2026 STATE OF THE INDUSTRY:

Cultivated

meat, seafood, and ingredients

Table of contents

Acknowledgments

Authors

Mackenzie Battle; Claire Bomkamp, PhD; Michael Carter; Eleni Chalmers; Jessica Colley Clarke; Daniel Gertner; Chelsea Hammersmith; Taylor Leet-Otley; Elliot Swartz, PhD

Contributors

Aiyanna Belliappa; Helen Breewood; Ankur Chaudhary; Daniel Dikovsky; Divya Gandhi; Hila Goldenberg; Helene Grosshans; Michal Halpert, PhD; Kimiko Hong-Mitsui; Seren Kell; Yeonjoo La; Amanda Leitolis, PhD; Carlotte Lucas; Camila Lupetti; Manuel Netto; Wasamon Nutakul, PhD; Anne Reshetnyak; Arghadeep Saha; Chandana Tekkatte; Guilherme Vilela

Editors

Jessica Colley Clarke, Liz Fathman, Tara Foss

Designers

Kelli Cromsigt, Joseph Gagyi, Emily Hennegan

Project manager

Emily Giroux

Advisors

Sophie Armour, Rodrigo Bonilla, Rachel Colombana, Vinicius Gallon, Ryan Huling, Emma Ignaszewski, Erin Rees Clayton, Tina Rodousakis, Sheila Voss

The cover image is courtesy of Ivy Farms.

About the series

The State of the Industry report series is GFI's annual deep dive into the rapidly evolving alternative protein landscape. This flagship series provides a global snapshot of the industry, synthesizing company landscape and product trends, investment and sales data, new scientific advancements, and public investment and regulatory updates that highlight industry progress.

Tracking the technological and adoption readiness of the cultivated, plant-based, and fermentation sectors is a useful way to evaluate progress toward competing on price, taste, and availability with conventional meat. Readiness can be determined by assessing the progress, challenges, and overall risk across categories such as scientific feasibility, engineering viability, innovation capacity, value proposition, market acceptance, and license to operate. This series summarizes the current state of these factors using real-world developments from the past year.

Access the full suite of 2026 State of the Industry reports here.

Important notes

- All figures are expressed in U.S. dollars where the $ symbol is used. Other global currencies are clearly marked.
- The Good Food Institute is not a licensed investment or financial advisor, and nothing in this report is intended or should be construed as investment advice.
- Please note that recently published investment figures may differ from prior figures published by GFI as we and Net Zero Insights continually work to improve our dataset and reporting methodology.
- An update to the report titles: In past years, GFI titled each State of the Industry report with the year covered in report content. Starting in 2026, the report titles now reflect the publication year (content timeframe remains the same).

Editor's note

Cultivated meat—meat grown directly from animal cells—is a transformative agricultural innovation few people have tasted or even heard of. For now.

That's likely to change as more governments, companies, and researchers recognize the need to diversify protein production on a planet being pushed to its limits. If we are to meet growing global demand for meat while addressing some of the world's biggest challenges within the next two critical decades, we can't simply ramp up business-as-usual meat production. While multiple interventions will be needed, cultivated meat—as well as meat made from plants or via fermentation—is an essential globally scalable solution.

In the sector's first decade, cultivated meat grew from an idea to a reality just now beginning to reach plates. In 2025, similar to other innovations in their early days, the field experienced both challenges and breakthroughs. Funding constraints, regulatory roadblocks, and company closures occurred alongside major cost reductions, production innovations, and collaborations critical to scale up and affordability:

- In 2025, a handful of company closures drew headlines, while regulatory wins racked up. For example, Food Standards Australia New Zealand finalized a regulatory pathway for cultivated meat.
- While the funding environment proved challenging, unprecedented milestones delivered open-access assets like cell lines and cell growth formulations, likely saving significant R&D time and money.
- Questions about profitability surfaced, while behind the scenes, researchers leveraged AI and other technologies to streamline processes, cut costs, and optimize end products.

Then and now: Ten short years ago, the cultivated meat milestones of today may have seemed far-fetched. It can be grounding to stop and ask: how far have we come in a decade?

In 2015, just three cultivated meat companies were founded, and fewer than 10 patents were published. By 2025, the company count topped 140 with over 1,500 patents published. In the past year, the first cultivated meat product launched in U.S. retail, cultivated seafood hit menus at a handful of U.S. restaurants, and the first cultivated meat products were served in restaurants in Australia. Globally, bioreactor capacity in operation expanded. A decade in, the cultivated meat space is taking root and focusing on the fundamentals of production—bringing down costs, optimizing taste and texture, and minimizing environmental impacts.

And focus we must. Evidence that current methods of meat production exacerbate global challenges—from climate change to pandemic risk—is mounting. In December 2025, the UN Environment Programme published the Global Environment Outlook, 7th Edition. The report notes that alternative proteins have the potential to pay significant dividends for our environment.

Yes, hurdles to scaling cultivated meat production remain. This report, *Cultivated meat, seafood, and ingredients*, details headline-grabbing hurdles like early-stage funding constraints, technical and cost obstacles, and regulatory challenges. But the following pages also detail the less visible progress: cost reductions, consistent product performance, credible paths to increased scale, and regulatory traction.

At GFI, a nonprofit funded by philanthropy, we're committed to charting a path forward that feeds growing global demand for meat in restorative, resilient ways. Our annual State of the Industry series—including this report—equips food system stakeholders with knowledge of the innovations and developments that got us further down that path in 2025.

Thank you to all those who are in this work alongside us, and as such, helping to build a thriving world, fed sustainably.

Executive summary

In 2025, the cultivated meat sector experienced a mix of successes and struggles across the commercial, investment, technology, policy, and regulatory landscape. Major themes:

- **Regulatory path-to-market milestones bring new, diverse products to consumers.** Cultivated foods and ingredients, including foie gras, pork fat, and salmon, broadened the variety of cultivated products available to consumers. In 2025, a growing number of companies and research institutions worked to innovate and optimize cultivated meat products.
- **The funding environment tightened.** Investors are showing increased discretion, prioritizing companies who demonstrate progress on fundamentals like cost, taste, and scale. Cultivated meat and seafood companies raised $73.9 million in 2025, according to a GFI analysis of data from Net Zero Insights (down from $144 million in 2024).
- **Commercial production is starting to scale.** The largest cultivated meat facility in the world is now open in Sydney, Australia (details below).
- **Public investment is growing in some places, declining in others.** Governments facing supply chain constraints and product shortages are increasingly integrating cultivated meat into their national food strategies and biotechnology plans, recognizing the potential benefits to the economy, food system, and national security.

	Bright spot	*Challenge*
Commercial landscape	**Regulatory pathways are expanding:** Regulatory pathways for cultivated foods now exist in Australia-New Zealand, Singapore, and the United States, clearing the way for broader commercialization.	**Hurdles across industry, consumer awareness, and profitability remain**: Production efficiency, regulatory roadblocks, consumer acceptance, and overall profitability continue to pose challenges.
Investments	**Strengthening metrics key to industry development:** Bioreactor capacity in operation, sustained output over time, and run reliability and consistency were all strengthened in 2025. **IntegriCulture** announced that they achieved profitability by generating revenue from selling research tools and nonfood products, a common diversification strategy pursued by startups needing to demonstrate clear and early paths to profitability.	**Smaller, more targeted investments:** The three largest cultivated meat deals in 2025 were Aleph Farms' $29 million raise, Mosa Meat's $17.6 million round, and BlueNalu's $11 million in convertible notes and preferred stock financings. These deals, while significant, each rank outside the top 20 largest cultivated meat deals of all time.

	Bright spot	*Challenge*
Science and technology *Scientific feasibility*	**Bovine cells for the whole sector:** GFI announced the acquisition of eight cell lines developed by the former startup SCiFi Foods. Through a partnership with Tufts University, researchers within academia and industry now have access to the first publicly available set of suspension-adapted bovine cell lines, enabling the acceleration of commercially relevant research and saving potentially millions in R&D expenses.	**Several actions are still needed to reduce the risks associated with commercialization:** These include depositing cell lines in public repositories to increase accessibility (especially for aquatic animals), creating cell lines with desirable traits, such as adaptation to suspension, and research demonstrating the metabolic efficiency of cells in bioreactors to increase commercial relevance.
Engineering viability	**Scaling commercial production: Vow** achieved production at 20,000-liter scale at their facility in Sydney, Australia, which hosts 35,000 liters of total capacity and room for 10 more similarly sized production lines. This is the largest current cultivated meat facility in the world, placing their production near the same scale as the largest biopharma processes.	**Lack of reliable data points for the cost of equipment, facilities, and other infrastructure associated with manufacturing:** To reduce the risks associated with high implementation cost, more public knowledge will need to be generated for bioreactor and facility costs at different scales, and other equipment and operational costs, such as media preparation and sterilization, harvesting, waste management, and common consumables.
Innovation capacity	**Industry-academic collaborations:** Establishing shared pilot-facility infrastructure at research universities can also encourage industry-academic collaborations to validate processes and accelerate innovation. For example, Tufts University is opening an innovation hub on their Medford campus in 2026.	**Reducing the risks associated with slow or limited process validation:** More cultivated meat products need to be sustained on restaurant menus and, eventually, in grocery store meat cases. Companies should continue to publish research to share process validation results and help de-silo research findings.

	Bright spot	*Challenge*
Government and regulation	**China:** In May 2025, the state-owned State Development & Investment Corporation announced a commitment of over CNY 4 billion ($555 million) to advance biomanufacturing infrastructure development through investments in domestic biotechnology companies. “New proteins” feature prominently.	**United States:** The U.S. drastically scaled back all federally funded R&D in 2025. As a result, new federal investments in cultivated meat and enabling technologies in the United States declined. In doing so, the United States bucks the global trend of investing competitively in food biotechnology and biomanufacturing.

Conclusion

In 2025, the cultivated meat industry earned multiple regulatory green lights. A total of seven companies have received regulatory clearance to sell different cultivated meat products, and signals of global market expansion are emerging. As of publication, cultivated meat can be sold in Singapore, the United States, and Australia. Private investments, however, are tightening, hindering continued innovation and commercial scale up. Access to critical research tools like cell lines has been made available, but far greater access is needed. Government support is strong in some regions, but is being curtailed in others.

The underlying case for cultivated meat is stronger than ever: rising demand for meat, climate and land use pressures, and the need to diversify protein supply chains. Many governments are prioritizing cultivated meat and other alternative proteins in their national food strategies and bioeconomy plans to achieve a range of goals, from climate mitigation and food security to economic competitiveness and public health. To fully realize the planetary and public health benefits that come with mainstream adoption of cultivated meat and other alternative proteins, governments, industry, and the research community must prioritize support for innovation that can help these new foods reach more plates.

Commercial landscape

Overview

Since the first cultivated meat product was made in 2013, the industry has expanded to more than 140 companies. While still modest in size, the cultivated meat industry experienced significant milestones in 2025, including the launch of the first cultivated meat in U.S. retail, the first cultivated seafood product in a U.S. restaurant, and the first cultivated meat products at Australian restaurants. Regulatory pathways for cultivated foods now exist in Singapore, the United States, and Australia-New Zealand.

Today, industry players are coalescing around the need to optimize production by reducing costs and improving process efficiencies that clear the way for scale up. Technological innovation, new R&D and scaling partnerships, and the use of AI are among the key levers companies are using to overcome barriers and accelerate cultivated meat production. For example, several companies announced media costs at $0.20 per liter or below in 2025, representing an over 99 percent decrease from just a few years ago.

However, other companies experienced setbacks and closures, mostly due to challenges securing funding for scale up in a subdued private capital environment. Production efficiency, regulatory hurdles, consumer acceptance, and overall profitability continue to pose meaningful challenges to the cultivated meat industry.

As the cultivated meat space matures, advancements across the value chain suggest that as companies hone their unique contributions to the industry—from ingredient innovation to manufacturing techniques to marketing—they will enable the sector as a whole to operate more effectively.

At scale, cultivated meat will offer the food industry a highly controllable production system with predictable costs, resilient supply chains, consistent quality, and scalable growth unconstrained by land, livestock biology, or agricultural volatility.

Today, the industry is working toward the technical, cost, and manufacturing benchmarks needed to make this scale a credible medium-term reality.

What is cultivated meat?

Cultivated meat—meat grown directly from animal cells—holds the potential to transform our global food system for the better.

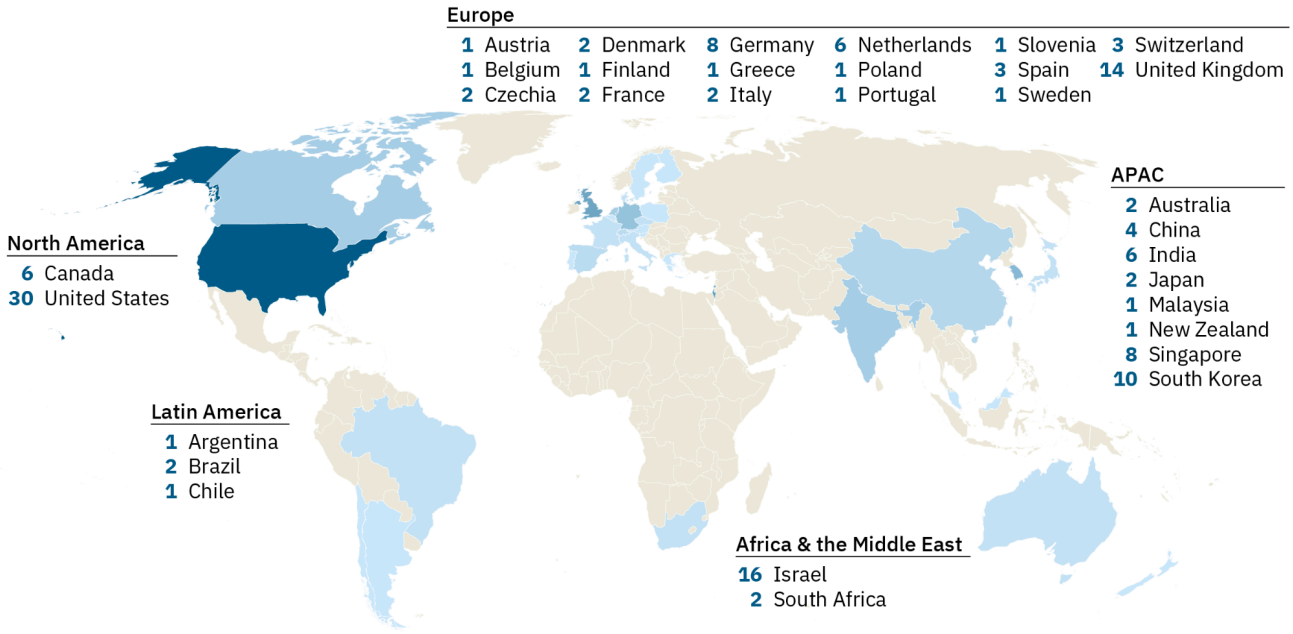
How is it made? A small sample of cells is fed basic nutrients—amino acids, fats, vitamins, salts, and sugars—in clean, controlled environments similar to those used to make yogurt, cheese, and beer. These cells then grow and develop into meat or seafood. Once the cells have matured, they're harvested, prepared as either an ingredient or end product, and then are ready to be cooked and enjoyed, just like the meat we eat today, but in a vastly more efficient, safer way. Cultivating meat at scale doesn't require antibiotics or hormones and avoids many of the food safety risks linked to conventional meat production.

