

Cultivated Meat for the Global Market

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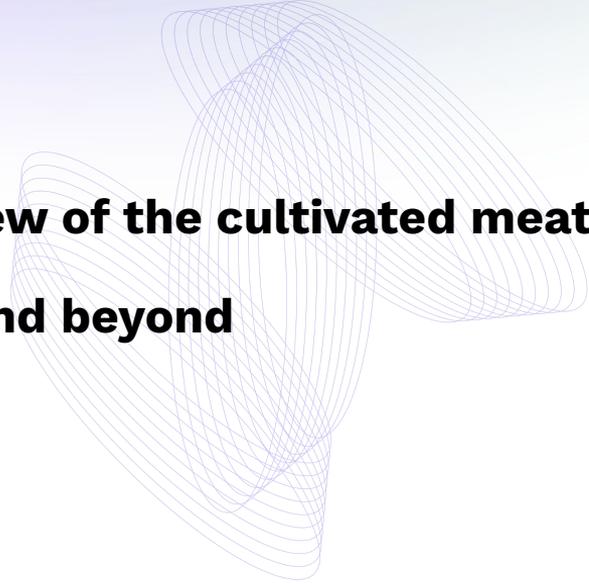
29 Febreary, 2024

Healthy Innovation Conference, Dubai



Agenda

- **Overview of the cultivated meat industry**
- **2024 and beyond**



GFI Consultancy (GFIC) is a China-based impact consultancy firm focused on providing industry insights and R&D resources to support the alternative protein sector.

We work collaboratively with academic institutions, scientists, corporations, startups, and investors to accelerate plant-based, fermentation-enabled, and cultivated protein innovation in China.





Our partner—the Good Food Institute (GFI)

GFI is an international network of nonprofits developing the roadmap for a sustainable, secure, and just protein supply.

Key areas of work:



Science and Technology

Advancing foundational, open-access research in alternative proteins



Corporate Engagement

Partner with companies and investors to unlock funds, innovation, and scale



Policy

Work with policymakers and regulators to ensure a clear path to market and secure support for research and innovation



