2026 STATE OF GLOBAL POLICY:

Public investment

in protein diversification to feed a growing world

Table of contents

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The cover image is courtesy of Fry Family Foods.

About the series

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

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

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

Important notes

- All figures are expressed in U.S. dollars where the $ symbol is used. Other global currencies are clearly marked.
- The Good Food Institute is not a licensed investment or financial advisor, and nothing in this report is intended or should be construed as investment advice.
- An update to the report titles: In past years, GFI titled each State of the Industry report with the year covered in report content. Starting in 2026, the report titles now reflect the publication year (content timeframe remains the same).

Executive summary

Five years in, governments have reached an inflection point

Five years since the Good Food Institute began tracking government investments in plant-based, cultivated, and fermentation-derived sources of protein, the industry and the world have changed considerably. GFI's 2021 report's cumulative total of approximately $700 million in government investments has become at least $2.5 billion as of 2025, and the 16 countries that had begun working to advance alternative proteins now number at least 33. Alternative protein sources now figure prominently in national economic and biotechnology strategies around the world, research programs increasingly include them as topics of interest, and regulatory authorities have begun dedicated efforts to clarify and facilitate the path to market. In short, governments have begun to act.

Trade tumult calls for innovation, reshoring, and resilient supply chains

Global uncertainty kicked up once again in 2025, but the progress that scientists, entrepreneurs, and policymakers have made in establishing that diversified protein sources offer benefits for the economy, environment, and food supply chain meant that these interventions were close at hand. As supply chains reacted to a flurry of new trade barriers, policymakers invested in secure domestic food supply chains through plant-based proteins, fermentation, and cultivated meat. Business support programs in Canada and France supported local farmers and producers to switch to locally grown protein crops; researchers in India, New Zealand, Spain, Switzerland, and more investigated new uses for local agricultural sidestreams; and programs in Australia, Canada, China, India, South Korea, and more incentivized construction of shared biomanufacturing facilities to help retain businesses through their development.

This turn inward coincided with a greater appreciation for the benefits that new protein options offer agricultural regions, rural communities, and farmers. The aforementioned research on agricultural sidestreams aims to benefit local farmers by creating new markets and sources of value. Enterprising governments are funding this research to ensure that sidestreams from their agricultural sectors become foundational ingredients for next-generation foods. Additionally, policymakers are working to actively include and prioritize agricultural communities in production. Projects in Canada and Germany give farmers and producers essential resources to make the most of up-and-coming food products and production systems, while an EU-backed project in the Netherlands has put a cultivated meat production unit directly on a dairy farm.

Biotechnology and biomanufacturing strategies put new protein sources in the spotlight

China and the European Union led the world in new investments in 2025, with both recognizing biomanufacturing capacity as a strategic and economic priority. China's state-owned State Development and Investment Corporation announced nearly $1 billion in investments in biotechnology facilities in 2025, specifically including food applications, while the European Union awarded over €100 million ($113 million) in loans to plant-based and fermentation companies for scaling up, in addition to tens of millions more for research across the continent. India, Japan, and the United Kingdom similarly signaled intentions to invest more heavily in infrastructure

development, while Australia, Canada, and the Netherlands directly funded the construction of shared fermentation facilities to support domestic startups. Among major economies, only the federal government of the United States markedly drew back from food biotechnology investments amid government-wide cuts to science and technology, announcing only $6 million in new research funding for plant-based, fermentation-derived, or cultivated protein sources.

Governments who include new protein production systems in their biotech strategies are ensuring that biomanufacturing capacity is capable of addressing future crises. Because biomanufacturing infrastructure can often be adjusted to produce a wide range of bioproducts such as food, fuel, medicines, chemicals, construction and manufacturing materials, and more, governments increasingly deem the sector necessary for national security, strategic readiness, and resilience to a wide range of economic shocks. However, this necessary volume of infrastructure is best maintained between crises through the production of mass-market, high-volume products that require larger production facilities and tighter safety protocols. New foods from fermentation and cultivation fit this description. Commercial production facilities can be designed with the right specifications to switch between many bioproducts, large enough to produce critically needed materials at scale, operated by a permanent, trained workforce, and financially supported on an ongoing basis by consistent, free-market demand. By investing in research hubs like the Novel Protein Bio-Manufacturing Innovation Center in China, the Cultivate at Scale facility in the Netherlands, or the Neptune BioInnovation Centre in Canada, policymakers are developing high-quality, popular consumer goods that can sustain a biomanufacturing base and create a pipeline for startups to move from research to commercial production.

New cultivated meat products cleared for sale; plant-based labeling debates continue

In 2025, Food Standards Australia New Zealand (FSANZ), who regulates food products in both countries, approved a cultivated quail product, joining Singapore and the United States as the third jurisdiction to greenlight a cultivated meat product. FSANZ also became the second jurisdiction after the United States to utilize a specific process for approving cultivated food products separate from their novel foods framework. South Korea finalized a similar process in 2024 and has received several applications, while plans to develop processes based on these examples are underway in Abu Dhabi, China, Japan, and the United Kingdom. In 2025, the United States also gave the regulatory green light to two other firsts: the first cultivated seafood product and the first cultivated pork product.

The debate over how to properly label alternatives to animal products is by no means settled, and developments cut both ways in 2025. At issue is whether products can use “meaty” terms like “sausage” or “steak” or animal-related words like “chicken” or “pork.” Crucially, research shows that consumers do not find these terms misleading when properly described as plant-based, and that these terms provide important information on taste and preparation that makes them easier to use. In jurisdictions like some European Union countries that are otherwise working hard to stimulate demand for plant-based foods to support the environment and public health, allowing the use of these terms on labels should be considered a priority.

Ongoing regionalization of investment trends, but some shared goals

Regional trends, resource profiles, and cultural perceptions continued to drive divergence in regional approaches to developing new food production systems, though some global trends emerged. While governments across the world were most likely to invest in biomass and precision fermentation, governments in the Asia Pacific region invested more heavily in cultivated meat, while those in Europe and the Americas invested more in plant-based proteins. Research grants were common across borders—sometimes literally, with several bilateral research grants announced in 2025—but Europe and the Americas tended to prefer business grants and loans to support commercial enterprise, while the Asia Pacific region typically funded new facilities directly, either as publicly operated organizations or through public and private investments. And though governments invested in new ways to produce all kinds of foods, Europe led the world by far in developing and producing plant-based and fermentation-enabled cheese.

Plant-based meat and dairy alternatives made using Kerry Ingredients. Photos courtesy of Kerry.

A changing world calls for a changing methodology

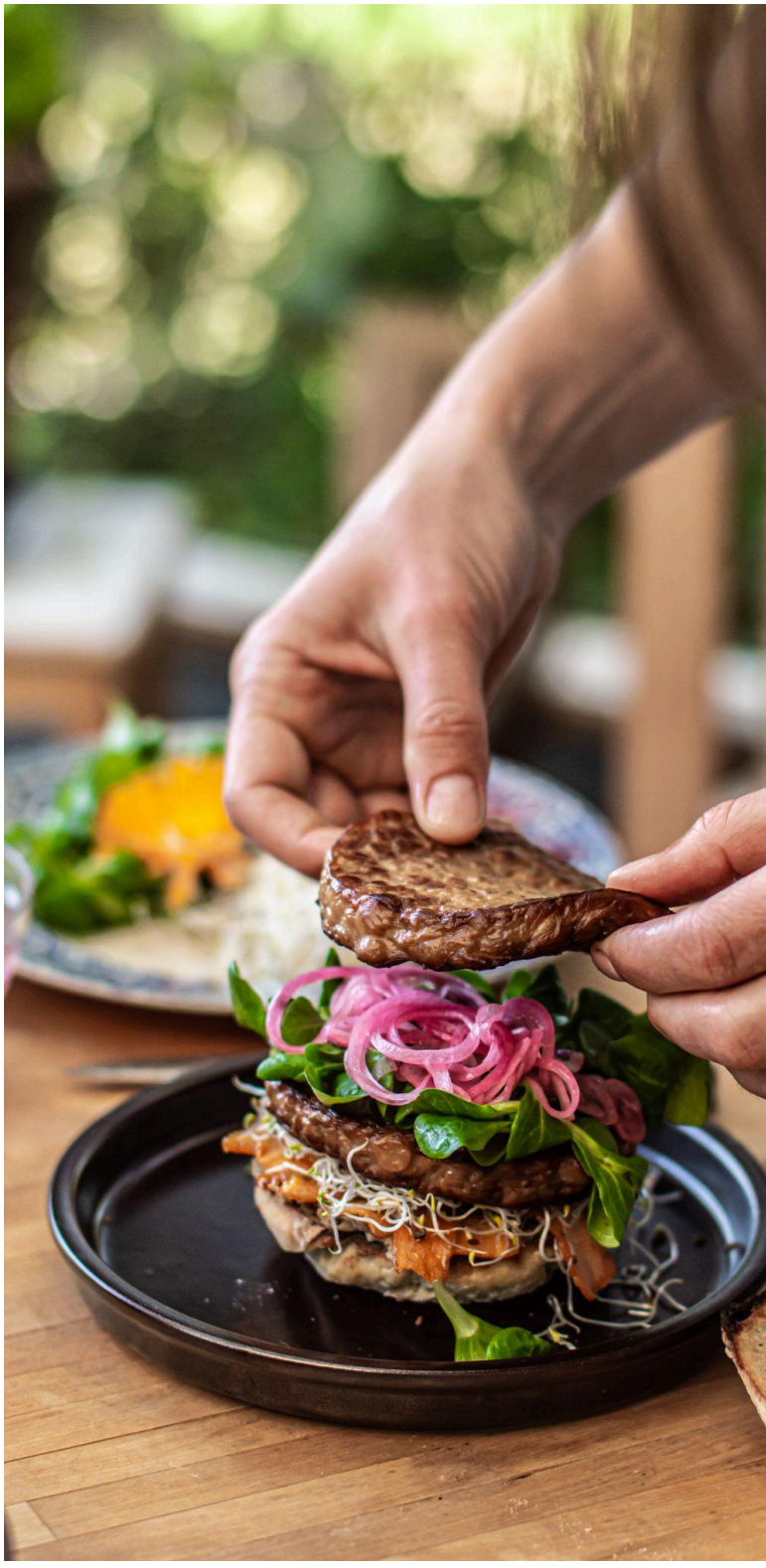
If the world has seemed to become more complex in the last five years, so too has the process of tracking and categorizing investments in alternative proteins. Companies in the sector are now receiving government-backed loans, loan guarantees, blended finance, and direct investments in addition to direct grant funding; new research often cuts across multiple technology sectors and product categories; and large commitments to build out biotechnology leadership and biomanufacturing capacity often highlight food production without specifying the exact amount of investment in it. These developments bode well for plant-based, fermentation-enabled, and cultivated protein sources as they are increasingly included in general research calls, investment portfolios, and bioeconomy plans.

