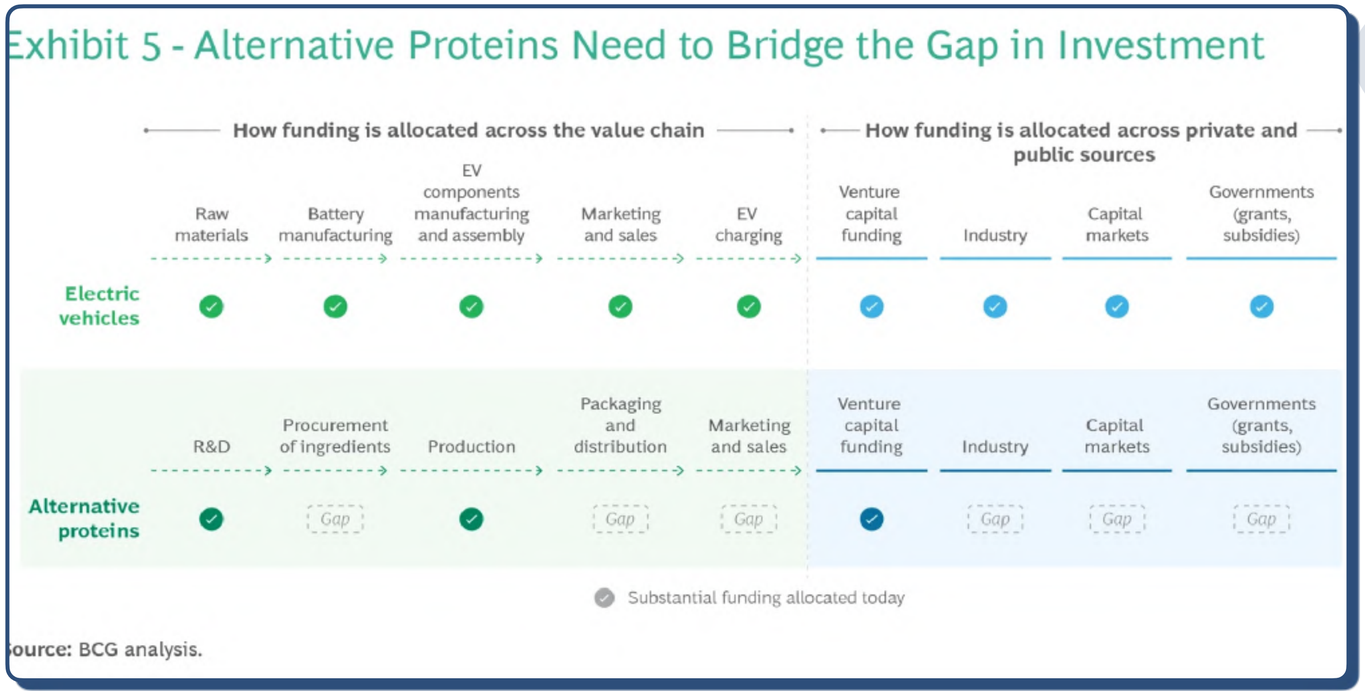
1 - Increasing government support across the world

- US:
  - Impressive rise in the number of ingredients approved for commercialisation in the past 18 months.
  - Complex times with a review of the regulatory approval process.

- In the rest of the world:
  - Increasing government support, notably in Asia (SK, China, Singapore) and in Europe

DigitalFoodLab

2 - Answer the challenge of scalability



- One of the challenges (the biggest?) is the ability to go from PoC to mass production.
- Using a comparison with electric vehicles, there are still multiple parts of the «funding value chain » where there is a lack of finance players.
- Will governments be ready to finance a transition to biotech products in agriculture and proteins through:
  - Incentives for the consumer
  - Grants to finance the scale up?

DigitalFoodLab

3 - Increasing corporate involvement

- Though times: the situation is complex for the agrifoodtech ecosystem, while incentives to invest in sustainability projects have significantly decreased for large food companies.

- We still observe an increase in the number of investments, partnerships and co-development deals between large agrifood companies and biotech+food startups.

Key takeaways

How to be ready for the upcoming food revolution?

- While funding is decreasing, FoodTech is much more exciting and interesting than a few years ago: startups are becoming mature and bringing real disruptions to the market.
- Europe’s position in this part of the ecosystem is even getting stronger !

- For leading companies, there has never been more than « now » to **plan for the future** by setting up:
  - An **innovation** strategy
  - A **vision** of where you want to play in the next decades, and notably, how to face the upcoming challenges and opportunities of the upcoming food revolution

Questions?


WEBINAR
BIOTECHNOLOGY
& FOODTECH
May 27th - 9:30 CET
DigitalFoodLab
BE PART OF THE FUTURE
wagralim
APPETITE FOR INNOVATION

Panel: how biotechnologies can be leveraged in the agrifood industry?

Tom Viaene

Manager new ventures

VIB

Filip Arnaut

Managing director

SPARKALIS
FOODTECH VENTURES

1 - What are the areas that would need more biotech innovation?

2 - How are ideas being « discovered » and then applied to agrifood challenges?

3 - What is the path between research, startup, and then mass adoption?

4 - What is the role of the industry, and how can we stimulate more innovation?

DigitalFoodLab

BE PART OF THE FUTURE

Matthieu VINCENT

matthieu@digitalfoodlab.com

+33 6 82 48 92 91

Jérémie Prouteau

jeremie@digitalfoodlab.com

+33 6 23 22 40 10