United States

Brazil

Europe

Israel

India

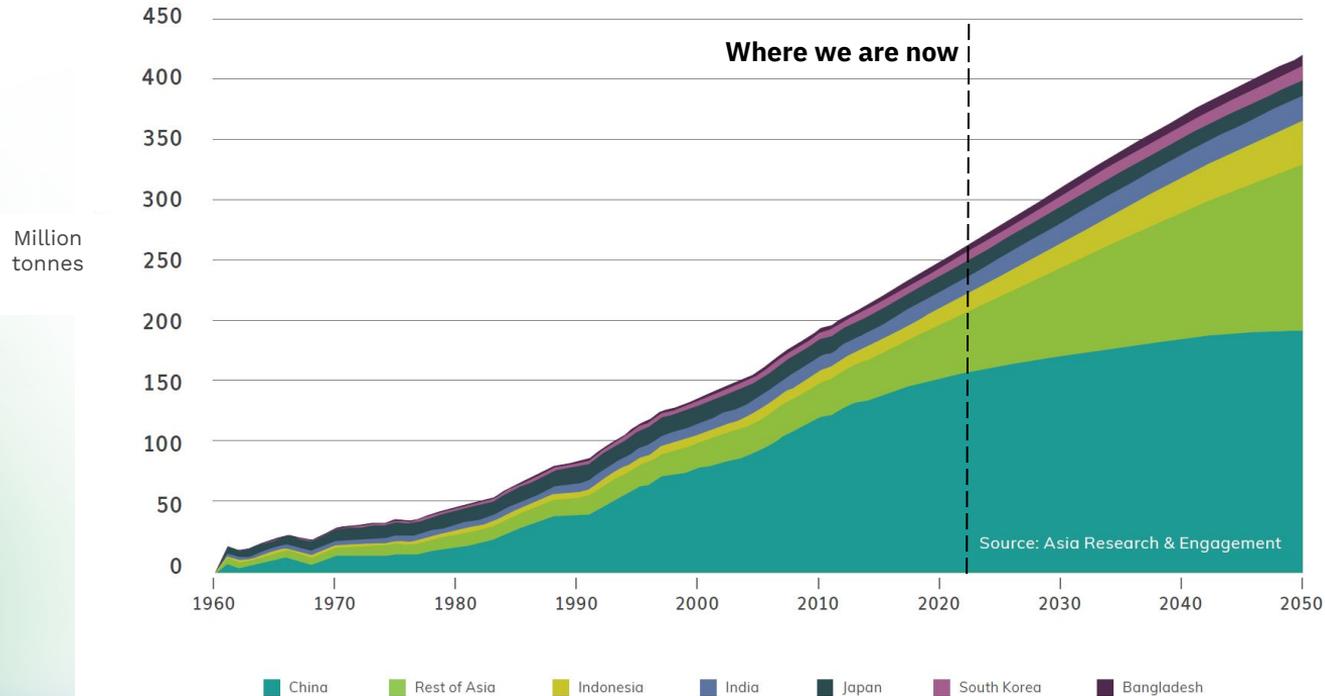
Asia Pacific

200+ staff in 6 regions

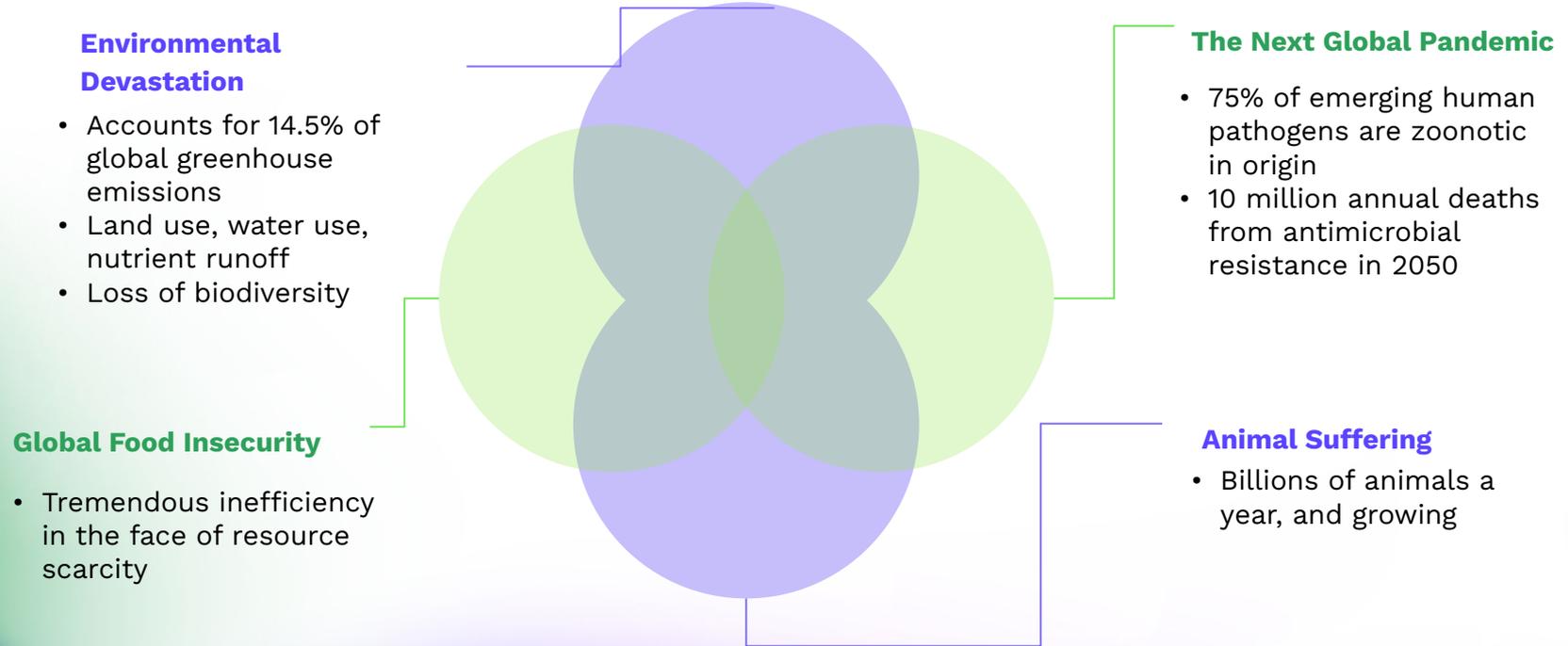


Demographic changes in Asia will push demand for animal protein to new heights

Asia's projected meat and seafood consumption growth, 1961-2050



Conventional meat production is fundamentally unsustainable



Source: FAO, retrieved from Our World in Data (2022)



But there is an alternative.

