2024 STATE OF THE INDUSTRY:

Cultivated

meat, seafood, and ingredients

Table of contents

Editor's note 3
Executive summary 5
Investment 13
Consumer insights 18
Science and technology 26
Government and regulation 37
Outlook 43
Conclusion 46
About GFI 47

Acknowledgments

Authors

Mackenzie Battle, Claire Bomkamp, PhD, Michael Carter, Jessica Colley Clarke, Lucas Eastham, Liz Fathman, Daniel Gertner, Jody Kirchner, Faraz Harsini, MSc, PhD, Taylor Leet-Otley, Elliot Swartz, PhD

Editors

Jessica Colley Clarke, Liz Fathman, Tara Foss

Project manager

Emily Giroux

Designers

Kelli Cromsigt, Joseph Gagyi, Emily Hennegan

The cover image is courtesy of UPSIDE Foods.

Editor's note

Cultivated meat—a bold, game-changing way to diversify the food supply and help meet growing demand—is just over a decade old.

In this short span, cultivated meat has captured headlines around the world, even before making it to market. It has secured much-needed (but still insufficient) support from governments and industry, and has earned early support from philanthropy—all sectors that share a stake in a resilient, secure food system. Thanks to a growing global network of innovators, the cultivated meat field is tackling big technological challenges while achieving significant scientific breakthroughs. In these first formative years, cultivated meat has faced regulatory roadblocks and restrictions while simultaneously clearing a path to market in key regions.

The first chapter of cultivated meat's story has been action-packed.

With Singapore and the United States being the first to sell cultivated meat, additional markets made major moves in 2024. In November, Vow's cultivated quail briefly debuted in Hong Kong (a Special Administrative Region in China)—a significant step toward introducing one of the world's most populous countries to cultivated meat. A fourth market, Israel, is on the near horizon, with approval of Aleph Farms' cultivated beef steaks now pending a few final steps before consumers there get a chance to buy meat grown without the animal.

Like many transformative innovations in their early days, cultivated meat faces a set of difficult–if predictable–challenges: early-stage funding constraints, technical and cost hurdles, and lack of clarity around regulatory timelines, to name a few.

Yes, these challenges are big. But in 2024, several bright spots emerged. Cultivated meat progressed in research facilities and test kitchens, in food biomanufacturing centers and innovation hubs, on college campuses and in classrooms, and in meetings with legislators and regulatory agencies.

If the world is to satisfy a growing demand for meat in vastly more sustainable ways, however, we'll need far more progress and at a quicker pace. In 2024, the World Bank published *Recipe for a Livable Planet*, which examined 26 of the agriculture, forests, and food sector's most promising emissions mitigation interventions. The analysis ranked a shift toward alternative proteins second for climate mitigation potential, at 6.1 $GtCO_2$ eq per year—six times the equivalent of eliminating air travel worldwide. If we are to fulfill growing global demand for meat in ways that reduce emissions, continuing to innovate and diversify protein production is essential.

At GFI, we see a path forward that will help feed more people in ways that use fewer resources while bolstering food security and economies. Our annual State of Alternative Proteins series equips food system stakeholders with an in-depth understanding of the alternative protein sector, including its biggest challenges and major opportunities. This report, *Cultivated meat, seafood, and ingredients,* details the major innovations and developments that moved the field forward in 2024.

We remain grateful and inspired by all those around the world who are advancing alternative proteins, and as such, helping to write this next extraordinarily important chapter of food and agriculture.

About GFI's State of Alternative Proteins series

GFI's State of Alternative Proteins series serves as our annual alternative protein sector deep-dive. The series compiles business developments, key technologies, policy updates, and scientific breakthroughs from around the world that are advancing the entire field. To read other reports, visit the series homepage.

Symbols to look for

Throughout the State of Alternative Proteins series, look for symbols highlighting how developments in the past year advanced the sector in the areas of health and nutrition, sustainability, and path-to-market progress.

Health

Sustainability

Path-to-market

Please note that 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.

Executive summary

In 2024, cultivated meat made noteworthy progress while also facing numerous obstacles, both new and continuing. The year was marked by diversified new products, impactful scientific breakthroughs, and new regulatory progress. Despite those successes, cultivated meat also continued to face technical and cost hurdles, declining investments, and regulatory bans, raising questions about consumer choice and food freedom in several countries around the world.

Over the year, 155 cultivated meat companies and a growing number of scientists were hard at work innovating and optimizing cultivated meat products so consumers can enjoy the foods they love made with a lighter footprint. In a challenging funding environment, cultivated meat and seafood companies raised $139 million in 2024, according to a GFI analysis of data from Net Zero Insights. Cultivated meat products debuted in new formats and markets despite closures and setbacks for some in the industry (common in the trajectory of any transformative innovation).

Throughout 2024, scientists discovered novel methods to reduce costs, companies collaborated to advance key technologies, and new innovation hubs and research centers launched around the world. Signals of market expansion beyond Singapore and the United States emerged. In late 2024, Vow's cultivated quail briefly debuted in Hong Kong SAR, a significant step toward introducing this innovative food to one of the world's major markets. As of this writing, Aleph Farms' cultivated beef steaks are pending a few final regulatory steps before reaching consumers' plates.

These are among the notable advancements in 2024:

Commercial landscape

- **Introducing innovation hubs:** Two cultivated meat innovation hubs, facilities in which companies can de-risk processes and demonstrate commercial viability, opened or were announced in 2024. These facilities can help lower companies' scale-up costs.
- **AI and cost reduction:** Companies partnered to utilize AI to develop processes and technology to reduce the cost of cultivated meat. Others agreed to codevelop equipment to improve cultivated meat's unit economics and establish methods for optimizing cell growth.
- **New product launch: GOOD Meat**, the cultivated meat division of the U.S. plant-based food company **Eat Just**, launched GOOD Meat 3, the first product containing cultivated meat (3%) to be available in retail, in the frozen section of **Huber's Butchery** in Singapore.

Investment

- **Significant deals:** The two largest cultivated meat deals in 2024 were **Prolific Machines**' $54.6 million Series B and **Mosa Meat**'s €40 million ($42.9 million) round.
- **The long-view context:** Though both deals were larger than 2023's largest round of $35 million, neither ranks among the top 10 largest investments in the sector. The investment environment of the past two years has been fundamentally different from the low-interest-rate period of 2020 to 2022, when the 10 largest cultivated meat and seafood rounds were raised.
- **Total raised:** Since 2013, privately held companies involved primarily in the cultivated meat sector have raised more than $3 billion. For comparison, in the first three quarters of 2024 alone, global private equity and venture capital funding into the electric vehicle sector totaled $3.3 billion, eclipsing all-time cultivated meat funding.

Science and technology

- **Cultivated bioprocess advances at the facility level:** Large-scale production systems are planned or coming online with the support of established industrial manufacturers: **Vow** is manufacturing cultivated quail in a 15,000 L bioreactor, with a 20,000 L bioreactor coming online soon, the largest production scale reported to date.
- **Alternative protein research, science, and commercialization centers:** Global innovation in alternative proteins continues to expand at dedicated hubs, including The Bezos Centers for Sustainable Protein, the Alternative Protein Technology Innovation Center of the China State Administration for Market Regulation, the UK's four dedicated alternative protein research centers, and India's IKP Knowledge Park's Centre for Smart Protein and Sustainable Material Innovation.
- **New facilities:** The Cultured Hub in Switzerland, the largest cultivated meat contract development and manufacturing organization (CDMO) in Europe, opened its doors. Additionally, Tufts University received a $2.1 million grant from Massachusetts state funds to establish pilot scale-up facilities on campus, and Fermbox/BBGI made progress on establishing the first CDMO facility in Thailand.

Government and regulation

- **Forward progress**: The sole entity tasked with legal authorization to issue Halal certificates in Singapore declared that cultivated meat can be Halal. In other regions and countries, the first regulatory submissions were made or accepted for cultivated meat and are undergoing the review process (EU, South Korea, and Thailand).
- **Explosion of global public investment:** The government of India made a billion-dollar commitment to develop domestic biotechnology capabilities that included cultivated meat in their wider scope, while Japan, New Zealand, Singapore, and South Korea funded public and private research to advance cultivated meat science.
- **Challenges at the state level in the United States**: Bills to ban cultivated meat were introduced across 12 states in 2024, and all but two failed to pass. In March 2024, Florida's legislature became the first in the country to vote to ban cultivated meat, with the governor signing the bill into law on May 1. Also in May, Alabama enacted a bill banning the production and sale of cultivated meat. Litigation challenging the Florida ban is currently ongoing.

Unless otherwise cited, all of the investment information presented in this "Executive Summary" is from GFI's analysis of data from the Net Zero Insights platform. Please note that aggregated data has not been reviewed by Net Zero analysts.

Commercial landscape

Overview

Progress is rarely linear, especially in a sector as broad and diverse as cultivated meat. The path of the industry reflected this in 2024.

Several cultivated meat companies made significant advancements in product development, scale up, and industry collaboration in 2024. At the same time, the cultivated chicken products approved for sale in the United States in 2023 were no longer available to consumers for most of 2024, and some companies paused their expansion plans or closed their doors entirely.

It can be tempting to oversimplify the sector and choose individual developments to fit into a predetermined narrative. In reality, the cultivated meat industry in 2024 achieved meaningful progress and faced challenging roadblocks. Significant commercial and scientific hurdles remain—such as securing sufficient funding in a challenging venture capital environment and demonstrating the ability to produce at scale without regulatory approval to sell the resulting products—but companies continued to advance their processes and products despite these challenges in 2024.

Cultivated meat products debuted in new formats and markets over the year, despite closures and setbacks for some in the industry amid a subdued private capital environment and uncertain regulatory and scale-up timelines. In Singapore, a product made with three percent cultivated chicken became the first cultivated product ever to hit retail shelves.

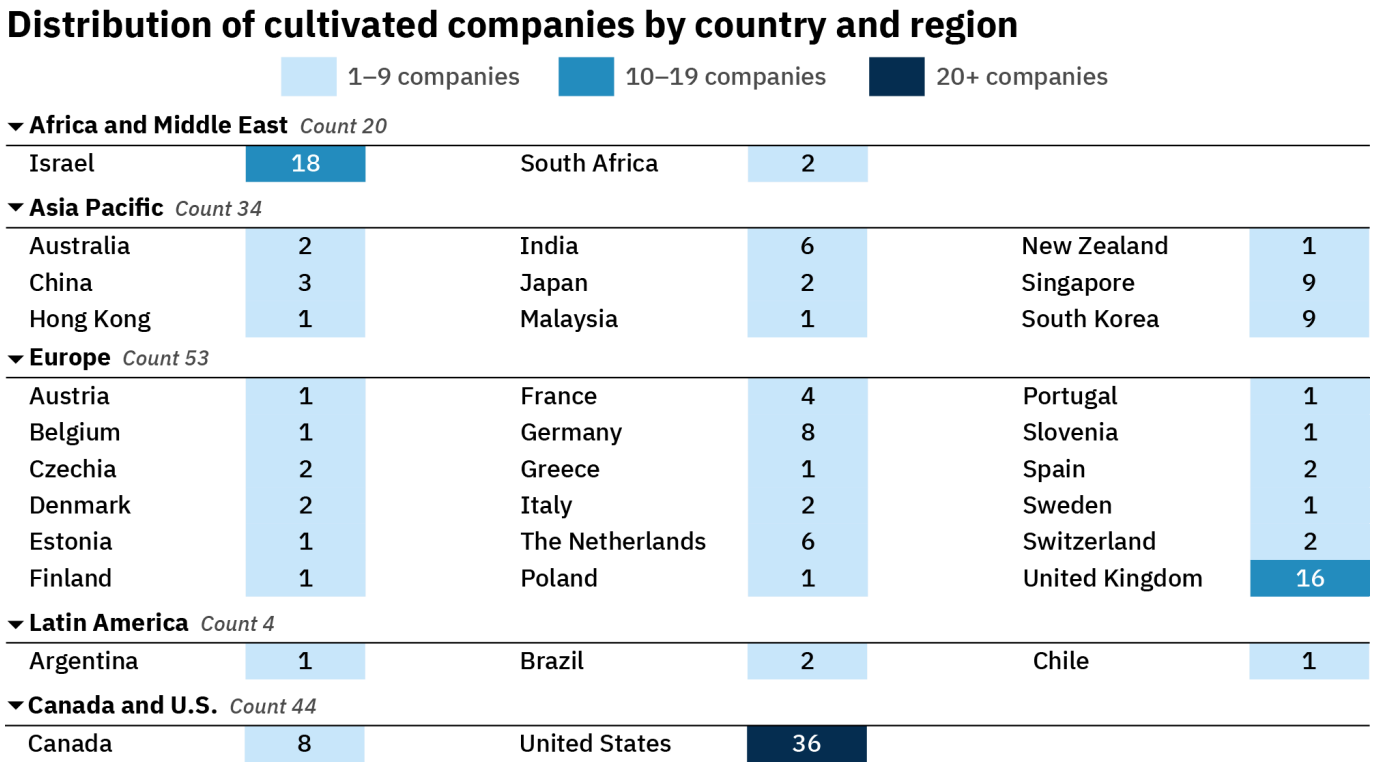
In Singapore, parfait and foie gras products made from cultivated quail entered the market. The same products briefly debuted in Hong Kong SAR, a notable step toward introducing cultivated meat to one of the largest economies on the planet. And advancements across the full value chain of cultivated meat—from cell culture media and feed developments to cost reduction and scaling partnerships—pushed the sector forward.

Key highlights from across the cultivated meat ecosystem are detailed below.

Company landscape

- **Number of companies:** In 2024, GFI's company database identified 155 companies primarily dedicated to the development of cultivated meat and seafood inputs or end products.
- **Diversifying portfolios:** The total number of companies at least partially involved in the cultivated meat and seafood sector reached a new high in 2024, with at least 126 additional companies active in the industry through investments, partnerships, or cultivated meat business lines.
- **Along the value chain:** The industry increasingly includes companies with focus areas all across the cultivated meat value chain, from target molecule selection to end-product formulation and manufacturing. This advancement of the business-to-business (B2B) ecosystem allows companies to focus on their core competencies and, over time, should allow the entire industry to function more efficiently.