However, these developments also make the clear, consistent tracking of government investment into alternative proteins more complex, and render previous methods of reporting these investments less accurate. China's large investments in broad biotechnology efforts through a state-owned corporation, for example, raise uncertainties in determining how much investment comes from public sources, how much supports companies creating alternative proteins (or upstream or downstream enabling infrastructure), and to what degree the provided investment is nonrepayable or concessional. Moving forward, these reports will feature as much detailed information on the past year's activity as before, including relevant statistics, but without pursuing a single top-line annual funding number. Much of the data underlying these statistics can be found in the Public Investment Database, which now includes over 1,000 research projects, business grants, loans, loan guarantees, initiatives, investments, and more.

Government support is necessary for a resilient, sustainable, prosperous future

Despite the changes, much remains the same. GFI's 2021 report noted: "Governments worldwide are grappling with how to feed growing populations and keep their economies strong in the face of fragile supply chains, intensifying climate events, and the looming threat of future pandemics and antibiotic resistance." These threats have become only more evident in the years since, but so too has the potential of new food technologies to address these challenges. Forward-looking governments have rallied behind plant-based protein sources to support agricultural communities and public health goals, fermentation technology to supercharge biomanufacturing capacity and valorize underused resources, and cultivated meat for point-of-need nutrition and sustainable animal proteins. All of these new protein sources can help create a resilient, prosperous food system.

Unfortunately, the gap between what is available and what is needed also remains significant. Five years ago, a Global Innovation Needs Assessment found that governments must invest $10.1 billion in alternative proteins on an annual basis to fully reap the rewards of a mature alternative protein sector, including up to 9.8 million jobs, $1 trillion in economic value, and benefits for food resilience, global health, and environmental security. Despite progress and enthusiasm from policymakers worldwide, governments' estimated investment in 2025 amounts to no more than 10 percent of this benchmark. Though broader biotechnology development programs show promise for creating the infrastructure and workforce needed for a more resilient food system, dedicated funding to increase consumer appeal and availability of new protein sources is necessary to build a future-proof food system.



Bärta burger patties and alder smoked cold cut.
Photo courtesy of Bärta

Photo credit: Fifth Taste Foods, LLC

Americas

Brazil

State governments take the lead in researching new protein sources

Public research on plant-based foods, cultivated meat, and fermentation grew in Brazil in 2025, with three new research efforts announced by two state governments. The government of Paraná continued to lead Brazil's investments in research and commercial support for fermentation in 2025, with multiple new public research efforts announced at the state level.

The Araucária Foundation, a research organization funded by the state of Paraná, announced four winners of an alternative protein research call jointly funded by GFI Brazil, focusing on cultivated meat and biomass fermentation:

- "Development of alternative protein inputs for the formulation of serum-free media: an approach using soybean meal, Rhizopus microsporus, and recombinant growth factors" at Pontifícia Universidade Católica do Paraná
- "Smart pathways for new ingredients applied to cultivation media in cellular agriculture" at Universidade Federal do Paraná
- "Application of Chestnut Mushroom (Pholiota adiposa) mycelium in the production of innovative foods: a sustainable alternative to conventional protein" at the State University of Maringá
- "Proposal of a bioprocess for the production of food-grade mycoprotein from the mycelium of Rhizopus microsporus var. Oligosporus" at Pontifícia Universidade Católica do Paraná

This follows a grant from the state government of Paraná in 2024 to **Typcal**, a biomass fermentation company pioneering the use of Brazilian fungi in mycoprotein products:

"The investor is focused on selling and generating revenue and not on developing technology, which is a risk area, but essential for any business, especially in biotechnology. Therefore, the investment of the Government of Paraná greatly increases our competitiveness because it allows us to grow as an industry and, in the end, generate jobs and income for the State itself."

– Eduardo Sydney, CTO, Typcal

The states of Santa Catarina and São Paulo, Paraná's immediate neighbors, joined in supporting research on cultivated meat and fermentation. Santa Catarina provided funding to establish the Laboratory of Cellular Crops and Animal Cell Bank at the Universidade Federal de Santa Catarina. One of three new multiuser biotechnology labs, the cell bank will provide researchers with the materials to better study animal cell cultivation for a variety of use cases. São Paulo began three new research projects on fermentation from methane and algae, as well as for precision fermentation of dairy, at local universities through the São Paulo State Research Support Foundation.

Federal regulators make progress in addressing plant-based foods

In November 2025, the Ministry of Agriculture and Livestock (MAPA) published Decree No. 12.709, which reorganized inspection competencies for a range of products, including plant-based foods that are analogous to animal products. While the decree does not establish immediate regulatory requirements for the sector, it formally places these products within MAPA's regulatory scope.

This development represents a procedural step toward the issuance of specific regulations for plant-based products and is particularly relevant in the context of renewed legislative debates on restrictions related to animal-protein nomenclature in Brazil. The decree may serve as a strategic policy instrument in future legislative discussions. Formally recognizing plant-based products within MAPA's regulatory framework helps consolidate the sector's institutional standing and may strengthen legal certainty.

ANVISA, the Brazilian Health Regulatory Agency, is currently undergoing their own regulatory process for plant-based foods. In 2025, ANVISA held a public hearing on alternative proteins and an open dialogue with the sector. ANVISA stated that their regulation on alternative proteins will be published in the near future.

State regulations align with federal rules, reducing uncertainty

In 2025, the State of Paraná concluded revisions to their State Consumer Protection Code, which had originally included provisions restricting the use of conventional meat-related terms for plant-based products. A new bill, sanctioned in April 2025, annulled these controversial elements. The revised Consumer Protection Code now allows the use of established nomenclature by plant-based products, provided they comply with federal regulations.

Canada

Plant protein powerhouse focuses on domestic food supply, building export markets

Protein Industries Canada (PIC), the plant protein supercluster backed by CAD 150 million ($112 million) over five years (2023–2028), continued to announce new and renewed public-private partnerships to build Canada's plant protein production capacity, research leadership, and business ecosystem. These efforts, ongoing since 2018, took on a new salience in 2025 as the closely intertwined agricultural trade relationship between the United States and Canada was rattled amid escalating tensions.

In response, PIC undertook new programs to support companies in sourcing from Canadian suppliers, build new pea protein processing plants, and develop new products from Canadian crops like fava and oats. PIC also worked with international partners in the UK on a CAD 1.5 million ($1.1 million) joint research effort to commercialize lupin protein and in Singapore to facilitate a market entry program for Canadian exporters in Asian markets, as well as sharing best practices for building a plant protein cluster with representatives from the Indian state of Maharashtra (see "India" section below).

The Ocean Supercluster, one of the four other Global Innovation Clusters funded alongside PIC with a mandate to expand Canada's ocean economy, awarded CAD 750,000 ($550,000) to a project to scale up plant-based and fermentation-enabled seafood production.

Additional research on plant-based proteins began or continued at Canadian universities funded by the Natural Sciences and Engineering Research Council of Canada.

Fermentation rising as a driver of Canadian innovation and economic growth

While the majority of Canada's support for new protein sources goes toward the country's strong plant-protein sector, the federal and provincial governments took action in 2025 to boost fermentation capacity, recognizing the benefits of creating more pilot- and demonstration-scale capacity so that Canadian startups need not look abroad as they scale up.

In January 2025, the province of Nova Scotia announced a CAD 1 million ($730,000) grant to fund expansions at the Verschuren Centre, a pilot-scale 10,000L precision fermentation facility constructed in 2022 with federal and state economic development funding. Though focusing initially on petroleum-based products, the Centre is also conducting research on precision fermentation-derived food products and expects to serve 50 clients simultaneously, including food producers.

Shortly after, the Government of Canada's Atlantic Canada Opportunities Agency announced CAD 5 million ($3.5 million) in funding to construct the Neptune BioInnovation Centre in nearby Dartmouth, Nova Scotia. "Canada's first large-scale bioinnovation centre," the facility will serve as a demonstration-scale contract manufacturer for local startups, offering up to 100,000L of precision fermentation capacity.

"The funding will help transform an underutilized facility in Dartmouth into a fully-equipped multi-user space for innovation and industry that will enable Canada to compete globally, strengthen domestic supply chains, and foster biotechnology advancements across critical sectors. It will provide shared industrial space, contract manufacturing, spray drying, and precision fermentation up to 100,000L, enabling companies to scale locally instead of leaving Canada."

– Atlantic Canada Opportunities Agency, in a press release

Illustrating the synergies between new food systems, as well as the many potential benefits for farmers and rural communities, PIC provided CAD 6.3 million ($4.5 million) in funding to a project to scale up fava bean processing, with one of the project partners being a biomass fermentation company using these Canadian-grown inputs to develop mycoprotein.

Cultivated meat brings Canadian researchers and farmers to the table

The government's support for research and development of cultivated meat has been similarly forward-looking and inclusive. Ongoing research projects on cultivated meat continue through the Natural Sciences and Engineering Research Council of Canada, which funds research at several universities, and through the Canadian Genomics Enterprise, a network of federally and provincially funded nonprofit research agencies.

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

"Alberta's farmers and producers work hard to feed our communities and drive our economy. This investment in New Harvest Canada is about supporting innovation that builds on that strength—creating new opportunities for producers, making our food system more resilient, and ensuring a strong, sustainable future for Alberta's agriculture sector."

– Terry Duguid, Minister for PrairiesCan

United States

Federal investments decline sharply, but some research supports farmers, businesses

In 2025, U.S. federal agencies drastically scaled back all federally funded R&D, cutting the number of new grants awarded by the National Science Foundation (NSF) by 25 percent and leading to an estimated 25,000 scientific research jobs lost from federal agencies and 20,000 scientific research jobs lost in the private sector. The United States is also expected to lose its position as the world's largest R&D funder to China in 2026. As a result, after consistently rising from 2020 to 2024, federal investments in plant-based, cultivated, and fermentation-enabled proteins in the United States declined from a peak of about $115 million announced in 2024 to an estimated $11 million in 2025. In doing so, the United States bucks the global trend of investing competitively in biotechnology and biomanufacturing, of which food production is an essential driver of scientific progress, production capacity, and economic growth.