As of the end of 2025, more than 140 companies worldwide specialize in the development of cultivated meat and seafood, and at least 138 additional companies are active in the industry through cultivated meat investments, partnerships, or business lines. At scale, cultivated meat can offer predictable costs, resilient supply chains, consistent quality, and scalable growth. To learn more, visit GFI's cultivated meat webpage.

Company landscape

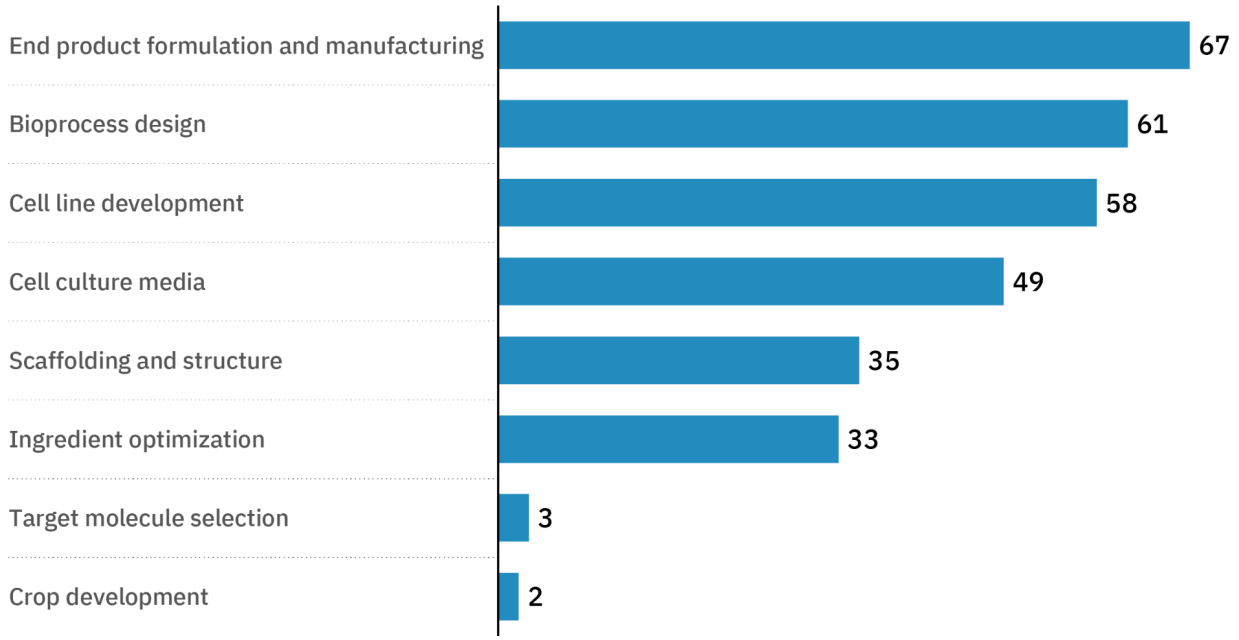
- **Number of companies:** In 2025, GFI's company database included 142 companies primarily dedicated to the development of cultivated meat and seafood inputs or end products. While this number is down from the 155 companies GFI identified in 2024, several mergers and acquisitions contributed to the shift, as did a handful of closures.
- **Diversifying portfolios:** The total number of companies at least partially involved in the cultivated meat and seafood sector reached a new high in 2025, with at least 138 additional companies active in the industry through investments, partnerships, or cultivated meat business lines, up from 126 in 2024.
- **Path to scale:** The industry continues to see companies focusing across all steps of the cultivated meat process: from raw materials/ingredients, to lower-cost processing aids, to equipment aimed at optimizing manufacturing and making new products. New technologies, facilities, and partnerships bolstered scale up and efficiency efforts.

Figure 1: Distribution of specialized cultivated companies by location



Source: Good Food Institute, Alternative protein company database, accessed: December 17, 2025. Specialized companies include (1) companies primarily or solely focused on producing foods that directly replace animal products (meat, dairy, seafood, or egg analogs) or (2) companies with a significant or sole focus on serving the alternative protein industry with ingredients or equipment. To avoid double counting companies across alternative protein sectors in the State of the Industry reports, companies involved in multiple alternative protein platforms are categorized by the platform they are most involved in (e.g., plant-based, fermentation). These restrictions do not apply in GFI's alternative protein company database.

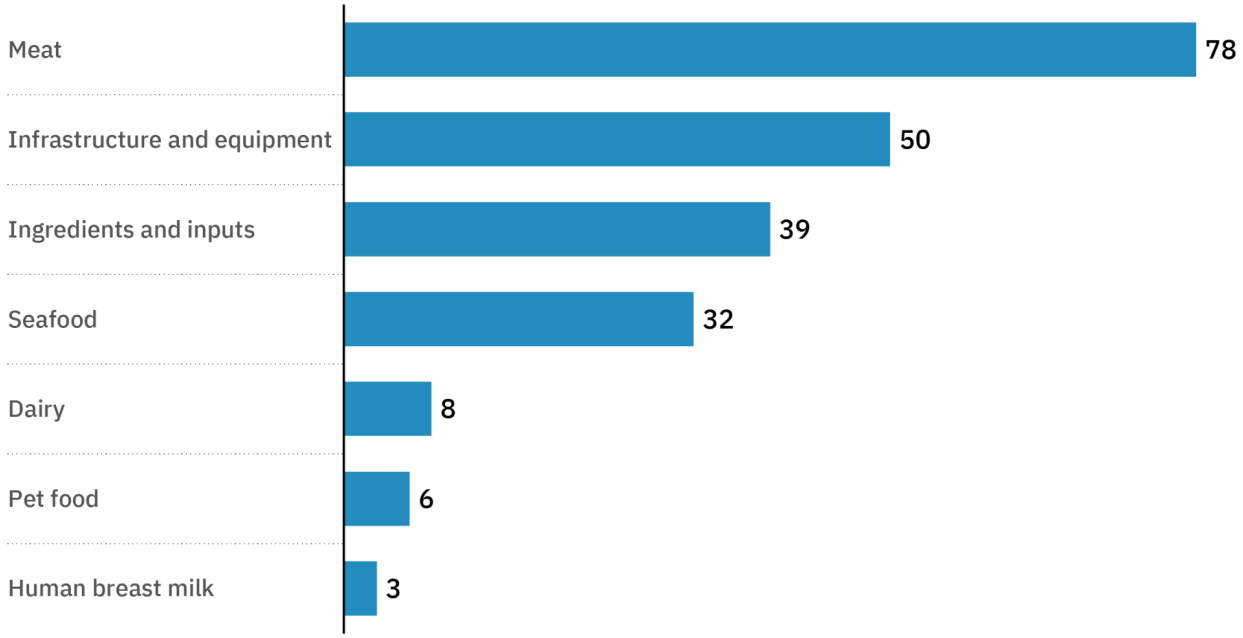
Figure 2: Number of companies involved in each technology focus area



Source: Good Food Institute, Alternative protein company database, accessed: December 17, 2025.

Note: Involvement by technology focus area is determined by a company's categorization in GFI's Alternative protein company database. Company representatives can self-select their company's focus area(s), as can GFI team members.

Figure 3: Number of companies involved in each end-product type



Source: Good Food Institute, Alternative protein company database, accessed: December 17, 2025.

Note: Product type is determined by a company's categorization in GFI's Alternative protein company database. Company representatives can self-select their company's product type(s), as can GFI team members.

These figures may not fully capture the actual count of companies involved in the cultivated meat space, as several startups likely remain in "stealth mode." Additionally, while GFI's company database is intended to be as comprehensive as possible, it is not exhaustive. Do you know of an alternative protein company that's not on our list? Request to add it here. Likewise, if you see a company in our database that has been acquired, closed, or rebranded, please let us know by requesting an update.
Note: Figures 1–3 and Table 1 may not reflect the full alternative protein commercial landscape in Japan. Some private sector companies in Japan prefer not to be included in public industry lists for underdeveloped products.

Facilities

Increased cultivated meat and seafood manufacturing capacity is critical for companies to improve processes and achieve scale. At least six new manufacturing sites, innovation hubs, and pilot facilities entered the ecosystem in 2025, primarily in the Asia Pacific region.

China

The **Fengtai District government** and meat processor **Shounong Food Group** teamed up to open the New Protein Food Science and Technology Innovation Base, a hub intended to accelerate development of cultivated and fermentation-enabled protein production. **Joes Future Food** opened China's largest cultivated meat pilot plant and completed a scaled trial production of cultivated pork in a 2,000-liter bioreactor.

India

At the **National Institute of Animal Biotechnology**, a new, first-of-its-kind biobank and laboratory opened with cultivated meat production among its priorities.

Japan

Singaporean biotech company **ImpacFat** opened an R&D hub in Japan to work on their cultivated omega-3 fish fat, joining the Agri and Food tech ecosystem at the Takanawa Gateway City, The Gateway city also established a "living laboratory" for research among scholars in the food and agritech areas within the Research Institute of Planetary Health (RIPH) at the University of Tokyo. Additionally, the Osaka Expo featured cultivated meat.

Singapore

The Malaysian startup **Cell AgriTech** opened a pilot facility in Singapore, offering contract manufacturing for startups and cultivated meat companies.

United States

The food industry systems supplier **GEA** established a $20 million tech center in Wisconsin to help the alternative protein industry scale up, including plant-based, fermentation, and cultivated technologies.

Involvement by diversified companies

Food companies are interested in new product opportunities to diversify their portfolio and stay relevant with consumer trends. Several leading global consumer packaged goods companies are exploring innovative ways to produce meat and remain involved in the cultivated meat sector. Additionally, several major engineering and construction companies are engaged in the innovation pipeline for industrial-scale production, enabling the buildout of key infrastructure.

Table 1: Diversified company involvement in cultivated meat and dairy

New in 2025

Company	Investment	Acquisition	Partnership	R&D and manufacturing
Ajinomoto	✓			✓
Bühler Group			★	★
Cargill	✓		✓	
Coca-Cola	✓			
Danone	✓			
Givaudan	✓		★	
JBS		✓	✓	✓
Maple Leaf Foods	✓			
Umios			✓★	★
Nestlé	✓		✓	✓
Nissin Foods Holdings				✓
Sumitomo Corp.			★	
Tyson	✓			

Source: Good Food Institute, Alternative protein company database, accessed: December 17, 2025. Specialized companies include (1) companies primarily or solely focused on producing foods that directly replace animal products (meat, dairy, seafood, or egg analogs) or (2) companies with a significant or sole focus on serving the alternative protein industry with ingredients or equipment. To avoid double counting companies across alternative protein sectors in the State of the Industry reports, companies involved in multiple alternative protein platforms are categorized by the platform they are most involved in (e.g., plant-based, fermentation). These restrictions do not apply in GFI's alternative protein company database.

New partnerships

Product innovation

Germany

Spice and additives company **VAN HEES** partnered with cultivated seafood company **BLUU Seafood** to develop hybrid plant-based and cultivated seafood products.

Japan and Singapore

The Japanese seafood company **Umios** (formerly Maruha Nichiro Corp.) and the Singaporean cellular agriculture company **Umami Bioworks** are partnering to develop cultivated tuna.

United States

New York-based materials science company **Corning Inc.** is entering the cultivated meat space with a patent on an edible ingredient for the cultivated meat production process. Likewise, an offshoot of **Merck** is working to commercialize a similar process.

Product made using Hoxton Farms cultivated pork fat.
Photo courtesy of Hoxton Farms

Production optimization and acceleration

Australia and the United States

The Australian cultivated meat company **Magic Valley** and the American machine learning company **Pythag Tech** are collaborating to accelerate cultivated meat production using AI to cut costs and improve process efficiencies.

France

Cultivated meat company **PARIMA** (formerly **Gourmey**) is teaming up with the biotech company **DeepLife** to optimize cultivated meat production with AI by refining recipes, increasing protein yield, and enhancing taste.

India

Cultivated meat company **ClearMeat** is partnering with the **National Institute of Food Technology Entrepreneurship and Management** to create APEX (Alternative Protein Excellence), a facility for research and manufacturing, aimed at scaling biotech and food innovations. Cultivated meat startup **Biokraft Foods** held the Great Indian Cultivated Chicken Cook-Off for culinary students to accelerate engagement by creating appetizers using cultivated chicken.

Switzerland and Israel

The Swiss manufacturer **Bühler Group** is teaming up with the Israeli cultivated meat company **Ever After Foods** to develop a commercial-scale cultivated meat production system using smaller, more efficient equipment.

United Kingdom and Japan

The British cultivated fat startup **Hoxton Farms** entered a strategic partnership with **Mitsui Chemicals** to scale up biomanufacturing infrastructure across Asia Pacific, with applications in cultivated food production, cosmetics, pharmaceuticals, and sustainable materials.

Expanded distribution

- **Asia: Hoxton Farms** is partnering with the investment firm **Sumitomo Corporation** to bring their cultivated pork fat to Asian markets.
- **Singapore, United Kingdom, and Europe:** The Singaporean cultivated meat company **Umami Bioworks** and the American pet food company **Friends & Family Pet Food Co.** are partnering to pilot cultivated pet food in Singapore, the UK, and the EU.
- **United Kingdom:** After the Food Standards Agency accepted the American cultivated meat company **BlueNalu** into the Cell-cultivated Products Regulatory Sandbox, BlueNalu announced they are expanding their partnership with the European frozen foods company **Nomad Foods** to work toward entering the UK market.
- **United States:** The cultivated meat company **UPSIDE Foods** is teaming up with the conventional meat distributor **Pat LaFrieda** to leverage the distributor's connections to restaurants.

Product launches

- **Australia:** After receiving the first regulatory approval for a cultivated meat product in Australia-New Zealand, **Vow** launched their cultivated Japanese quail foie gras in several Australian restaurants following the launch in several high-end restaurants in Singapore last year. In 2025, they also debuted three retail products featuring their cultivated quail—foie gras, croquettes, and a smoked spread—sold direct-to-consumer under the brand Forged.
- **United Kingdom:** Cultivated meat company **Meatly** teamed up with the plant-based pet food company **THE PACK** to launch pet food made with both plant-based ingredients and cultivated chicken.
- **United States: Mission Barns** launched the first cultivated meat product available in U.S. retail for a limited time at a California natural grocer. **Wildtype** debuted the first cultivated seafood product in the United States, bringing their cultivated salmon filet to select restaurants.

Forged cell-cultured japanese quail. Photo courtesy of Vow

Investments

Overview

Companies operating primarily in the cultivated meat ecosystem raised $73.9 million in 2025, according to GFI analysis of data from Net Zero Insights. That brought the total capital invested in the sector since 2016 to $3.4 billion, all of which has been raised by privately held companies.

