Good Food Institute

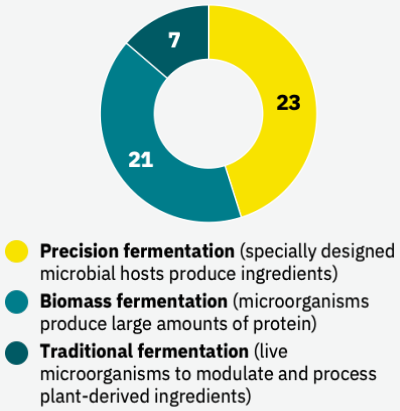
At a glance 2020 State of the Industry

Fermentation: Meat, Eggs, and Dairy

Fermentation is increasingly being used as an enabling technology in alternative proteins. In 2020, the fermentation sector continued to expand, with several key developments across the commercial, product, investment, science and technology, and government and regulation landscapes.

Commercial landscape

Number of companies by type of fermentation



New startups. Thirteen startups dedicated to the use of fermentation for alternative proteins launched, along with new suppliers focused on fermentation-enabled alternative protein ingredients.

Precision fermentation. Activity in precision fermentation increased, with nine of the 13 new companies focused on precision fermentation, three on biomass (an area with significant activity in 2019), and one on traditional fermentation.

Known companies. Fifty-one known companies are now dedicated to fermentation-enabled alternative proteins, an increase of 34 percent from 2019.

Business lines. More than 30 additional companies have a business line in alternative protein fermentation.

Products

In 2020, companies advanced applications of fermentation technology to produce products and enhance plant-based products across categories:

Whole-cut meat | Ground meat | Seafood | Eggs | Milk | Cheese | Gelatin | Fats | Oils | Pet food

Whole cuts. Meati Foods launched whole-cut steak and chicken made through **submerged fermentation**. Atlast Food Co. introduced their brand **MyBacon** produced via biomass fermentation and **presold all planned capacity through 2023**. Prime Roots sold out their soft-launch inventory **within hours**, launching animal-free bacon, chicken, pork, and beef products in their **online store**.

Dairy. **Perfect Day** commercially debuted animal-free ice cream with recombinant casein and whey protein, including a retail launch via Brave Robot and introductions at multiple ice cream chains. Other companies, including **New Culture**, **Change Foods**, **Cultivated**, and **LegenDairy**, recently emerged to create dairy proteins and fats.

Investments

Investment in fermentation technology skyrocketed in 2020. Fermentation companies raised $587 million—more than two times the amount raised in 2019—representing 57% of all-time sector funding.

Category	2020	2013–2020	Highlights
Total invested capital	$587M	$1B	2020 invested capital grew 109% from 2019
Invested capital deal count	28	102	2020's largest investment was $300 million (Perfect Day).
Unique investors	80 new	259	The number of unique investors grew 45% from 2019.
Series A/A1/A2 rounds	7	19	Top 3 by dollars raised: Air Protein ($32M), The Protein Brewery ($26M), Meati Foods ($25M).
Series B rounds	1	3	Nature's Fynd ($80M).
Series C/C1 rounds	1	3	Perfect Day ($300M).

Science and technology

GFI (via its **research grant program**) funded studies on fermented oat proteins and fermented flavor bases for plant-based meat.
TurtleTree Labs spun out **TurtleTree Scientific** and partnered with a filamentous fungi company on growth factors.
White Dog Labs bought an ethanol plant to convert it for **aquaculture feed production**.
Quorn opened a **Fermentation Development Centre** to accelerate their protein research.
3F Bio opened a **pilot-scale facility**.

Government and regulation

Regulatory approvals. The **Singapore Food Agency** and **Food Standards Australia New Zealand** approved Impossible Foods' soy leghemoglobin. The U.S. FDA sent Perfect Day a **no questions letter** for their beta-lactoglobulin.

Investments and funding. The U.S. Dept. of Energy **invested** in Meati Foods; the European Commission awarded a grant to Mycorena; 3F Bio, along with a consortium of partners, **received a grant from EU Horizons**. Perfect Day announced **plans for an R&D center** with Singapore's Agency of Science, Technology and Research (A*STAR).

Download the full report.

About GFI

The Good Food Institute is a 501(c)3 nonprofit organization developing the roadmap for a sustainable, secure, and just protein supply. We identify the most effective solutions, mobilize resources and talent, and empower partners across the food system to make alternative proteins accessible, affordable, and delicious.