Despite this decline in federal support for science and technology in 2025, some general-purpose R&D programs worked to maintain the United States' scientific and entrepreneurial leadership in the sector through research and business grants. Several new Small Business Innovation Research grants from NSF allowed startups to investigate promising technologies for developing cultivated meat and precision fermentation. NSF also supported two collaborative research projects with the BioMADE Manufacturing Innovation Institute on developing cultivated meat growth factors at Duke University (NC-04) and applying AI to precision fermentation at The University of California, Berkeley (CA-12), as well as an International Research Experiences for Students program through the University of Tennessee, Knoxville (TN-02) to place U.S. engineering students in alternative protein labs in New Zealand.

The United States Department of Agriculture (USDA) also continued research on new protein sources with several new projects to develop a Cellular Agriculture and Food Biomanufacturing Workshop at Texas A&M University (TX-10), train food science students on alternative protein methods at San Diego State University (CA-51), evaluate the safety of fermentation-derived products at Tufts University (MA-07), and host three workshops on cultivated meat food safety.

Congress considers biotech action in wake of "sobering" national security report

The National Security Commission for Emerging Biotechnology (NSCEB), a short-term advisory body convened by the United States Congress to "advance and secure biotechnology, biomanufacturing, and associated technologies for U.S. national security and to prepare the United States for the bioindustrial revolution," published their findings in April 2025. The "sobering" report raises major national security and economic concerns about the United States falling behind in biotechnology while also emphasizing the country's immense potential to lead in the development and manufacturing of transformative new technologies. The Commission recommends a minimum $15 billion investment over the next five years in 49 specific actions to boost R&D funding, commercial scale-up infrastructure, talent pipelines, and more.

"In April 2025, the Commission came to a sobering conclusion: U.S. policymakers have a three-year window to retain, or in some cases regain, biotechnology leadership or risk ceding profound military, geopolitical, and economic advantages to China."

– U.S. National Security Commission on Emerging Biotechnologies, "The Future of U.S.–China Biotechnology Competition," December 2025

"The inflection point for biotechnology has not yet arrived. Ultimate leadership of the sector is still up for grabs. With chips and advanced telecommunications we were caught flat-footed. But with biotechnology, fortunately, we can act early and decisively."

– U.S. National Security Commission on Emerging Biotechnologies, "Charting the Future of Biotechnology: An action plan for American security and prosperity," April 2025

While the Commission's definition of biotechnology spans a wide range of applications, including fuel, materials, pharmaceuticals, and more, the report highlights the potential benefits of biotechnology in future-proofing food and agriculture, including developing new food sources from biotech.

"Realizing the full potential of agricultural biotechnology requires addressing the challenges it faces. Total U.S. spending on agricultural research has fallen by a third since peaking in 2002. By contrast, China is now the largest global funder of agricultural research and development (R&D), and China-based companies are acquiring and consolidating global agricultural companies to bolster their technology portfolio. For all of these reasons, it is critical that the United States leverage the opportunities of biotechnology today to build an agricultural sector that is up to the challenges of tomorrow."

– U.S. National Security Commission on Emerging Biotechnologies, "Charting the Future of Biotechnology: An action plan for American security and prosperity," April 2025

Several of the NSCEB recommendations were subsequently adopted in the FY2026 National Defense Authorization Act, including the creation of a Biotechnology Management Office at the Department of Defense. Several more have been proposed in Congress (as of publication), including the Synthetic Biology Advancement Act to establish a foundational biotech research center at USDA and the Independence Investment Fund Act to support U.S. companies developing critical and emerging technologies, including biotech, with midstage equity investments. In early January 2026, the NSCEB also released 30 recommendations for "Creating Clear Regulatory Pathways for Biotechnology," including strengthening regulatory capacity and training, harmonizing requirements across U.S. states and international partners, and establishing a foundation to enable biotechnology commercialization.

California Jobs First highlights alternative proteins as key growth opportunity

California announced three initiatives in 2025 that will advance plant-based, fermentation-derived, and cultivated proteins as part of a suite of new food production systems, underscoring the state's pursuit of leadership in food production, processing, and innovation. The California Jobs First Regional Investment Initiative, an innovation engine focused on key development regions, awarded over $10 million to **BEAM Circular** (CA-05) to build the California Bioeconomy Innovation Campus, a bioproduction facility that will allow researchers and startups to test products from pilot scale to demonstration scale, addressing a key infrastructure gap.

"Our mission has always been to unlock the potential of the North San Joaquin Valley by building a thriving circular bioeconomy. The California Jobs First funding accelerates that mission. It will advance our development of the California Bioeconomy Innovation Campus, accelerate the growth of innovative businesses, allow local farmers to capture more value from what they produce, and ensure that our communities benefit directly from this growing industry."

– Karen Warner, CEO of BEAM Circular

California Jobs First also committed nearly $1 million to the University of California Agriculture and Natural Resources to build a Plant Food and Agricultural Innovation Center, a research facility that will include equipment for developing cultivated meat and fermentation-derived foods in addition to greenhouses, vertical farms, and other testing and processing equipment.

Further shoring up the state's research leadership, the California legislature earmarked $1 million for the University of California, Davis' Integrative Center for Alternative Meat and Protein, a nationally leading hub for plant-based, fermentation, and cultivated meat research.

State- and county-level economic development efforts include alternative protein sources

California was not alone in making commitments to alternative protein development. Illinois' Alternative Protein Innovation Task Force, a panel convened in 2024 to study the landscape of alternative proteins in Illinois and develop policy options for securing associated potential economic opportunities, released their final report in December 2025, making firm recommendations that the state support biomanufacturing for alternative proteins through funding programs, research leadership, workforce development initiatives, public procurement, and clear regulation.

"By investing strategically in infrastructure, access to capital, research, and workforce development—building and expanding crucial programs—Illinois can cement its status as a national hub for food innovation and biomanufacturing. These efforts will ensure that the benefits of this emerging industry—job creation, new markets for crops, reduced greenhouse gas emissions, and improved food resilience—are unlocked across the state in both rural and urban communities."

– Illinois Alternative Protein Innovation Task Force Recommendation

Additionally, in 2025, Albany County, New York, became the first known U.S. county to support alternative protein scaling and market access with a $1.6 million blended grant and loan to **Ecovative** (NY-20) to support research and production of their mycelium-based bacon and other sustainable goods.

Two world firsts for cultivated meat regulation

In 2025, the U.S. federal government continued to evaluate and greenlight cultivated meat products under the regulatory process governed jointly by the Food and Drug Administration (FDA) and USDA. FDA is solely responsible for regulating cultivated seafood and game meat, and USDA and FDA jointly regulate cultivated livestock, poultry, and catfish products.

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

Cultivated meat continued to face challenges at the state level, with legislators enacting two-year moratoria on cultivated meat sales in Indiana and Texas, and enacting outright sales bans in Mississippi, Montana, and Nebraska. Together with the bans in Florida and Alabama passed in 2024, seven states have passed temporary or indefinite cultivated meat bans in the United States. However, seven other states declined to advance similar proposals in 2025 due to concerns about limiting consumer choice, stifling innovation, and market fragmentation. Litigation challenging the Florida ban is ongoing, with the Institute for Justice (IJ) representing **UPSIDE Foods**. IJ also filed a legal challenge against the Texas moratorium in November 2025 on behalf of UPSIDE Foods and Wildtype.

New fermentation-derived products potentially face a longer path to market

In the United States, companies continued to have two regulatory pathways to bring novel fermentation-derived foods and ingredients to market in 2025. First, companies may submit a food additive petition (or a color additive petition for ingredients that impart color) to FDA, which may then issue a regulation authorizing specific uses of the ingredient. This process is generally time-intensive.

The second pathway is to establish that an ingredient is Generally Recognized as Safe (GRAS) by qualified experts for its intended use. Companies can bring a product to market as soon as they establish this, but it is best practice to submit a GRAS notice to FDA upon making this determination and wait until FDA issues a "no questions" letter in response, indicating that the agency does not question the experts' safety conclusion. Fermentation companies (and food companies generally) typically elect this GRAS pathway to market over submitting a food additive petition, as demonstrated by the numerous companies that received "no questions" letters in 2025:

- In March 2025, Dutch company **Vivici** received a "no questions" letter for their precision-fermented beta-lactoglobulin protein ingredient.
- In May 2025, Singapore-based startup **TurtleTree** received a "no questions" letter for their precision-fermented lactoferrin, a milk protein for use in food, supplements, and wellness products.
- In September 2025, U.S.-Finnish company **Onego Bio** received a "no questions" letter for their precision fermented egg protein, and U.S. company **Oobli** received their third "no questions" letter for their sweet-tasting precision fermented protein.
- In October 2025, French company **Verley** received a "no questions" letter for two of their dairy ingredients made with precision fermentation.

Fermentation GRAS "No questions" letters in 2025

By production method and ingredient type

Production method	Ingredient	Company (HQ)	Specific ingredient	Production strain	"No questions" letter date	GRN number
Precision fermentation	Dairy Protein	**Vivici** (Netherlands)	Beta-lactoglobulin	*Komagataella phaffii*	February 2025	GRN 1200
		TurtleTree (Singapore)	Lactoferrin	*Komagataella phaffii*	May 2025	GRN 1219
		Changing Bio (China)	Beta-lactoglobulin	*Kluyveromyces lactis*	September 2025	GRN 1247
		Verley (France)	Beta-lactoglobulin	*Aspergillus oryzae*	September 2025	GRN 1241
	Heme protein	**Impossible Foods** (U.S.)	Soy leghemoglobin	*Komagataella phaffii*	March 2025	GRN 1202
	Egg protein	**Onego Bio** (U.S., Finland)	Egg protein	*Trichoderma reesei*	September 2025	GRN 1249
	Sweet protein	**Nanjing Bestzyme** (China)	Brazzein	*Aspergillus oryzae*	May 2025	GRN 1207
		Oobli (U.S.)	Brazzein	*Komagataella phaffii*	September 2025	GRN 1142*
Biomass fermentation	Yeast protein	**Changing Bio** (China)	Yeast biomass	*Kluyveromyces marxianus*	September 2025	GRN 1248
	Mycoprotein	**MoreMeat** (China)	Mycelial biomass	*Fusarium compactum*	November 2025	GRN 1255

Source: GFI analysis of the FDA GRAS Notices Inventory.

*Oobli received a supplemental "no questions" letter for a strain modification to their GRN1142 notice.