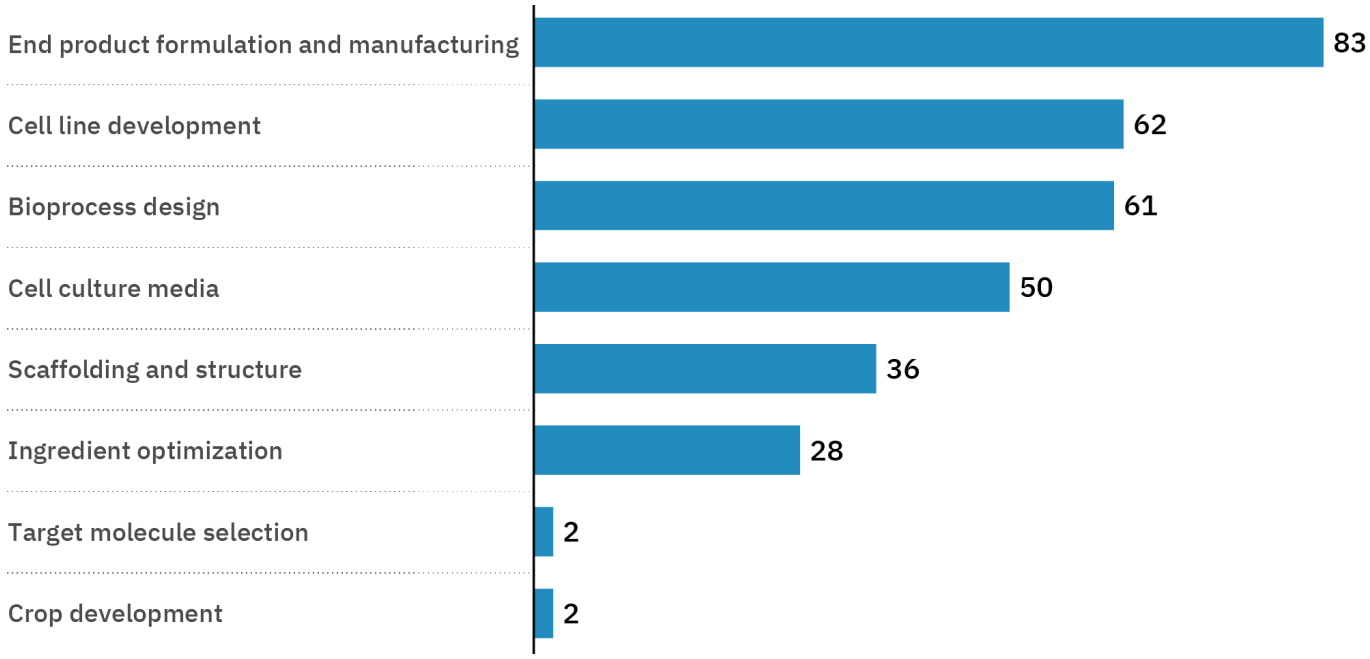
Figure 1: Distribution of specialized cultivated companies by country and region



Africa and Middle East *Count 20*					
Israel	18	South Africa	2		
Asia Pacific *Count 34*					
Australia	2	India	6	New Zealand	1
China	3	Japan	2	Singapore	9
Hong Kong	1	Malaysia	1	South Korea	9
Europe *Count 53*					
Austria	1	France	4	Portugal	1
Belgium	1	Germany	8	Slovenia	1
Czechia	2	Greece	1	Spain	2
Denmark	2	Italy	2	Sweden	1
Estonia	1	The Netherlands	6	Switzerland	2
Finland	1	Poland	1	United Kingdom	16
Latin America *Count 4*					
Argentina	1	Brazil	2	Chile	1
Canada and U.S. *Count 44*					
Canada	8	United States	36		

Source: Good Food Institute, Alternative protein company database, accessed: December 11, 2024. 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 11, 2024.
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.

These figures may not fully capture the actual count of companies involved in the cultivated meat space, as there likely remain several startups 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.

Facilities

Increased cultivated meat and seafood manufacturing capacity is critical for companies to improve processes and achieve scale.

- **New openings:** At least four production facilities in the cultivated meat sector were announced or opened in 2024, including **Multus**' commercial-scale serum-free growth media facility in the UK, **Nutreco**'s food-grade cell feed production facility in the Netherlands, **BLUU Seafood**'s pilot plant in Germany, and **Cell AgriTech** and **Umami Bioworks**' planned meat and seafood facility in Malaysia. These facilities spanned the cultivated meat value chain, from inputs to end products.
- **Introducing innovation hubs:** Two cultivated meat innovation hubs opened or were announced in 2024, including **The Cultured Hub** in Switzerland and **Re:meat** and **Alfa Laval**'s planned cultivated meat scale-up facility in Sweden. Innovation hubs are facilities in which companies can de-risk processes, demonstrate commercial viability, and reduce scale-up costs.
- **Plans on pause:** Some cultivated meat companies delayed their expansion plans or temporarily paused production in 2024, while others struggled to find funding to support expansion.

CC-BY Wildtype, photo credit: Rachelle Hacmac/Rile Co.

New cultivated meat facilities entered the ecosystem in 2024, but process scale up remains difficult for companies until additional regulatory clarity is achieved. Companies require funding to prove, optimize, and innovate production abilities, but investors may hesitate to provide financing to companies if there is a lack of regulatory clarity or if companies have not demonstrated the ability to produce at a commercial scale. This may incentivize companies to explore other scale-up paths, such as identifying partners who already possess the necessary equipment or financial means to increase cultivated meat production.

Involvement by diversified companies

Existing meat and food producers can be a force multiplier for cultivated meat companies to access funding, infrastructure, and expertise. The continued commitment to the cultivated meat sector from incumbent food companies underscores the potential for cultivated meat to help meet growing meat demand.

Many of the largest meat and consumer packaged goods companies around the world—including **JBS**, **Tyson**, **Cargill**, **Nestlé**, **Thai Union**, and **Danone**—remain active in the cultivated meat industry by engaging in investments, acquisitions, partnerships, and/or research, development, and manufacturing. In 2024, Israeli cultivated meat startup **Aleph Farms** submitted Thailand's first application for cultivated meat approval after preparing for nearly a year in close collaboration with company investor and global seafood producer Thai Union.

Table 1: Diversified company involvement in cultivated meat and dairy

	Investment	Acquisition	Partnership	R&D and manufacturing
Cargill	✓		✓	
Coca-Cola	✓			
Danone	✓			
JBS		✓	✓	✓
Maple Leaf	✓			
Nestlé	✓		✓	✓
Nissin Foods Holdings				✓
Tyson	✓			

Source: GFI analysis of publicly reported industry news and events

New partnerships

Cultivated meat partnerships in 2024 reflected three key trends: AI and cost reduction, scaling, and product development.

AI and cost reduction

- **Aleph Farms** partnered with **BioRaptor** and **Multus** teamed up with **New Wave Biotech** to utilize AI to develop processes and technology to reduce the cost of cultivated meat.
- **GEA** and **Believer Meats** agreed to codevelop equipment to improve cultivated meat's unit economics.
- **Sticta Biologicals** and **Meatable** partnered to establish methods for optimizing cell growth.

Scaling

- Partnerships related to scaling cultivated meat included **Vital Meat**'s cultivated chicken scaling agreement with **Biowest**, **BSF** and **CellRev**'s partnership focused on mass-producing cultivated meat, and two agreements focused on developing region-specific growth strategies in China and South Korea.

Curious about the latest information on alternative protein trade organizations? Take a look at a list of alternative protein industry organizations.

Ingredient and product development

- Ingredient and product development partnerships included a **Multus** and **Quest Meat** R&D partnership to codevelop cell culture media ingredients, a hybrid meat product development partnership between **The Better Butchers** and **Genuine Taste**, **Pulmuone** and **ABB Korea Robotics**' cultivated seafood development agreement, and **Ivy Farm Technologies**' partnership with **Fortnum & Mason** to develop a scotch egg containing cultivated meat.

Product launches

Unique and innovative cultivated meat products debuted in 2024, each one representing advancements in cultivated meat's variety and accessibility for consumers.

- **GOOD Meat**, the cultivated meat division of the U.S. plant-based food company **Eat Just**, launched GOOD Meat 3, the first product containing cultivated meat (3% cultivated meat) to be available in retail, in the frozen section of **Huber's Butchery** in Singapore.
- **Vow**, an Australian cultivated meat startup, launched a cultivated quail parfait and a quail foie gras in restaurants in Singapore. The same products briefly debuted in Hong Kong SAR, giving one of the world's most populous countries a first taste of cultivated meat.

For a deeper dive into 2024's alternative protein industry news, check out previous editions of GFI's Alternative Protein Opportunity newsletter.

Investment

Overview

Following the first disclosed investment in cultivated meat and seafood in 2013, privately held companies involved primarily in the cultivated meat sector have raised more than $3 billion, with $139 million secured in 2024, according to a GFI analysis of data from Net Zero Insights.

In recent years, the broader investment environment (particularly elevated interest rates), uncertain cultivated meat scale-up timelines, and cultivated meat regulatory hurdles slowed the flow of capital into the sector, resulting in fewer companies generally receiving smaller quantities of funding.

The wider ecosystem of companies involved primarily in alternative proteins brought in $18.6 billion in funding from 2015 to 2024—$16 billion of which was raised by privately held companies and $2.5 billion of which went to publicly traded firms.

In 2024, privately held alternative protein companies raised $1.1 billion. The slowdown in funding followed the trend in the broader climate tech sector, which has also experienced consecutive annual funding declines since 2021. While the broader venture funding sector experienced slight growth in 2024, the increase was primarily due to the rise in artificial intelligence (AI) funding, which rose to nearly $100 billion in 2024 and may have redirected capital flows from other industries.

Funding is a proxy for the resources available to an industry, not the innovation or progress occurring within it. Cultivated meat companies advanced product variety, regulatory approvals, and process improvements in 2024. For these advancements to continue, companies need access to more resources.

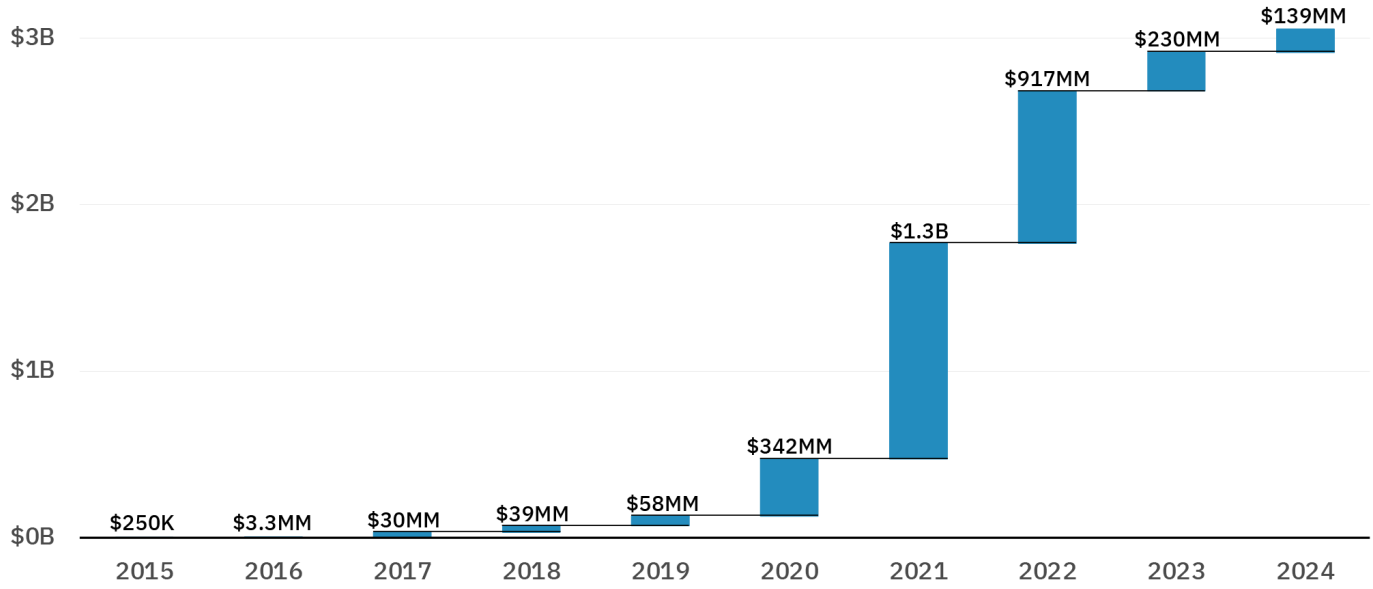
Investment is only one piece of the funding puzzle, and cultivated meat and seafood companies must continue to pursue creative and multipronged funding strategies to access the capital needed for the industry to achieve scale.

Key investment highlights from across the cultivated meat ecosystem include:

- **Significant deals:** The two largest cultivated meat deals in 2024 were **Prolific Machines**' $54.6 million Series B and **Mosa Meat**'s €40 million ($42.9 million) round.
- **The long-view context:** Though both deals were larger than 2023's largest round of $35 million, neither ranks among the top 10 largest investments in the sector. The investment environment of the past two years has been fundamentally different from the low-interest-rate period of 2020 to 2022, when the 10 largest cultivated meat and seafood rounds were raised. Figure 3 highlights how the investment environment of 2020–2022 was an outlier relative to historical trends.
- **Difficult venture capital environment:** Amid an overall decline in climate tech investments, food, agriculture, and land use was only 8% of venture funding in climate tech in Q4 2023 through Q3 2024, despite comprising 22% of global emissions.