What if we could transition to alternative meat, eggs, and dairy produced in **more sustainable and efficient ways** without compromising on the **taste, affordability, and accessibility** of animal-based products?

Protein diversification



Plant-based



Photo courtesy of Plant-Based Seafood Co.

Fermentation



Photo courtesy of Meati

Cultivated



Photo courtesy of Wildtype



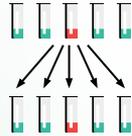
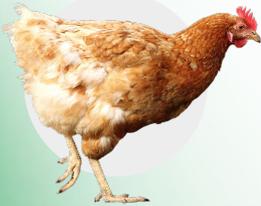
Overview of the cultivated meat industry



What is cultivated meat and how is it made

SAMPLE

A small sample of cells is obtained from an animal.

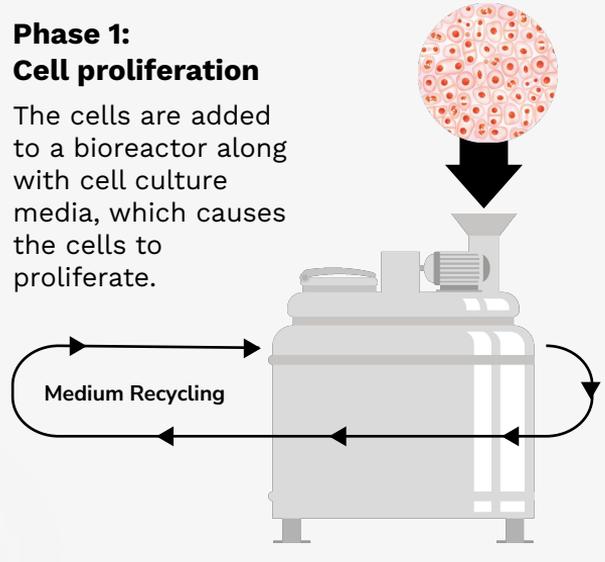


CELL STARTER CULTURE



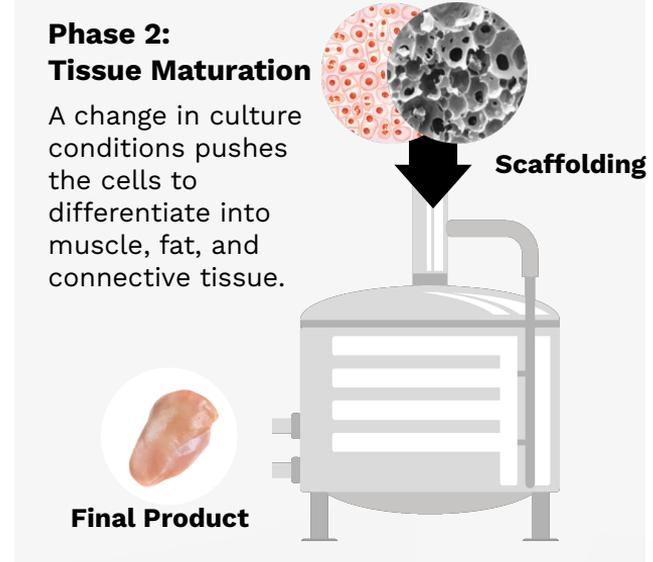
Phase 1: Cell proliferation

The cells are added to a bioreactor along with cell culture media, which causes the cells to proliferate.



Phase 2: Tissue Maturation

A change in culture conditions pushes the cells to differentiate into muscle, fat, and connective tissue.



CELLS AT MATURATION
Primarily muscle, fat, and connective tissue.

Fat Cell



Muscle Cell



Fibroblast Cell



Why cultivated meat



Photo courtesy of GOOD Meat

Cultivated meat and seafood is produced directly from animal cells.

Meat cultivation facilitates the same biological process that happens inside an animal by providing cells with the warmth and basic nutrients required to build muscle and fat.