In late 2025, FDA sent a proposed rule that would amend the GRAS process to the Office of Management and Budget for review, following critiques of the GRAS process by U.S. officials. This is the final step in the government clearance process before the proposed rule gets released to the public for comment. The proposed rule is expected to require companies to notify FDA that they have a positive GRAS determination for an ingredient, including for both new and existing substances, before the ingredient can come to market. Without funding to hire additional review staff at FDA, this change could impact the timeline for bringing new ingredients to market. Once the proposed rule is made available to the public, FDA will solicit comments and potentially incorporate feedback into the rule.

FDA issues draft guidance on plant-based labeling

In early 2025, the U.S. FDA issued draft guidance on the Labeling of Plant-based Alternatives to Animal-Derived Foods. The draft guidance states that plant-based food labels can include terms associated with animal products, so long as the labels are not misleading. The draft guidance also encourages companies to include primary plant sources of products on labels, instead of only using broad qualifiers (e.g., "chia and flaxseed eggless scramble" instead of "plant-based egg scramble"). Draft guidance is not legally binding, but represents the agency's current approach to applying their regulations.

FDA accepted comments on the draft guidance through May of 2025, but has yet to issue a final guidance.

Photo credit: UNLIMEAT

Asia Pacific

Australia

Fermentation and more figure prominently in business development programs

The government of Australia unveiled several initiatives in 2025 to support the developing precision fermentation sector, including a newly opened Pioneer BioPilot biomanufacturing hub in Queensland, which has been backed by AUD 18 million ($11.8 million) in public investment from the federal and state governments. The public-private partnership will allow startups and entrepreneurs to test new methods and technologies alongside Queensland University of Technology researchers. This follows prior investment from both governments toward a private fermentation facility, operated by **Cauldron**, also located in the region.

"This is about turning Queensland's agricultural strengths into global opportunities, aligning with our bold vision for primary industries in Prosper 2050. The upgraded MRBPP gives local researchers and industry the tools to turn biomass into high-value products–right here in Mackay. It's a powerful demonstration of how regional Queensland is open for business, strongly appealing to companies looking to use sugar feedstocks for their products."

– Sean Dillon, Queensland Assistant Minister for Primary Industry Development

Eclipse Ingredients, a lactoferrin precision fermentation company, emerged from stealth mode in 2025 with AUD 2.9 million ($1.9 million) in investment from Australia's Food and Beverage Accelerator, a public-private partnership funded by the federal government's Trailblazers University Program. The company then received an additional AUD 1.9 million ($1.2 million) from Australia's Industry Growth Program, an initiative to build manufacturing capacity through commercialization grants to startups.

Australia's Industry Growth Program also awarded AUD 100,000 ($62,000) to cultivated meat company **Magic Valley** to help scale up their cultivated pork production and AUD 1.2 million ($750,000) to **Dairy Free Down Under** to scale up production and expand exports of plant-dairy hybrid cheese.

Queensland was joined by the state of Victoria in working to attract investment in new food technology. Invest Victoria updated their "Alternative Proteins" investment positioning page to explicitly name alternative proteins, including fermentation, as a priority area, pointing to state and federal programs and finance mechanisms to encourage commercialization.

Regulatory agency formalizes regulatory pathways and GM definitions

In June 2025, Food Standards Australia New Zealand (FSANZ) approved Sydney-based **Vow**'s cultivated quail product, which is also available in Singapore. Australia and New Zealand are now the third jurisdiction globally to give the regulatory green light to cultivated meat for human consumption, following approvals in Singapore and the United States.

Earlier in the year, FSANZ finalized a dedicated regulatory pathway for cultivated meat, opting to introduce new standards for cultivated foods rather than relying solely on their existing Novel Foods Framework. FSANZ requires cultivated meat products that include words or labels indicating their animal source on packaging to be labeled as "cell-cultured" or "cell-cultivated."

In June 2025, FSANZ introduced new definitions in the Food Standards Code for "genetically modified [GM] food" and "novel DNA" that addressed precision fermentation products. The new definitions will continue to treat precision fermentation products derived from microorganisms that contain novel DNA as GM foods, but exempt additives and processing aids created using precision fermentation and GM organisms from the GM food definition, since additives and processing aids are already regulated separately in the code. As such, the updated code says that precision fermentation products derived from microorganisms that contain novel DNA will be considered GM foods and may be subject to premarket regulation.

China

High-level development strategies drive investments in new protein sources

China's No. 1 Central Document—the first policy statement released by the Central Committee of the Communist Party of China and the State Council each year–included among 2025's goals "Building a diversified food supply system," including efforts "to cultivate and develop biological agriculture and explore novel food resources." The central document specifically mentions a need for "expanding food sources through multiple channels," including fungal and algae-based protein extraction—techniques used in the development of many plant-based and fermentation-derived products.

China's investments in cultivated meat, fermentation-enabled protein, and other "new proteins" grew both larger and more explicit in 2025, with a variety of actors at the national, state, and municipal levels announcing new investments in biotechnology research, industry development, and infrastructure. In February 2025, the Ministry of Agriculture and Rural Affairs released a plan to revitalize rural economies pursuant to the No. 1 Central Document, advocating for investment in biotechnology-enabled agriculture, exploration of new food resources such as plant-based meat, and the development of algae-based foods.

In June 2025, the Ministry of Industry and Information Technology and the National Development and Reform Commission issued a notice supporting the build-out of pilot-scale biomanufacturing capacity, including "food and additives, biopharmaceuticals, cosmetics, chemicals, energy, and enzyme preparations." The Ministry aims to create at least 20 new pilot-scale biomanufacturing facilities by 2027, supporting "more than 200 service enterprises and more than 400 incubation products."

State-owned investment corporation invests nearly $1 billion in biotech, new proteins

In May 2025, the state-owned State Development & Investment Corporation (SDIC) announced a commitment of over CNY 4 billion ($555 million) toward advancing biomanufacturing infrastructure development through investments in domestic biotechnology companies. Though not all of these biomanufacturing operations will be food-grade or otherwise pertinent to cultivated meat or fermentation-derived foods, "new proteins" do figure prominently. The SDIC simultaneously announced a Novel Protein Bio-Manufacturing Innovation Center to be established at Jiangnan University with co-funding from the city of Wuxi. The center will directly address bottlenecks in scaling the industrial production of new protein products, accelerating the path to market.

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

"China is combining public investments with mechanisms that mobilize private capital to accelerate commercial readiness in emerging biotechnologies. Moreover, with targeted innovation policies that link research, pilot-scale capabilities, and manufacturing within single regions, China is ensuring its biotechnology companies can overcome key commercialization barriers."

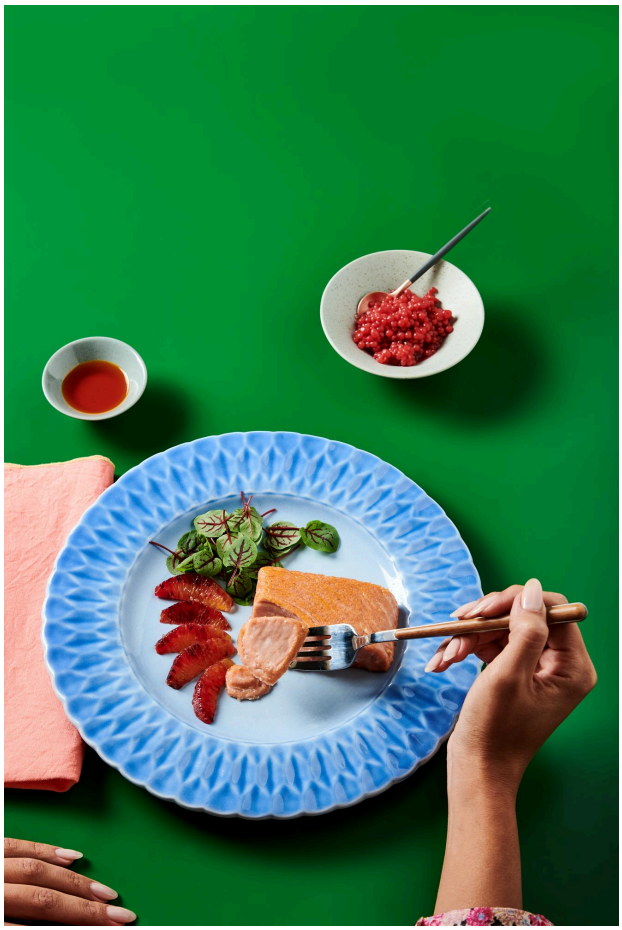
– U.S. National Security Commission on Emerging Biotechnologies, "The Future of U.S.–China Biotechnology Competition," December 2025

Regional and municipal governments build infrastructure, fund research

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

The Guangdong Provincial Development and Reform Commission also approved a Synthetic Biology Manufacturing Pilot Platform project in 2025, investing a total of CNY 217.33 million ($30.3 million) in a four-pronged pilot-scale manufacturing facility, of which two ("functional proteins and other biomacromolecules" and "high-value-added bio-based products") support fermentation-derived food and ingredient production.

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



Oshi's salmon filet. Photo courtesy of Oshi

China's first mycoprotein approval and progress in regulating new foods

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

China continues to regulate novel fermentation-enabled products and ingredients through a premarket approval system administered by the NHC, with the National Center for Food Safety Risk Assessment conducting safety assessments. As of July 2025, the NHC had accepted 26 novel food applications, including applications for fermentation-enabled ingredients. In November 2025, the NHC announced China's first approval of mycoprotein as a food ingredient following an application from **Jiangxi Fushine Biotechnology**.

India

BioE3 policy fuels investment in research, infrastructure

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

The Department of Biotechnology has further advanced the BioE3 policy through new funding for high-performance biomanufacturing platforms to advance domestic production and unlock scale. At least three of these new platforms are industry-led fermentation facilities for smart proteins, enzymes, growth factors, nutraceuticals, and functional foods, led by **HiMedia Laboratories**, **Laurus Bio**, and **Sundyota Numandis**. Among other equipment and services, these production platforms will develop 5kL to 100kL of fermentation capacity for single-cell proteins and precision fermentation-enabled alternative proteins, including upstream and downstream products like recombinant proteins, enzymes, and growth factors. A fourth biofoundry, led by the Biotechnology Research and Innovation Council's National Agri-Food and Biomanufacturing Institute, will develop industrial-scale capacity to produce food from single-cell proteins derived from corn starch sidestreams.

States investigate the promise of plant-based processing industries

The Indo Pulses Development Association (IPDA), a commodity stewardship council under the aegis of the Government of Maharashtra and supported by the World Bank, has organized multiple rounds of technical and policy dialogue to strengthen the pulse ecosystem and mobilize partners around a proposal to establish a plant protein cluster in the state. In August 2025, members of IPDA visited Protein Industries Canada (See "Canada") to learn more about the infrastructure and technology required for large-scale industry promotion through a plant protein cluster.