Key trends from 2025 include:

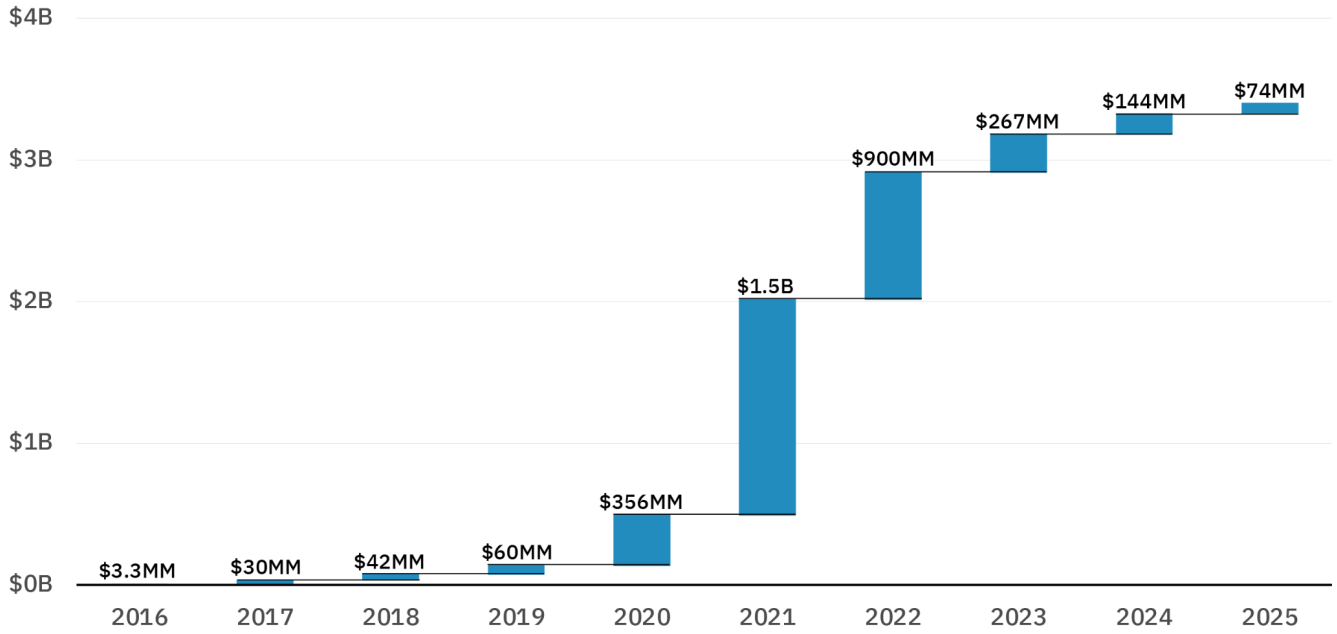
- **Smaller, more targeted investments:** The three largest cultivated meat deals in 2025 were **Aleph Farms**' $29 million raise, **Mosa Meat**'s $17.6 million round, and **BlueNalu**'s $11 million in convertible notes and preferred stock financings. These deals, while significant, each rank outside the top 20 largest cultivated meat deals of all time. Investors are showing increased discretion in allocating funding to the sector, prioritizing companies demonstrating meaningful progress on fundamentals like cost, taste, and scale.
- **Ongoing industry consolidation:** Some notable cultivated meat companies paused or ceased operations in 2025 following difficulty securing additional funding. At the same time, several other cultivated companies acquired or merged with competitors to combine portfolios, technology stacks, and intellectual property. **Nexture Bio** acquired **Matrix F.T.**, **Gourmey** merged with **Vital Meat** to form **PARIMA**, and **Fork & Good** acquired **Orbillion Bio**. These mergers and acquisitions allow companies to leverage external technologies and specialized expertise, accelerating innovation within the sector.
- **Public investment across the value chain:** China and South Korea both invested in cultivated meat research centers to support the research, development, and commercialization of cultivated meat. In the Netherlands, **Invest-NL**, the country's national financing and development institution, participated in **Mosa Meat**'s $17.6 million raise.

The wider ecosystem of alternative protein companies raised $881 million in 2025, less than one-tenth of which went to cultivated companies. Of that overall total, $734 million was raised by privately held companies and $147 million was raised by publicly traded companies. Since 2016, privately held companies in the alternative protein sector have raised $16.7 billion, while publicly traded companies have raised $2.7 billion.

Broader private capital markets are increasingly dominated by investments in artificial intelligence (AI), which captured nearly 50 percent of all global funding in 2025. Venture capital tightened across most other sectors, and alternative proteins experienced similar barriers to raising capital as the climate tech and food tech spaces. At the same time, investment in cultivated meat companies declined more sharply than in adjacent sectors, and many companies found it particularly difficult to secure funding in 2025.

Figure 4: Cumulative and annual investment in privately held companies

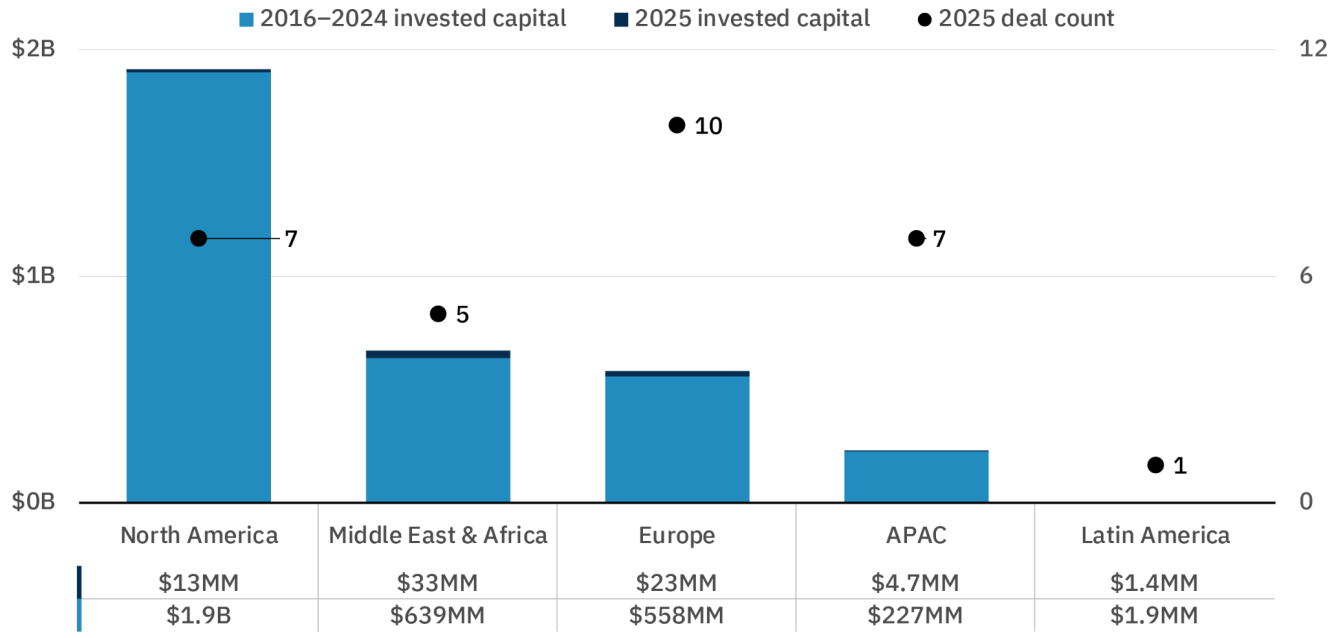
2016-2025



Source: GFI analysis of data from Net Zero Insights. Note: Aggregated data has not been reviewed by Net Zero Insights analysts.

Figure 5: Investments in privately held cultivated companies by region

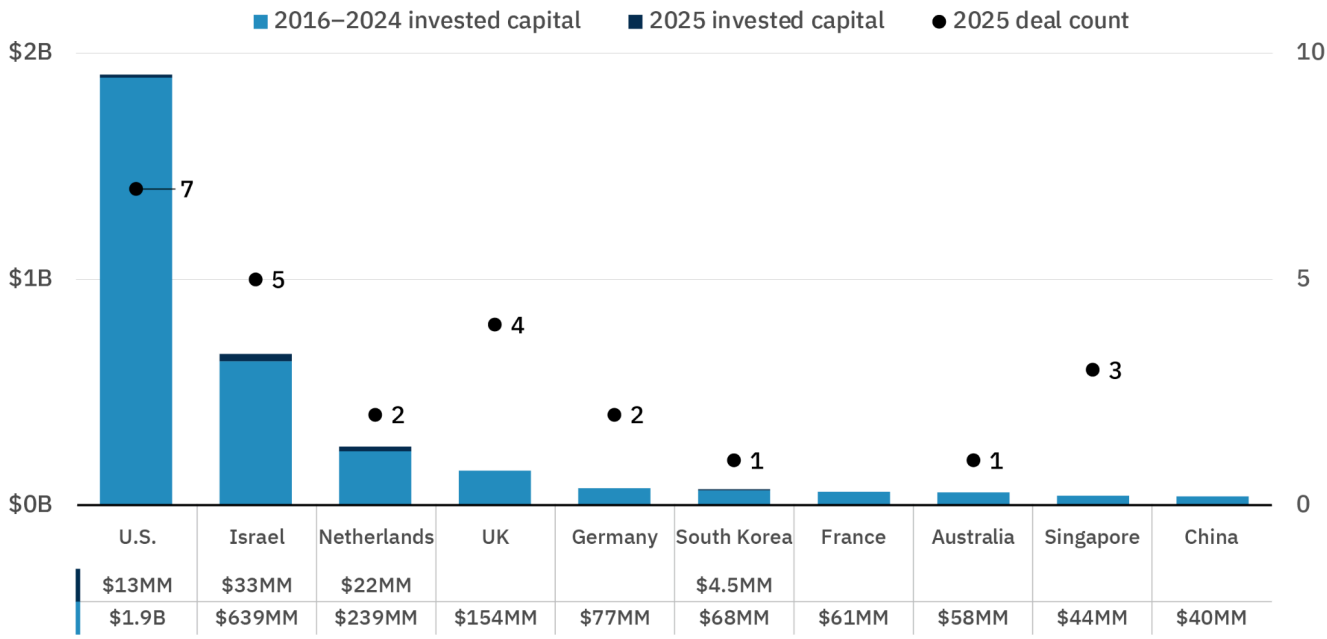
2016-2025



Source: GFI analysis of data from Net Zero Insights.
Note: Aggregated data has not been reviewed by Net Zero Insights analysts. The total deal count includes deals with undisclosed amounts.

Figure 6: Investments in privately held cultivated companies: Top 10 countries

2016-2025



Source: GFI analysis of data from Net Zero Insights.
Note: Aggregated data has not been reviewed by Net Zero Insights analysts. The total deal count includes deals with undisclosed amounts.

Table 2: 2025 key funding rounds

Convertible note		Late VC		Early VC	
Aleph Farms	BlueNalu	Mosa Meat	Aleph Farms	SuperMeat	CURVE
$22MM	$11MM	$18MM	$7MM	$3.3MM	$1.1MM

Series A	Debt crowdfunding	Equity crowdfunding	Seed	Pre-seed	
Pensées	Mosa Meat	Sustineri Piscis	Atlantic Fish Co.		BIOKRAFT FOODS
$4.5MM	$4MM	$1.4MM	$1.2MM	$400K	$227K

Source: GFI analysis of data from Net Zero Insights.
Note: "2025 key funding rounds" includes investments in the 75th percentile or higher by dollar amount for each funding round category that includes more than three deals. For funding round categories that include three deals or fewer, all deals are included. Aggregated data has not been reviewed by Net Zero Insights analysts. The total deal count includes deals with undisclosed amounts.

Financing in a risk-averse environment

Cultivated meat remains both capital-intensive and milestone-driven. Funding deployment is often tied, formally or informally, to key R&D, regulatory, and early commercialization milestones.

Increasingly, investors are also looking for evidence of near-term market uptake and paths to profitability. In an environment where a handful of companies globally have achieved regulatory approval—and an even smaller number are consistently producing and selling products—these dynamics have increased the difficulty for cultivated meat companies seeking funding.

In 2025, investments largely clustered around a narrower set of companies demonstrating tangible progress in areas like cost reduction, consistent product performance, credible paths to increased scale, and regulatory traction. Deal structures often reflected the tougher environment. Many rounds functioned as recapitalizations or insider-led extensions, and others relied on meaningful participation from government-related or strategic investors.

Looking ahead, reaching the next phase of scale up will likely rely on blended capital stacks that pair private investment with public and philanthropic support to de-risk projects and crowd-in additional capital.

Other indicators of progress and scale

In a market where capital availability and deal structure depend on investor risk appetite as much as technical and operational advancements, funding alone is an unreliable proxy for progress. Other metrics key to industry development, like bioreactor capacity in operation, sustained output over time, and run reliability and consistency, were strengthened in 2025. **Vow** reached 20,000 liter-scale production, while others expanded pilot-scale campaigns, pushing process learning and validation to ever-larger volumes.

A clear path to profitability is another important indicator to track. In 2025, **IntegriCulture** announced that they achieved profitability by generating revenue from selling research tools and cosmetics products. Other companies across the cultivated meat ecosystem also expanded their revenue bases by selling media, inputs, and ingredients into adjacent industries, such as regenerative medicine, life sciences, and cosmetics.

Partnerships also continue to play a central role in driving commercialization. In some cases, they have partially substituted for venture funding by underwriting defined workstreams such as process development, equipment co-development, and commercialization pilots.

In 2025, collaborations focused on increasing production and lowering costs, developing more efficient manufacturing equipment and production systems, and leveraging distribution agreements and regulatory frameworks to accelerate market entry. Taken together, these signals suggest the industry continues to build the capabilities and commercial pathways needed to support further scale up.

Looking ahead

Near-term, fundraising conditions for cultivated meat remain constrained. Many companies are unlikely to raise meaningful private rounds in the current environment. A sustained recovery will likely rely on more companies demonstrating clear, near-term pathways to profitability and delivering exits that enable investors to deploy more capital into the category.

Until then, investment is likely to remain selective, flowing primarily to companies combining technical execution, well-defined commercialization plans, and disciplined approaches to capital use. For cultivated meat, these dynamics favor capital-efficient scale-up strategies that limit large, upfront infrastructure commitments.

Commercialization models that can progress through partnerships, contract manufacturing capacity, and staged facility buildouts are likely better aligned with current risk tolerance. This is especially true when they are paired with public investment, large corporate participation, and philanthropic support to de-risk key milestones. Such funding frameworks were central to the development of sectors from clean energy to public health, and successfully implementing them for cultivated meat can help the sector realize its potential food security, emissions, and public health benefits.

Photo credit: Mission Barns

Consumer insights

Overview

While companies are working to bring cultivated meat to market in several regions, research continues to show that less than half of consumers in most of these regions are aware of cultivated meat, and smaller but significant percentages of consumers are interested in trying it based on what they know today.

More consumer messaging focused on explaining the products and their key benefits will be needed to increase consumer awareness and openness. Research in 2025 provided new data on what benefits resonate most with consumers and how best to communicate those benefits.