Cultivated meat produced with renewable energy reduces environmental impacts

	 Conventional chicken (ambitious benchmark)	 Conventional pork (ambitious benchmark)	 Conventional beef (ambitious benchmark, from dairy cattle)	 Conventional beef (ambitious benchmark, from beef cattle)
 Land use	63%	72%	81%	95%
 Water use	No reduction	No reduction	51%	78%
 Air pollution	29%	49%	85%	93%
 Toxic chemicals	4%	50%	89%	92%
 Greenhouse gas emissions (CO ₂ -eq)	17%	52%	85%	92%

Source: GFI and CE Delft Lifecycle Assessment 2021

Cultivated meat potential: additional health benefits



Mitigate the threat of antibiotic resistance - cultivated meat does not require antibiotics for production



Decrease the incidence of meat and seafood-related foodborne illness - cultivated meat does not contain native bacteria like traditional meat and seafood, and is produced without heavy metal or microplastic

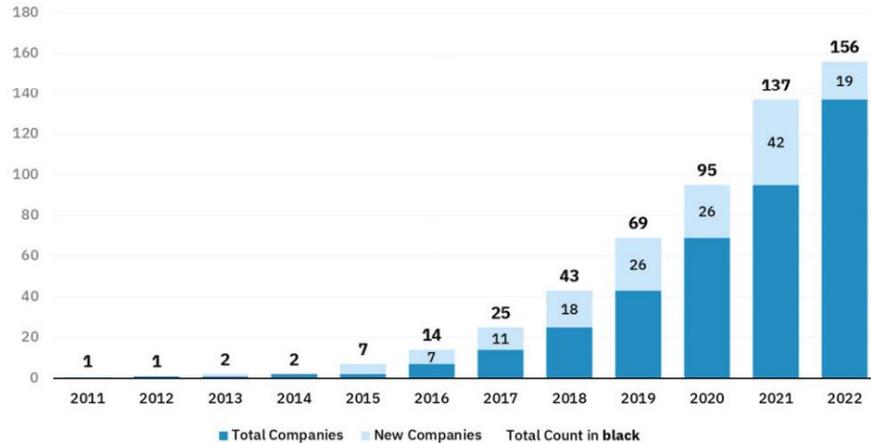


Mitigate against future pandemics caused by zoonotic disease - which spread from intensively-farmed animals to humans

Global commercial landscape expansion



Number of cultivated meat companies is growing



Distribution of startups by country and region



Source: GFI Analysis

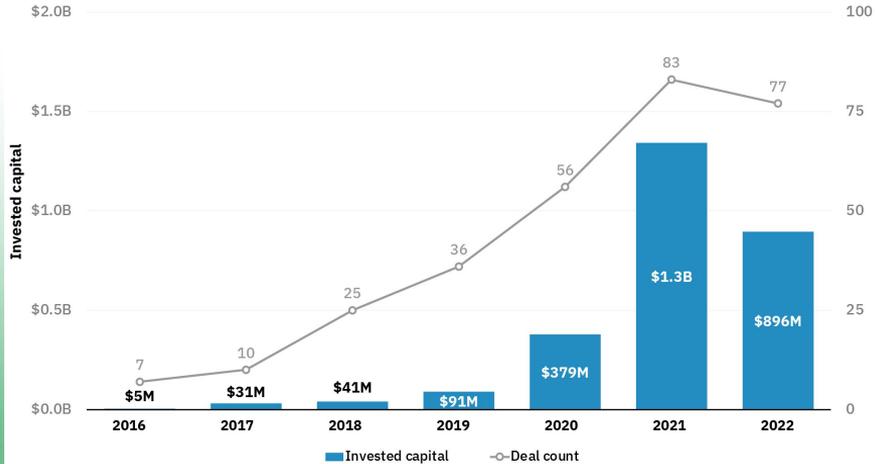
Established meat, food and biotech companies and conglomerates have also joined the sector through investments, acquisitions, partnerships or production of process inputs & ingredients