Figure 3: Cumulative and annual investment in privately held cultivated companies

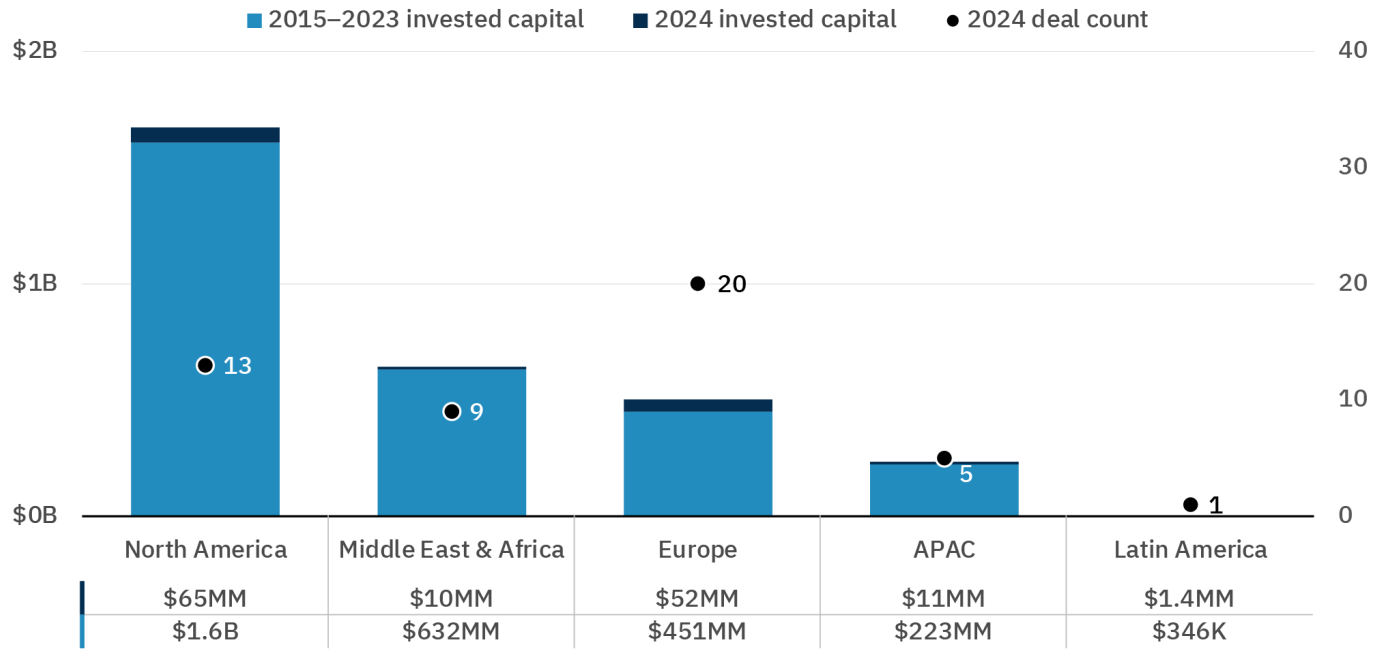
2015-2024



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

Figure 4: Investments in privately held cultivated companies by region

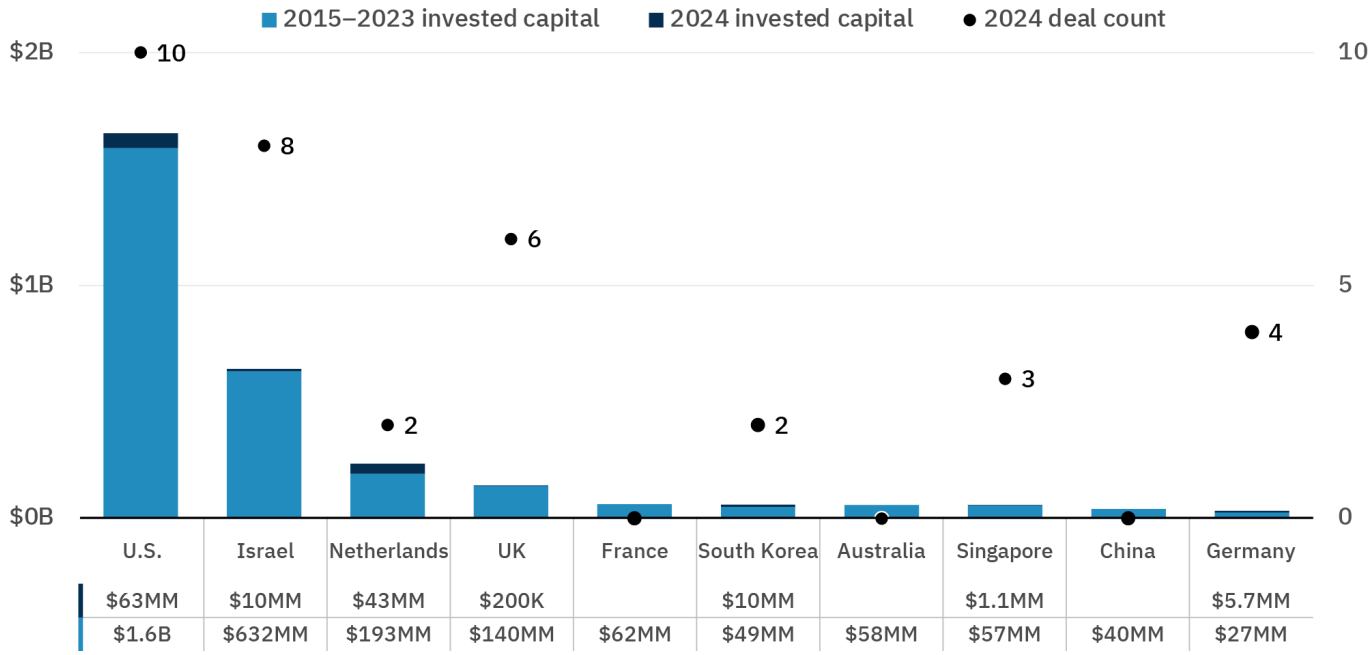
2015-2024



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.

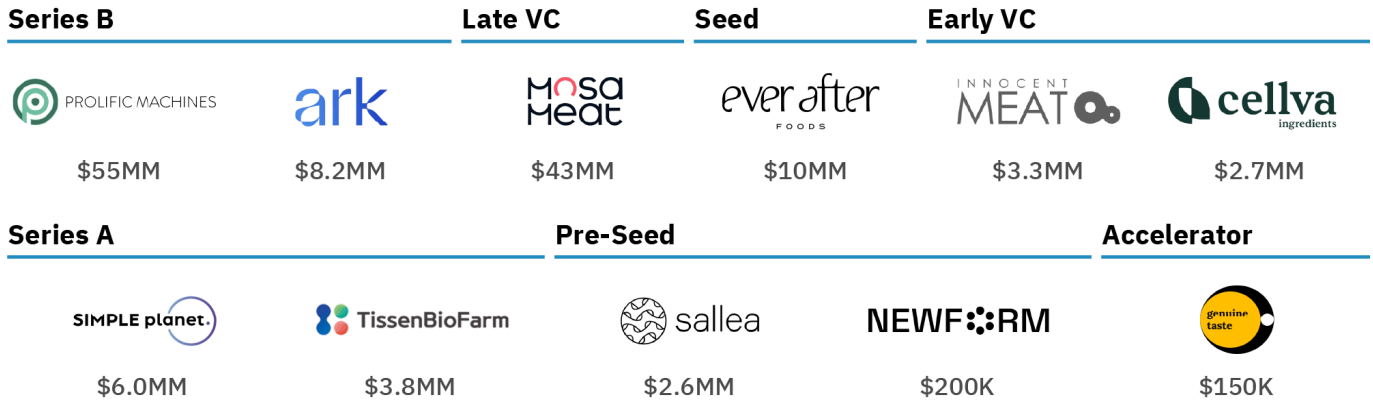
Figure 5: Investments in privately held cultivated companies: Top 10 countries

2015-2024



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: 2024 key funding rounds



Source: GFI analysis of data from Net Zero Insights.
Note: "2024 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.

Key trend #1: Consolidation in the cultivated meat sector

The cultivated meat sector is just over a decade old. Until more products are approved for sale, most companies have limited revenue-generating opportunities. In this new investment environment, some manufacturers will be unable to secure funding and will downsize, close operations, or merge with other organizations. This was the case for a handful of companies in 2024, but consolidation should not be equated with a declining category. Consolidation is inevitable for any nascent sector, and mergers, acquisitions, and intellectual property transfers can accelerate the dissemination of technology and expertise within an industry.

In the 1920s, there were more than 700 washing machine manufacturers in the U.S. Only five still exist today. Technological, financial, and consumer challenges remain for cultivated meat, but lessons from other industries show that growth can be a long and winding road. The sector's progress should be judged based on multiple factors—such as product taste, price, accessibility, and consumer acceptance—rather than the trajectory of funding alone.

BLUU seafood's Fishfingers, made out of cultivated salmon or rainbow trout. Photo credit: Ann Brauns oder Wim Jansen

Key trend #2: A tight capital landscape

The funding landscape for cultivated meat and seafood differs from a few years ago. Interest rates in the United States are elevated relative to recent years' lows, and investors have now had several years to watch the cultivated meat industry evolve. Investors are demonstrating more discretion in allocating funding to the sector, and it seems that, on average, investments going forward will be distributed to fewer companies and in smaller quantities than during the period from 2020 to 2022.

If a company possesses unique technology, innovative approaches, or a high-potential target market, their funding path may diverge from the trajectory of the broader category. A category-wide shift in private capital tides likely requires a handful of cultivated meat companies to successfully de-risk their operations by increasing production, lowering costs, and demonstrating a path to profitability. Companies made progress on all these factors in 2024, debuting cost-effective, animal-free media, introducing new bioreactors optimized for scaling adherent cell growth, and publishing studies demonstrating continuous manufacturing approaches leading to favorable economics at scale.

Successful exits for cultivated meat companies—or even alternative proteins more broadly—could also meaningfully alter investor sentiment. Until that point, cultivated meat investments will likely remain closer to the levels seen in recent years. Even if the venture market shifts, it is unlikely to soon return to the peak environment of 2021, which was driven by an extended period of near-zero and even negative interest rates following the 2008 financial crisis. Additionally, while that investment environment spurred some venture funders to support capital expenditure projects, venture capital is not typically well-suited to fund new facilities. As a result, companies looking to scale, especially via first-of-a-kind facilities, will likely need to identify alternative sources of funding.

Key trend #3: Various funding sources needed to fuel cultivated meat growth

Given cultivated meat's current stage of development and the significant capital required to scale, venture funding alone is unlikely to fully support the industry's growth. To achieve long-term viability, cultivated meat companies will need to complement venture capital with additional funding sources. It is more important than ever that companies, investors, governments, and philanthropists develop innovative funding solutions that support the growth of the cultivated meat industry.

GFI's Funding the build report, published in 2024, explored potential avenues for companies looking to scale, such as equipment leasing, strategic partnerships, sovereign wealth funds, blended finance, and government programs. Still, there are no silver bullets to fill funding gaps in the cultivated meat sector.

Cultivated meat holds the potential to improve food security, reduce emissions, and protect public health. To realize these outcomes, cultivated meat companies need more funding, and governments, investors, and philanthropists should work together—as has been done for clean energy development—to position the sector for long-term success.

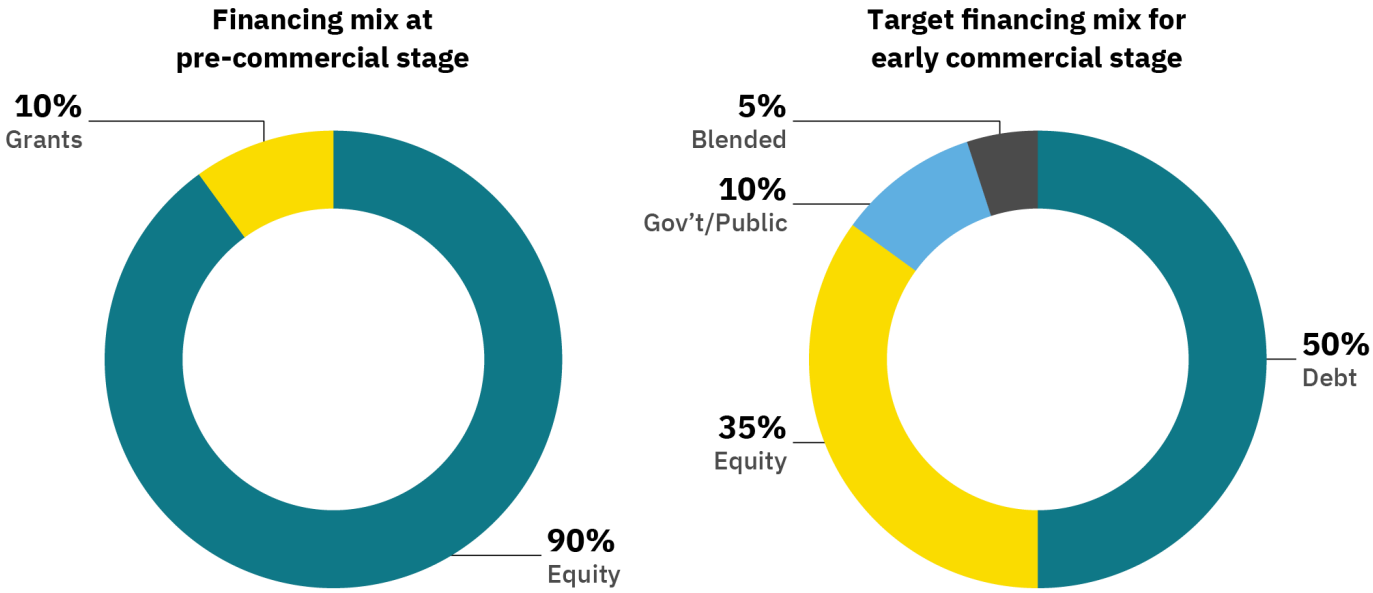


Figure 7. Source: Mixed funding sources example by GFI, first published in Funding the build.

To more accurately reflect investment trends in the cultivated meat and alternative protein sectors, GFI updated our reporting methodology for the 2024 State of Alternative Proteins reports to differentiate alternative protein funding according to whether a company is publicly traded or privately held. Find an overview of our investment data methodology here and take a look at previous editions of the investor newsletter here for a deeper dive into this year's activity.

Source: Unless otherwise cited, the investment data reported above was derived from GFI's 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. The Good Food Institute is not a licensed investment or financial advisor, and nothing in the State of Alternative Proteins report series is intended or should be construed as investment advice.