Asia Pacific consumer findings

New research across several countries in Asia Pacific deepened our understanding of consumer expectations for cultivated meat in the region.

China

In China, the APAC Society for Cellular Agriculture (APAC-SCA) conducted a survey examining consumer perceptions and acceptance of cellular agriculture products across four Tier 1 cities: Beijing, Shanghai, Guangzhou, and Shenzhen. It found low awareness and a desire for confidence in the safety and health of the products, but also a strong interest.

- **Very few are aware of cultivated meat:** Just 10% of Chinese consumers were aware of "cell-cultured foods," while an additional 53% had "heard of it, but [were] unsure of the meaning." These numbers are unsurprising given that cultivated meat is not yet commercially available in China, and will likely rise as new products are approved for sale.
- **Most would try cultivated meat:** More than three in four (77%) said they would be willing to try cultivated meat and seafood, with most commonly citing interest in trying new things.
- **Concerns around cultivated meat focus on safety:** Many expressed concerns about the safety, health impacts, and naturalness of cultivated meat. They placed great importance on laws, regulations, and safety standards, suggesting that creating trust in how cultivated meat is made will be crucial for its success in China.

Singapore

In Singapore, the longest-running market where cultivated meat is commercially available, researchers at National University of Singapore conducted a novel study. Participants ate conventional chicken nuggets, which they were informed were either conventional, plant-based, or cultivated (i.e., some participants believed they were consuming cultivated or plant-based meat, though it was in fact conventional). This makes the study a unique controlled test for product perceptions and satisfaction in a hypothetical scenario where sensory parity with conventional meat is achieved. It found that:

- **Many tasters were familiar with cultivated meat:** More than half (54%) of participants had heard of cultivated meat. This is higher than in other regions where research exists, likely due to cultivated meat's longer-running availability in Singapore.
- **Messaging about cultivated meat's benefits was key for acceptance:** Cultivated meat was less accepted than both conventional and plant-based meat, which is not uncommon for a novel product. Among respondents who tried what they believed to be cultivated meat and heard an explanation of cultivated meat's benefits, acceptance of cultivated meat rose significantly to become comparable to conventional meat, suggesting that messaging is an important tool to drive appeal.
- **Messaging will be necessary even among consumers of other alternative proteins:** Almost three in four participants (74%) had eaten plant-based meat, suggesting that messaging will be key to driving acceptance even among consumers of other alternative proteins.

Australia

In Australia, where limited research had been done on cultivated meat adoption readiness to date, a study from researchers at Deakin University found that:

- **Many are aware of cultivated meat:** Three in four consumers (75%) claimed to have heard of cultivated meat.
- **Some would eat it regularly:** Around one in four (26%) said they would be willing to eat it regularly "at home," and almost one in five "in restaurants" or "in ready-to-eat meals" (18–19%). More than two in three (69%) say they would *not* be willing to eat cultivated meat regularly.
- **Trust is key for adoption:** Confidence in the benefits of cultivated meat (primarily health and environmental) was most predictive of acceptance, but depended on their perceived safety and trust in regulatory processes.

European consumer findings

In 2024, research by GFI Europe in 15 European countries served as a foundational comparative understanding of rates of consumer interest in cultivated meat across the region. New research in many of these countries validated and expanded that understanding in 2025.

How open are consumers to cultivated meat?

A Euroconsumers study conducted in January 2025 on consumers in four European countries found that around half of consumers would try cultivated meat if it were approved and available. It found rates similar to those seen by GFI in 2024 in Spain and Italy, although slightly lower levels than those seen in 2024 for Portugal and Belgium.

- Spain: 56%
- Portugal: 53%
- Italy: 47%
- Belgium: 44%

An additional survey by the European Institute of Innovation & Technology of more than 3,300 European consumers from six countries (Denmark, France, Greece, Italy, Poland, and Spain) found that 35 percent would try cultivated meat. This was asked in the context of a survey on food system trust and regulation, which may have contributed to lower rates of interest than those seen in other surveys.

A survey by Ipsos of UK consumers found around one in three (32 percent) would be willing to eat cultivated meat, and up to almost one in two (47 percent) among Gen Z consumers.

What would lead European consumers to consider cultivated meat?

The Euroconsumers study (Belgium, Italy, Portugal, Spain) found it is likely to appeal to flexitarian consumers and omnivores, and that they're interested in products that can closely match the sensory experience of conventional meat, at comparable prices, potentially offer additional health benefits, and where they trust in its safety.

- **Appeals to meat eaters, and especially flexitarians:** More than half (56%) of consumers across these four countries report reducing or being interested in reducing their meat consumption, and these consumers are more likely to try cultivated meat than consumers who do not intend to reduce their meat consumption (41%) or who have already stopped eating meat (3%). And even a large minority (43%) of those with no intention of reducing their meat consumption would nevertheless try cultivated meat.
- **Sensory similarity to conventional meat is important:** Around half (48%) would only eat cultivated meat if it had the same taste and structure as conventional meat.
- **Cost is important:** A majority (59%) say they would not buy cultivated meat if it were more expensive than conventional meat.
- **Health is important:** More than one in three (38%) would include it in their diet if it were proven to be healthier than conventional meat.
- **Some have concerns about safety, but most are persuadable:** A majority (51%) said they are afraid of the long-term health risks of eating cultivated meat, but 68% would trust the European Food Safety Authority to judge whether cultivated meat would be safe for consumption.

These results suggest that many European consumers will need to trust in the safety of cultivated meat and understand what it is in order to adopt it. Conveying information like allergenicity to consumers is also a key factor in approval decisions for novel foods in the EU. Research by Opinium for GFI Europe in France, Germany, Spain, Switzerland, and the UK in 2025 examined what terms on illustrative packaging were most understandable and appealing to consumers and found that:

- **Consumers would understand clear cultivated meat labels:** A large majority of consumers were able to distinguish between cultivated and conventional meat based on category names and claims, and that "meaty" names for cultivated meat products are essential to help consumer understanding.
- **"Cultivated" conveys key information to consumers:** Terms that could be considered pejorative or more technical like "artificial" and "made from synthetic protein" were less effective at conveying allergenicity information: consumers who saw the product labeled as "cultivated" or "cultured" were almost twice as likely to correctly understand allergenicity compared with those who saw it labeled as "artificial" (55% for "cultivated" and 58% for "cultured," vs. just 32% for "artificial").
- **Terms like "artificial" and "synthetic" do not help consumers:** Consumers also rated terms like "artificial" and "synthetic" as being "too technical," "misleading," and "unappetising," suggesting they do not align with consumers' perceptions of the category.

U.S. consumer findings

New research by GFI in the U.S. in 2025 saw key consumer metrics for cultivated meat remain mostly steady (compared to 2024), with less than half aware of it and a small but significant minority willing to try it.

Consumer awareness

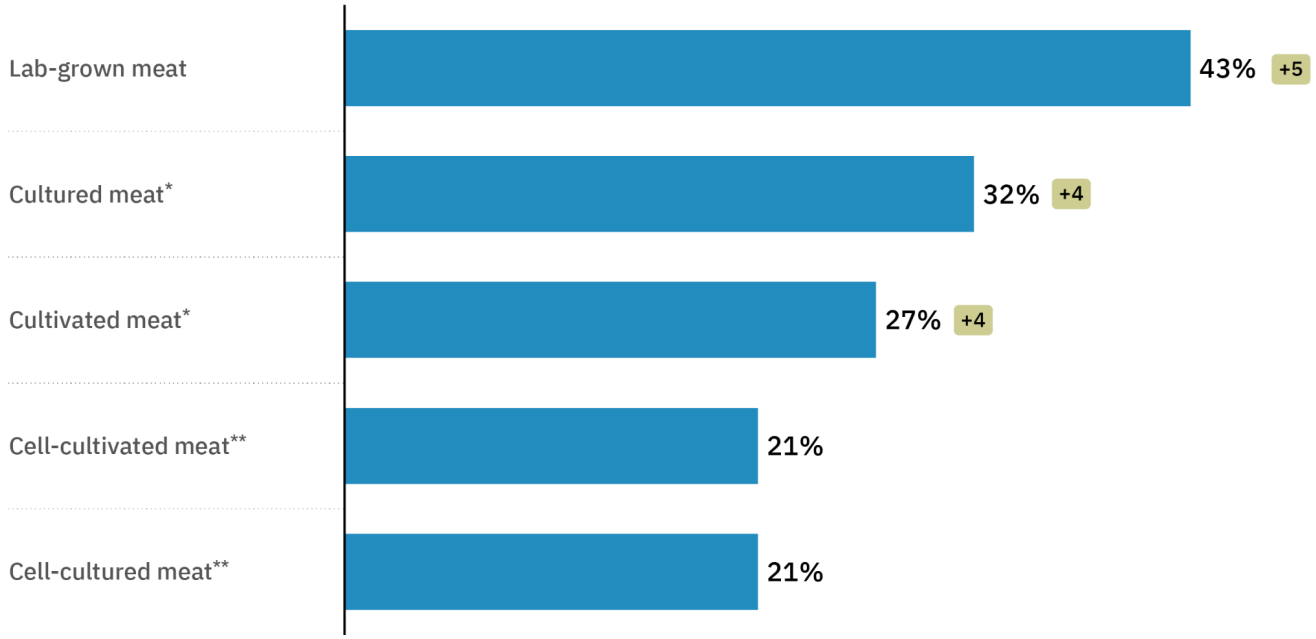
- **Awareness is low, and skews toward "lab-grown":** Americans who have heard of cultivated meat are most likely to have heard of it as "lab-grown": almost one in two Americans (43%), vs. just over one in four for "cultivated meat" (27%). Awareness of both terms grew similarly from 2024 to 2025, with "lab-grown" growing by five points and "cultivated meat" by four points. These numbers are unsurprising given the limited commercial availability of cultivated meat, and will likely rise as new products are approved for sale.
- **What cultivated meat is called affects acceptance:** Higher consumer familiarity with the term "lab-grown" is a potential challenge for the category since research suggests that many consumers respond less favorably to scientific or process-focused explanations. Past research has found "cultivated" to be the term consumers rate as most appealing, helpful for distinguishing from conventional meat, and the term they would most likely anticipate using themselves. "Lab-grown" also does not accurately depict the types of facilities where products are made at a commercial scale.

Nomenclature and effects on openness

Research continues to suggest that building awareness of "cultivated" as a category name is most likely to help consumers connect with these products.

- **Some find cultivated meat appealing:** Around one in five U.S. consumers in 2025 said they find cultivated meat appealing or would buy it based on what they know today (18% and 19% respectively). An additional 25% find it "somewhat" appealing and an additional 25% are "somewhat" likely to buy.
- **Many would try cultivated meat:** Almost three in five say they are likely to try it: 30% "extremely/very" and 29% "somewhat," suggesting that more may be persuadable to buy or eat it regularly if products meet their expectations around basic attributes like taste and offer a compelling value proposition.

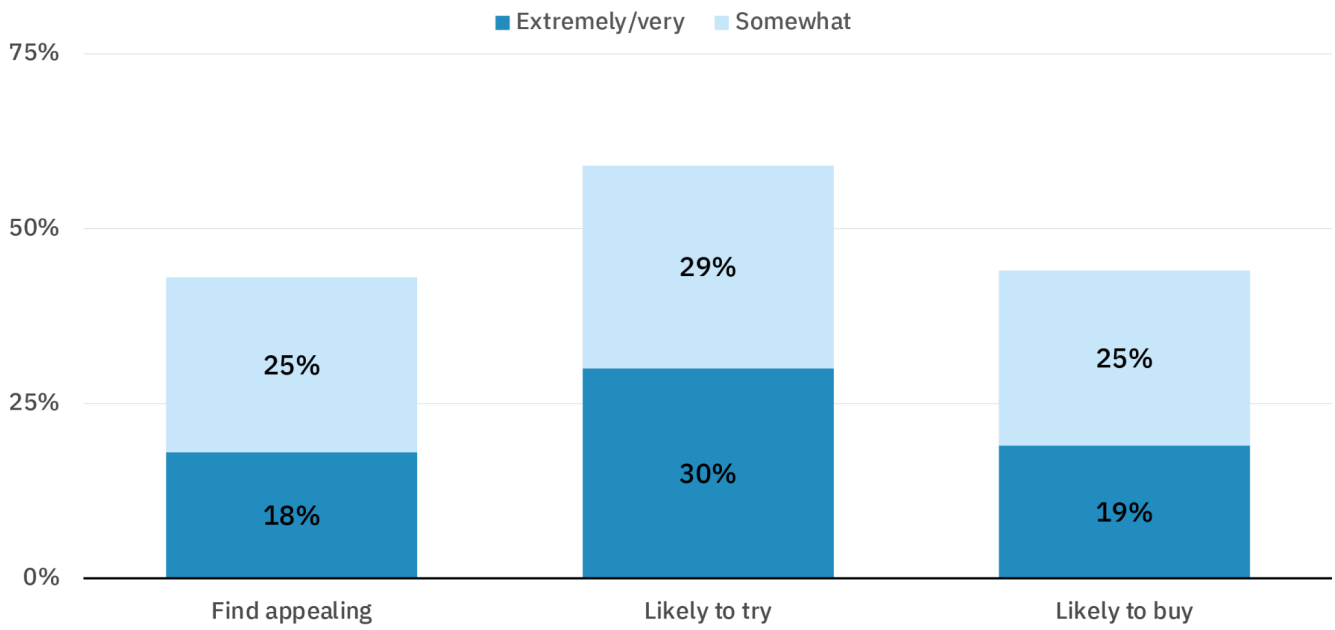
Figure 7: Names U.S. consumers have heard for cultivated meat



Have you ever seen, read, or heard about each of the following? % selected "yes."
Poll by Morning Consult on behalf of GFI: n=4,204 U.S. adults, June 2025
*versions without "cell-" shown to 2,083 respondents; **versions with "cell-" shown to 2,121 respondents.
Green = % change from 2024

Figure 8: U.S. cultivated consumer metrics

2025



Based on the description provided, how appealing or unappealing do you find cultivated meat?
If you were offered a free sample of a product made with cultivated meat, how likely would you be to try it?
Based on what you know, how likely are you, if at all, to purchase cultivated meat?
Poll by Morning Consult on behalf of GFI: n=1,067 U.S. adults, June 2025

How can cultivated meat be explained to consumers in an appealing way?

At current awareness and desirability levels, it is important for companies to articulate what cultivated meat is in ways that clarify why consumers should choose it.

GFI research published in 2025 explored U.S. consumer reactions to various ways of describing cultivated meat. It found that U.S. consumers are most likely to find cultivated meat appealing when descriptions focus on similarity to conventional meat. Explaining how cultivated meat does not require killing animals is also appealing and has additional value because it conveys in a non-technical way how it is made.

Consumers also reacted positively to descriptions that referenced personal and public health attributes of cultivated meat, including being nutritionally comparable to conventional meat, not containing hormones or antibiotics, and reducing the risk of zoonotic disease.

