

EXECUTIVE SUMMARY | 2021 STATE OF THE INDUSTRY REPORT

Cultivated meat and seafood

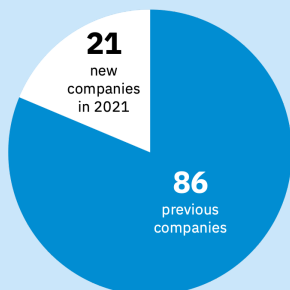
2021 was a year of robust activity and progress in the cultivated meat industry. Governments invested new public funding, the United States launched a center for excellence in cellular agriculture at Tufts University, and more countries made strides in the race to approve cultivated meat products.

The supply chain strengthened as several new pilot-scale production facilities opened, and the largest meat company in the world signaled its confidence in the industry with a \$100 million investment and an announcement that it would go to market with cultivated meat by 2024. The world's first-ever life-cycle assessment and techno-economic analysis for cultivated meat that involved industry and government data and participation were published, creating the most inclusive picture ever of what a global transition to cultivated meat might look like. These studies also spurred healthy conversation about the future of cultivated meat, illustrating the need for further research and development in the sector.



Commercial landscape

Companies dedicated to producing cultivated meat



107 total companies (2021)
↑ **24%** YOY increase

Facility launches. Several landmark facilities opened in 2021, including Future Meat's pilot plant, Wildtype's pilot plant with annual production capacity of 200,000 pounds, UPSIDE Foods' facility with current production capacity of 50,000 pounds and future capacity of 400,000 pounds, and Shiok Meats' mini plant for cultivated seafood R&D.

Geographic expansion. 2021 saw the first launches of cultivated meat companies in Mexico and Brazil and a cultivated seafood company in Africa.

Activity from the world's largest meat company.

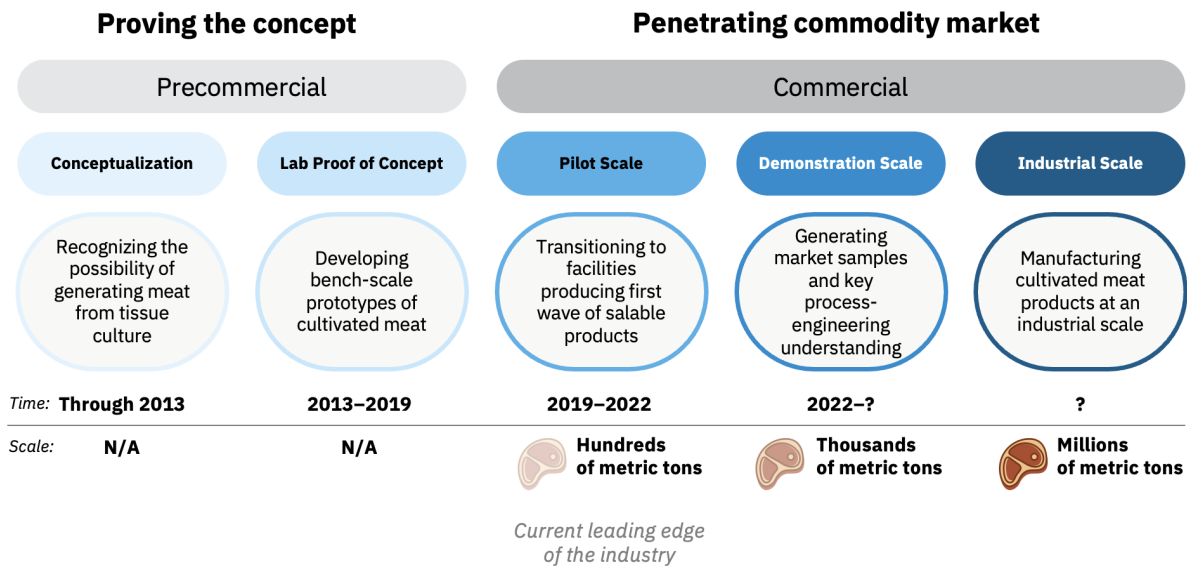
JBS, the largest protein company and the second-largest food company globally, announced a \$100 million investment that includes the following:

- 1) An agreement to acquire Spanish company BioTech Foods and invest in the construction of a new production facility in Spain.
- 2) Establishing Brazil's first cultivated protein R&D center.