Consumer insights

Overview

The cultivated meat industry moved forward in 2024 in terms of regulatory approvals, investment progress, and a product launch. But consumer awareness, interest, and perceptions mostly remained stable from 2023, suggesting the industry will need to build consumer awareness and interest to drive demand for products in the future.

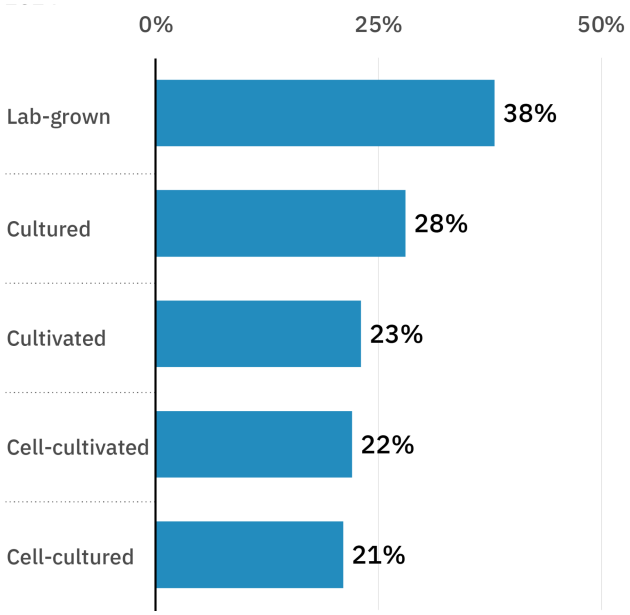
However, new research expanded our understanding of consumer interest and perceptions globally, and a landmark study in Singapore suggested that cultivated meat delivers on consumers' sensory expectations.

How many people know about cultivated meat?

After a milestone year in terms of market developments in 2023, new studies in 2024 expanded our understanding of consumer awareness around the globe.

- **Africa:** Research conducted in 12 African countries in 2023 (Cameroon, the Republic of Congo, the Democratic Republic of Congo, Ghana, Ivory Coast, Kenya, Morocco, Nigeria, Senegal, South Africa, Tanzania, and Tunisia) found that 64% had heard of "artificial meat" (which was explicated as being cell-cultivated in the survey).
- **Brazil:** In Brazil, research focused on studying the intention to consume cultivated meat in two regions (São Paulo and Salvador) found that 38% of consumers had heard of cultivated meat ("carne celular"), and found that residents of São Paulo demonstrated higher familiarity with cultivated meat (45%) compared to 32% in Salvador.
- **China:** Research in China found that 66% had heard of "cultured meat."
- **Europe:** Consumers in European countries vary widely in their awareness of cultivated meat. Research by GFI Europe in 15 countries in 2024 found rates of familiarity ranging from 23% (Greece) to 61% (the Netherlands). Consumers in Northern and Central Europe were most familiar, with Austria, Germany, the Netherlands, and Sweden exceeding 50%. Rates in most countries ranged between 30 and 40%. Researchers in the UK and Slovenia found high rates compared to most other European nations: 50% in the UK and 73% in Slovenia.
- **Japan:** Research in Japan found that 39% had heard of "cultivated meat and seafood."
- **Singapore:** Research in Singapore (where cultivated meat was available for sale) found that 26% were "familiar with cultivated meat."
- **United States:** In the United States, where GFI surveys consumers annually, the number of consumers aware of cultivated meat did not change significantly. In a 2024 poll by Morning Consult on behalf of GFI, 23% of consumers reported having heard of cultivated meat. Consumers were much more likely to have heard of it as "lab-grown meat," at 40% (though "lab-grown" does not accurately describe the facilities where cultivated meat can be created at scale). This is consistent with 40% who had heard of "cultivated meat (also sometimes called 'lab-grown meat')" in 2023.

Figure 8: U.S. consumer awareness of terms for cultivated meat
2024



Source: Survey by Morning Consult on behalf of GFI of 2,214 U.S. adults, May 2024. Note: "Lab-grown meat" is inaccurate as, at scale, the production process occurs in a production facility similar to a brewery rather than in a lab.

These findings suggest that:

- **What we call cultivated meat matters:** More consumers have heard of the concept of cultivated meat than have heard of the term "cultivated meat" itself, based on lower rates of familiarity in studies that test "cultivated" than ones testing "lab-grown," "cultured," etc.
- **Unhelpful terms predominate:** More consumers are likely exposed to terms that could be considered pejorative like "lab-grown" or "artificial" than "cultivated." "Lab-grown meat" is inaccurate as, at scale, the production process occurs in a production facility similar to a brewery rather than in a lab.
- **Work is needed to build awareness:** The industry will need to build awareness of "cultivated meat" (the most appealing term identified in current research, and the term used by most commercial and pre-commercial cultivated meat producers) as a category term.

How many people are likely to try and buy cultivated meat?

Research suggests that a significant minority of U.S. consumers are likely to try and buy cultivated meat as of 2024, and finds differences across regions where cultivated meat was available (Singapore) and wasn't available (all other countries) in 2024.

U.S. consumers' likelihood to try cultivated meat:

A 2024 poll by Morning Consult on behalf of GFI found that: 32 percent of American adults find the concept of cultivated meat appealing; 28 percent would be likely to try a free sample if offered; and 17 percent would be likely to purchase. These results are unsurprising given the low rates of awareness of cultivated meat.

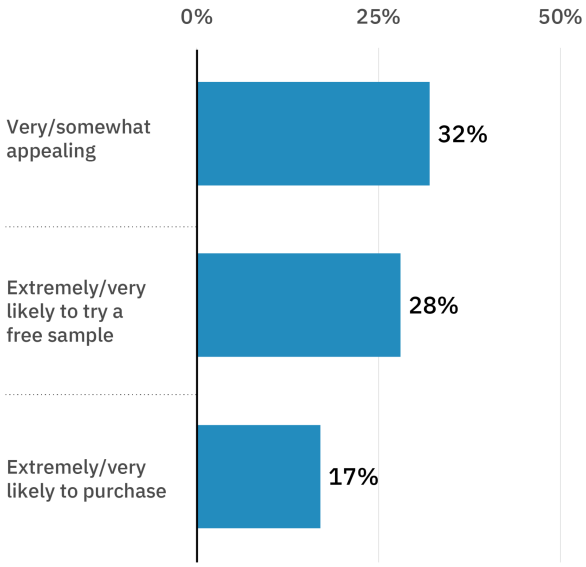
European consumers' likelihood to try cultivated meat:

Research by GFI Europe found that many consumers across EU countries would be willing to try cultivated meat. More than 50 percent of consumers in Belgium, Czechia, Denmark, the Netherlands, Poland, Portugal, Spain, and Sweden would be willing to try, and significant pluralities in Austria, France, Germany, Greece, Hungary, Italy, and Romania.

Likelihood to try cultivated meat by generation in Singapore:

A small-scale focus group study among parents and children in Singapore found that while the child participants were less likely to have heard of cultivated meat than the adults, it sparked their curiosity, with children wanting to know how similar it is to conventional meat.

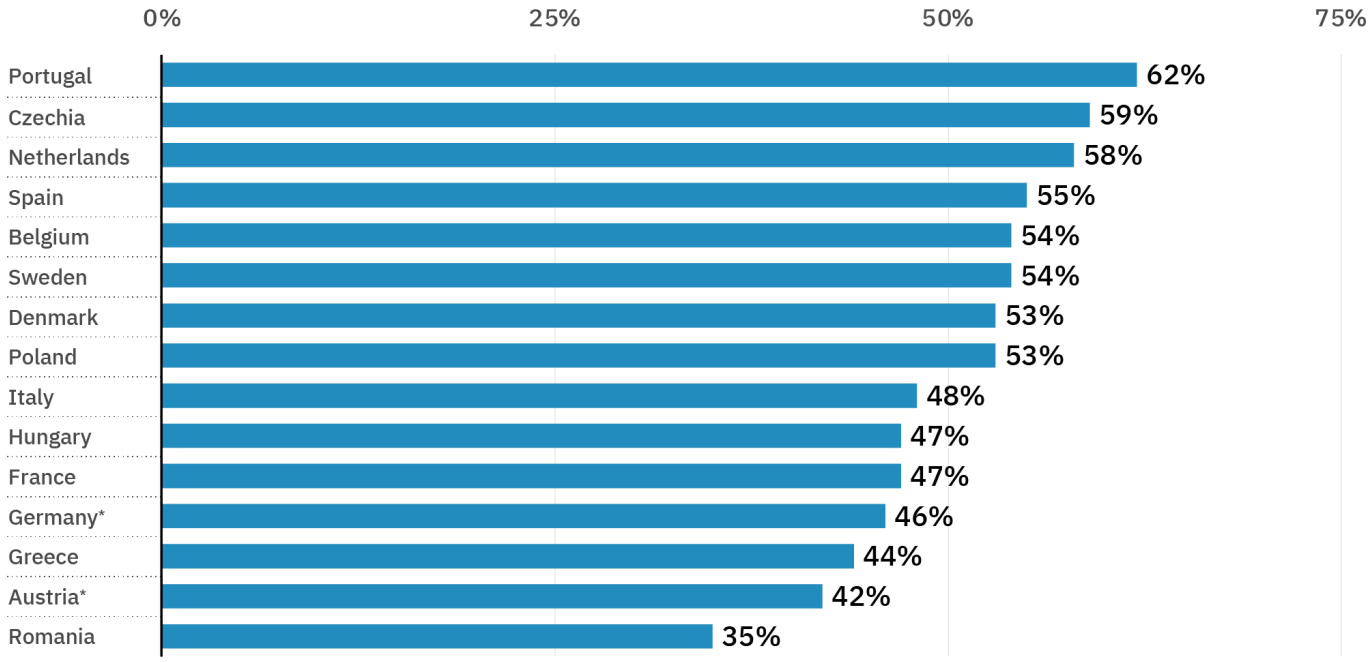
Figure 9: U.S. consumer outlook on cultivated meat
2024



Source: Survey by Morning Consult on behalf of GFI of 2,214 U.S. adults, May 2024. Note: "Lab-grown meat" is inaccurate as, at scale, the production process occurs in a production facility similar to a brewery rather than in a lab.

Figure 10: European consumers' likelihood to try cultivated meat

If cultivated meat were available in my country, I would try it at least once



A nationally representative YouGov online survey of >1000 people per country over 18 years old (April 2024). *Austria and Germany results are from a separate survey run in February 2024 using the same question.

These findings suggest that:

- **There are significant differences in regional openness:** There are significant differences in consumer receptivity to cultivated meat in markets where recent data is available.
- **Product descriptions matter:** Consumers' receptivity to cultivated meat will vary based on how the products are described, and how the channels where they are available describe them.

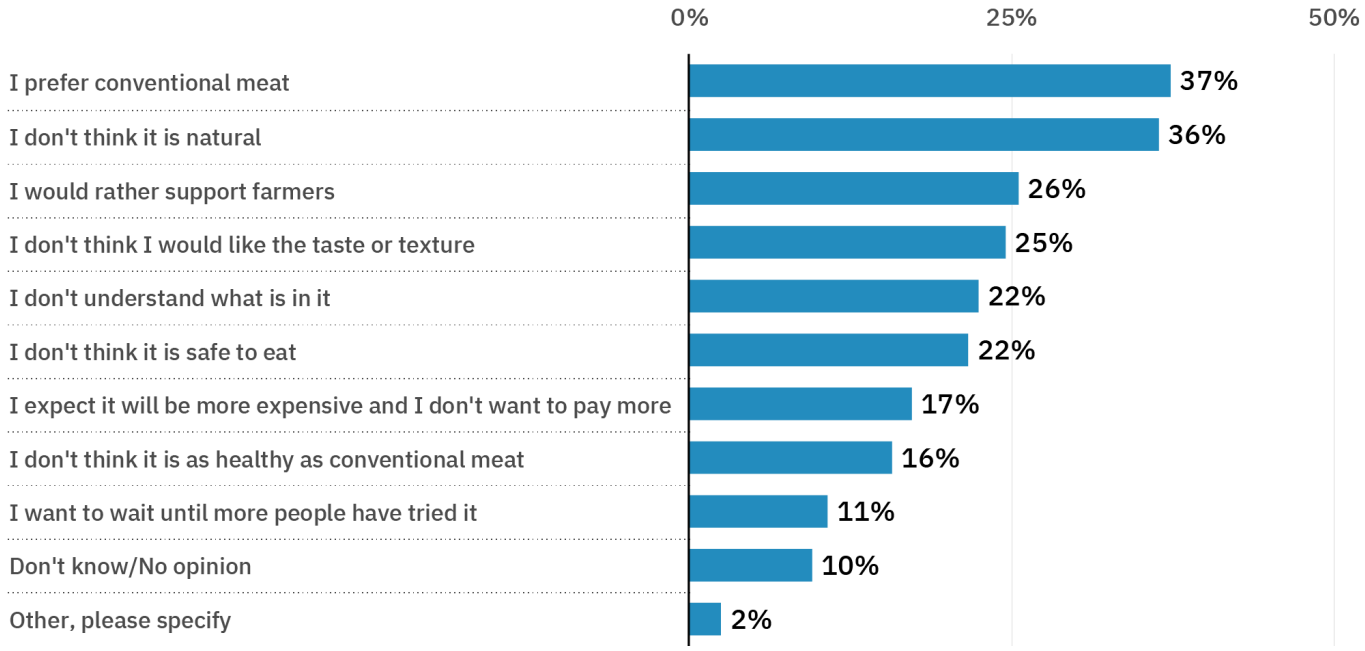
What will lead people to try and buy cultivated meat?

Research suggests that some consumers recognize there are environmental and ethical benefits of cultivated meat when asked, but are not convinced it will deliver a similar sensory experience to conventional meat.

U.S. consumers convinced of some but not all benefits: A 2024 poll by Morning Consult on behalf of GFI found that more U.S. consumers believe cultivated meat is more sustainable than conventional meat than believe conventional meat is more sustainable than cultivated. However, they were more likely to believe that conventional meat is "healthy," "tasty," and "natural."

