



Israel State of Alternative Protein Innovation Report March 2022

New: Read the July 2022
mid-year update on pg.43



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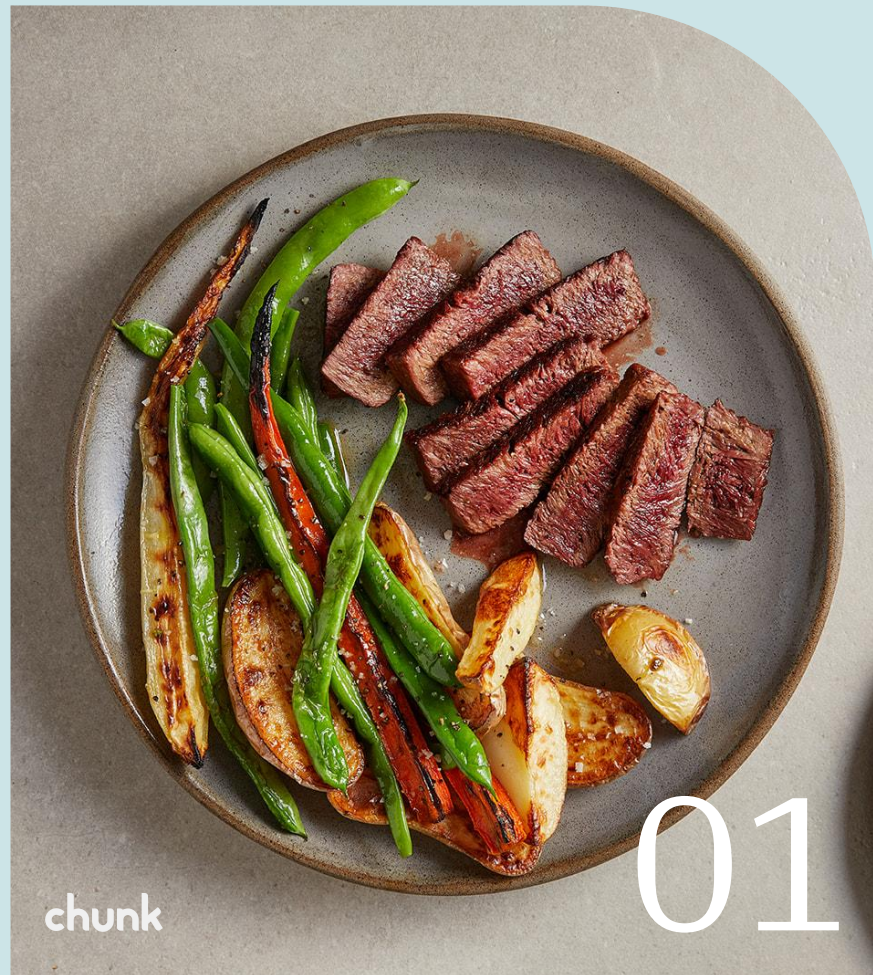
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Introduction



Opening Words



Nir Goldstein
Managing Director, GFI Israel

In recent years, it has become clear that our food system must undergo a significant change, for the planet, people, and animals. The Good Food Institute is an international nonprofit reimagining meat production. With more than 150 team members across the globe, we're building a world where alternative proteins are the default choice. This report unveils how Israel has become a global leader in alternative protein research, innovation and public investment. The next few years will determine the Israeli ecosystem's long term position in the future of our global food system. Can it sustain its leadership? Will it leverage it and become an industrial leader as well, and promote Israeli national food security? At GFI Israel we work towards solving some of the major roadblocks in Israel's ecosystem such as the need for academic research funding, R&D infrastructure and regulation. May 2022 be another year of significant growth and innovative breakthroughs!



Aviv Oren
**Director of Business Engagement
and Innovation, GFI Israel**

2021 saw alternative protein placed at the forefront of the food-tech industry, with several massive investment rounds intended to accelerate scale-up and allow young companies to become global leaders for a better food system. This momentum draws more investors, governments and multinational companies, as it is clearer than ever that to meet climate change goals and prevent future pandemics we must leverage technology to change the way we consume our food. Israel is leading this change, with more startups and more investment in alternative protein than any country besides the U.S. However, there is still work to be done. New innovative solutions, novel ingredients, and investment in infrastructure are required to create better products that will enable the dietary shift of flexitarians and omnivores. At GFI Israel we work to increase the pipeline of new ventures by sponsoring cutting-edge research and working with scientists, entrepreneurs, investors and policymakers to accelerate commercialization of great ideas. Just as they do in Israel's successful cyber and fintech industry, we invite multinational corporations and investors to establish R&D and innovation centers here in Israel so they can enjoy the magic of our unique ecosystem and create the desired change for successful business and a better world.