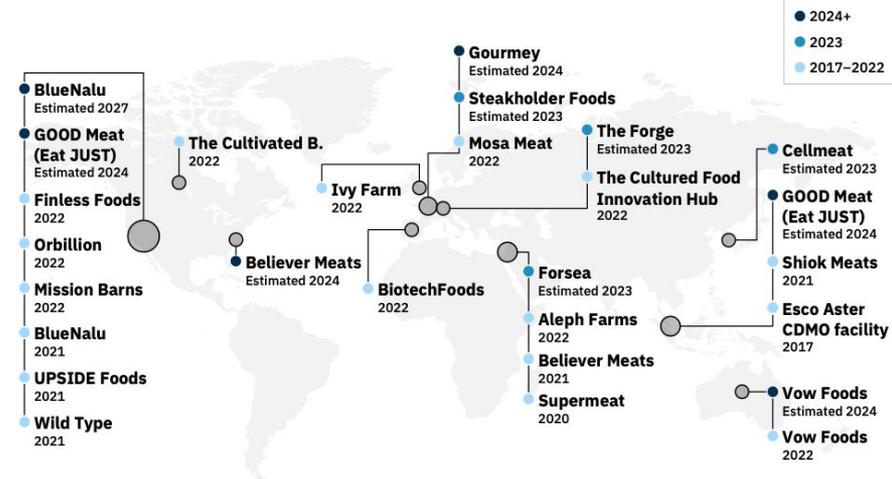


Investments are fuelling the establishment of production facilities and hubs around the world

Annual investment in cultivated meat (2016–2022)



Current and future cultivated meat production facilities



Invested capital	Largest investment
<p>\$896 million in 2022 (32% of all-time investment)</p> <p>\$2.78 billion total (2016–2022)</p>	<p>\$400 million (UPSIDE Foods)</p>

Source: GFI analysis of data from PitchBook Data, Inc.

Note: Data has not been reviewed by PitchBook analysts. The total deal count includes deals with undisclosed amounts.



The cultivated meat ecosystem in APAC is booming

Cultivated Meat

Logos for Cultivated Meat companies: Vow, meatiply, SPACE, Fi, Diverse Farm, JOES FUTURE FOOD, Dr. FOODS JAPAN, MAGIC VALLEY, GAIA FOODS, 极康, Pensées, CellX, TissenBioFarm, ANTS INNOVATE, seawith, me&, Organoid Farm.

Cell Lines

Logos for Cell Lines companies: OPO BIO AOTEAROA, Fisheroo, SIMPLE planet.

Contract Manufacturing / CDMO

Logos for Contract Manufacturing / CDMO companies: ESCO ASTER, Cell AGRITECH.

Scaffolds and Cell Culture Solutions

Logos for Scaffolds and Cell Culture Solutions companies: cass, KosmodHealth Singapore, ND Farm, TISSUE By NET, Integriculture, Cellivate Technologies, DaNAgreen.

Cultivated Seafood

Logos for Cultivated Seafood companies: CellQua, UMAMI BIOWORKS, avant, CellMEAT For the Future, Shiok Meats Seafood, reinvented, BaoBob, Impacfat.

Media Ingredients & Growth Factors

Logos for Media Ingredients & Growth Factors companies: KCELL, JSBio, Ajinomoto, wasna, PeptiGrowth, SMART MCs, NUProtein.