A total of 25 percent of consumers who were unlikely to try cultivated meat cited expecting not to "like the taste or texture" as one of their primary reasons, and 16 percent cited health. But more cited "prefer[ring] conventional meat" (37 percent) and not thinking that cultivated meat is "natural" (36 percent), which has become increasingly important to many consumers seeking clean label and organic foods despite its unclear definition and tenuous connections to nutrition and food safety. No single reason was selected by more than these, suggesting that there's no majority objection shared by all cultivated meat rejectors and that some are categorically not open based on their current understanding of cultivated meat.

Figure 11: Reasons U.S. consumers who are unlikely to try cultivated meat would not try it
2024



Source: Survey by Morning Consult on behalf of GFI of 2,214 U.S. adults, May 2024. Note: "Lab-grown meat" is inaccurate as, at scale, the production process occurs in a production facility similar to a brewery rather than in a lab.

Additional GFI research conducted with Morning Consult in 2024 found meaningful differences in consumer comprehension and appeal of cultivated meat depending on how the products were described, consistent with consumers having low prior familiarity with the concept. Descriptions that referenced sensory or health comparability or animal welfare benefits increased appeal. Descriptions that emphasized how cultivated meat is grown were more effective at building comprehension but generally required a disproportionate tradeoff with appeal.

Non-GFI research similarly suggests that some people understand the sustainability and ethical benefits of cultivated meat, but are not convinced of its sensory properties.

- **Many see ethical benefits:** A 2024 survey by Mintel found that 40% of U.S. consumers agree that "cultivated meats are a good solution to problems with animal agriculture." This was more than who were neutral (30%) or disagreed (30%). Younger U.S. consumers were significantly more likely to agree.
- **Few expect it to taste as good as meat:** The Purdue Center for Food Demand Analysis & Sustainability found that U.S. consumers expected cultivated meat types like beef and chicken to be around half as tasty (both rated 2.7 out of 5) vs. their conventional counterparts (4.2 and 4.4, respectively). They expected a narrower gap on healthiness between meat types, rating cultivated chicken 2.9/5 for health on average vs. 4.2 for conventional chicken, and 2.6 vs. 3.4 for cultivated vs. conventional beef.
- **Few expect to replace meat:** A YouGov survey similarly found that only 13% expected to prefer eating "lab-grown meat" in a scenario where it was "indistinguishable from animal meat in terms of taste, nutrition, and cost."

While these results are unsurprising in a context where consumers are asked about an unfamiliar product, they do suggest that cultivated meat products will have more early appeal among U.S. consumers who recognize their sustainability and ethical benefits before they will be able to attract unfamiliar audiences based on other attributes.

Photo credit: CC-BY Wildtype

How do cultivated products deliver on taste?

While these results suggest that many consumers are skeptical of how cultivated meat will taste, results of a landmark peer-reviewed study suggest that a cultivated meat product met expectations in a real market context.

As summarized by GFI APAC, researchers surveyed more than 100 people who purchased and ate a cultivated chicken product produced by GOOD Meat at Huber's Butchery & Bistro in Singapore in 2023. They found that consumers rated the taste of two dishes on average at 4.21/5, rated their willingness to eat it again at 4.41/5, and their likelihood of recommending it to friends and family at 4.45/5.

These consumers also cited similar motivations for choosing cultivated meat as seen in GFI's U.S. surveys.

- Taste was the top-cited reason they would be "more likely to eat cultivated chicken if it becomes available at more restaurants" (58%).
- Price (50%), health (50%), texture (43%), and similarity to conventional chicken meat (40%) were also rated highly.
- Ethical benefits were less selected (20%).

While these results are selective (participants had to preregister for the survey and to purchase the products), they suggest that cultivated meat products can meet or exceed sensory expectations among early adopters and that early adopters may be likely to recommend them to family and friends as access to products expands.

Annemiek Verkamman, managing director of hollandbio, tastes Mosa Burger during the second European cultivated meat tasting. Photo credit: Mosa Meat

Photo credit: Ivy Farm

How cultivated meat could close the gap in consumer expectations: Lessons from EVs

Electric vehicles serve as a case study for how public and private investment can help these categories compete on cost, work toward feature parity, and diversify. Learn more in an analysis by GFI, Synthesis Capital, and the Boston Consulting Group.

> *"To realize its full potential, the alternative protein industry should take inspiration from the electric vehicle (EV) sector, whose success has come in large part from addressing the hurdles to consumer adoption that limited potential expansion early on."*
>
> –What the Alternative Protein Industry Can Learn from EV Companies by GFI, BCG, and Synthesis Capital

Science and technology

Overview

In 2024, researchers made steady progress in addressing cost and scale challenges of cultivating meat and seafood from cells. Key advancements included the development of new cell lines, exploring cost reduction strategies such as the use of hydrolysates in culture media, and bioprocess design improvements led by cultivated meat startups. Several themes emerged:

1. **Innovating beyond current cultivated meat approaches can substantially lower costs.**

   Efforts to lower production costs have accelerated faster than expected. Researchers are increasingly replacing serum and turning to food-grade ingredients, including hydrolysates (breakdown products of edible and nutritious raw materials), to reduce media input costs, while implementing filtration and recycling systems for efficient use of media throughout production. Published LCAs reinforce these strategies, with environmental gains from replacing expensive and complex components, such as albumin and serum, with alternative ingredients.

2. **Building a collaborative ecosystem.**

   Collaborative efforts continued to grow, including new shared co-manufacturing facilities, alternative protein research centers, and open-access cell line repositories. These developments lay the groundwork for broader industry cooperation. Breaking down siloed barriers will be essential to sustaining progress and fostering innovation.

3. **Expanding the diversity of research focus areas.**

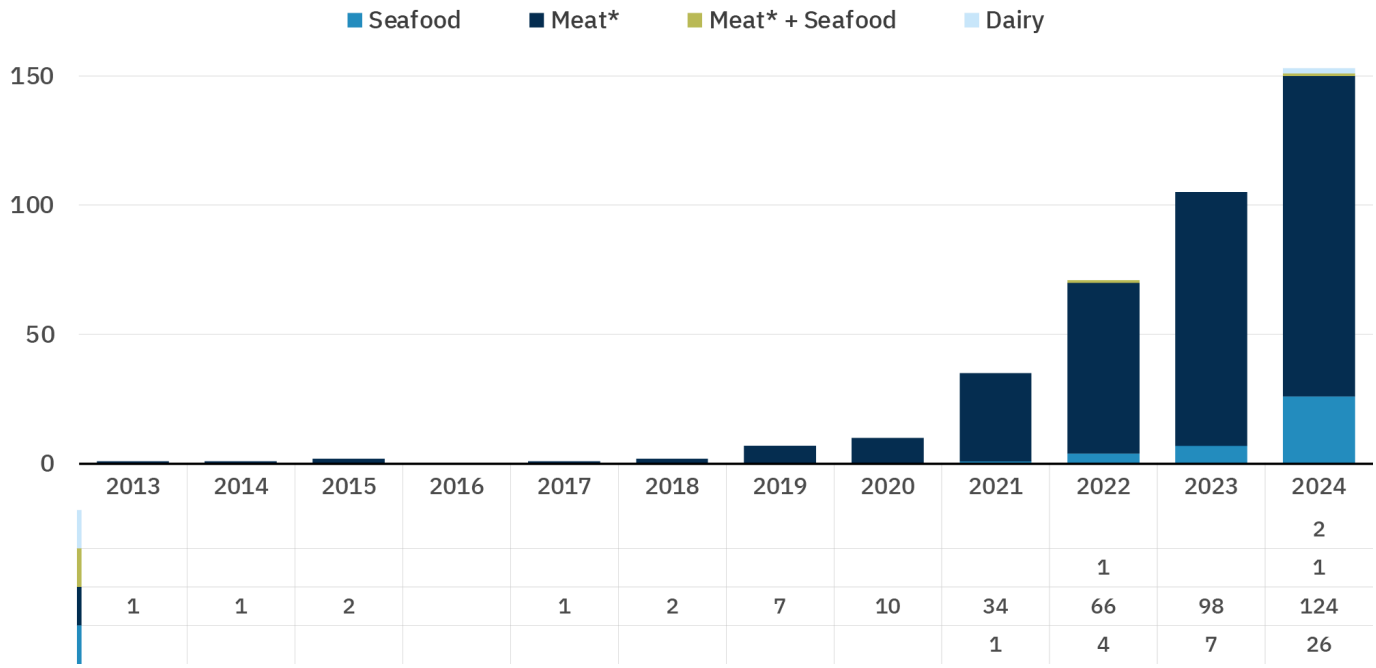
   Seafood-focused research efforts are starting to close the gap with terrestrial meat, as more cell lines and publications focus on diverse species. Researchers turning to previously overlooked species suggests a shift toward exploring less crowded innovation spaces and an emphasis on more varied food options. Continued progress in publications and patents across species and product types signals sustained momentum in this widening phase of research.

For a comprehensive view into the current state of the scientific progress and challenges in cultivated meat, visit GFI's recently updated Science of cultivated meat page.

Research publications and patent trends

Cultivated research publications continue to grow, especially for cultivated seafood. In 2024, there was a relative increase in cultivated seafood publications compared to overall cultivated meat. New subspecialties, such as cultivated dairy research, are also beginning to be published. The growing number of publications across categories suggests a widening of cultivated process applicability that will enable these topic areas to make species- and end-product-specific advancements.

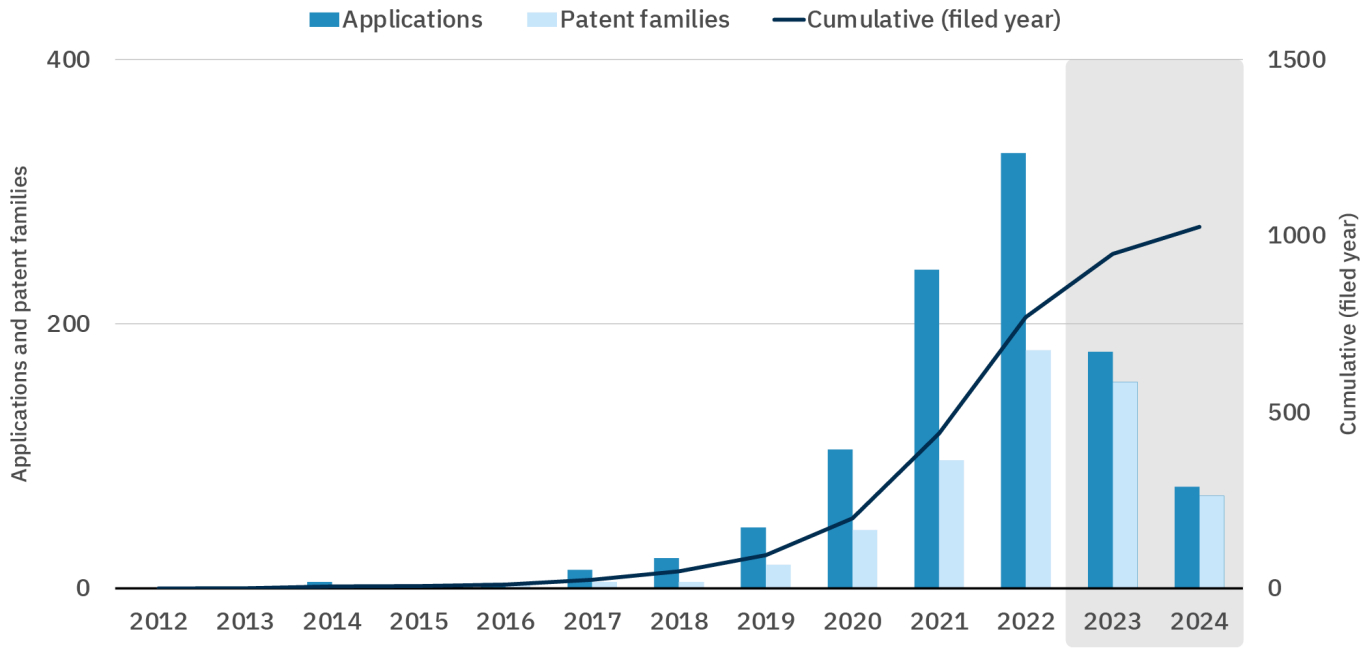
Figure 12: Papers on cultivated proteins by year, by end product



Source: GFI's alternative protein literature library. Notes: Research publications (including preprints) by year, color-coded according to focus on different end products. Publications with a social science focus (socioeconomics, religious considerations, and consumer preferences) are excluded. *In this figure, "meat" refers to publications focused on cultivated terrestrial meat or papers that did not distinguish between meat and seafood. "Seafood" papers are included as a separate category to show the overall increase in papers focused on cultivated seafood.