Table 3: Appealing descriptors of cultivated meat as rated by U.S. consumers

Appealing	
• No sacrifice • 100%/Real meat • Future-friendly • High-quality • Same as today's meat • Antibiotic free/need for antibiotics • No kill/without harming/more humane	• Feed more people • Nutritious/nutritionally comparable • Look/cook/taste like conventional meat • Reduced risk • Grown (without specifying "from cells")

Poll by Morning Consult on behalf of GFI; n=3,517 U.S. adults, October 2024

In contrast, most technical explanations of how cultivated meat is made ("from cells," "outside the animal," "cultured," "bioreactor," etc.) are more often unappealing. However, they're also helpful at educating consumers on the differences between cultivated meat and plant-based or conventional meats. Consumer education will be important as more products come to market, and more research is needed to shape effective communication strategies.

Many consumers are looking for cultivated meat to replicate the sensory experience of conventional meat. This makes it crucial to understand how the small number of products on the market perform. In 2025, a small-scale peer-reviewed ethnographic study conducted during the UPSIDE Foods Freedom of Food Pop-up 2024 included product tasting and qualitative feedback.

- **Tasters had a range of opinions on how cultivated meat compares to other meats:** Tasters varied on whether they found the product comparable to or superior to plant-based meat (especially among vegetarian/vegan participants) and to conventional meat.
- **Many would try cultivated meat, and want to see how it evolves:** More than half expressed willingness to try it again, but fewer (around 1/3) expressed intent to consume it regularly. Many expressed that their consumption would depend on how products' sensory performance developed as they come to market.

Looking ahead

As consumer data becomes more robust across regions, it validates core opportunities and challenges for cultivated meat:

- **Industry challenges:** New products coming to market will face low consumer awareness in the short term, even in regions where cultivated meat has been available for years.
- **More consumer education is needed:** Products and brands will need to educate consumers on reasons to choose cultivated meat, like potential health and animal welfare benefits, and find ways to explain what cultivated meat is and why it offers those benefits while recognizing that overly technical explanations can reduce consumer appeal.
- **Research on value propositions:** Messaging research internationally suggests that many aspects of cultivated meat's unique value proposition (a comparable sensory experience to conventional meat, with ethical, personal health, and public health benefits) are likely to resonate with many consumers, including those who continue to eat conventional meat.
- **Importance of sensory experience:** It will be crucial for products to closely match the sensory experience of conventional meat to drive widespread adoption.

Science and technology

Tracking the technological readiness of the cultivated meat sector is a useful method to evaluate its progress toward competing on price, taste, and availability with conventional meat. Technological readiness can be determined by assessing the progress, challenges, and overall risk across categories such as scientific feasibility, engineering viability, and innovation capacity. In this section, we focus on the most noteworthy dimensions within each of these categories that took center stage in 2025.

Read more about technological and commercial readiness frameworks.

Scientific feasibility

Cell lines

- **Bovine cells for the whole sector:** GFI announced the acquisition of eight cell lines developed by the former startup **SCiFi Foods**. Through a partnership with Tufts University, researchers within academia and industry will have access to the first publicly available set of suspension-adapted bovine cell lines, enabling the acceleration of commercially relevant research. Researchers interested in using the cells can sign up here.
- **Practical guidance for seafood work:** GFI scientists published a guide for developing continuous cell lines for cultivated seafood based on survey results and interviews with industry and academic researchers.
- **Cell line advancements:** GFI funded seven research projects to develop advanced cell lines from cows, fish, and lobster, and researchers published numerous articles on new cell line development or characterization from species including cows, pigs, lamb, and several avian and fish species (e.g., snakehead, carp, salmon, trout, eel, and seabass). Additionally, researchers in the adjacent biopharma sector solved a decades-old challenge of reducing metabolite buildup during cultivation without sacrificing cell growth, which can be adopted by cultivated meat researchers.
- **Cell banking:** In addition to existing infrastructure at ATCC, several new cell banking initiatives kicked off around the world, including a new program at Tufts University and government-sponsored repositories and training programs in Hyderabad, India and Santa Catarina, Brazil.

While substantial progress in the number of cell lines being developed continues, indicated by new publications and GFI's database of cell lines growing to over 90 entries (up from 75 in 2024), several actions are still needed to reduce the risks associated with a lack of appropriate cell lines. These include depositing cell lines in public repositories to increase accessibility (especially for aquatic animals), creating cell lines with desirable traits, such as adaptation to suspension, and conducting research demonstrating the metabolic efficiency of cells in bioreactors to increase commercial relevance.

As shown by GFI's acquisition of SCiFi Foods' cell lines, these efforts can be dramatically accelerated by philanthropic funds used to salvage assets from companies who close their doors.

The role of nonprofits in accelerating cultivated meat research

Philanthropy is uniquely positioned to salvage research assets that might otherwise be lost.

What? In 2024, cultivated meat company SCiFi Foods—known for their innovation in beef cell lines—was on the brink of closure. Developing cell lines can cost millions of dollars and take years of research, making it one of the steepest hurdles for new companies. All of their progress was at risk of disappearing overnight. In partnership with Tufts University, GFI acquired those cell lines and made them publicly available. Nonprofits can play a powerful role in turning a challenge for one company into a breakthrough for the entire field.

How? Private sector funding has outpaced publicly funded cultivated meat R&D, resulting in data and materials that aren't publicly accessible. This means that academic labs often start from scratch, leaving researchers struggling to keep pace with industry innovation. By making these cell lines freely available, GFI has ensured academic labs can access the same tools used in industry, saving years of R&D. The investment made by this partnership has the potential to jumpstart global progress in cultivated meat research.

Why? Because GFI is a nonprofit funded by philanthropy, we were able to leverage SCiFi Foods' progress for the greater good of the entire sector. By transforming what could have been a loss into a public resource, GFI has helped ensure that innovation doesn't disappear—it multiplies.

Learn more with this video.

Cell culture media and inputs

- **Optimized media formulations for the whole sector:** GFI acquired serum-free cell culture media formulations for bovine fibroblasts previously developed by SCiFi Foods and published them openly to assist the research community in media development.

- **Understanding the amino acid supply chain:** GFI and MG Consulting published an extensive analysis of the amino acid supply chain. The analysis showed that food-grade amino acid costs are much lower than previously reported, enabling cell culture media costs below $0.20 per liter, independently validating recent announcements from companies in the sector. The report also projected anticipated volumes of amino acids required for a scaled industry, characterized high-risk amino acids, and analyzed the potential use of hydrolysates as a future amino acid supply.

- **Steady progress by companies toward cost-effective media:** Regulatory documents from **Vow**, **WildType**, and **Believer Meats** show that companies are frequently eliminating the most costly media components such as insulin, transferrin, and albumin from their processes. Food-grade cyclodextrins (made from corn starch) are emerging as low-cost alternatives to albumin, and several companies report using fewer than two growth factors in their media. In addition to Believer Meats, the companies Gourmey (now **PARIMA**) and **Meatly** both stated that they have developed entirely protein-free media. These innovations indicate substantial progress toward cost-effective media for the scaled production of cultivated meat.

- **Increasing availability of food-grade media:** The UK startup **Multus Media** announced a new food-grade media offering, enabling academic researchers to have access to the same lower-cost, food-grade media inputs used in industry.

- **Safety of media inputs:** An international team of researchers published a framework for the safety assessment of cell culture media inputs to assist the harmonization of safety assessments across jurisdictions.

Cell culture media cost, which is the largest operational expense in cultivated meat production, has decreased by over 99 percent from its starting point a decade ago. These cost reductions were driven by switching to a food-grade supply chain and developing solutions to eliminate or dramatically reduce the amount of proteins (the highest-cost component) in the media.

However, progress is not equally distributed. While some solutions are becoming available, academic researchers still broadly lack access to food-grade media, and many research labs are still working to develop serum-free media that perform well. To lower the long-term risks associated with scarce food-grade media, the field will need to develop open-source media formulations that can accommodate the wide range of species and cell types used in production. Together with accessible cell lines, this will enable the academic ecosystem to contribute to translational research that helps solve scale-up, cost, and end-product challenges in the coming years.

End-product attributes

- **A big flavor boost from cultivated cells:** A team led by scientists from the National University of Singapore and A*STAR performed sensory analyses of aroma extracts from cultivated cells and of dumplings with a hybrid filling that incorporated these extracts with plant protein. The hybrid dumplings substantially outperformed the plant-based controls, demonstrating the potential for cultivated ingredients to enhance the sensory properties of primarily plant-based products.

- **Tuning aroma through media supplementation:** While there is no substitute for sensory testing, strategic application of instrumental measurements can meaningfully advance cultivated meat's sensory properties. For example, a study from Tufts University modulated the aroma of cultivated meat by supplementing the culture media with precursor compounds that can be metabolized by the cultivated cells. This study provides insights into the interplay between media components, cellular metabolism, and chemical reactions during cooking responsible for producing the complex and desirable flavors associated with cooked meat.

- **Improving texture through cultivated ingredients:** Research from the ICL Bezos Centre has shown that adding as little as 2 to 10% of cultivated beef can favorably modulate the texture (as assessed by instrumental methods) and microstructure of pea protein extrudate. This could lead to a promising texturization process for plant protein via microstructure modulation, reducing off-tastes, and enhancing functional features to develop high-quality cultivated meat.

- **A first look at digestibility:** Researchers from Nanjing Agricultural University, in collaboration with cultivated meat company **Joes Future Food**, compared the digestibility of multiple protein sources. Cultivated pork showed higher protein digestibility than conventional pork, soy, egg, whey, and casein. While further research is needed to understand the relationship between digestibility and process parameters, as well as how digestibility might correlate with sensory characteristics, to our knowledge, this is the first study to directly measure cultivated meat's protein digestibility.

- **Summarizing knowledge:** Researchers from Pontifícia Universidade Católica do Paraná published a systematic review on cultivated meat quality, analyzing physicochemical, technological, and sensory outcomes. Their work identifies major progress in muscle tissue formation and color development while highlighting persistent gaps in texture, protein content, and lipid incorporation.

- **A practical guide to sensory testing:** Based on input from sensory science professionals, GFI, together with Dr. Alissa Nolden, released a best-practices guide for the use of sensory methods for alternative proteins, including cultivated meat. This guide provides practical tips for companies or labs looking to incorporate sensory work or those looking to improve their current practices.

The market success of cultivated meat and ingredients—and therefore its ability to deliver on its potential benefits—fundamentally depends on cultivated products' ability to compete on sensory metrics. Routine, direct evaluation of cultivated meat's sensory attributes will be essential to achieving this. However, integrating these practices into academic studies is challenging, in part due to: the need to ensure the food safety of all ingredients, even in lab-scale research; the challenge of ensuring and documenting compliance with institutional requirements; and the presence of restrictions on tastings of products prior to regulatory approval. The UK made progress in 2025 toward the goal of enabling safe premarket tastings for research purposes. For more on this, please see the "Government and Regulation" section. Much still remains to be understood about the sensory impacts of various decisions that cultivated meat producers might make in designing their production processes, and we are beginning to see the first steps taken to shed light on these questions.

Engineering viability

Scaling

- **Modeling cell growth:** GFI and BioPharm Designs published an overview of cell growth modeling for cultivated meat, which highlights research priorities and provides a framework to guide model-assisted process development during scale up.
- **Scaling commercial production: Vow** achieved production at 20,000-liter scale at their facility in Sydney, Australia, which hosts 35,000 liters of total capacity and room for 10 more similarly sized production lines. This is the largest current cultivated meat facility in the world, placing their production near the same scale as the largest biopharma processes. At this scale, Vow can produce up to low hundreds of tons of cultivated quail annually.
- **China's largest pilot plant: Joes Future Food** commissioned China's largest cultivated meat pilot plant and completed trial runs of cultivated pork in a 2,000-liter bioreactor.
- **Industry challenges:** In October, **Believer Meats** received a USDA grant of inspection for their 200,000 square foot facility in North Carolina, enabling them to begin operations. However, a few weeks later, Believer Meats suddenly filed for bankruptcy, with public filings suggesting their facility costs had grown to $154 million, about 11% over initial projections. The site would have been the largest cultivated meat facility in the world, capable of producing over 10,000 tons of product annually.

The next several years will be pivotal for determining the pace of scaling cultivated meat. The year 2025 marked both successes and setbacks in scale up, highlighting how strategic decisions related to facility sizes can affect business operations. Extended regulatory timelines combined with the challenging investment environment have forced many companies to focus on smaller, modular processes or to leverage the limited co-manufacturing spaces available to reduce large capital expenditures. Currently, most companies operate bioreactors with volumes below 1,000 liters, with only a handful commissioning facilities capable of larger processes.

To reduce the risks associated with scaling, the industry will need several more companies to gain regulatory approvals, enter the market successfully, maintain operations and product sales at pilot or industrial scales, and demonstrate a path to profitability. Establishing additional co-manufacturing facilities or partnering with existing ones, as seen with **Aleph Farms** and **The Cultured Hub** in Switzerland, can also provide a bridge for startups. If achieved, these successes could collectively de-risk the cautious outlook around scaling cultivated meat and open the door for greater investment in larger facilities.

Implementation cost

- **Economic assessments:** Techno-economic analyses were commissioned by Gourmey (now **PARIMA**) and **Aleph Farms**, both optimistically assessing the cost of production at 5,000-liter scale. However, several sensitive details were omitted, making them difficult to independently verify.
- **Tracking progress toward cost-competitiveness:** Investment firm **Lever VC** published an encouraging overview of industry progress on various factors that influence implementation costs, including media, cell line, and process-related challenges.
- **Cost savings through customization: Vow** stated that their 20,000-liter bioreactor cost 80% less than a similar off-the-shelf vessel, while **Meatly**'s 320-liter bioreactor was reported to cost 95% less. These data points provide some of the first insights into how cultivated meat manufacturers are turning to custom designs, vessel fabrications, and in-house installation to reduce costs.

The cost of cultivated meat production rightly attracts ample attention. While there is a clear understanding of the costs, challenges, and solution space for inputs (i.e., cells and media), there remains a lack of reliable data points for the cost of equipment, facilities, and other infrastructure associated with manufacturing. With no new peer-reviewed techno-economic models published in 2025, the true implementation cost of cultivated meat remains difficult to pinpoint.

To reduce the risks associated with high implementation costs, more public knowledge will need to be generated for bioreactor and facility costs at different scales, and for other equipment and operational costs, such as media preparation and sterilization, harvesting, waste management, and common consumables. Although proxies exist in the biopharma sector, the cost profiles for food-grade manufacturing of cultivated meat are expected to be dramatically different, as shown by the examples above. While significant data gaps exist, the developments highlighted above already provide clues as to the types of innovations—such as developing fit-for-purpose bioreactors—that are likely to meaningfully reduce implementation costs.

Innovation capacity

Process validation

Process validation refers to the number, time span, and variety of settings in which cultivated meat testing and validation have been carried out. The year 2025 saw growth in the variety of settings for cultivated meat production, including multimillion-dollar funding for industry innovation centers in China and Korea, on conventional farms, and in regulated facilities in new countries. Companies continued to publish research and have started to demonstrate the value in leveraging their scale up expertise to produce cultivated meat that can be analyzed and published openly by university collaborators.