Executive Summary by Numbers



Private investment:

\$623M - total raised in 2021 by Israeli startups

~**450%** YoY Growth

11 - new companies established during 2021



Government funding:

\$13 million in early stage startups and infrastructure

\$15M* cultivated meat consortium

* Initial approval received, pending final approval



Israel as a global leader in 2021:

36% of global investment in cultivated proteins

#2 in the world in global alternative protein investment

#2 in the world in number of cultivated and fermentation startups

#1 in the world in number of alternative seafood startups founded in 2021



Academia:

2 - startups based on GFI research grants established

39 - number of active researchers

GFI grants in Israel: total - **11**, new in 2021 - **7**



Market data:

\$254M - 2021 total plant-based Israeli retail market

Plant-based retail sales showed two-year growth over **7 times** as large as animal-product retail

Plant-based milk made up **16%** of all milk retail sales

Investments



**FUTURE
MEAT**

02

Alternative Protein Fundraising in Israel

2021 saw accelerated expansion with **~450% YoY growth** between 2020 and 2021

High growth in the cultivated sector was due to several companies beginning scale-up, which requires significant capital for the building of factories.

Growth across all sectors was fueled by companies reaching the commercialization stage and expanding their operations, targeting global markets.

Data sources and calculations:

GFI Israel compiled a list of companies focused primarily on producing alternative proteins or serving those who produce them. Our analysis relied on PitchBook, Crunchbase, Startup Nation Central and other public data sources. Additionally, since a few Israeli early-age startups chose to be listed as publicly traded to fund their research, development and growth - and because we do not consider such listings an 'exit' - we included these startups in our analysis. Public funding comprised approximately 10% of all start-up funding in 2021.

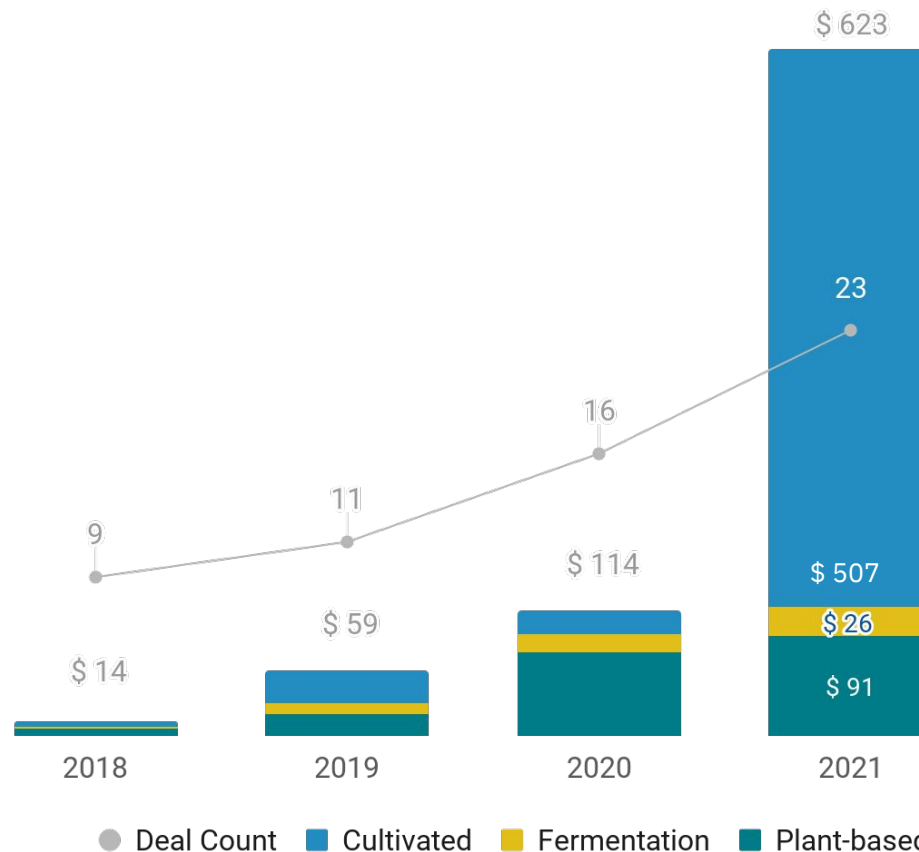


Figure 2.1: Israeli startup fundraising by alternative protein sector in millions of USD (2018-2021).