Figure 13: Patent applications (annual and cumulative)

by filed year and patent families across jurisdictions

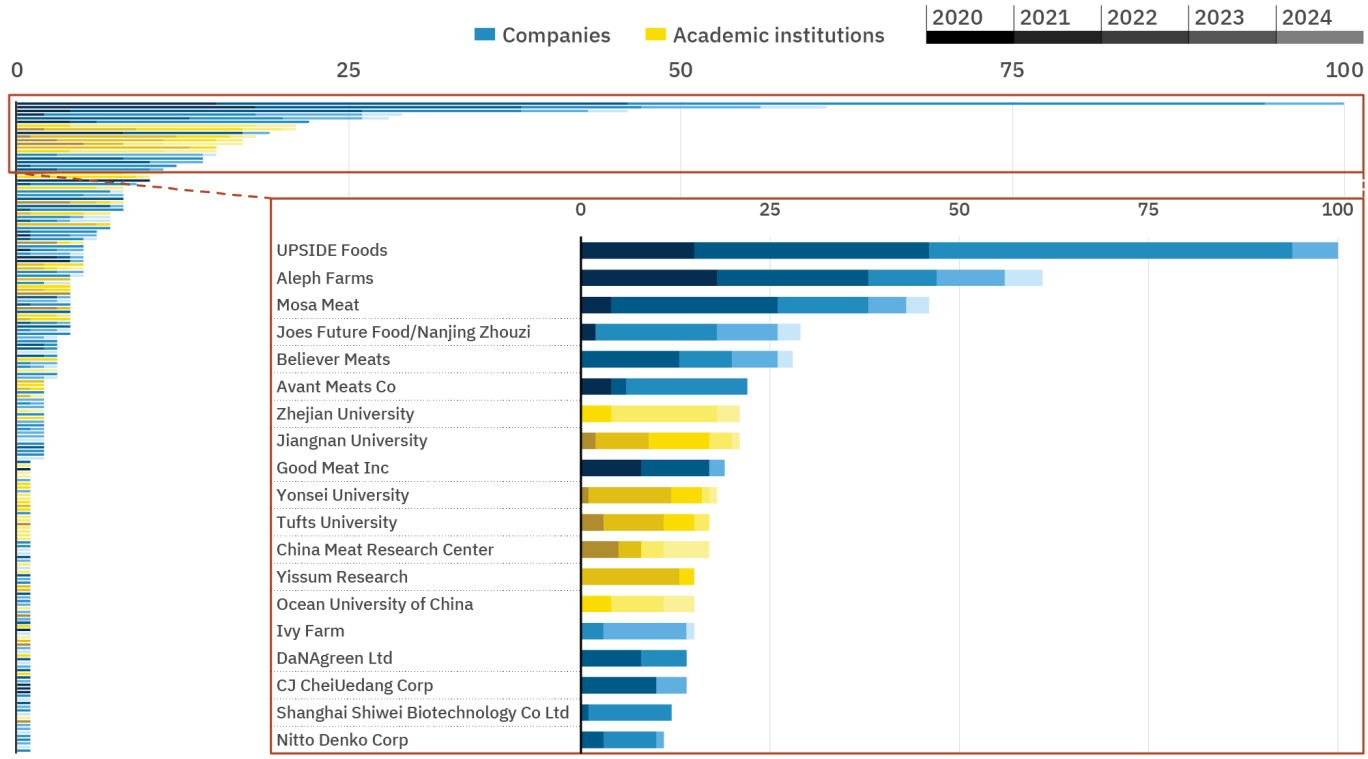


Source: Data sourced from Dimensions, an interlinked research information system provided by Digital Science (www.dimensions.ai). Note: Annual and cumulative cultivated meat patent filings from 2012 to 2024 by application filed year, as well as annual patent family publications. Applications represent total unique patent filings across jurisdictions.

**Applications filed in 2023 and 2024 (shaded in grey) could have delayed publication and do not accurately represent total patents filed in those years, since patent filing publications can be delayed up to 18 months after filing.*

Figure 14: Unique assignee patent publications

by filed year across jurisdictions



Source: Data sourced from Dimensions, an interlinked research information system provided by Digital Science (www.dimensions.ai). Note: Applications filed in 2023 and 2024 could have delayed publication and do not accurately represent total patents filed in those years, since patent filing publications can be delayed up to 18 months after filing.

Cultivated intellectual property releases lag behind sustained, quiet innovation. Cultivated meat patent activity surged over the past decade to over 1,000 unique filings (>450 patent families), though publicly disclosed filings may decrease alongside the funding downturn. While published 2023 and 2024 patent filings are currently lower, this partially reflects a lag in public releases. Despite this lag, unique patent family applications from 2023 are approaching the all-time highs observed in 2022. Along with the diverse pool of patent applicants, this data suggests a resilient base of innovators continuing to generate intellectual property across jurisdictions. These publication and patent trends reveal common themes.

- **Innovation continues despite funding challenges**, albeit at a smaller scale, particularly in niche subspecialties critical to the success of the entire cultivated food industry.
- **Delays between innovation and public disclosure are expected,** especially with rigorous publication processes. Scientific progress is gradual and iterative—after all, valuable innovation takes time. Importantly, while publications do not always guarantee commercial translation, each new publication and patent adds to the collective foundational knowledge needed to establish cell lines and fine-tune culture and manufacturing conditions across species.

The recent *State of the European alternative protein research ecosystem* reports explore the current research and innovation landscape for alternative proteins in Europe and feature in-depth analyses of public and nonprofit funding, academic publications, and patents, including deep dives on cultivated meat and fish.

Cell line availability gradually improving

Thanks to public and private sectors alike, cell line availability is gradually improving, especially for under-resourced species.

Key highlights include:

- **Academic research begins to gain ground on cell line development:** New cell lines were developed by academic research labs, particularly for under-researched aquatic lines, including eel—a widely eaten delicacy—and seven-band grouper and brown-marbled grouper, consumed regularly in Southeast Asian countries like Indonesia, the Philippines, and Thailand. Progress in porcine cell line research in muscle (also, here) and fat cells provides foundational tools for other researchers working on this similarly under-resourced species.
- **Repositories increase accessibility of cell lines:** There are more cell lines in more public repositories than ever before. GFI's database of cell lines has grown to 75 (from 43 at the end of 2021), with many lines listed by B2B companies in the sector. ATCC, one of the largest nonprofit cell line repositories, launched a landing page for cell lines relevant to cultivated meat (and microbial strains). Researchers in industry and academia can use any of the 22 cell lines available across avian, fish, porcine, and bovine species.

Access to quality cell lines across species remains a challenge, but in 2024, academic labs made progress in developing cultivated aquatic cell lines, an area that had lagged behind terrestrial species. Publications on the complexities of culturing niche and under-resourced species, along with the growing number of cell lines in publicly accessible databases—thanks to B2B company contributions—are benefiting the broader field.

These resources allow companies and researchers to begin cultivated meat research with less risk, saving a few months to several years in the innovation cycle, with a value of up to millions of dollars. Proof positive that these contributions translate into industry success is GOOD Meat's 2022 regulatory filing, which used an ATCC-derived chicken cell line. Foundations being laid are beginning to mirror that of biopharma development, where researchers don't need to start from scratch in developing cell lines. Continued investment in cell lines is critical to sustain industry progress.

What is driving cell culture media cost reductions?

Initial cell culture media cost reductions are driven by the rise of food-grade and novel ingredients. For example:

- **The first proof points for low-cost media:** A peer-reviewed study from The Hebrew University of Jerusalem and Believer Meats cites a media cost of $0.63/L, a >99% decrease from a pharma-grade baseline. The publication also uses low-cost, food-grade ingredients to replace the most expensive component–albumin–in serum-free media. The study projects that a 50/50 plant-based/cultivated chicken hybrid product could cost between $6.22–$10.08/lb when hypothetically produced at scale, comparable to organic chicken.
- **The rise of food-grade inputs:** Even at small scale, food-grade components are >80% more affordable than pharma-grade counterparts, and 2024 was a turning point for the transition to food-grade cell culture. For example, Nutreco opened the first commercial food-grade media production plant, Integriculture launched a fully food-grade cell culture starter kit, Qkine launched a food-grade growth factor product line, and Pensées also launched food-grade basal media.
- **Expanding the source materials for cellular nutrition:** Hydrolysates offer a cost-effective source of essential amino acids and other nutrients for cell growth. They can be derived from various sources: from animal feed pellets to agricultural sidestreams, yeast, algae, and bacteria. Given the strong potential for hydrolysates to supply cellular nutrition while further reducing the cost and environmental impact of media, GFI also funded six projects to optimize hydrolysate use in 2024.

The cultivated meat industry must substantially reduce media costs to become cost-competitive with conventional meat, as media is a major cost driver expected to comprise 50 to 70 percent of total production costs. Switching to food-grade ingredients and sourcing key nutrients from less purified sources can not only dramatically reduce costs, but it's also expected to increase circularity and reduce the environmental impact of production. Overall, dramatic cost reductions in media are happening faster than anticipated. GFI expects additional proof points in the near future, with the outlook for media costs continuing to drop in the coming years.

Cultivated bioprocess advances at the facility and process-specific level

New infrastructure is being established and a variety of approaches to scaling are being trialed in the industry:

Shared manufacturing facilities begin to open: While Esco Aster in Singapore has been an established CDMO for the sector for a number of years, several data points in 2024 illustrate the growing demand for shared co-manufacturing facilities for scale up:

- The Cultured Hub in Switzerland opens its doors.
- FermboxBio/BBGI partnered with Aleph Farms to co-manufacture products in Thailand. Aleph Farms subsequently submitted an application for regulatory approval in Thailand.
- Tufts University received a $2.1M grant from Massachusetts to establish pilot scale-up facilities on campus.

Large-scale production systems are planned or coming online with the support of established industrial manufacturers: Vow is manufacturing cultivated quail in a 15,000 L bioreactor, with a 20,000 L bioreactor coming online soon. Believer Meats partnered with German engineering firm GEA, one of the largest suppliers of production equipment, to scale production and reduce costs, with plans to open the industry's largest facility in North Carolina in 2025.

Continuous manufacturing could be cost-effective at scale: Believer Meats' breakthrough publication demonstrated how continuous production and reusable filters for tangential flow filtration could reduce consumable costs and total capital investment needed for facilities compared to other perfusion strategies. A white paper techno-economic analysis (TEA) published by SuperMeat also featured a continuous manufacturing approach and favorable economics at scale for producing fat and muscle tissues. The processes are designed to adapt to industrial-scale systems using proven scalable equipment and technologies, with production costs estimated at $11.80 to $13.40 per pound at a 25,000 L scale, similar to pasture-raised chicken.

Technical advances in bioreactor technology to enable scaling: Mission Barns introduced a new bioreactor optimized for scaling adherent cell growth. As most conventional bioreactors are tailored to cells grown in suspension, this bioreactor can assist in scaling adherent cells, enabling the production of structured meat products or products with improved texture.

Critical need for ongoing innovation, investment, and collaboration to enable the cultivated meat industry to scale efficiently: In 2024, GFI released the results of a 2023 survey on bioprocessing, with input from 30 companies. The results indicated that many companies plan to install bioreactors with capacities from tens to hundreds of thousands of liters within three years, enabling hundreds to thousands of tons of cultivated meat production annually. Companies are exploring diverse bioprocessing strategies to optimize their processes and reduce costs, but there are gaps in regulatory knowledge and a need for additional techno-economic models. The results emphasize the importance of cross-industry collaboration, data sharing, experimental research, and ongoing innovation.

One of the biggest challenges in scaling cultivated meat is developing efficient, cost-effective bioprocesses. In 2024, the industry hit major milestones in increasing facility access, improving manufacturing, and bioreactor innovation. Co-manufacturers can help optimize scale up without the need for individual companies to build or finance pilot facilities. Continuous manufacturing could enhance throughput and scalability, while diverse bioreactor formats support various cell lines, reducing scaling risks.

Dive into GFI's Trends in cultivated meat scale up and bioprocessing to better understand the current landscape of industry practices.

Sensory and nutritional attributes will benefit from continued focus

Academic laboratories have begun to produce quantities of cultivated meat that can be analyzed, enabling a deeper understanding of sensory and end-product attributes:

- **Continuing the trend of increasingly sophisticated prototype characterization, 2024 saw a focus on understanding aroma and response to cooking.** Co-culturing muscle and fat cells may help better replicate conventional flavors, as researchers discovered a missing fat breakdown product in their skeletal muscle-only cultivated fish. Combining sensory and instrumental aroma measurements offers a promising method to pinpoint the molecular compounds that influence flavor and consumer preference. This could speed up feedback loops in the product development process by allowing some evaluation steps to rely on instrumental methods rather than sensory testing. Furthermore, analyzing how cultivated beef responds to cooking allows researchers to optimize raw material properties, improving texture and appearance in the final cooked product.
- **One focus area of opportunity and potential challenge is in integrating nutritionally important omega-3 fatty acids in seafood.** In 2024, GFI released a report summarizing the alternative protein industry's potential future needs for omega-3 ingredients. Results suggest that long-chain omega-3 ingredients could be a bottleneck, but also that this industry's growth represents an opportunity for oil suppliers from microalgae, plant molecular farming, and precision fermentation to gain traction.

Cultivated meat producers should prioritize achieving sensory and nutritional qualities that match or surpass those of conventional products. This year, researchers investigated the links between a product's molecular aroma profile and its performance in sensory tests, while emphasizing the importance of considering final cooked properties from the raw meat stage. Early sourcing of key ingredients that enhance overall product quality is crucial, particularly for seafood manufacturers, as products continue to be developed.

Rethinking media formulations improves the sustainability of cultivated meat

Research advanced our understanding of the environmental impact drivers of the cell culture media:

The first three life cycle assessments (LCAs) on serum-free culture media demonstrate that replacing serum lowers the environmental impacts of cultivated meat production, with room for even lower impacts as media optimization progresses.

- University of Helsinki researchers found that reducing or eliminating serum reduced all studied environmental impacts, including when using pea hydrolysates as a serum replacement with commercially available Essential 8™ media.
- Tufts University researchers compared two serum-free culture media formulations and found lower environmental impacts for a rapeseed protein isolate formulation compared to its albumin-containing counterpart.
- In a preprint study, researchers, including those from the Graduate School of Agriculture at Tokyo University of Agriculture and Technology, analyzed real-world company data of the culture media production process itself, revealing that producing serum substitutes is the largest environmental driver, though impacts are expected to decrease as the industry scales.
- The industry should maintain a critical eye toward environmental impacts at scale. SuperMeat published a white paper LCA of their hypothetical production process at scale, citing a potential 50% decrease in carbon footprint compared to conventional chicken production.

Replacing ingredients like serum with a combination of novel and off-the-shelf components can simultaneously reduce the costs and environmental impacts of cultivated meat. However, ongoing attention to environmental considerations is essential, particularly when sourcing novel ingredients with limited supply chains. As the industry scales, the full environmental impact will become clearer, underscoring the need for real-world data to guide sustainable development.

Increasing cultivated meat's global accessibility

Cultivated meat can be manufactured in ways that are inclusive of existing food traditions and value chains:

- **The first guidance on halal cultivated meat:** Singapore's Islamic Council made the landmark announcement that cultivated meat may be deemed permissible as halal, which set in motion similar efforts across neighboring countries.
- **Understanding the opportunities for farmers in cellular agriculture:** In Europe, there has been an increase in research exploring the intersection of cultivated meat and existing agricultural industries. For example, researchers in the UK investigated how cultivated meat could impact and intersect with farming, and a report on Respect Farms' techno-economics provided perspectives on how cultivated meat can integrate with these established groups.