Bioreactors

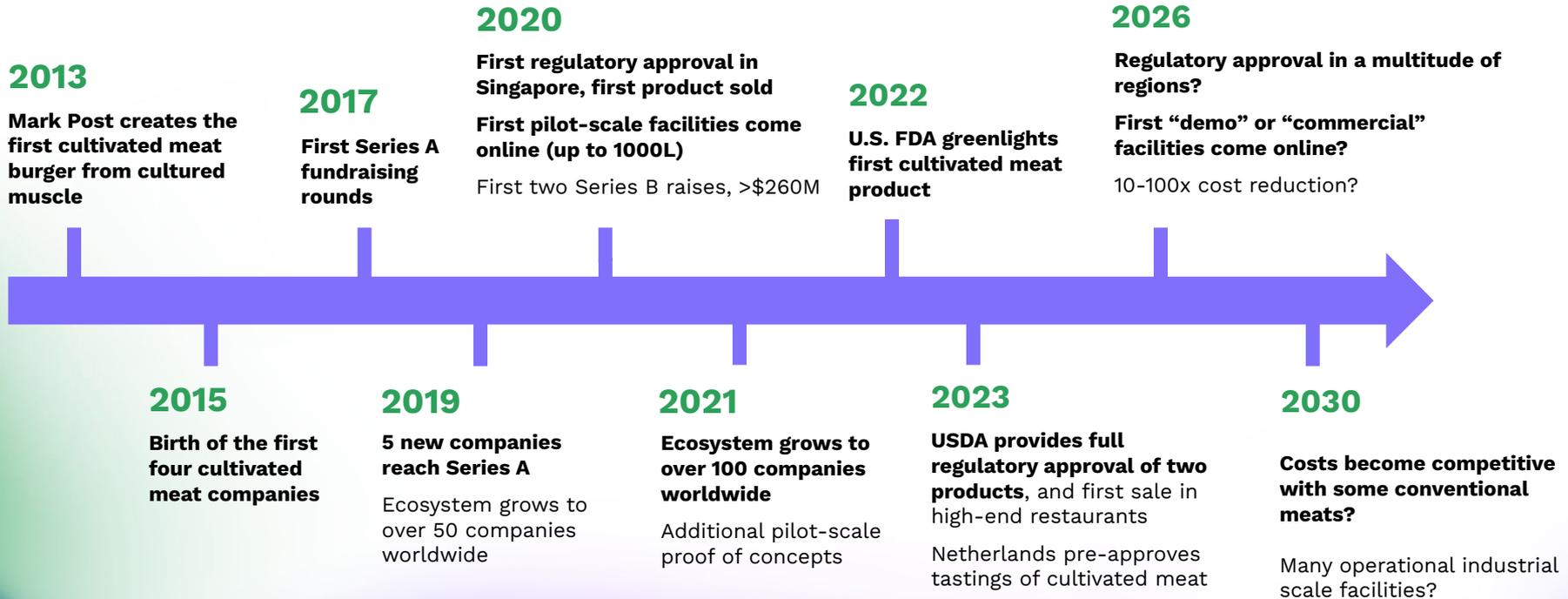
Logos for Bioreactors companies: DYNACYTE, HEUROS, DIONING 多宁生物, Tofflon.

An abstract graphic composed of multiple overlapping, thin, light blue lines that form a complex, three-dimensional wireframe structure, resembling a stylized letter 'G' or a series of intersecting ellipses. It is centered behind the main text.