Additionally, the state of West Bengal invited GFI India to speak on the potential of plant-based proteins at the annual Bengal Business Summit. Bringing together businesses in the food processing ecosystem, the summit discussed emerging food technology and how the state's vibrant food processing industries can make the most of the opportunity.

Regulatory authorities consider new approaches for fostering innovation

The Food Safety and Standards Authority of India, the country's food regulator, highlighted alternative proteins at the third iteration of their Global Food Regulators Summit 2025, and particularly discussed the regulatory approaches for alternative proteins in "Dynamic Food Landscapes–A Need for Pragmatic Approaches." A readout from the session calls for the exploration of "robust pre-market approval processes, process validation and controls for [emerging food technologies], and developing adaptive regulatory tools such as risk- based approaches and regulatory sandbox programs that safeguard public health yet foster innovation."

Japan

Food tech fuels national growth efforts, government builds bridges with industry

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

Throughout 2025, the government has been supportive of working with the private sector through partnerships to advance the industry. Government representatives have discussed the need for food biomanufacturing at BioJapan, the Global FoodTech Summit SKS Japan, and the Cell Ag Ready Dialogue. Industry associations, including the Japan Bioindustry Association, which advances food biomanufacturing, also work closely with the government, providing infrastructure and knowledge partnerships to advance national policy.

The Japanese Society for Cultivated Food was established in April 2025 with participation from leading universities throughout Japan. MAFF, METI, the Japan Science and Technology Agency, and the Consumer Affairs Agency joined the inaugural annual academic conference during Cell Ag Week 2025. Research sessions highlighted cultivated meat safety guidelines (expected mid-2026), consumer acceptance, new research findings, and a cross-industry workshop for the cultivated food industry.

National research and development agencies advance protein science

Research on fermentation-derived protein and cultivated meat in Japan continued through several projects funded by the National Agriculture and Food Research Organization's Bio-oriented Technology Research Advancement Institution. Additional researchers working on cultivated, fermentation-enabled, and plant-based foods were funded by the Japan Society for the Promotion of Science and the New Energy and Industrial Technology Development Organization. Research investigated the application of traditional food techniques to new protein sources, such as applying the *koji* fermentation process to plant-based proteins, as well as developing new cell cultivation and fermentation techniques, including those for mass production.

Regulatory process for novel foods begins to take shape

Through the aforementioned National Growth Strategy process, MAFF will lead the creation of a public-private investment roadmap for food technology, including measures regarding the regulatory hurdles and other considerations. Specific pathways to market for precision fermentation products are currently being developed, with the nonprofit Japan Bioindustry Association facilitating communication between companies and regulators at the Consumer Affairs Agency (CAA).

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

Central and regional governments drive food tech opportunities for a circular economy

Excitement about future foods and new protein sources extends to the subnational level as well. The "Next Kitchen" conference, jointly organized by the Japan External Trade Organization, Hyogo Prefecture, and the city of Kobe, matches local and global food tech startups looking to expand to Japan, inviting about 10 startups from Europe and Asia annually to collaborate with Japanese companies in the "city of gastronomy."

At Expo 2025 Osaka, the spotlight was on sustainable food technologies and sustainable food, including fermentation and cultivated meat. Managed by the Japanese government with support from industry consortia, the Japan Pavilion highlighted fermentation and algae-based technology as core components of Japan's future bioeconomy. Cultivated meat also generated significant public interest, leading to numerous requests for tasting events and ongoing engagement. Osaka's host city pavilion showcased the "Consortium for Future Innovation by Cultivated Meat," with exhibits, seminars, and cooking demonstrations led by the consortium representative Professor Noriya Matsuzaki of Osaka University. The Michelin-starred chef and vice president of **Diverse Farm** prepared the company's cultivated meat for the Expo, while another exhibit on cultivated meat by **IntegriCulture** was featured at The National Museum of Emerging Science and Innovation, known as Miraikan, with the support of the Tokyo Metropolitan Government.

New Zealand

International research collaborations boost agricultural sector and food security

Several new research projects in New Zealand underscore the promise of plant-based, cultivated, and fermented foods to enhance the country's agricultural sector and export market. The New Zealand Institute for Bioeconomy Science awarded NZD 10.4 million ($6.1 million) to a five-year research program focused on precision fermentation, including the development of feedstocks made with New Zealand-specific sidestreams.

A collaboration with Singapore, funded on the New Zealand side by the Ministry of Business, Innovation and Employment (MBIE), combines research and private-sector capabilities in both countries to develop new protein products by using biomass fermentation with fruit industry sidestreams, creating new sources of value for farmers and protein for consumers. Together, these projects work to boost New Zealand's domestic agricultural sector and position it to benefit from breakthroughs in food technology.

Furthering the two countries' ongoing collaboration in alternative protein research, MBIE also co-funded a joint research program with Singapore, in which researchers from both countries will develop meat products that include both cultivated meat and plant-based ingredients. The project aims to match the strengths from both types of protein to create meat alternatives that are tasty, affordable, and resource-efficient.

For regulatory updates from Food Standards Australia New Zealand (FSANZ), see "Australia."

Singapore

Research programs seek tasty, nutritious, and secure protein sources

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

The projects under the Future Foods Grant seek "innovative solutions to strengthen nutrition and functionality of alternative proteins products," including through measuring protein digestibility, using precision fermentation to produce omega-3s and other nutrients, and enhancing the flavor and functionality of microalgae-derived foods. Together, these projects aim to boost consumer demand for sustainable, scalable foods by increasing their appeal and reducing sensory barriers to uptake.

International collaboration fuels research leadership, innovative new products

Singapore deepened cross-border collaboration with New Zealand in 2025. The National Research Foundation's (NRF) "Catalyst 2025: Strategic New Zealand–Singapore Research Programme" funded a project at universities in both countries to develop mycelial and biomass-fermented protein products from fruit industry sidestreams (see "New Zealand.") SFA also co-funded a Singapore-New Zealand Biotech in Future Foods Research Programme project to develop meat products that include both cultivated cells and plant-based ingredients.

SFA further supported the development of precision fermentation as a core domestic industry through additional funding for the Centre for Precision Fermentation and Sustainability, a collaboration between the U.S.-based University of Illinois Urbana-Champaign, the National University of Singapore, and the Singapore Institute of Technology. Following the establishment of the Centre with SGD 20 million ($14.8 million) NRF in 2024, the additional funding will help scientists "translate research outputs into market ready solutions."

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

Legislation codifies novel foods process, clarifies regulatory requirements

In January 2025, Singapore enacted the Food Safety and Security Act, establishing a unified statutory framework for food safety and formally codifying the SFA's premarket approval process for novel foods, including cultivated meat and proteins from biomass and precision fermentation, under a new "defined foods" category. Companies can now reference a clear regulatory category with corresponding legislation to identify the pathway to market for these products, rather than relying solely on policy guidance. The Act will be implemented in phases from late 2025 through 2028.

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

South Korea

Whole-of-government approach fuels research leadership

South Korea continued government support for protein diversification, building on past initiatives through several agencies and working to build the country's infrastructure to better support a future food industry. Though the total announced new public investment in South Korea decreased from 2024 to 2025, following multiple large, multiyear projects announced in 2024, the number of active research grants increased from 112 to 121, and the government made new announcements in support of further action.

The Ministry of Agriculture, Food, and Rural Affairs (MAFRA), the Ministry of Food and Drug Safety (MFDS), the Ministry of SMEs and Startups, the Ministry of Education, the Rural Development Administration, the Ministry of Oceans and Fisheries, the Ministry of Trade, Industry and Energy, and the Ministry of Science and ICT together funded at least 38 new research projects concerning fermentation, cultivated meat, or plant-based foods in 2025, making South Korea one of the leading research ecosystems and reflecting a whole-of-government approach to advancing food science and biotechnology research.

High-level support for food technology was evident at the 2025 World FoodTech Forum in Seoul. President Lee Jae-myung of Korea sent congratulatory remarks, read by the Agriculture Minister, which emphasized the importance of food technology in addressing climate change, food security, and demographic shifts. The Speaker of the National Assembly, Woo Won Shik, referred to alternative foods as one of these key food technologies.

Regional industrial policies lay groundwork for food technology development

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

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

New legislation addresses regulatory bottlenecks to support market entry

In December 2025, South Korea enforced the Food Tech Industry Promotion Act, establishing a legal and administrative framework for MAFRA to support plant-based foods, precision and biomass fermentation, and cultivated foods. The Act empowers MAFRA to provide direct support to businesses, offer startup assistance, facilitate access to research facilities and equipment, and foster market entry. The Act also allows MAFRA and companies to collaborate to address regulatory bottlenecks, rather than having companies navigate the regulatory process independently. In the press release, MAFRA stated that a dedicated fund worth KRW 100 billion ($68 million) will be created by 2027 to revitalize the startup ecosystem and provide stage-by-stage support for the funds needed for corporate growth.

Regulatory agency takes active role in developing domestic and global guidelines

As of the end of 2025, three companies have submitted applications for their cell-cultivated food ingredients and are currently awaiting approval. Several other companies are also nearing the submission of their applications.

In 2025, the MFDS commissioned a study on Safety Assessment Methods for Novel Food Ingredients Produced Using Precision Fermentation Technologies, signaling that the government may soon begin developing guidelines to approve precision fermentation ingredients.

MFDS also hosts the Cultivated Food Public-Private Council, which includes the Director General of the Food Standard Planning Office, the Director of Novel Food Division, startups and food corporations, academia, and consumer organizations. The third meeting of the Council was held in December 2025, at which MFDS shared the following priorities for 2026: (1) strengthen the pre-submission consultation process, (2) establish new standards and specifications reflecting the characteristics of cell-cultivated foods, (3) expand participation in the Council, and (4) play an active role in developing cultivated food guidelines through Codex Alimentarius' Committee on Food Additives and Committee on Food Hygiene.

Thailand

Industrial policy prioritizes future foods, biotechnology workforce

Thailand's Office of the National Higher Education, Science, Research, and Innovation Policy Council (NXPO) identified alternative proteins as one of Thailand's core future food policy priorities at an expert forum convened in January 2025. In November, NXPO issued a "Development Opportunities for Thailand's Alternative Protein Industry" report identifying development opportunities for plant-based, cultivated, and fermentation-derived proteins.