Figure 1: 2021 cultivated meat around the globe



Figure 2: Leading edge of cultivated meat production



Companies at the leading edge of the industry are now manufacturing cultivated meat at pilot scale, a crucial early step to assess the viability of industrial-scale production.



Investments

Investment in cultivated meat companies topped \$1.36 billion in 2021, more than doubling the previous cumulative investment in the industry. 2021 also saw more than a hundred new investors enter the space.

Category	2021	2020	All-time (since 2016)	2021 highlights
Total invested capital	\$1.38B	\$410M	\$1.93B	2021 invested capital grew 336% from 2020.
Invested capital deal count	64	51	188	2021's largest investment was \$347M (Future Meat Tech.).
Unique investors	258	157	453	The number of new unique investors grew by 62% in 2021.
Growth stage deals (Series B and above)	7	1	8	These included Eat Just, Future Meat, and Finless Foods.
Liquidity events	\$18.6M	\$0	\$18.6M	MeaTech acquired cultivated fat producer Peace of Meat.

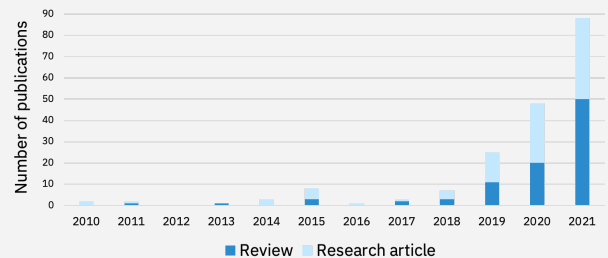


Science and technology

In 2021, the science and technology landscape for cultivated meat accelerated:

Techno-economics. In late 2020 and early 2021, three techno-economic analyses of hypothetical commercial-scale cultivated meat production were published: [Humbird, 2020](#), and [2021](#); [Vergeer, 2021](#) (funded by GFI and using industry-provided data); and [Risner, 2021](#).

Open-access R&D. [Companies](#) and [academic laboratories](#) continue to push the boundaries of cultivated meat research. In 2021, GFI awarded [research grants](#) for 22 innovative projects related to cultivated meat.



Scientific papers. Research into cultivated meat is heating up. GFI's science and technology team has been tracking scientific publications focused on cultivated meat, and each year the numbers continue to rise.



Government and regulation

As of the end of 2021, Singapore remains the only nation to approve the sale of a cultivated meat product. But other countries are making strides in the race to approve and invest in these products:

Momentum in Israel. In preparation for his first meeting with U.S. president Joe Biden, Israeli prime minister Naftali Bennett was briefed by GFI Israel on the importance of alternative proteins to climate change mitigation. GFI Israel's managing director also served on the country's official delegation to COP26.

Public funding. The Israel Innovation Authority announced a ₪220 million (\$69 million USD) investment in four new innovative consortia, including a cultivated meat consortium composed of companies and research institutions.

In October 2021, the EU government funding program REACT-EU, launched in response to the Covid-19 pandemic, awarded cultivated meat company Mosa Meat and partner Nutreco a €2 million grant for research into lowering the cost of cell culture media.

The USDA announced an award of \$10 million for the creation of a **center of excellence** in cellular agriculture at Tufts University, and the U.S. National Institutes of Health granted **\$1.5 million** to Defined Bioscience to develop a cell culture medium supplement.



Opportunities

Capturing even a fraction of the global meat market—estimated in 2020 at **328 million tons** and worth more than \$1 trillion—is a colossal opportunity. Doing so will require a remarkable deployment of scientific innovation, infrastructure development, investment, and—crucially—a robust ecosystem to support the industry's growth. Fortunately, 2021 was a year of growth and commercialization for the field of cultivated meat. The industry made considerable progress in scaling the technology, desiloing the industry via commercial partnerships, and carving out a key regulatory precedent. But there is a lot more work to do, and GFI's teams of scientists, lobbyists, lawyers, and corporate engagement specialists all over the world are focused on projects that will lift up the entire cultivated meat sector globally, allowing us to sustainably meet the world's growing demand for protein.



[Download the full report online.](#)

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 and cultivated meat delicious, affordable, and accessible. Powered by philanthropy, GFI is an international network of organizations advancing alternative proteins as an essential solution needed to meet the world's climate, global health, food security, and biodiversity goals. To learn more, please visit www.gfi.org.