2024 and beyond

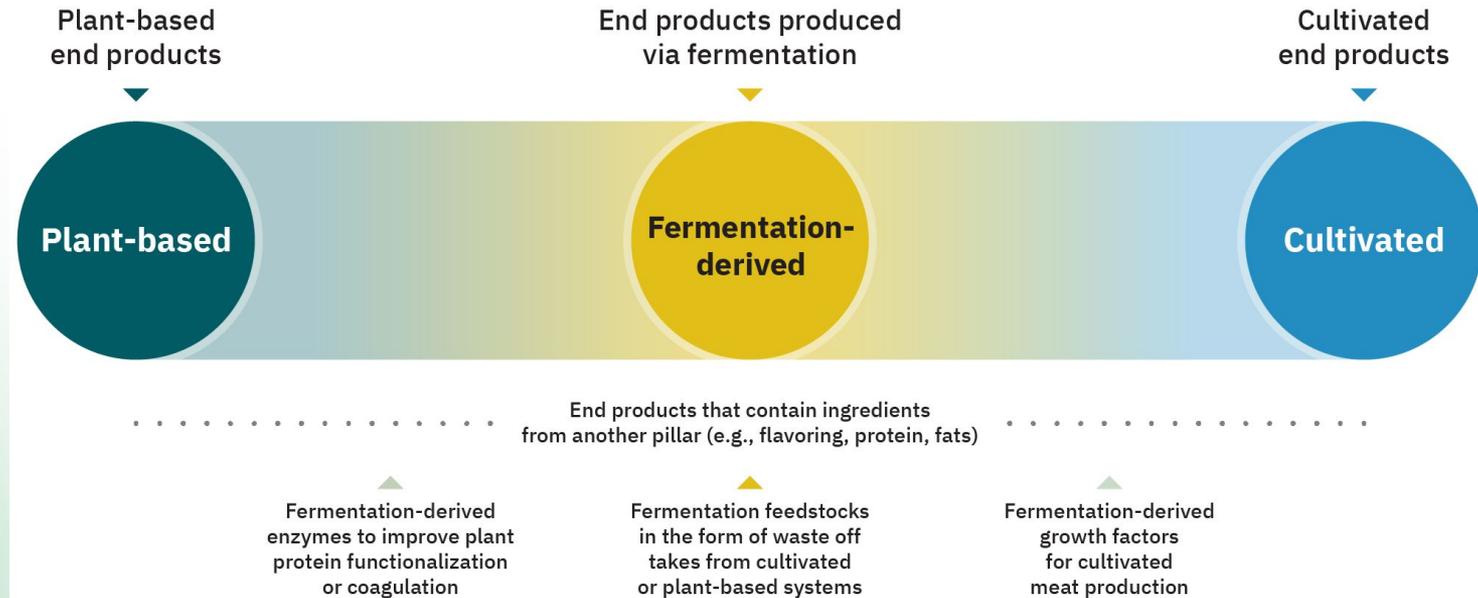


Where are we in the industry's trajectory





Continued funding and innovation will drive alternative protein development along a spectrum

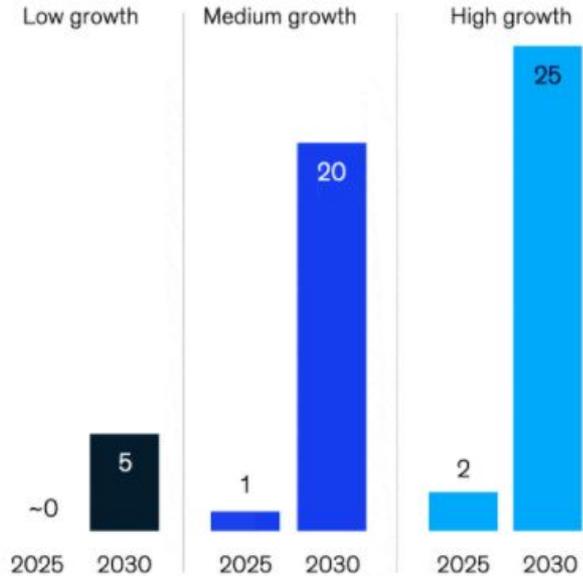


The market for cultivated meat could reach \$25 billion, 2.1 kilotons by 2030

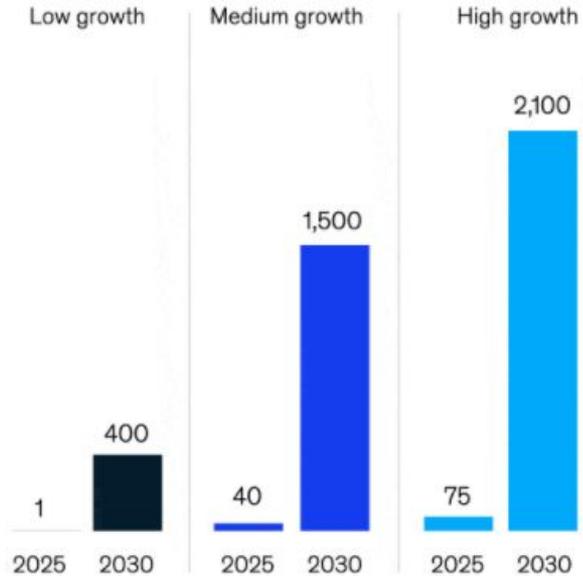


Possible cultivated-meat market size

Market size projections,¹ \$ billion



Market size projections, thousands of tonnes



● **Low growth:** cultivated meat is only able to replace processed meat (eg, burgers, sausages), limiting penetration; sales geographically limited to North America, Europe, and select Asia-Pacific countries

● **Medium growth:** cultivated meat is able to replicate processed meat and whole cuts; sales geographically limited to North America, Europe, and select Asia-Pacific countries

● **High growth:** cultivated meat is able to replicate a wide variety of both processed meats and whole cuts; sales in multiple large meat-consuming countries and regions (eg, China, US, EU, Brazil, India)

Source: [McKinsey & Company](#) (2021)

Contact us



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GFIC—accelerating China's sustainable protein innovation