"Thailand aims to increase the market value of this [future food] sector to 500 billion THB [$15.8 billion] by 2027. This will involve attracting domestic and foreign investment in advanced extracts and proteins, fostering agribusiness engagement in primary processing, quality control, and R&D, establishing consortia to promote inter-ministerial collaboration, and expanding markets. This project seeks to add 150 positive lists from Thai raw materials, establish a platform for health product registration, and promote Thai future food as a soft power through food and tourism festivals."

– **Dr. Siriporn Pittayasophon, Vice President, NXPO**

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

Science and startup programs support alternative protein research and development

In July 2025, the Program Management Unit for Human Resources & Institutional Development, Research and Innovation, a government research agency, announced a bilateral research call with the Japan Science and Technology Agency on "Precision Fermentation Technologies for Alternative Foods and Functional Molecules" and two other topics. Selected projects will be announced in March 2026. Further, four of the 18 food tech startups selected for the fifth cohort of the SPACE-F incubator focus specifically on alternative proteins. Backed by the Ministry of Higher Education, Science, Research, and Innovation, Mahidol University, Thai Union, Nestlé, and other private-sector co-funders, the incubator guides promising companies through fundraising and product development.

Cultivated meat assessed by regulators, but plant-based label restrictions pending

Thailand began assessing **Aleph Farm**'s application (submitted in December 2024) for approval of their cultivated beef product in 2025, under the country's novel food regulation.

The January 2025 expert forum with the Agricultural Research Development Agency and the Program Management Unit for Competitiveness also sought to establish functional claims for future foods, including alternative proteins. Expanding the available claims is expected to create a more favorable environment for alternative protein products, including fermentation-enabled products, positioned around the functional benefits of specific ingredients.

In May 2024, the Thai Food and Drug Administration published a draft "Proposal for Developing Regulations and Regulatory Measures Governing the Supervision of Alternative Protein Products" for public comment. The proposal would set technical and labeling requirements for plant-based food, including categorizations of plant-based proteins and specific label text, and restrict the use of certain terms, including "meat." The draft proposal remained pending throughout 2025. If finalized without safeguards, the restrictions could raise compliance costs and create marketing barriers for plant-based meat and dairy companies, and may set a precedent for cultivated and fermented proteins.

Wildtype cultivated seafood. Photo courtesy of Wildtype

Photo credit: Formo

Europe

The European Union

Biotechnology plans boost protein diversification, food security efforts

Amid a broader biotechnology and biomanufacturing push, the European Union took concrete steps to support food production from plant-based and fermentation-enabled sources in 2025, building on the groundwork laid in 2023 and 2024 by the European Innovation Council (EIC) and the European Investment Bank (EIB).

In 2025, the European Commission published two strategies outlining the policy direction and priorities for sectors relevant to protein diversification: the Life Sciences Strategy and the Bioeconomy Strategy. In both, advanced fermentation is positioned as a key technology with applications across multiple sectors, including food, signaling growing momentum for food biotech and related innovations alongside commitments to remove bottlenecks. The Life Sciences Strategy highlighted the potential of advanced fermentation and called for better collaboration initiatives and new funding opportunities, while the Bioeconomy Strategy announced measures to improve regulatory and technical support for fermentation innovators, support scale-up infrastructure, and mobilize investment to help bring fermentation-made products to market.

Loans and blended finance fuel scale up, build bioeconomies

The EIB, which in 2024 made a pioneering €20 million ($22.2 million) loan to Denmark's **Matr Foods** to finance the construction of a mycelium biomass facility, followed up in 2025 with multiple large loans to businesses across the technology spectrum:

- €35 million ($36 million) to Germany's **Formo** to produce biomass- and precision-fermentation-enabled cheese at scale
- €20 million ($22 million) to Spain's **Heura Foods**, to develop and scale nutritious, high-protein plant-based meat
- €50 million ($55 million) to Sweden's **Lantmännen farming cooperative** to build a pea protein factory

Additionally, the EIC supported **MOA Foodtech**, a Spanish fermentation startup, with a €14.9 million ($15.4 million) investment commitment, consisting of a €2.3 million ($2.4 million) grant and €12.5 million ($13 million) in equity funding, the latter of which is contingent on matching co-investments from private investors. The European Union's use of loans and blended finance models to support scaling up across the continent signals growing recognition of the economic and competitiveness potential of a more diversified, domestic food system.

Fermentation-focused program accelerates scale up

The EIC awarded much of the €50 million ($54.9 million) set aside through the EIC Accelerator Work Programme 2024 for scaling up the production of food from fermentation and algae, advancing the science and commercial potential of precision, biomass, and gas fermentation. The projects range from multicountry partnerships of academics and researchers to direct grants to pioneering private-sector companies, including:

- Harnessing the immense potential of precision fermentation to produce animal fats for the next generation of meat and dairy alternatives (**Melt and Marble**, Sweden)
- HuMiLAF: Human Milk Lactoferrin by Precision Fermentation (**PFX Biotech**, Portugal)
- Inspiring CO2 circularity by introducing carbon transformation to our plates (**Solmeyea**, Greece)
- Novel precision fermentation process to produce animal-free bioidentical ovalbumin (**Onego Bio**, Finland)
- Pioneering vegan whole cuts through mycelium solid state fermentation (**Esencia Foods**, Spain)
- ROLF: Revolutionary OnLine Fermentation monitoring (**Holloid**, Austria)

Other food tech research continues through companies, consortia, public-private partnerships

Further research was funded by the EU's Horizon Europe program at universities and public research organizations under research calls concerning "Sustainable micro-algae as feedstock for innovative, added-value applications" and "Innovative bio-based food/feed ingredients," as well as through non-specific research programs supporting scientific advancement more generally. Horizon Europe also funded APRISE ("Alternative Proteins Research and Innovation Skills Enhancement"), a project to provide workforce development, technical training, and shared resources with countries without strong food technology sectors, including Greece, Malta, North Macedonia, Poland, and Türkiye.

A €2.5 million ($2.86 million) grant from the EIC Accelerator to Czech cultivated pork startup **Mewery** will help the company scale up production, while €2 million ($2.3 million) from EIT Food helped establish the CRAFT (Cellular Revolution in Agriculture and Farming Technology) Consortium, otherwise known as "the world's first cultivated meat farm." (See "The Netherlands.")

The Sustainable Blue Economy Partnership further added to the list of ongoing EU-funded research with two projects evaluating microalgae and biomass fermentation of seaweed for alternative seafood, as well as the international multipartner project SEANERGIES, in which partners from Brazil, Italy, the Netherlands, Norway, and Portugal will develop cultivated octopus cell lines and culture media.

Regulatory progress remains slow while EU companies advance abroad

In November 2025, the Netherlands became the first EU country to issue a code of practice for public tastings of novel foods produced using precision and biomass fermentation, following the establishment of a similar code of practice for cultivated meat. (See "The Netherlands.") **The Protein Brewery**, a Netherlands-based company, received the EU's first positive European Food Safety Authority (EFSA) scientific opinion for a new mycoprotein ingredient, confirming that their fermented fungal biomass ingredient is considered safe under proposed conditions of use. In the next step, the European Commission will prepare the legal act for authorization, and EU member states must vote to approve it before the product can be sold in the EU.

In January 2025, **Mosa Meat** filed the second application for a cultivated product in the EU for their cultivated beef fat, which can be used as an ingredient in otherwise plant-based beef products to enhance taste and texture. The application will undergo scientific evaluation by EFSA and then be considered by the European Commission and the EU member states as required by the novel foods framework. Should this product be authorized, that authorization will apply across all 27 EU member states.

Meanwhile, European companies are pursuing regulatory approvals outside the EU. French company **PARIMA** (an entity formed after Gourmey acquired Vital Meat) received approval from the Singapore Food Agency for their cultivated chicken product, making it the first European company to bring a cultivated meat product to market. In October 2025, PARIMA submitted an application to Food Standards Australia New Zealand (FSANZ) seeking approval for a cultivated duck ingredient, and expects the FSANZ evaluation process to conclude by August 2026. Similarly, Finnish biomass fermentation startup **Enifer** has begun seeking GRAS status in the United States despite scaling up operations in Europe.

Labelling restrictions could threaten growing industry, suppress demand

Following several months of debate and negotiations in 2025, EU policymakers agreed in March 2026 to ban the use of the word "meat" and 31 meat-related terms for both plant-based and cultivated options. This decision was made despite consistent survey results demonstrating that European consumers support the use of these terms for plant-based products, and research shows that "meaty" terms for cultivated meat are crucial for consumer understanding.

When the restrictions come into force, companies will no longer be able to use everyday terms such as "steak" and "chicken" to describe their plant-based or cultivated products. Lawmakers agreed to a three-year transition period to enable companies to sell existing stock and adapt to the restrictions. At the time of writing, the text is also subject to final adoption, including a vote in the European Parliament.

Austria

A new federal government was formed in Austria at the beginning of 2025, including in their coalition agreement negative language on cultivated meat: "The federal government is opposed to the approval of lab-grown meat at EU level and calls for an impact assessment."

Belgium

The regional government of Flanders initiated the Green Deal Protein Shift on Our Plates 2.0, a consumption-focused policy framework designed to transition diets toward a greater adoption of plant-based or otherwise sustainable protein sources. The program targets a dietary composition of 60 percent plant and 40 percent animal proteins by 2030, and explicitly acknowledges fermentation and cultivated meat as promising paths to this goal. However, the framework currently lacks specific measures concerning innovation, funding, or regulatory support for these technologies.

Denmark

Biosolutions join plant-based foods as national priority

Denmark continued to build on their leadership in advancing plant-based food. During their tenure as president of the Council of the European Union from July to December 2025, the Danish government organized a major Plant Food Summit. The Danish Chamber of Commerce also joined a new Plant-Based Diplomacy initiative, along with other members of Danish civil society, to encourage the European Commission and European Parliament to adopt supportive policies toward plant-based foods, as Denmark has done.

Denmark also brought an additional policy focus on fermentation-derived proteins in 2025. The Danish government earmarked approximately DKK 460 million ($73.3 million) in funding for biosolutions between 2026 and 2029, and DKK 100 million ($15.7 million) in 2026 alone, through the Innovation Fund Denmark, a funding opportunity expected to include food production from fermentation in scope.

In 2025, the Danish Alliance for Biosolutions, a partnership created by and housed under the Danish Chamber of Commerce, launched a Biosolutions Forum+ to accelerate the development of future foods and their regulatory path to market, including stakeholders from science, industry, and government.