Top Private Deals in Israel

Future Meat Technologies raised the **single largest funding round** by a cultivated meat company to date anywhere in the world

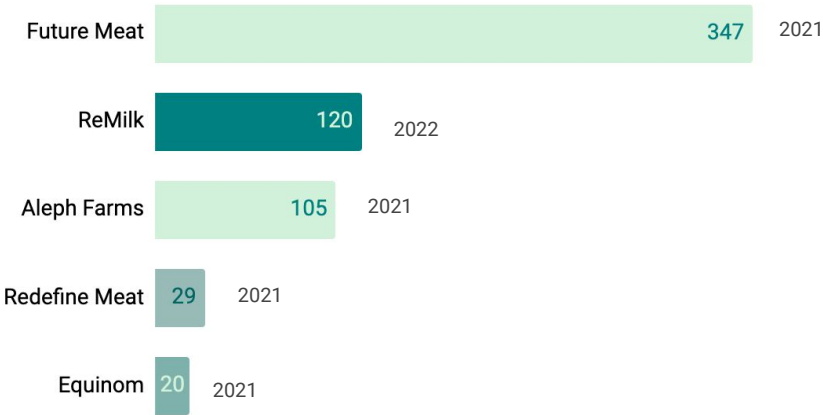


Figure 2.2: Largest funding rounds in Israel to date in millions of USD.

Cultivated meat company Future Meat Technologies raised **\$347 million** in a series B round. They announced plans to use the funds to build a production facility in the U.S.

The second largest raise in Israel was by fermented milk company Remilk, who raised **\$120 million** in a series B round.

Aleph Farms, a cultivated meat company, raised **\$105 million** in a series B round. They intend to use the funds to bring their product to market by the end of 2022.

Redefine Meat's **\$29 million** series A raise allowed them to scale-up production and launch their plant-based products on the European market.

Equinom, a crop optimization company working to produce high-yield, plant-based proteins raised a **\$20 million** series C.

| | 2020 | 2021 |
|---------------------|-------|--------|
| Number of deals | 15 | 19 |
| Largest deal | \$18 | \$347 |
| Average deal amount | \$6.0 | \$29.5 |
| Median deal size | \$2.5 | \$1.3 |

Alternative Protein Investment by Country

Global alternative protein investments grew 60% from 2020 to 2021 to a new record-breaking total of \$5 billion

Israel is second only to the U.S in investment and number of alternative protein startups

#2

#2 in the world in number of **cultivated** companies - 12 companies

#2

#2 in the world in the number of **fermentation** companies - 12 companies

#1

#1 in the world in number of **alternative seafood companies founded in 2021** - 5 companies

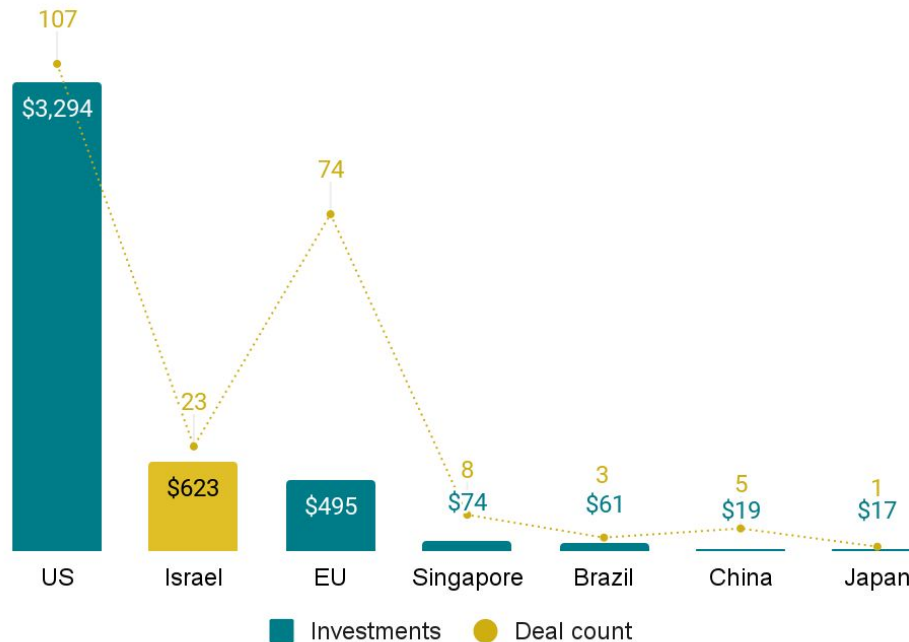


Figure 2.3: Global investment in alternative proteins in millions of USD (2021).