Green Alliance published a report commissioned by GFI Europe, which explored what a shift to alternative proteins could mean for the future of European agriculture. The analysis found that alternative proteins could provide European farmers with the space needed to farm sustainably, and to grow more food at home rather than importing it from abroad.

Ensuring cultivated meat is inclusive and accessible to the more than one billion people who follow halal food standards is a long-term priority for the industry. In 2024, Singapore's Islamic Council became the first to create a pathway to obtain halal certification, creating a template for other nations to follow. Additionally, research in Europe aided in understanding how farmers view the pros and cons of cultivated meat and how they can participate in the cultivated meat value chain. Future studies tailored to different regions around the world are needed to understand how cultivated meat can fit into existing agricultural value chains.

Scientific ecosystem growth is gaining momentum

In 2024, cultivated meat saw substantial global progress driven by the synergistic efforts of conferences, funded research projects, and established alternative protein research centers.

- **Conferences:** Brazil hosted important events such as the 1st Conference on Alternative Proteins (COAP), the 1st International Cell Ag Brazil Conference, and a side event called The Role of Biotechnology in Sustainable Food Production, which took place during the Brazilian Congress of Industrial Biotechnology (COBBIND), one of the most critical events in industrial biotechnology in Brazil. In Europe, cultivated meat is starting to become mainstream within other major scientific conferences, with dedicated cultivated meat tracks at the European Bioprocessing Summit and EFFoST conferences. In addition, four different academic-leaning cultivated meat conferences took place in Denmark, the Netherlands, Portugal, and the UK.
- **Research projects:** In Europe, €160 million in total funding has been awarded for cultivated meat, including large-scale projects that kicked off in 2024, such as FEASTS, the first Horizon Europe project focused exclusively on cultivated meat.
- **Alternative protein research, science, and commercialization centers:** Global innovation in alternative proteins continues to expand at dedicated hubs, including The Bezos Centers for Sustainable Protein, the Alternative Protein Technology Innovation Center of the China State Administration for Market Regulation, the UK's four dedicated alternative protein research centers, and India's IKP Knowledge Park's Centre for Smart Protein and Sustainable Material Innovation.

The scientific ecosystem for cultivated meat has never been stronger. Several new research centers in Asia, Europe, and the United States were formed, multiyear collaborative research projects kicked off, and cultivated meat as a focus within scientific conferences inside and outside the industry grew, including the first cultivated meat conferences in Brazil. These developments highlight sustained momentum and signal continued advancements in research and innovation for years to come.

In summary

Over the past few years, the cultivated meat industry has made remarkable strides in reducing input costs, culminating in the latest data from 2024 showing media costs dropping by over 99 percent from a pharma-grade baseline, driven by key ingredients being derived from affordable, food-grade alternatives. While large-scale commercial production remains to be demonstrated, 2024 saw encouraging signals, including the opening of new, shared manufacturing facilities, techno-economic analyses of continuous production technologies, and the operation of the largest bioreactors to date.

With several new products nearing market entry in multiple jurisdictions, a new wave of consumers will soon get the chance to try cultivated meat for the first time. Although cultivated meat manufacturers are pushing toward larger production scales, the rollout of new products is still expected to be limited, primarily reaching customers in select restaurants. Looking ahead, 2025 will be a pivotal year for the industry, with eyes on the successful commissioning and operation of new facilities and consumer reactions to new products.

Government and regulation

Overview

Government approaches to cultivated meat varied in 2024. Public investments in cultivated meat biotechnology, research, and development reached new highs across Asia in 2024. In the Americas, national governments focused investments on developing plant-based and fermentation-derived proteins. This reflects a more cautious approach to public investment: while governments in the Asia Pacific region worked to develop new biotechnologies, governments in Europe and the Americas largely focused on more mature sectors.

Similarly, the most exciting regulatory advancements for cultivated meat in 2024 were made in the Middle East and Asia. Israel approved the first cultivated beef product and cultivated quail was briefly served in Hong Kong SAR in November—thus introducing cultivated meat to one of the world's largest economies. In Singapore, the city-state's Islamic council issued a historic declaration that cultivated meat can be permissible as halal, provided that it meets certain conditions.

Global public investment

Americas

Cultivated meat received some direct public investment from governments in the Americas in 2024. Aside from a few business grants and nonspecified funding for alternative proteins, the vast majority of public investment for alternative proteins focused on plant-based protein in Canada and fermentation-derived protein in the United States. Though the United States leads the cultivated meat private sector and research ecosystem, this position will become increasingly vulnerable as other governments more proactively support their domestic capabilities.

Examples of public investment include:

- In Brazil, the FAPESC, a foundation that applies federal funding for innovation in the state of Santa Catarina, approved the investment of $500,000 to build a cell bank storing cell lines for cultivated meat research in the south of Brazil.
- U.S. Congress again appropriated $5.5 million to the U.S. Department of Agriculture's Agricultural Research Service for "alternative protein research," most of which has focused on plant-based foods in previous years.
- Massachusetts authorized $10 million for alternative protein research grants and capital needs, as well as $115 million for an innovation hub "accessible to" alternative proteins.

Asia Pacific

Public investment for cultivated meat increased across Asia in 2024. The governments of China and India made large commitments to develop domestic biotechnology capabilities, both of which include cultivated meat in their scope (in addition to making additional specific investments), while Japan, New Zealand, Singapore, and South Korea funded public and private research to advance cultivated meat science. Special attention was paid to cultivated seafood, as India, New Zealand, and South Korea all experience current or looming impacts to their domestic seafood production. The government of Malaysia began an official commission to evaluate supporting cultivated meat in the country, with the prime minister expressing support for this commission in a Facebook post.

- **China**: In September 2024, the establishment of China's First National Alternative Protein Technology Innovation Centre was approved by the State Administration for Market Regulation. The Innovation Centre will include research and development in cultivated meat and fermentation.
- **India**: The world's most populous country allocated INR 9197 Crore ($1.1 billion) through 2026 under the Biotechnology Research Innovation and Entrepreneurship Development (Bio-RIDE) scheme, a component of the BioE3 policy. The Bio-RIDE scheme highlights alternative proteins as a key sector in food sciences and biotechnology to help establish India as a global biomanufacturing hub and nurture the circular bioeconomy.
- **Singapore**: The region's leading supporter of alternative proteins allocated an estimated US$12.4 million for five research projects on cultivated meat through a Future Food grant call on cultivated meat.
- **South Korea**: The Ministry of SMEs and Startups awarded several individual research and commercialization grants and designated a special "regulatory-free" zone for developing cultivated foods. The Ministry of Oceans and Fisheries launched a five-year R&D funding program for seaweed-based alternative seafood and cultivated seafood.
- **New Zealand**: The NZ Endeavour Fund's NZ$9.6 million ($5.9 million) research program will develop stable, sustainable, and high-quality seafood cell lines and ingredients for use in alternative protein products.

Europe

Cultivated meat research continued across Europe, with past supporters such as the European Commission and the United Kingdom deepening their commitments and new countries such as Czechia and Poland making introductory investments in domestic producers. While funding for cultivated meat was generally scarcer and awarded at smaller levels than for plant-based or fermentation-derived protein, the level of support shows progress in developing a regional business and research ecosystem.

- **EU**: The Fostering European Cellular Agriculture for Sustainable Transition Solutions (FEASTS) project launched with €7 million to assess cultivated meat and seafood through a Food Systems approach.
- **UK**: BBSRC and Innovate UK launched the National Alternative Protein Innovation Centre (NAPIC), backed by £16 million of public investment.
- **Poland**: The Polish government provided a €2 million grant to cultivated chicken startup LabFarm.
- **Czechia**: The Czech government awarded a €200,000 grant to Mewery for cultivated pork.

The Middle East

Israel maintained its strong leadership position in support of cultivated meat, continuing to provide funding to researchers and startups through the Israel Innovation Authority and the Higher Education Council. Israel also continued the trend of pursuing bilateral research calls, deepening the research and entrepreneurial ties across borders.

- **Research**: The Israel Innovation Authority awarded about $16.4 million to research projects on alternative proteins, including about $3.1 million for research and development on cultivated meat.
- **Bilateral partnerships**: Israel awarded about $370,900 for alternative protein research through a research partnership with the United Kingdom and $90,000 through a research partnership with France.

Regulation by country and region

In 2024, governments around the world made mixed amounts of progress on advancing regulatory pathways to market for cultivated meat. The year started with Israel becoming the third country in the world, after Singapore and the United States, to greenlight a cultivated meat product (and the first for cultivated beef) and ended with Hong Kong SAR briefly debuting cultivated quail, a notable step toward introducing cultivated meat to one of the world's most populous countries.

This past year saw some governments attempt to restrict the labeling of cultivated meat products, or ban such products altogether. Even so, many nations made progress toward approving cultivated meat products, as described below:

Australia/New Zealand

In 2024, Food Standards Australia New Zealand (FSANZ) continued facilitating a path to market for cultivated meat by soliciting two rounds of public comments on an application from Vow to amend the Australia New Zealand Food Standards Code to allow the use of cultivated quail as food. Following the first round of public consultation, FSANZ proposed that cultivated meat should be regulated under a new standards-based approach, rather than the existing FSANZ novel foods framework. According to FSANZ, this approach will provide a clearer regulatory framework for cultivated meat products and support innovation. FSANZ recommends labeling cultivated meat products as either "cell-cultured" or "cell-cultivated." FSANZ is now in the process of evaluating feedback on this proposed approach.

Brazil

In December 2023, the National Health Surveillance Agency published Resolution 839, which updated the regulations for registering novel foods and ingredients to include those obtained from cell culture. This update, which also established the requirements for companies (national and international) to apply to register their products in Brazil, came into force on March 16, 2024. According to Anvisa itself, the next steps will be established as soon as the first application for registration is received, through a learn-by-doing process. This signals that the doors to cell-cultivated product registration applications are open in the country.

European Union (EU)

The European Commission has not approved any cultivated meat products yet, but if it does, that approval will apply across all 27 EU member states.

- In July 2024, the first regulatory submission in the EU for cultivated meat was made by French cultivated meat company GOURMEY for their cultivated foie gras. In January 2025, the second application for cultivated meat in the EU was filed by Mosa Meat for their cultivated beef fat. The applications will now undergo evaluation by the European Food Safety Authority, the European Commission, and EU member states as required by the novel foods regulatory authorization framework.

- Also in July 2024, EU member state Hungary proposed a domestic law banning the production and marketing of cultivated meat. At the same time, the draft law was submitted to the EU Technical Regulation Information System (TRIS) procedure, a mechanism that enables other EU member states and the European Commission to provide feedback on proposed laws that have implications for the free movement of goods and services within the EU. Via the TRIS process, multiple EU member states, as well as the European Commission, raised significant concerns, with the European Commission stating that the ban could be "unjustified" and harmful to the European single market. The Commission's statement on the Hungarian proposals indicates that the existing cultivated meat ban in Italy may also be inapplicable since it was passed without undergoing the TRIS procedure. The Italian ban remains in effect for now, but if the EU approves cultivated meat products in the future, it may be vulnerable to challenges by the European Commission or other actors via the European Court of Justice.

India

- The Food Safety and Standards Authority of India exhibited interest in clarifying the regulatory path to market for cultivated meat under the current regulatory framework. While this guidance is awaited, cultivated meat companies can still apply under the existing Approval for Non-Specified Food and Food Ingredients Regulations, which provides a broad framework for the safety assessment of all novel foods.
- In August 2024, the Indian Union Cabinet approved the BioE3 policy (Biotechnology for Economy, Environment, and Employment Policy for Fostering High-Performance Biomanufacturing) with smart proteins (alternative proteins) as one of the key thematic sectors. The policy provides a framework for Indian institutions, universities, startups, and industries to engage in innovation across six sectors, including "functional foods and smart proteins." This policy has the power to act as a catalyst for alternative protein industry growth in India.

Singapore

- In early 2024, the Fatwa Committee of the Majlis Ugama Islam Singapura (MUIS), the sole entity with legal authorization to issue halal certificates in Singapore, announced that cultivated meat can be permissible as halal under certain conditions. Considering that approximately 15% of Singapore's citizens are Muslim, the ruling marks an important step forward for cultivated meat in the country that first approved its commercial sale in 2020.
- In January 2025, Singapore passed a new Food Safety and Security Bill, which consolidates and refreshes existing laws to create a single, clear framework for managing food safety, security, and sustainability. With input from GFI APAC, the bill formalized and enhanced novel food application procedures, which are crucial for companies seeking premarket approval for products such as cultivated meat and fermentation-based proteins.

South Korea

- South Korea's Ministry of Food and Drug Safety began accepting applications for the regulatory approval of cultivated meat in early 2024, creating a tangible path to market for cultivated meat in the country for the first time.
- This news came after the Ministry of Drug and Food Safety revised its "Standards for Recognition of Temporary Standards and Specifications for Foods," which stipulated the procedure for approving raw food materials made using cell and microbial cultures. In addition, South Korea published detailed guidelines for companies to follow when preparing dossiers to submit for regulatory approval of cultivated meat. The approval process is projected to take up to 270 business days.
- To incentivize even greater progress toward the commercialization of cultivated meat in South Korea, the government also designated North Gyeongsang Province as a "Regulatory-Free Special Zone" (RFSZ) to allow cultivated meat companies to test their innovative technologies without certain regulatory hurdles. South Korea has used these zones to inspire development in other technological sectors, but this is the first RFSZ focused on food. These regulatory milestones indicate a strong interest from South Korea in the cultivated meat industry.

United Kingdom

- In October 2024, the UK announced plans to establish a cultivated meat regulatory sandbox. The sandbox provides an opportunity for a limited number of companies to work hand-in-hand with the UK regulator to explore the safety of cultivated meat as well as other product development considerations.
- Also in the UK, in July 2024, the first cultivated pet food regulatory approval was granted for Meatly's cultivated chicken meat, which reached retail shelves in February 2025.