Research continues to develop new, resilient food technologies

The Green Development and Demonstration Programme announced three new projects concerning precision fermentation and plant-based foods:

- "Continuous fermentation of milk protein" with **Enduro Genetics**
- LinkingOat, "to promote the sustainable cultivation of oats and the production of high-quality, oat-based foods," with the Danish Institute of Technology, Aarhus University, and several industry partners
- "Interdisciplinary Future Food Network (IFFN)" with **Kost Studio**

AgriFoodTure, a Danish research program funded by NextGeneration EU's Recovery and Resilience Facility, began 36 new research projects under Denmark's AgriFoodTure partnership, including projects to develop cell-cultivated milk, create enhanced cell-culture media, and improve plant-based cheese.

Estonia

Estonia, a growing hub for startups and entrepreneurs, awarded local startup **ÄIO** €1 million ($1.1 million) to speed up the development of their yeast-derived sustainable fat alternative. Though early products are intended for the cosmetics and personal care industries, the company has also developed products to replace animal fats in food products.

Finland

Government reports position food innovation as national opportunity

The Finnish National Food Strategy 2040, which outlines principles for "a land of happy food," recognizes cellular agriculture specifically, and food innovation generally, as important drivers of change. A government-commissioned report from the VTT Technical Research Centre found that cellular agriculture, including cultivated meat and fermentation, presents the country an economic opportunity of up to €1 billion and recommended a five-year, €100 million ($118 million) research, development, and innovation program to advance the sector, in addition to regulatory support, workforce development, and the establishment of a Ministry of Future Food.

"One of Finland's biggest challenges currently is the lack of capital, which limits the growth opportunities of cellular agriculture. Building production facilities requires large investments, and success will not come without government support to accelerate investments and realize venture capital investments,"

– Emilia Nordlund, VTT lead researcher

Government investments in new facilities grow biomanufacturing base

Finland's trade and investment agency, Business Finland, has provided a model of the necessary government support since 2022, when it awarded €33.6 million ($36 million) in funding for gas fermentation company **Solar Foods**' pilot-scale Factory 01. Business Finland reiterated support for the development of domestic biomanufacturing capacity, granting an additional €10 million ($10.5 million) in February 2025 to support planning for Factory 02 in Lappeenranta, which will boost production capacity 40x. Backed by the European Union's Hydrogen Important Project of Common European Interest state aid scheme, Solar Foods is eligible to receive up to €110 million ($115 million) in public grant funding through 2036.

In 2024, the Finnish Government also provided €3 million ($3.25 million) to back a partnership between **Synbio Powerlabs** and the United Kingdom's **Ivy Farm** to retrofit a facility in Helsinki into "the world's largest cultivated meat and precision fermentation facility."

France

"Protein sovereignty" emerges as focus area, supports plant protein sources

Following past support for France's pulse sector, the 2025 announcement of public investment in 10 projects advancing "protein sovereignty" underlines the government's prioritization of domestic, sustainable food sources as a driver of food security and local prosperity.

These projects will work at various stages of the food system, including encouraging cultivation of protein-rich crops on farms, developing more processing capacity and more technologically advanced systems, and promoting plant proteins in diets. While not specifically focused on plant-based meat and dairy, the upstream and downstream initiatives show how the development of these alternatives can support national efforts to build resilient food systems.

In February 2026, the French government published their National Strategy for Food, Nutrition and Climate, which embeds in national policy protein diversification and the need to shift toward plant-based protein sources.

Courts reaffirm use of "meaty" terms on plant-based labels, but EU overrides

In January 2025, the French Conseil d'État annulled two decrees from the French Government in 2022 and 2024 seeking to ban the use of meat-based terminology in the marketing of plant-based products. This decision from the Conseil d'État was in line with the Court of Justice of the European Union ruling of October 2024 that the labeling of plant-based products is covered by EU regulations, and that meat terms on plant-based foods cannot be banned at the national level unless those terms have existing legal definitions. However, in March 2026, the EU agreed to ban the use of 32 meat-related terms for alternative proteins.

Germany

New government coalition endorses protein diversification

Germany's coalition government collapsed in late 2024 over budget issues, leaving the country without a federal budget for over nine months and halting initiatives like the previously announced national protein strategy. Snap elections in February 2025 led to a new government in May, which expressed a similarly positive approach toward alternative proteins:

"We are committed to a comprehensive and ambitious EU protein strategy and will strengthen domestic cultivation of protein crops in order to reduce imports. We will advance the development and market introduction of sustainable alternative proteins."

As a result, alternative proteins were included in the German government's High-Tech Agenda, which explicitly called for using biotechnology for new protein sources and mobilizing public investments to fuel innovation. The German government also continued to promote protein diversification through the 2026 budget of the Federal Ministry of Agriculture, Food and Regional Identity (BMLEH), which includes "proteins of the future" as part of a larger shared budget of €67 million ($78 million), which will also be used to fund projects in organic farming, as well as €5 million ($5.8 million) dedicated to protein diversification initiatives.

In accordance with the coalition agreement of the new federal government, in the context of the debate on impending labeling bans for plant-based meat alternatives, the German Federal Government has publicly and vehemently opposed the proposals of the Commission and Parliament to ban terms such as "burger" and "sausage" for plant-based products.

Research ecosystems focus on plant-based food quality and local sourcing

While the German Research Foundation began a program at the Technical University of Darmstadt and the University of Stuttgart to research 3D printing of cultivated beef, most publicly funded research focused on plant-based alternatives to meat and dairy. A number of projects from BMLEH identified new protein sources from domestic crops, while research funded by the Federal Ministry for Economic Affairs and Energy worked to improve the juiciness and texture of plant-based meat and create a machine-learning-driven database of protein functionality.

The European Investment Bank's €35 million ($36 million) loan to Germany's **Formo** to produce biomass- and precision-fermentation-enabled cheese at scale (See "European Union"), will further contribute to Germany's efforts to develop and market high-quality alternatives to animal products.

Hungary

Hungary's parliament passed a cultivated meat ban despite the European Commission finding through the EU TRIS process that such a measure would be unjustified and undermine the harmonized novel foods framework, and despite evidence that a majority of Hungarians disagree with a ban. This marks the EU's second cultivated meat ban, following Italy's ban in 2023.

The Netherlands

Continued leadership on cultivated meat research, and new scale-up initiatives take shape

Following the Netherlands' pioneering establishment of Cellulaire Agricultuur Nederland (CAN) in 2021, the government has undertaken a number of new efforts to maintain their leadership in food production through R&D and developing production capacity. Two new open-access facilities announced in January 2025, each backed by €12.5 million ($12.9 million) from the Dutch National Growth Fund, will support entrepreneurs as they scale up production. Cultivate at Scale, a public-private partnership involving CAN and **Mosa Meat**, will offer production capacity and downstream processing to cultivated meat startups, shortening their financial and logistical path to market. The Biotechnology Fermentation Factory will be constructed alongside an existing precision fermentation pilot plant in Ede, offering large-scale upstream processing capacity to startups moving from pilot to demonstration scale.

The CRAFT Consortium (Cellular Revolution in Agriculture and Farming Technology), an initiative co-funded with €2 million ($2.3 million) from the European Union's EIT Food, announced the "world's first cultivated meat farm" in 2025 with the installation of a cultivated meat production unit at a dairy farm in Zuid-Holland. Seeking to demonstrate ways to scale up cultivated meat production through on-farm operations, the consortium aims to empower farmers and align food technology with existing food systems.

The Dutch Research Council also awarded grants to develop cultivated meat scaffolds from seaweed at Wageningen University, research "sustainable bioprinting techniques to make protein-rich cultivated meat" at Maastricht University, and conduct consumer research and provide strategies to plant-based food entrepreneurs.

Dutch regulators expand legal tastings to fermentation-derived foods

In 2023, the Dutch government began developing a framework for evaluating cultivated meat products, allowing premarket tastings that provide companies with valuable consumer feedback. In 2024, Dutch MPs passed a motion urging the expansion of this framework to include innovative fermentation-derived products, supporting a wider group of food tech companies.

In response, the Dutch government published a Code of Practice for companies to follow in hosting tasting events for not-yet-approved fermentation-made foods, including animal-free cheese, eggs, and fats. This makes the Netherlands the first EU nation to permit public tastings of precision and biomass fermentation products that fall under the EU's novel food category before they receive regulatory approval. As with the cultivated meat framework, companies hosting tastings must provide information on microorganisms, production processes, and nutritional and toxicological data. The first tasting events are anticipated to take place in early 2026.

In 2025, the **Protein Brewery**, a Netherlands-based fungi ingredient company, received a positive scientific opinion from EFSA for a fermented fungal biomass product (See "European Union").

Norway

Strong research ecosystem prioritizes cultivated and fermentation-enabled foods

The Research Council of Norway funded new cultivated meat research to develop and evaluate cell culture media from Norwegian crops at the Norwegian Food Research Institute, as well as fermentation-focused projects to source omega-3s from microalgae and to scale microalgae and single-cell protein production. The Council also began a project at the University of Oslo to evaluate meat alternative consumption and consumer uptake in Asia, in collaboration with partners in the United Kingdom and Vietnam, to uncover best practices for stimulating demand in Scandinavia.

Portugal

The 2025 general election in Portugal paused efforts to implement the National Plant Protein Strategy announced last year. After the election in May 2025, the new Portuguese government reaffirmed this commitment and began internal preparatory work between the Environment and Agriculture ministries.

Russia

The government of Russia made their first known investment in the science of plant-based foods with a research project to develop a vitamin-enriched oat milk.

Spain

National planning advances production of new, sustainable foods

The Spanish Government launched their first National Food Strategy in January 2025, which recognizes the role of alternative proteins in the food system in a high-level strategic policy document. Alternative proteins are mentioned as one of the defining trends of the agrifood sector, and the Strategy includes a specific commitment from the Spanish Government to "promote R&I in new foods and ingredients, alternative protein sources ... to adapt to increasing demand for more sustainable, healthier foods."

Together with the regional governments of Navarre and La Rioja, the Spanish government also launched the Spanish Agrifoodtech Sandbox. Managed by EATEX Innovation Hub, a spinoff from food technology center CNTA, the Sandbox aims to provide technical and regulatory support to innovators in the sector and bring academics, companies, and regulators together.

The European Investment Bank's €20 million ($22 million) loan to **Heura Foods**, a Spanish startup making nutritious, high-protein plant-based meat (See "European Union"), will enable the company to invest further in their laboratories and co-manufacturing facilities in Spain, increasing research capabilities and production capacity.

"The EIB's support for innovation and biotechnology is key to Europe's technological leadership. With this agreement, we are boosting the dynamism of the startup ecosystem in Spain and Europe and responding to new consumer needs by developing new sustainable food products."