- **Collaborating on end-product analysis: Joes Future Food** provided cultivated pork to researchers at Nanjing Agricultural University for a study assessing protein digestibility. The cultivated pork had a higher digestibility and free amino acid content than conventional pork and other animal proteins.
- **Cultivating meat on a farm:** A consortium of seven companies and one academic institution led by **Respect Farms** in the Netherlands was awarded a €2 million grant from **EIT Food** to integrate a cultivated meat process onto a conventional farm.
- **A pilot facility for the Singaporean ecosystem:** Nanyang Polytechnic launched its BioFoundry, including 10–50-liter bioreactors, to help innovators in Singapore pilot, test, and advance their cultivated meat product concepts.
- **Industry scientists advancing knowledge:** At least 13 original research papers (including preprints) on cultivated meat were published by teams that included industry affiliations (up from a previous high of nine in 2023). This is a positive signal that cultivated meat is moving in the direction of an open and collaborative scientific ecosystem where foundational knowledge is built by academics, startups, and larger corporates to solve shared challenges.

Additionally, five safety evaluations for cultivated meat products were completed in 2025, and five different cultivated products were sold in 2025. Production occurred in four countries and utilized cell lines from pigs, poultry, and fish, validating that cultivated processes can be applied across the most commonly farmed animals. Additionally, none of the products approved or sold in 2025 used antibiotics in production, confirming one of the major advantages of cultivated meat. While there have been 10 safety evaluations completed for cultivated meat products to date, only three companies (**WildType**, **GOOD Meat**, and **Vow**) had consistently sustained sales in 2025.

To reduce the risk associated with slow or limited process validation, more cultivated meat products need to be sustained on restaurant menus and, eventually, in grocery store meat cases. Companies should continue to publish research to share process validation results and help de-silo research findings. Finally, the establishment of shared pilot facility infrastructure at universities can also encourage industry-academic collaborations to validate processes and accelerate new innovations.

Table 4: Cultivated meat products sold and authorized in 2025

✕ No

Company name *(year approved, region)*	Species	Genetic modification?	Antibiotics?
Cultivated products sold in 2025			
Mission Barns *(2025, USA)*	*Sus scofa domesticus (pig)*	✕ No	✕ No
WildType *(2025, USA)*	*Oncorhynchus kisutch (coho salmon)*	✕ No	✕ No
Vow *(2024, Singapore; 2025 Australia New Zealand)*	*Coturnix japonica (Japanese quail)*	✕ No	✕ No
Meatly *(2024, UK)*	*Gallus gallus domesticus (chicken)*	✕ No	✕ No
Good Meat *(2020, Singapore)*	*Gallus gallus domesticus (chicken)*	✕ No	✕ No
Cultivated products authorized in 2025, but not sold			
Believer Meats *(2025, USA)*	*Gallus gallus domesticus (chicken)*	✕ No	✕ No
PARIMA *(2025, Singapore)*	*Gallus gallus domesticus (chicken)*	✕ No	✕ No

Sources: FDA inventory of completed premarket consultations, FSANZ, Meatly (pet food), personal communication.

Scientific ecosystem

Patent landscape

Patents, a cornerstone of innovation protection, are one metric for tracking and analyzing the growth of innovation within the scientific ecosystem. Nearly 1,500 unique patents have been filed over the past decade, demonstrating significant growth since the industry's inception. In 2023 and 2024, the number of unique innovations (patent families) and assignees reached all-time highs. This trend signals scientific growth from a broader, more diverse inventor base. However, this expansion is likely driven by earlier funding, as patent filings are generally a lagging indicator of investment.

The global patent landscape for new cultivated meat innovations is shifting, with total filings decreasing since the 2022 peak, despite an increase in unique innovations (patent families) in 2024.

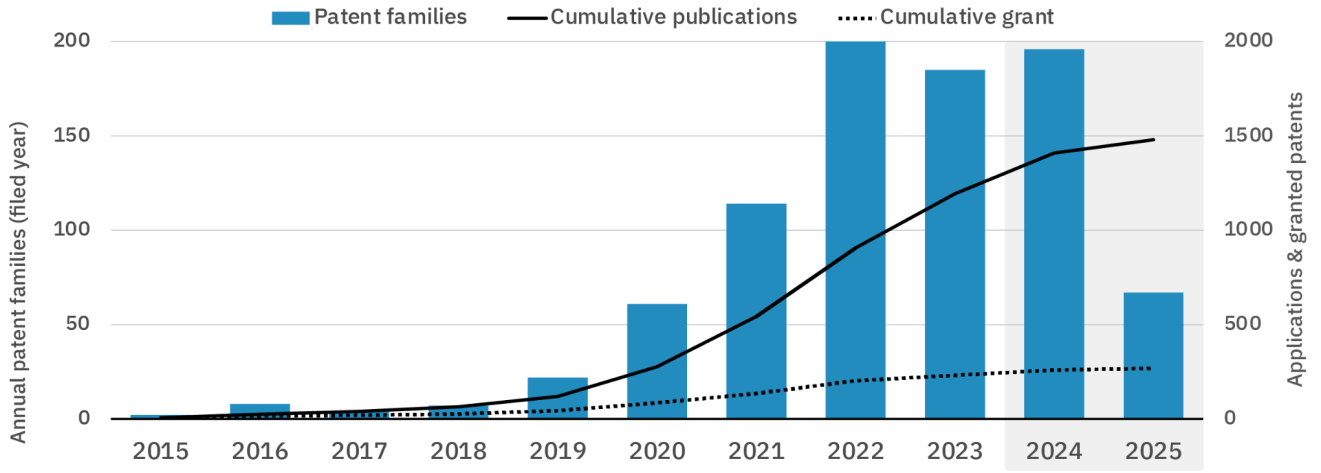
This suggests a move toward prioritizing strategic protection over broad global applications, likely driven by regional commercialization strategies and reduced funding.

China and the United States have remained the leading jurisdictions for patent applications over the past five years, followed by Europe, Korea, Israel, Japan, and Australia, highlighting key innovation, manufacturing, and consumer market hotspots. The APAC region, including China, surpassed North America and Europe combined in both new cultivated meat innovation filings and the number of innovators, highlighting significant ecosystem growth there.

Access GFI's cultivated meat patent database here. Additional information on patents can be found on GFI APAC's blog on regional patent activity, in GFI Europe's patent analysis, and by reading highlights at Lab Grown Technologies, a new resource covering innovations in cellular agriculture.

Figure 9: Annual patent family filings and cumulative patent activity

By filed year



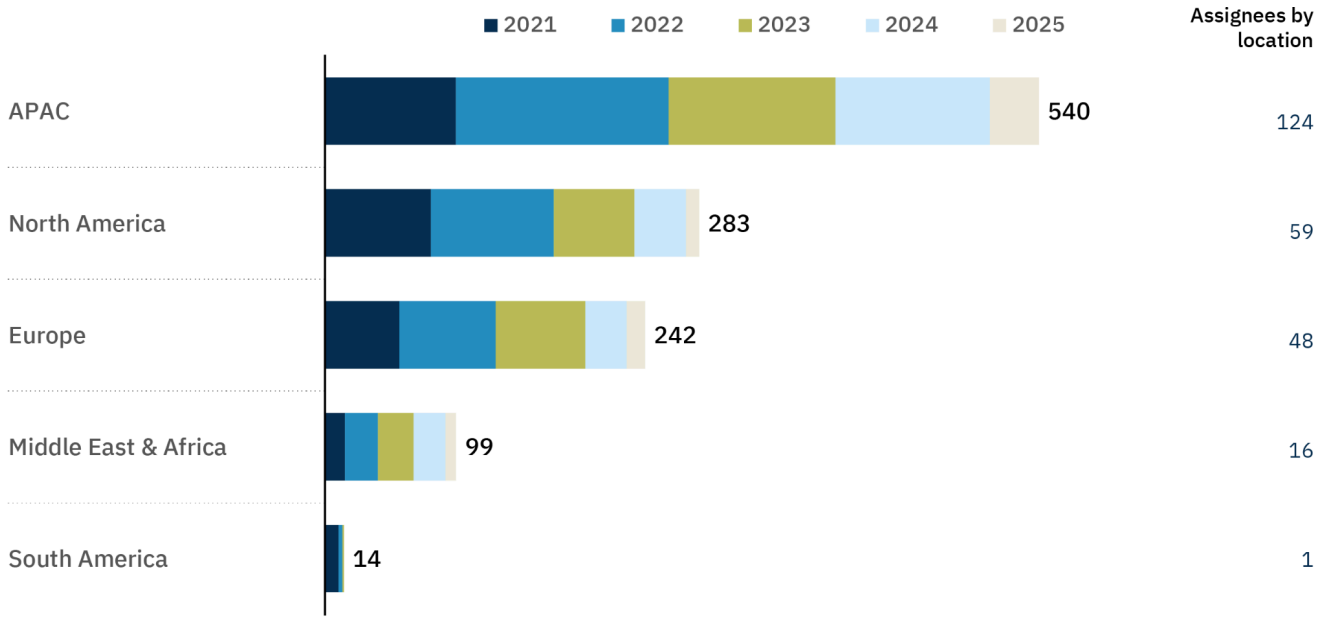
	2020	2021	2022	2023	2024	2025
Jurisdictions	19	24	19	13	11	10
Assignees	41	69	100	97	108	42
Global patent filings	157	267	363	287	216	71

Annual patent family and cumulative patent filings from 2015 to 2025 by filed year. Cumulative applications represent total unique patent filings across jurisdictions, while patent families represent unique innovations.

Source: Data sourced from Dimensions, an interlinked research information system provided by Digital Science (www.dimensions.ai). A note on data: 2024 and 2025 filing numbers are incomplete and do not accurately inform activity in those years as patent publication can be delayed up to 18 months after filing.

Figure 10: Global cultivated meat patent filing regions

By filed year and application origination jurisdiction



Global cultivated meat patent filings by region between 2021–2025 based on applications filed in regional intellectual patent offices (left) with the number of aggregated assignees by location (right). Regional IPOs in order of patent counts: APAC: CN, KR, JP, AU, PH, SG, IN; North America: US, CA, MX; Europe: EP, GB, NL, ES, DE, SE, LU, IT, IS, FR, FI, AT; Middle East & Africa: IL, ZA; South America: BR, CO, AR, EC, CL

Source: Data sourced from Dimensions, an interlinked research information system provided by Digital Science (www.dimensions.ai). A note on data: 2024 and 2025 filing numbers are incomplete and do not accurately inform activity in those years as patent publication can be delayed up to 18 months after filing.

Patent methodology:

Expanding on our 2024 patent landscape, the methodology used patent title, abstract, and claims (TAC) keyword searches, TAC exclusions, and curated company assignee legal filing names. An additional company name search was conducted to improve the accuracy of the top patent filers. Duplicate patents (by family ID and jurisdiction) were removed, and remaining patents were manually screened for relevance to cultivated meat. Assignee legal filing names were manually translated and curated by the most relevant company name and inventor location. More company details are available in the GFI company database. Are we missing something? Please let us know by filling out our company database edits form or contact us at corporate@gfi.org.

New resources

Lastly, there were various other developments related to the growth of the supporting scientific ecosystem and knowledge base in 2025. These included:

- **Increasing accessibility:** A new global B2B marketplace for cultivated meat research tools and equipment called **CellBase** launched, making it easier for researchers to find suppliers. Additionally, **Ocatté Base**, operated by Japanese startup Integriculture, began shipping food-grade research tools to global researchers.
- **Improving life cycle assessments:** An international team of researchers published guidelines for life cycle assessments of cultivated meat, aiming to harmonize and improve the accuracy of future environmental analyses. Additionally, GFI and scientific collaborators published a critique of a previous study that suggested the environmental impact of cultivated meat could be higher than that of conventional beef.
- **Leveraging AI:** Researchers at TU Delft and **New Harvest** were awarded grants from the Bezos Earth Fund's AI Grand Challenge to develop open-access tools and systems that deliver AI-driven insights to accelerate scientific understanding and fast-track innovation breakthroughs.
- **Research opportunities:** Looking for an impactful research project? GFI-APAC compiled a list of underexplored research opportunities in alternative proteins, including cultivated meat.
- **Mapping the ecosystem:** GFI's ecosystem map, which tracks the industrial and academic alternative protein ecosystem, listed over 230 cultivated meat researchers and 28 courses offered at global universities by the end of 2025. Additionally, GFI's online course called *The Protein Transition* was awarded professional accreditation for excellence in nondegree education and training by **EIT Food**.

In summary

Meaningful but uneven progress marked 2025 across the ecosystem. Scientific feasibility was advanced by major gains in cell line development and accessibility, media cost reduction, and supply chain knowledge, though access gaps for academia and species-specific challenges remain. Research into sensory performance accelerated, with promising results for cultivated ingredients, digestibility, aroma modulation, and best practices for sensory testing, underscoring that consumer-relevant attributes are becoming increasingly central.

Innovation capacity continued to grow through expanded pilot infrastructure, more industry–academic publications, additional safety evaluations, and product sales across multiple species and regions. For engineering viability, 2025 highlighted both scale-up successes and cautionary failures. While some companies demonstrated larger-scale production, others faced capital and regulatory setbacks, reinforcing a shift toward smaller, modular facility designs, co-manufacturing, and cost-saving custom equipment.

Looking ahead, companies can learn from the challenges that others have faced to meet the moment of a capital-strained investment landscape. Second-generation companies can build on the scientific and regulatory knowledge gained over the last decade to reach the market on a lighter budget. The year 2026 is likely to look similar to 2025, with new product approvals but also company closures. These closures may provide a new opportunity for philanthropic actors to salvage those assets, which can be shared openly to provide an improved starting point for new entrepreneurs and narrow the scientific gap between industry and academia.

Government and regulation

Global public investment

Changes in public investment in cultivated meat were variable across the globe. While some governments and regions fell behind in announcing new investments in cultivated meat, other governments began or dramatically increased efforts to establish domestic industries. Much of the most significant activity tracked in 2025 took the form of large-scale commitments to build domestic biomanufacturing capacity and research leadership, which often highlighted food production and occasionally specifically mentioned cultivated meat and other individual technologies.

Notably, China has begun to mobilize hundreds of millions of dollars in support of national and regional biomanufacturing development through the State Development & Investment Corporation, endowing multiple biotechnology investment funds to build capacity and support early- and mid-stage startups nationally and in three key regions. Taking similarly forward-looking views of the biotechnology sector's promise for food production and economic growth are India, the Netherlands, South Korea, and the United Kingdom, all of which have announced ambitious, catalytic investments in building new cultivated meat research and biomanufacturing capacity. On the other hand, the United States, which remains the world leader in cultivated meat companies and innovation, cut all federal research funding by at least $2 billion, leading to a steep decline in cultivated meat R&D and related investments in biomanufacturing.

Despite these different trajectories, the retrospective on 2025 shows that cultivated meat remains a promising field for policymakers and the researchers, entrepreneurs, farmers, and consumers they represent. Governments supported new factories from Australia to Scandinavia, funded research from Brazil to South Korea, and collaborated as much as they competed—on food safety systems (Singapore and the United States), alternative protein-specific study abroad programs (the United States and New Zealand), and cultivated meat research itself (New Zealand and Singapore). Publicly supported research projects investigated how cultivated meat could best benefit farmers in Canada, California, the Netherlands, and Norway, and business support programs emphasized the benefits new protein production systems could do for people, the economy, and the environment.