United States

Federal regulations

- Cultivated meat companies in the United States are continuing to operate under the joint regulatory process set forth by the Food and Drug Administration (FDA) and the Department of Agriculture (USDA). Both federal agencies solicited public comments on labeling and nomenclature requirements for cultivated meat and are expected to issue rules and guidance on nomenclature in the near future.
- Cultivated meat offers the opportunity to produce more food domestically, create new jobs, and ensure a strong bioeconomy. Creating a strong regulatory framework for cultivated meat will allow the United States to continue its role as a leader in science, agriculture, and manufacturing.

State legislation and litigation

At the state level, the cultivated meat industry faced some challenges in 2024. In March, the Florida government enacted a bill banning cultivated meat, making Florida the first state in the country to do so. The bill was signed into law by the governor on May 1. Also in May, Alabama enacted its own bill banning the production and sale of cultivated meat. The Florida ban is currently being challenged by UPSIDE Foods and the Institute for Justice, and litigation is ongoing.

However, some states recognized that cultivated meat bans limit consumer choice, stifle innovation, and disrupt a unified U.S. market. Of the cultivated meat ban bills introduced across 12 states in 2024, all but the two above failed to pass.

Global cooperation and coordination

In 2024, the trend of governments conducting joint projects to advance an interconnected global ecosystem for alternative proteins continued.

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, made strides to advance cultivated meat in 2024.

- At the annual Codex Alimentarius Commission convened in November 2024, the Singapore Food Association hosted a side event titled "Addressing Food Safety Challenges from the Production of Cell-Based Foods and the Role of Codex." At the event, representatives from several Codex member states spoke about the important role Codex can play in ensuring the safety of cultivated meat as it becomes more prevalent.
- Also in 2024, the Singapore Codex delegation indicated its intent to submit two new work proposals on cultivated meat in 2025. The first proposal for a "Guideline for the conduct of food safety assessment of cell-culture media components used in the production of cell-based foods" was submitted to the Codex Committee on Food Additives as a joint proposal by Singapore and China in February 2025. This proposal was supported by a new resource codeveloped by GFI APAC and Vireo Advisors called the Safety-Assessed Media Ingredient (SAMI) framework, which was created with input from the Future Ready Food Safety Hub (FRESH) and the Singapore Food Agency. The second proposal for a "Code of hygienic practice for the manufacture of cell-based foods" is expected later this year. More proposals for new work related to cultivated meat will likely come to Codex as the industry continues to grow.

International Standards Organization

- The Standards Institution of Israel, in collaboration with representatives of the alternative protein ecosystem and led by Israeli company Biopuremax, has submitted an official draft resolution to the International Standards Organization (ISO) titled "Principles for production of cell cultured food products." The document proposes harmonized international standards for describing, regulating, and marketing cultivated meat, which would ensure that researchers, entrepreneurs, and regulators share a common understanding of the science and technology involved and apply the same metrics across borders and regulatory jurisdictions.

UNFCCC

- Israel: In the diplomatic sphere, the Ministry of Environmental Protection expressed strong support for including alternative proteins in Israel's Nationally Determined Contribution (NDC) through the UN Framework Convention on Climate Change.

Outlook

Overview

The cultivated meat sector has achieved significant progress in its first decade, but the industry is almost entirely prerevenue, and a large share of companies remain in the early stages of product research and development. A handful of products have been sold in limited quantities across three markets, meaning the number of consumers who have ever purchased cultivated meat is somewhere in the thousands. Meanwhile, billions of people worldwide regularly consume conventional meat.

Given the cultivated meat industry's early stage of development, it can be difficult to fully capture activity and advancements in the sector. Much of the industry's progress occurs through largely unseen developments like process validation, efficiency improvements, and technical breakthroughs. Without full visibility into company-level advancements, factors like public and private funding totals, regulatory approvals, and the formation of research and innovation centers provide other windows into the growing cultivated meat ecosystem.

Public investment in cultivated meat—public funding that yields dividends in job creation, food security, and economic growth—reached new highs in 2024 as governments around the world supported continued cultivated meat research and development. Multiple cultivated meat products were sold across regions, including the first cultivated meat product ever available in retail and, briefly, the first cultivated meat sales in Hong Kong SAR. Additionally, multiple cultivated meat innovation hubs and alternative protein centers of excellence—including the Bezos Centers for Sustainable Protein in North Carolina, London, and Singapore—opened in 2024, setting the stage for future investments and advancements in alternative proteins. These developments propelled the sector forward in 2024 and laid the groundwork for future progress.

Like the early days of other transformative innovations, cultivated meat still faces challenges. Several additional companies around the world have begun the regulatory approval process, but do not have clarity on approval timelines under various governments. Private investments in cultivated meat companies declined in 2024, a headwind for an almost entirely prerevenue sector, although additional regulatory approvals could spur new funding opportunities. Those factors, paired with the technical and cost hurdles inherent to any early-stage, high-capital-expenditure sector, present runway challenges for many companies—underscoring the need for multipronged financing strategies from public, private, and philanthropic sources.

As the cultivated meat landscape evolved in 2024, consumers' appetites for meat continued to grow. The FAO expects meat consumption worldwide to rise by at least 50 percent by 2050 (from 2012 levels). Multiple strategies will be needed to meet the growing global demand for meat while limiting greenhouse gas emissions and resource use. Given sufficient funding and regulatory support, cultivated meat can help provide consumers with meat that reduces environmental impacts, lowers public health risks, and increases food security.

So, what does the future hold for the cultivated meat industry? The remainder of this section will explore the category's outlook in 2025 and beyond.

The year ahead

A diversifying and expanding product landscape, regulatory approvals across new regions, continued scientific and technical progress, and a changing financing environment characterized 2024, and those trends are likely to continue in 2025.

There are more cultivated meat production processes and end products represented on the global stage than ever, but the products currently available for sale comprise only a small fraction of the submissions pending in regulatory pipelines across Asia, Australia/New Zealand, Europe, and the United States. Regulatory progress will vary across products and regions in 2025. Countries like Singapore and the U.S. remain priority areas for many companies seeking approval, while other companies are looking to trailblaze the approval processes elsewhere around the world. Although some uncertainty exists due to shifting political winds around the globe, more approvals are likely in 2025.

These approvals will increase the number of cultivated meat products on the market while also generating new and more robust data on their safety and nutritional profile. Other likely areas of technical and scientific advancements in the coming year include the further diversification and improvement of available cell lines, continued progress in demonstrating the use of food-grade media in cultivated meat production, and further identification of lower-cost substitutes for expensive ingredients in food-grade media.

The financing environment for cultivated meat will also continue to evolve in 2025 as several companies enter the scale-up phases of their operations. It is increasingly clear that private funding alone will be insufficient to fully fund first-of-a-kind cultivated meat facilities.

Companies need to develop creative and diverse funding strategies to access growth financing. While venture capital will remain an important component of the sector, a combination of public, private, and philanthropic funding sources will be necessary to support research and industry growth.

As companies learn to navigate this new financing landscape, those unable to access funding will look to downsize, consolidate with other companies, or close. As with any sector charting new paths in uncertain environments, it will take time to identify the most viable financing approaches, so some industry consolidation is likely to occur in 2025.

Despite potential consolidation, the additional regulatory approvals and increased scale for select companies mean more cultivated meat will likely be produced and sold in 2025 than any other year to date.

Long-term outlook

The cultivated meat industry still has a long road to parity with conventional meat when it comes to price, taste, and convenience. Companies need to increase scale by demonstrating consistent production in more and larger bioreactors, lower costs of key inputs like cell culture media, communicate the value of their products and production methods to consumers, and push back on regulatory challenges—all of which require additional funding and regulatory support.

Progress occurred on all these fronts in 2024. If cultivated meat companies can continue to navigate this landscape, an immense opportunity remains.

With continued investment, innovation, and collaboration, cultivated meat has the potential to provide consumers with the products they love while increasing food security, promoting biodiversity, and protecting public and planetary health.

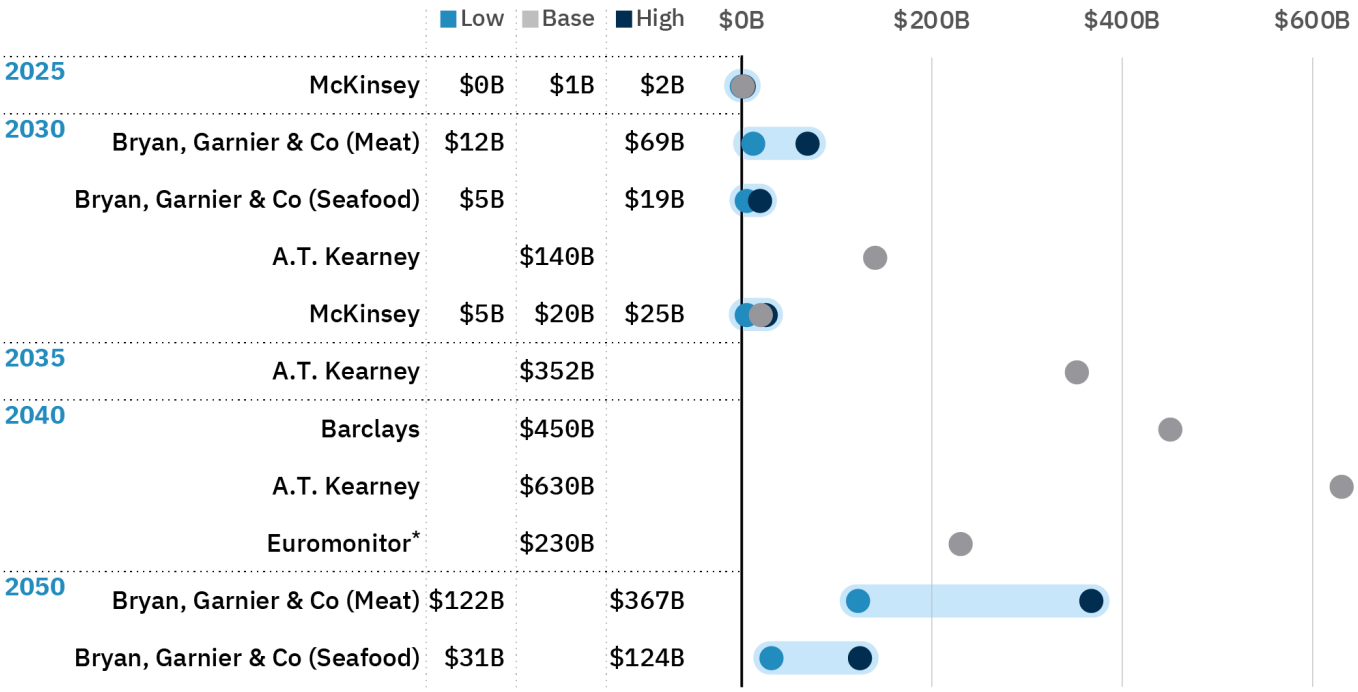
External projections

External forecasts of the cultivated meat market from consulting firms, think tanks, and research organizations project a wide range of market sizes, though some of these forecasts were published several years ago and no longer reflect probable outcomes on the timescales provided. All of these forecasts represent massive increases from 2024's market size, which is composed of a handful of cultivated products approved for sale in three countries. The global conventional meat market, on the other hand, is currently estimated to be around $1.7 trillion.

Meeting even the low-end estimate requires notable advancements in regulatory approvals, production efficiency, costs, and capacity. Delivering on cultivated meat's potential to help meet global demand for meat would necessitate levels of public and private investment many times higher than 2024 figures. Such increases are justified by cultivated meat's return potential, contribution to supply chain resilience, and land and resource use benefits.

If governments and investors worldwide are committed to achieving better outcomes for citizens and consumers, they should boost investment and strengthen regulatory support to position the cultivated meat sector for long-term success.

Figure 15: Forecasts for global cultivated industry market size



Source: A.T. Kearney, Financial Times (citing Barclays Cultured Meat: Industry funding & facility launches accelerate the path to commercialization," 2022), Bryan, Garnier & Co, Euromonitor, McKinsey

*Some forecasts projected the share of the total market rather than the industry size in dollars. For those forecasts, we estimated the dollar size of the cultivated meat sector using Barclays' forecast for the total 2040 meat market.

Conclusion

The cultivated meat industry is best understood as a story still unfolding. It is a story of scientific progress amid challenges and headwinds. Of governments investing in protein innovation as part of their food security, bioeconomy, and public health goals. Of a big, bold idea turning its next page, moving ever closer to diversifying how meat is made.

A few reflections on shared values and motivations, as we lean into the critical years ahead together:

Diversifying protein provides more and better choices for consumers, not fewer.

Consumers deserve better food choices and the freedom to make them. Alternative proteins can offer meat-eaters a delicious, affordable way to diversify their diets that comes with a side of serious benefits: health and nutrition gains and a lighter environmental footprint, to name just a few. Bringing these proteins to market gives consumers greater choice, enabling them to enjoy their favorite foods made in increasingly sustainable ways.

Diversifying protein can protect our lands, waters, and wildlife.

Growing demand for meat and seafood is placing even greater pressure on farmers and fishers to produce more, at the same time as calls for halting deforestation and overfishing grow louder around the world. Alternative proteins are land- and water-efficient, producing more food with fewer resources.

Diversifying protein can build healthy communities by reducing risks to public health and contributing to a more secure, resilient food supply.

Global threats like avian flu and other potential pandemics leave many people concerned about their health, safety, and ability to feed their families. Given the growing global demand for meat, a large-scale shift toward alternative proteins, including cultivated meat, will be central to mitigating the risk of antimicrobial resistance and future pandemics while feeding a growing population.

To be sure, multiple interventions will be needed to transform food systems at the pace and scale needed to feed a growing world. By their nature, not all will be equal in terms of impact. It's the interventions that address root-causes and realities that can create genuinely transformative new futures. As the primary food and agriculture innovation that can scale similarly to renewable energy, alternative proteins are a root-cause solution that, with the right levels of support, can help meet growing global demand for meat.

To all those in this work already, thank you for channeling your time and talents to this extraordinary, still-unfolding story. You are helping to write the next chapter of a far more sustainable, secure, and just food system that present and future generations deserve.

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 advancing alternative proteins as an essential solution needed to meet the world's climate, global health, food security, and biodiversity goals.

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. To learn more, please visit www.gfi.org.

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 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 level regulatory frameworks for assessing safety and labeling products.

Engaging with industry to advance alternative proteins

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.