– Nadia Calviño, President of the EIB Group

Research at national and provincial levels advances cultivated meat and fermentation

The Center for the Development of Industrial Technology, Spain's innovation agency, awarded €1.6 million ($1.8 million) to support a consortium of companies and startups aiming to research the processing and preservation of cultivated meat as a "sustainable, safe, healthy and competitive" protein source. The Regional Government of Valencia awarded €472,000 ($555,000) to public research center IATA-CSIC and the University of Valencia for the YEAST4VALUE project, which will develop ways to use sidestreams from the rice, wine, olive oil, and horchata industries as feedstocks for precision fermentation. The Province of Tarragona in Catalonia also awarded a grant of about €50,000 ($58,800) to **Eurecat** for a project on gene editing for precision fermentation.

Sweden

Public research enables innovation and unlocks new sources of funding

Several newly announced developments and research projects from Sweden point to the progression of scientific and industrial capacity in biotechnology for food production:

- **Curve**, a cultivated meat and industrial protein producer formerly known as Re:meat, announced in 2025 that it was opening a pilot plant at Biotech Heights, a public research complex at Lund University.
- The Swedish Research Council began a new research project in 2025 called "Sustainable protein from gas fermentation: Advancing cultivation efficiency and functional performance in complex food matrices," at KTH Royal Institute of Technology.
- The Swedish Research Council also began functional research to improve the shelf life of plant-based meat products at Chalmers University, and social research on Food Innovation Enabling Sustainable Transition at the RISE Research Institutes of Sweden.
- KTH launched an initiative through a call for projects addressing "contingency planning and competitiveness in the food system" and funded by the Research Council for Environment, Agricultural Sciences and Community Building (Formas). The PLENTY research center, backed by SEK 85 million ($8.5 million), will use fermentation and other technologies to valorize agricultural byproducts and strengthen Swedish food resilience.

The European Investment Bank's €50 million ($55 million) loan to the Lantmännen farming cooperative (See "European Union") to build a pea protein factory in Sweden follows the cooperative's receiving a 2022 grant from Sweden's Environmental Protection Agency to begin planning the facility and a 2024 research grant from Formas to continue innovating new tasty, nutritious products, illustrating the pathway from early public investment to commercial-scale support, yielding benefits to agricultural communities and consumers.

"We are delighted that the EIB recognises the long-term value of investment in the food of the future–plant protein–and that it has chosen to support our Lidköping facility. Promoting exports and expanding food production not only leads to better profitability for farmers, but also ensures improved food security. This is a grand and important project, and I am happy that the EIB is supporting our work to this end."

– Michael Sigsfors, CFO, Lantmännen

Switzerland

Research builds bridges between fermentation and dairy industry

Public research organizations in Switzerland funded two new research projects concerning fermentation-derived dairy products in 2025. Both research projects investigate the valorization of existing dairy-industry sidestreams through microalgal fermentation, enhancing the nutrition and sustainability of otherwise underutilized resources.

- Swiss National Science Foundation: "Nutrition-functional tailored food from microalgal-dairy hybrid systems through in-line sensing and predictive control of multiphase structure extrusion processing."
- Innosuisse: "Whey2blue: Up-cycling of whey streams via microalgae into innovative fortified dairy and dairy-alternative products."

Three additional research projects from Innosuisse and the Swiss National Science Foundation advanced plant-based foods as drivers of sustainable, local food systems: finding better binding agents for plant-based meat, developing new functional products from local pea production sidestreams, and planning for a more sustainable Swiss food system through plant-based proteins and oils.

Court rules animal species terms on plant-based meat impermissible, but "meaty" terms allowed

In May 2025, Switzerland's Federal Supreme Court ruled that plant-based meat alternatives may not be marketed using animal-specific terms such as "chicken," "duck," or "pork." In a four-to-one decision, the Court held that such designations are misleading under Swiss food law because they refer to animals legally defined as meat, even if the product is clearly labeled as plant-based and its ingredients are disclosed. The ruling overturns a prior decision by the Zurich Administrative Court and requires manufacturers to rename affected products within a set transition period. While generic meat-style terms such as "steak," "sausage," or "schnitzel" remain permissible for plant-based products, explicit references to animal species are not.

United Kingdom

Alternative proteins continue to feature prominently in national planning

The UK government began developing a new national food strategy for England in 2025. In their vision for the food system, *The Good Food Cycle*, the government emphasizes alternative proteins as an economic growth opportunity that supports more sustainable food production. Implementation of the food strategy is expected in 2026, and GFI Europe has published a set of proposals to accelerate the development of alternative proteins.

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

The National Alternative Protein Innovation Centre, a public research collaboration founded by the UK government in 2024, undertook 30 new research projects spanning plant-based, fermentation-enabled, and cultivated proteins, working on new production methods, sidestream utilization, and taste and texture improvements. These research projects included collaborations

between UK universities and partners, including Beijing Technology and Business University, McDonalds UK, and Nestlé.

Innovate UK continued to support foundational R&D in collaboration with the private sector, including projects to develop high-quality plant-based dairy alternatives made with hemp seeds grown in Wales, discover new recombinant growth factors for cultivated meat, and use artificial intelligence and world-leading sensory science expertise to create more authentic meat flavors in fermentation-enabled products.

Government invests in fermentation regulatory expertise

In late 2025, the UK Food Standards Agency (UKFSA) and Food Standards Scotland (FSS) launched a Market Authorisation Innovation Research Program (IRP) for fermentation products funded by the Department for Science, Innovation and Technology. The IRP is a one-year program designed to enhance regulators' expertise on innovative food technologies, with a specific emphasis on precision fermentation. The program will also support precision fermentation companies who want to apply for market authorization, and enhance the overall clarity of the UK's guidance on innovative food products.

Sandbox builds capacity to regulate cultivated meat in the UK

In March 2025, the UK's "Regulatory Sandbox for Cell-Cultivated Products" was established, including GFI Europe as a participant alongside eight cultivated meat businesses and academic representatives. The program delivers detailed business guidance on technical food safety questions and policy issues relating to cultivated meat, aiming to create a robust and transparent path to market in the UK. The UKFSA's goal is to complete two risk assessments for cultivated meat products by the end of the program in early 2027.

As part of the sandbox program, the UKFSA updated their novel food taste trial guidance and issued new business guidance for cultivated meat, covering requirements for conducting taste trials, classification and hazard analysis, as well as allergenicity and nutritional assessments in regulatory filings. This guidance is not law, but it will provide greater clarity for companies and will enhance the efficiency of the regulatory review process. Future guidelines will be published on the Innovative Food Guidance Hub as they become available.

UKFSA and FSS also opened dedicated Business Support Services for cultivated meat companies submitting applications for authorization of their products in the UK. The service will help industry and government align on specific aspects of a company's dossier submission; it is scheduled to close in early 2027 upon completion of the sandbox program.

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

Photo credit: Aleph Farms

Middle East & Africa

Israel

In 2025, the Israel Innovation Authority (IIA) directed approximately NIS 90 million ($28 million) to food technology programs, of which around NIS 49.5 million ($15.5 million) specifically targeted alternative proteins. These investments were aimed at strengthening Israel's capabilities in areas such as food biotechnology, precision fermentation, and artificial intelligence, all situated within a rapidly scaling climate technology ecosystem. By the end of 2025, cumulative investment from the IIA in alternative proteins reached approximately NIS 325 million ($100 million). As a result of ambitious investments to build a scientific network and necessary infrastructure, particularly in precision fermentation milk and dairy products, Israeli companies have led the global sector in launching new products and scoring regulatory green lights.

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

South Africa

In July 2025, South Africa's Department of Agriculture, Land Reform and Rural Development (DALRRD) issued new regulations concerning the labeling and composition of plant-based meat. Notably, products advertised as meat alternatives or plant-based meat must contain at least nine percent protein.

Additionally, though product names like "burger" and "sausage" are permitted if described as plant- or fungi-based, the regulations prohibit animal-specific references like "chicken" or "beef" even if modified or similarly described as plant-based. This updated regulation follows restrictions proposed in 2022 by DALRRD that were subsequently revisited after feedback from plant-based food companies.

United Arab Emirates

In October 2025, Abu Dhabi launched a new strategic initiative to develop a regulatory framework for novel proteins, including cultivated meat, in collaboration with the Abu Dhabi Agriculture and Food Safety Authority, the Quality and Conformity Council, and the Abu Dhabi Investment Office.

The initiative aims to align Abu Dhabi's novel foods regulations with international best practices, including those adopted by the UAE, the Gulf Cooperation Council, the EU, Singapore, and the United States. It will also align the halal certification process with global benchmarks, particularly those in Malaysia and Indonesia. Abu Dhabi plans to establish a database of approved cultivated meat products alongside detailed technical and regulatory guidelines.

Photo credit: The ISH Food Company

Global cooperation and coordination

Codex Alimentarius Commission

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

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

Halal certification

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

Notes on methodology

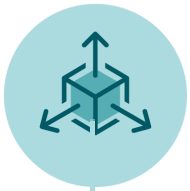
The State of Global Policy report primarily tracks funding announcements, calculating the dollar value of announced funding and supportive policies on an annual basis. While the report separately tracks the estimated disbursement of funds by year, dividing the total amount of the funding by the years it is active (if known), the country totals reported include both past, spent funding, and future, committed funding unless otherwise noted. All figures/charts featured in this report present data sourced from GFI's Public Investment Database as of March 31, 2025. Currency conversions to USD are calculated by the average exchange rate on an indicated date, typically the date of the announcement or the project's start date, whichever is earlier (or whichever is known).

If no dates are known, the conversion is calculated on the first day of the known month or year of the investment. Loans, loan guarantees, dilutive investments, and other funding arrangements in which governments may expect complete, partial, or equity-derived reimbursement are nevertheless calculated as the full monetary value of the loan or loan guarantee. These types of funding arrangements provide both tangible and intangible value to the alternative protein ecosystem, even when eventually recouped by funders. Governments also often set aside the entire amount of a loan guarantee while the funding arrangement is active, representing a temporary government outlay even when no transaction ultimately takes place.

About GFI

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

We focus on three programmatic priorities:



Cultivating a strong scientific ecosystem

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

Influencing policy and securing public investment

We ensure that alternative proteins are a part of the policy discussion around 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 work to replicate past market transformations by showing companies of all sizes, from startups to multinationals, the benefits of protein diversification and how alternative proteins can be profitable while meeting sustainability goals. We conduct research and share insights to educate the public on alternative proteins and champion their adoption by the food industry, including manufacturers, retailers, restaurants, investors, and more.

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

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