Americas

Brazil

Public research on cultivated meat grew in 2025 with new research efforts from two state governments. The Araucária Foundation, a research organization funded by the state of Paraná, announced the winners of an alternative protein research call co-funded by GFI Brazil; two of the four winning projects will advance the science of cultivated meat.

Additionally, the state government of Santa Catarina provided funding to establish the Laboratory of Cellular Crops and Animal Cell Bank at the Universidade Federal de Santa Catarina. One of three new multiuser biotechnology labs, the cell bank will provide researchers with the materials to better study animal cell cultivation for a variety of use cases, including cultivated meat.

Canada

While Canada has mainly focused on plant-based and fermentation-derived foods as core drivers of the future food economy, the government's support for R&D of cultivated meat has been similarly forward-looking and inclusive. Ongoing research projects concerning cultivated meat continue through the Natural Sciences and Engineering Research Council of Canada, which funds research at several universities, and through the Canadian Genomics Enterprise, a network of federally and provincially funded nonprofit research agencies.

In 2025, Prairies Economic Development Canada awarded CAD $1 million ($700,000) to the Cellular Agriculture Prairies Ecosystem (CAPE) Project, an initiative by New Harvest Canada to ensure that Canada's breadbasket shares in the benefits of new food production systems. CAPE will support research that identifies how Canadian crops can be used in cell cultivation and fermentation as feedstocks and conduct life cycle assessments to determine the environmental and economic impacts of a diversified food system.

United States

The United States drastically scaled back federally funded R&D in 2025, cutting the number of new grants awarded by the National Science Foundation (NSF) by 25 percent in 2025 and leading to an estimated 25,000 scientific research jobs lost from federal agencies and 20,000 scientific research jobs lost in the private sector. The United States is also expected to lose its position as the world's largest R&D funder to China in 2026. As a result, new federal investments in cultivated meat and enabling technologies in the United States declined. In doing so, the United States bucks the global trend of investing more competitively in food biotechnology and biomanufacturing.

Nevertheless, some research on cultivated meat continued to advance the United States' scientific and entrepreneurial leadership in the sector. Several new Small Business Innovation Research grants from NSF allowed startups to investigate promising technologies for developing cultivated meat. NSF also supported collaborative research with the BioMADE Manufacturing Innovation Institute on cultivated meat at Duke University and an International Research Experiences for Students program through the University of Tennessee, Knoxville to place U.S. engineering students in alternative protein labs in New Zealand. The United States Department of Agriculture (USDA) supported a Cellular Agriculture and Food Biomanufacturing Workshop at Texas A&M University and a cultivated meat food safety initiative, in addition to ongoing research funded through the National Institute of Food and Agriculture.

Beyond the federal government, the state of California announced two new initiatives in 2025 that will advance cultivated meat as part of a suite of new food production systems, underscoring the state's pursuit of leadership in food production, processing, and innovation. The California Jobs First Regional Investment Initiative, an innovation engine focused on key development regions, committed nearly $1 million to the University of California Agriculture and Natural Resources to build a Plant Food and Agricultural Innovation Center, a research facility that will include equipment for developing cultivated meat and fermentation-derived foods. Further shoring up the state's research leadership, the California legislature earmarked $1 million for the University of California, Davis' Integrative Center for Alternative Meat and Protein (CA-04), a nationally leading hub for cultivated meat research.

Asia Pacific

Australia/New Zealand

Australia's Industry Growth Program, an initiative to build manufacturing capacity through commercialization grants to startups, offered an AUD $100,000 ($62,000) grant to cultivated meat company **Magic Valley** to help scale up their cultivated pork production. New Zealand co-funded a joint research program with Singapore (see "Singapore"), in which researchers from both countries will develop meat products that include both cultivated meat and plant-based ingredients.

China

China's investments in cultivated meat and other "new proteins" grew both larger and more explicit in 2025, with a variety of actors at the national, state, and municipal levels announcing new investments in biotechnology research, industry development, and infrastructure. In May 2025, the state-owned State Development & Investment Corporation (SDIC) announced a commitment of over CNY 4 billion ($555 million) to advance biomanufacturing infrastructure development through investments in domestic biotechnology companies. Though not all of these biomanufacturing operations will be food-grade or otherwise pertinent to cultivated meat or fermentation-derived foods, "new proteins" do figure prominently: the SDIC simultaneously announced a Novel Protein Bio-Manufacturing Innovation Center to be established at Jiangnan University with co-funding from the city of Wuxi.

SDIC has also established regional biomanufacturing funds [machine translated] "to provide financial ammunition for the biomanufacturing industry," offering much-needed capital for startups to build facilities and create regional supply chains. Such funds, endowed with about CNY 1–2 billion ($145–290 million) each, have been established in the Tianjin Haihe region, Anhui province, and the city of Hangzhou. These are similarly broader in scope than food production alone, but nevertheless represent an unmatched effort to achieve biomanufacturing leadership on the global stage.

China's largest municipalities continued advancing development agendas that featured cultivated meat and other new food technologies among broader "future industries" to receive government support. Following 2024 efforts from the cities of Beijing and Nanjing to scale new protein production, including through a CNY 80 million ($11 million) alternative protein innovation center in Beijing's Fengtai district that opened in 2025, the city of Shanghai announced a Shanghai Future Industry Fund with CNY 15 billion ($2.1 billion) in which biomanufacturing and new foods are included. Earlier in the year, the Shanghai Municipal Science and Technology Commission funded seven research projects pertaining to new proteins.

While the full scope of China's investment in cultivated meat research and commercialization is not consistently made public, the announced efforts in 2025 point to a robust, economy-wide effort to provide the industry with the capital and policy support needed to overcome technological hurdles, achieve scale, and gain market share.

India

India's BioE3 policy (Biotechnology for Economy, Environment, and Employment) moved from concept to reality in 2025 with the Department of Biotechnology inviting the first round of proposals for research and startup funding for "smart proteins," the recipients of which are set to be announced in early 2026. This round of proposals emphasizes transformative research to enhance protein production efficiency, safety, and affordability while addressing scalability challenges, all key considerations for developing a robust industry and a stable, diversified food supply.

The Department of Biotechnology has further advanced the BioE3 policy through new funding for high-performance biomanufacturing platforms to advance domestic production and unlock scale, including India's first national animal stem cell repository. A joint effort of the National Institute of Animal Biotechnology and industry partner **HiMedia**, the cell bank will increase access to cell lines for cultivated meat research and product development.

Japan

In November 2025, Prime Minister Takaichi announced the National Growth Strategy, which identifies 17 national strategic sectors for investment, including "food tech," overseen by the Ministry for Agriculture, Forestry and Fisheries (MAFF), and "synthetic biology and biotechnology," overseen by the Ministry of Economy, Trade and Industry (METI). The ministries will submit proposals to the Council for Japan's Growth Strategy, with the plan scheduled to be announced in June 2026.

Research on cultivated meat in Japan continued through several projects funded by the National Agriculture and Food Research Organization's Bio-oriented Technology Research Advancement Institution (BRAIN). Additional researchers working on cultivated meat were funded at lower levels by the Japan Society for the Promotion of Science.

The Japan Society for Cultivated Food was established in April 2025 with participation from leading universities throughout Japan. MAFF, METI, the Japan Science and Technology Agency, and the Consumer Affairs Agency joined an event to celebrate the establishment of the Society at Cell Ag Week 2025. Research sessions at Cell Ag Week highlighted cultivated meat safety guidelines (expected mid-2026), consumer acceptance, and new findings.

Singapore

Eleven new research projects began through the Singapore Food Agency's (SFA) Future Foods and Food Safety grant programs in 2025, three of which advance the science and evaluate the safety of cultivated meat. Seeking to "support the development of non-animal New Approach Methodologies (NAMs) for toxicological evaluation of food innovations," the cultivated meat projects under the Food Safety Grant Call utilize new methods to proactively ensure the safety and nutrition of cultivated meat and other foods. One such project, establishing a method for evaluating small-molecule additives in cultivated meat, includes the United States Food and Drug Administration (FDA) as a member.

The SFA further supported the development of cultivated meat through a Singapore-New Zealand Biotech in Future Foods Research Programme grant researching hybrid meat production. Funded by the governments of Singapore and New Zealand, researchers from both countries will develop meat products that include both cultivated cells and plant-based ingredients.

Following the establishment of the Bezos Centre for Sustainable Protein at the National University of Singapore, Enterprise Singapore announced a joint startup grant program with the Centre to fund three alternative protein startups with SGD $150,000 ($116,000) toward anchoring key activities in Singapore.

South Korea

The Ministry of Agriculture, Food, and Rural Affairs (MAFRA), the Ministry of Food and Drug Safety, the Ministry of SMEs and Startups, the Ministry of Education, the Rural Development Administration, the Ministry of Oceans and Fisheries, and the Ministry of Science and ICT together funded 21 new research projects concerning cultivated meat in 2025, making South Korea one of the leaders in cultivated meat research and reflecting a whole-of-government approach to advancing food science and biotechnology research.

Policymakers also undertook specific efforts to build regional food technology hubs in strategic industrial zones. Following 2024's establishment of the Gyeongbuk Cell-Cultivated Foods Regulatory-Free Special Zone, MAFRA announced the establishment of a new Gyeongbuk Province Food Tech Research Support Center focusing on "Cell Cultured Food," which will advance research and scaling efforts for cultivated meat and other cell-derived new food products.

Additionally, the municipal government of Iksan City and Jeonbuk Province jointly announced the creation of a Jeonbuk Innovation Success Venture Fund with KRW 30 billion ($20.8 million) to support food technology companies based in the region. Two of the seven initiatives outlined in the announcement pertain to cultivated meat, and two more pertain to plant-based and fermentation-derived proteins. Jeonbuk Province also signed a Memorandum of Understanding with the Embassy of the Netherlands in Korea to jointly promote all three new protein production systems.

Thailand

In a bid to establish Thailand as a regional hub for advanced manufacturing and innovation, in 2025 the government announced THB 5 billion ($153 million) in funding to support upskilling at least 100,000 people to work in "biotechnology, advanced agriculture, electronics, food processing and medical devices," among other key areas. The government plans to work with investors and manufacturers to develop curricula and identify areas of need, targeting both university students and the current workforce.

Europe

European Union

The European Union made several investments to support the scaling of cultivated meat amid a dedicated effort to increase biomanufacturing within the bloc. A €2.5 million ($2.86 million) grant from the EIC Accelerator to Czech cultivated pork startup **Mewery** will help the company scale up production, while €2 million ($2.3 million) from EIT Food helped establish the CRAFT (Cellular Revolution in Agriculture and Farming Technology) Consortium, otherwise known as "The World's First Cultivated Meat Farm," which will demonstrate ways to scale up cultivated meat production by empowering farmers to diversify production.

The EU also launched APRISE (Alternative Proteins Research and Innovation Skills Enhancement), a project to provide workforce development, technical training, and shared resources with countries without strong food tech sectors, including Greece, Malta, North Macedonia, Poland, and Türkiye. The European Sustainable Blue Economy Partnership made its first investment in cultivated seafood R&D, funding the international multi-partner project SEANERGIES. Partners from Brazil, Italy, the Netherlands, Norway, and Portugal are working to develop cultivated octopus cell lines and culture media.

Denmark

Denmark's AgriFoodTure partnership launched one project to develop cell-cultivated milk and another to produce enhanced cell-culture media. These are included among 36 agrifood projects funded through NextGenerationEU's Recovery and Resilience Facility, a post-pandemic economic recovery fund.

Finland

The Finnish National Food Strategy 2040 recognizes cellular agriculture specifically, and food innovation generally, as important drivers of change. A government-commissioned report from the VTT Technical Research Centre found that cellular agriculture, including cultivated meat, presents the country with an economic opportunity of up to €1 billion and recommended a five-year, €100 million research, development, and innovation program to advance the sector, in addition to regulatory support, workforce development, and the establishment of a Ministry of Future Food.

Germany

Germany's federal government included food biotechnology as a priority in their 2025 High-Tech Agenda, which calls for developing new protein sources by mobilizing public investments to fuel innovation. Through this agenda, the government announced that it will invest in cultivated meat R&D in 2026 and 2027.

In 2025, the German Research Foundation, a public research organization, began a program at the Technical University of Darmstadt and the University of Stuttgart to research the 3D-printing of cultivated beef.

Netherlands

The Netherlands established Cultivate at Scale, an open-access cultivated meat scale-up facility in Maastricht, backed by €12.5 million ($12.9 million) from the Dutch National Growth Fund. The facility was developed as a public-private partnership involving Cellulaire Agricultuur Nederland and **Mosa Meat**, and will provide startups with the equipment and expertise needed to produce cultivated meat at scale.

The Dutch Research Council continued to support cultivated meat research at Dutch universities, awarding grants to SEACUTERIE, a project to develop cultivated meat scaffolds from seaweed at Wageningen University, and "Sustainable bioprinting techniques to make protein-rich cultivated meat" at Maastricht University.

Norway

The Research Council of Norway funded new research to develop and evaluate cell culture media from Norwegian crops at the Norwegian Food Research Institute and to evaluate meat alternative consumption and consumer uptake in Asia at the University of Oslo, in collaboration with partners in Vietnam.

Spain

The Center for the Development of Industrial Technology, Spain's innovation agency, awarded €1.6 million to support a consortium of companies and startups aiming to research the processing and preservation of cultivated meat as a "sustainable, safe, healthy and competitive" protein source.

Sweden

Sweden announced in 2025 that **Curve** (formerly Re:meat), a company developing bioreactors for the cultivated meat and precision fermentation sectors, was opening a pilot plant at Biotech Heights, a public research complex at Lund University.

United Kingdom

The UK's Modern Industrial Strategy was published in summer 2025, with the Digital and Technologies Sector Plan allocating an initial £184 million ($249 million) for engineering biology scale-up infrastructure. This funding could likely support the creation or expansion of production facilities for fermentation or cell cultivation over the rest of the decade. In late 2025, the Government confirmed that overall R&D funding for engineering biology would increase threefold to £644 million ($872 million).

Innovate UK funded a project with Occam Biosciences and the University of Edinburgh to develop a discovery platform for novel recombinant growth-factors for enhancing cell culture media at scale.

Israel

In 2025, the Israel Innovation Authority (IIA) directed approximately NIS 90 million ($28 million) to food technology programs, of which around NIS 49.5 million ($15.5 million) specifically targeted alternative proteins. These investments were aimed at strengthening Israel's capabilities in areas such as food biotechnology, precision fermentation, and artificial intelligence, all situated within a rapidly scaling climate technology ecosystem. By the end of 2025, cumulative investments from the IIA in alternative proteins reached approximately NIS 325 million ($100 million). While the portion of the 2025 funding allocated to cultivated meat was not available at the time of publication, past Israeli investments have ranged across all three production methods while maintaining focus on biotechnology.

Note: All information on IIA investments and priorities was provided directly to GFI Israel.

Regulation by country and region

In 2025, regulatory momentum for cultivated meat continued globally, with some jurisdictions establishing clear approval pathways and advancing products to market, while others focused on foundational policy development and guidance. At the international level, multilateral bodies made efforts to align domestic product assessment principles, taking steps toward increased global coordination.

Australia/New Zealand

In April 2025, Food Standards Australia New Zealand (FSANZ) finalized a dedicated regulatory pathway for cultivated meat, opting to introduce new standards for cultivated foods rather than relying solely on its existing Novel Foods Framework. The regulatory pathway was established as a result of FSANZ approving Sydney-based **Vow**'s cultivated quail product. FSANZ requires cultivated meat products that include words or labels indicating their animal source on packaging to be labeled as "cell-cultured" or "cell-cultivated."

China

In early 2025, China's Ministry of Agriculture and Rural Affairs outlined its "Key Areas of National Agricultural Science and Technology Innovation" through 2028, which include "research on novel food resource development technology," including cultivated meat. As of 2025, the Chinese National Health Commission is reportedly working on guidelines for cultivated meat, but has not yet accepted any applications for product approvals.

European Union

In 2025, the European Commission published several strategy documents laying out its policy agenda for the AgriFood, Life Sciences, and Bioeconomy sectors. While none of these documents explicitly mentions cultivated meat, they outline a broadly positive vision for advancing industrial biotechnology and biomanufacturing in the food sector. However, while the Vision for Agriculture and Food acknowledges the need to reconsider protein production, it also cautions that "certain food innovation is sometimes seen as a threat to the traditions and culture across Europe" and calls for an "enhanced dialogue" to make sure that "these innovations can be assessed in an inclusive way that also considers social, ethical, economic, environmental and cultural aspects of food innovation."

Following several months of debate and negotiations in 2025, EU policymakers agreed in March 2026 to ban the use of the word "meat" and 31 meat-related terms for plant-based, fermentation-enabled and cultivated options despite research showing 'meaty' terms for cultivated meat are crucial for consumer understanding. When the restrictions come into force, they will prevent cultivated meat companies from using key animal-related terms such as "chicken" and "bacon" to describe their products. Labelling decisions are part of the regulatory approval process for these foods, so these restrictions will significantly undermine this process. At the time of writing, the text is subject to final adoption, including a vote in the European Parliament.

At the country level, cultivated meat also faced some opposition:

- In early 2025, Austria's new federal government committed itself to opposing the EU's approval of cultivated meat in its coalition agreement.
- Hungary enacted a cultivated meat ban despite the European Commission finding through the EU TRIS process that such a measure would be unjustified and undermine the harmonized novel foods framework, and despite public opposition. This marks the EU's second cultivated meat ban, following Italy's ban in 2023.

Meanwhile, European companies are pursuing regulatory approvals outside the EU. In October 2025, French company **PARIMA** submitted an application to Food Standards Australia New Zealand (FSANZ) seeking approval for a cultivated duck ingredient developed by Gourmey. PARIMA expects the FSANZ evaluation process to conclude by August 2026. PARIMA also received approval from the Singapore Food Agency for their cultivated chicken product, making it the first European company to bring a cultivated meat product to market.

Japan

In December 2025, Japan's Consumer Affairs Agency (CAA) released draft safety guidelines for cultivated foods, outlining how companies may eventually demonstrate the safety of cultivated meat products, and how regulators might review that information. The draft guidelines address the full production process, from cell sourcing to handling the final product. While Japan has not yet finalized a formal regulatory pathway for cultivated foods, the release of the draft materials previews how authorities are thinking about the safety assessment for these products.

Singapore

In January 2025, Singapore enacted the Food Safety and Security Act, establishing a unified statutory framework for food safety and formally codifying the Singapore Food Agency's premarket approval process for novel foods, including cultivated meat, under a new "defined foods" category. Companies can now reference a clear regulatory category with corresponding legislation to identify the pathway to market for cultivated meat, rather than relying solely on policy guidance.

In March 2025, Singapore updated its novel foods safety assessment guidance to clarify and standardize approval expectations for cultivated meat, including an estimated nine to 12 month review timeline and regulatory submission checklists for cultivated meat and seafood. In November 2025, Singapore further signaled its continued engagement with cultivated foods by reconvening its annual Roundtable on Novel Foods Regulation, bringing together regulators, industry, and academia to discuss the safety assessment and oversight of cultivated foods.

South Korea

In December 2025, South Korea enacted the Food Tech Industry Promotion Act, establishing a legal and administrative framework for the Ministry of Agriculture, Food, and Rural Affairs (MAFRA) to support innovative food products, including cultivated meat. The Act empowers MAFRA to provide direct support to businesses, offer startup assistance, facilitate access to research facilities and equipment, and foster market entry. The Act also allows MAFRA and companies to collaborate to address regulatory bottlenecks, rather than having companies navigate the regulatory process independently.

Thailand

Thailand's Office of the National Higher Education, Science, Research, and Innovation Policy Council (NXPO) identified alternative proteins as one of Thailand's core future food policy priorities at an expert forum convened in January 2025. In November, NXPO issued a report identifying development opportunities for Thailand's alternative protein industry, specifically noting strengths and gaps for cultivated meat. Thailand also began assessing **Aleph Farms**' application (submitted in December 2024) for approval of its cultivated beef product in 2025, under its novel food regulation.

United Arab Emirates

In October 2025, Abu Dhabi launched a new strategic initiative to develop a regulatory framework for novel proteins, including cultivated meat, in collaboration with the Abu Dhabi Agriculture and Food Safety Authority, the Quality and Conformity Council, and the Abu Dhabi Investment Office. The initiative aims to align Abu Dhabi's novel foods regulations with international best practices, including those adopted by the UAE, the Gulf Cooperation Council, the European Union, Singapore, and the United States. It will also align the halal certification process with global benchmarks, particularly those in Malaysia and Indonesia. Abu Dhabi plans to establish a database of approved cultivated meat products alongside detailed technical and regulatory guidelines.

United Kingdom

In July 2025, the Food Standards Agency (FSA) and Food Standards Scotland (FSS) validated the market authorization application submitted by French company **PARIMA** for their cultivated foie gras, marking the first time a cultivated meat novel food application has been validated in the United Kingdom. This does not authorize the product for commercial sale, but it means the government considers the application complete and will advance it to a full scientific risk assessment. This validation follows PARIMA's participation in the UK cell-cultivated products regulatory sandbox. Another sandbox participant, UK-based **Hoxton Farms**, also advanced its regulatory efforts in 2025 by filing for approval of its cultivated pork fat in Singapore.

In December 2025, the FSA and FSS issued their first business guidance for cultivated meat (referred to as "cell-cultivated products" or "CCP"), covering requirements for conducting taste trials, classification and hazard analysis, as well as allergenicity and nutritional assessments in regulatory filings. This guidance is not law, but it will provide greater clarity for companies and enhance the efficiency of the regulatory review process. Future guidance will be published via the Innovative Food Guidance Hub throughout 2026. FSA and FSS also opened dedicated Business Support Services for cultivated meat companies submitting applications for authorization of their products in the UK. The 1-1 service will help industry and government align on specific aspects of a company's dossier submission; it is scheduled to close in early 2027 upon completion of the sandbox program.

United States

In 2025, companies continued to bring cultivated meat products to market under the regulatory process governed jointly by the Food and Drug Administration (FDA) and the Department of Agriculture (USDA). FDA is solely responsible for regulating cultivated seafood and game meat, and USDA and FDA jointly regulate cultivated livestock, poultry, and catfish products.

Wildtype's cultivated salmon completed FDA's premarket consultation in May 2025 and subsequently entered U.S. restaurants. In July 2025, **Mission Barns**' cultivated pork fat was cleared for U.S. sale following FDA and USDA safety evaluations, marking the world's first cultivated pork product on the market. **Believer Meats** received similar USDA clearance for its cultivated chicken in November 2025, after completing FDA premarket review in July.

At the state level, cultivated meat continued to face some challenges. Legislators enacted two-year moratoria on cultivated meat sales in Indiana and Texas, and outright sales bans in Mississippi, Montana, and Nebraska. Including the 2024 bans passed in Florida and Alabama, seven states had temporary or indefinite cultivated meat bans in place by the end of 2025. However, seven other states declined to advance bans in 2025, citing concerns about limiting consumer choice, stifling innovation, and market fragmentation. Litigation challenging the Florida ban is ongoing, with the Institute for Justice (IJ) representing **UPSIDE Foods**. IJ also filed a challenge against the Texas moratorium, representing UPSIDE Foods and **Wildtype.**

Global cooperation and coordination

Codex Alimentarius Commission

The Codex Alimentarius Commission, an international body run jointly by the United Nations Food and Agriculture Organization and the World Health Organization, considered multiple proposals related to cultivated meat in 2025.

- In March, the Codex Committee on Food Additives reviewed a Singapore- and China-led proposal to develop guidelines for the food safety assessment of cell culture media components. The proposal was refined by an electronic working group in late 2025 and will be reconsidered in April 2026.
- At the full meeting of the Codex Alimentarius Commission in November, the Commission considered a new work proposal from the European Union to develop "principles for the risk analysis of new food sources and production systems (NFPS)," a category which includes cultivated meat. The EU is refining this proposal for resubmission to the Codex Executive Committee in July 2026.
- In December, the Codex Committee on Food Hygiene considered a proposal from Singapore, China, Korea, and Saudi Arabia to develop a code of hygienic practice for manufacturing cell-based foods. While it did not advance in 2025, it remains on the agenda for November 2026.

Halal certification

Religious and institutional developments across multiple countries are helping clarify pathways for halal certification of cultivated meat. The Department of Islamic Development **Malaysia** (Jabatan Kemajuan Islam Malaysia – JAKIM), through the National Muzakarah Committee, has issued a landmark religious ruling stating that cultivated meat can be halal if certain conditions are met, marking the first such ruling in a Muslim-majority country. This ruling follows similar conclusions from the Assembly of Muslim Jurists of **America** in 2022, leading Shariah scholars in **Saudi Arabia** in 2023, the Islamic Religious Council of **Singapore** in 2024, and the **Korean** Muslim Federation and International Fiqh Academy earlier in 2025. In February 2025, South Korean company **Simple Planet** partnered with the Halal Science Center at Thailand's Chulalongkorn University to pursue halal certification for cultivated meat products and conduct joint halal science and technology research.

Conclusion

The world's biggest challenges—climate, public health, food security—are all connected to how we currently produce meat. To address those challenges, we must diversify how meat is made.

Cultivated meat offers one way to do exactly that. Consider this: Cultivated meat requires up to 90 percent less land than conventional beef, and could reduce air pollution by up to 94 percent. But a long road remains to realize those benefits. Today, just a little over a decade in, cultivated meat can be sold in Singapore, the United States, and Australia. The cultivated meat industry comprises approximately 280 total companies—a mix of startups and some of the world's biggest food companies. As of this writing, seven of those have received regulatory clearance to sell cultivated meat products. Yes, these are important milestones, yet, for now, the sector is minuscule compared to the size of the global meat industry.

Innovation and investments that accelerate R&D progress remain a must. In 2025, innovators in the field discovered new ways to bring down costs, scale sustainably, and make delicious, nutrient-rich meat and seafood. They did so amid regulatory roadblocks that restrict consumer choice, a challenging funding environment, and low to no public awareness and understanding.

In the critical years ahead, there are choices to make that will determine our collective food future. What path will we pursue and what will it look like? A few reflections as we lean into the work ahead together:

We can choose a path where meat is made in vastly more sustainable, secure, and safe ways.

There is a path that respects people's food choices and offers options with far fewer adverse impacts than conventional meat.

In concrete terms? This looks like friends and families gathered around tables enjoying delicious, nourishing meals that include their favorite foods produced in ways they feel good about.

We can choose a path where the meat we eat enables nature to rebound and health to rise.

As meat demand grows, continuing to produce it in status quo ways takes us down a path with zero chance of reducing emissions and reversing biodiversity loss. There is another choice, where, compared to conventional meat production, the meals we eat actually strengthen public health and help protect the natural world.

In concrete terms? This looks like a delicious cultivated salmon filet or plant-based steak used in a favorite everyday recipe, all while an overfished ocean recovers and fragments of forest reconnect.

We can choose a path that builds a thriving world, fed sustainably.

There is a path that leads to abundance, not scarcity. We can build a better food system for all, one that feeds a global population nearing 10 billion while mitigating multiple risks at once.

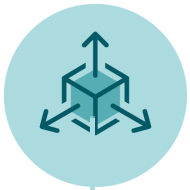
On that path, cultivated meat will need several things: more public investment in R&D and infrastructure from governments around the world, more scientific collaborations and resource-sharing, more public-private partnerships that propel innovation, and more policies and pathways that bring new products to market in affordable and accessible ways.

Multiple interventions will be needed to transform food systems at the pace and scale needed to feed a growing world. As a nonprofit, GFI is committed to moving the entire sector forward. We are helping to build a path where delicious, affordable meat and seafood are made in ways that are far more sustainable, secure, healthy, and safe. With the right levels of support, cultivated meat—as well as meat made from plants or via fermentation—can be a core food system solution, helping us tackle the biggest challenges of our time.

About GFI

The Good Food Institute is a nonprofit think tank working to make the global food system better for the planet, people, and animals. Alongside scientists, businesses, and policymakers, GFI's teams focus on making plant-based, fermentation-enabled, and cultivated meat delicious, affordable, and accessible. Powered by philanthropy, GFI is an international network of organizations—working across Asia Pacific, Brazil, Europe, India, Israel, and the United States—advancing alternative proteins as an essential solution needed to meet the world's climate, global health, food security, and biodiversity goals.

We focus on three programmatic priorities:



Cultivating a strong scientific ecosystem

We map out the most neglected areas that will allow alternative proteins to compete on taste, price, and nutrition. We meet these challenges by developing open-access research and resources, educating and connecting the next generation of scientists and entrepreneurs, and funding open-access research across the sector.

Influencing policy and securing public investment

We ensure that alternative proteins are a part of the policy discussion around climate and biodiversity, global health, future-resilient jobs and bioeconomies, and food security. In every region where we have a presence, we advocate for public investment for open-access research on alternative proteins, and increasingly, we work to advocate for government resources to support scale up and commercialization. We also advocate for fair and transparent regulatory frameworks for assessing safety and product labeling.

Engaging with industry to advance alternative proteins

We work to replicate past market transformations by showing companies of all sizes, from startups to multinationals, the benefits of protein diversification and how alternative proteins can enable businesses to succeed while meeting sustainability goals. We conduct research and share insights to educate the public on alternative proteins and champion their adoption by the food industry, including manufacturers, retailers, restaurants, investors, and more.

All of GFI's work is made possible by gifts and grants from our global community of donors. If you are interested in learning more about giving to GFI, contact philanthropy@gfi.org.

In 2026, GFI marks its 10th year. That's 10 years of impact—from a simple idea (can meat be made differently?) to a global and growing ecosystem of innovators making it happen. To learn more, check out our special 10th anniversary edition Year in Review, which marks how far the field has come and points to the important work ahead.