Cultivated Meat Investment by Country

In 2021 Israel maintained its position as a global powerhouse in cultivated meat. **Second only to the US, over 36% of investment in the field was in Israeli startups.**



Figure 2.4: Investments in cultivated meat startups: country ranking by millions of USD (2021).

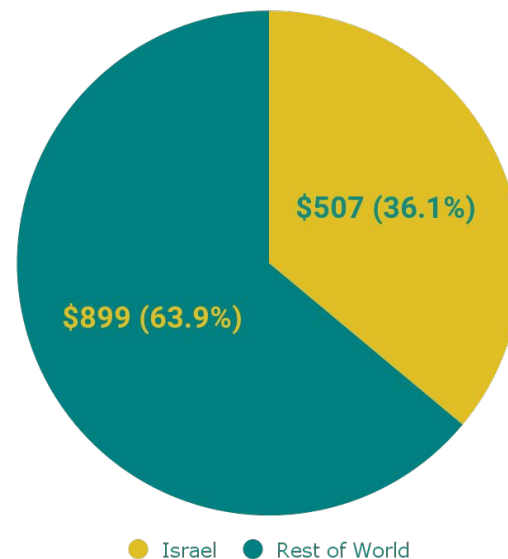


Figure 2.5: Investment in cultivated meat globally and in Israel in millions of USD (2021).

Israeli Food-tech Comparisons

Alternative proteins comprised **~70%** of food-tech investment in Israel in 2021

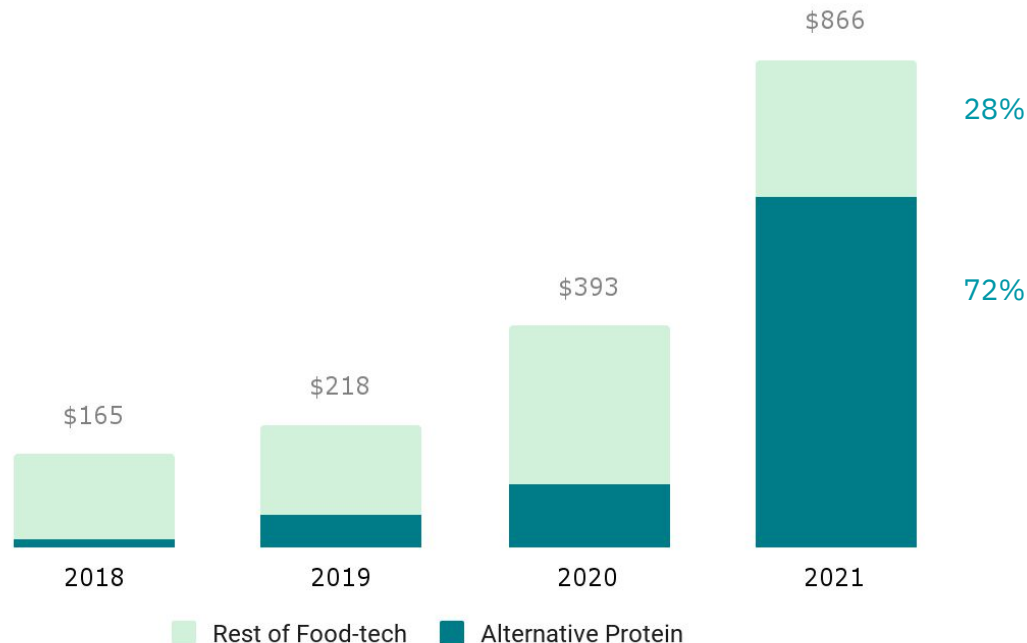


Figure 2.6: Alternative protein investment out of food-tech investment in millions of USD (2018-2021). Food-tech data from SNC.

Israeli Climate-tech Comparisons

Alternative proteins are still underfunded as compared to their emission reduction potential

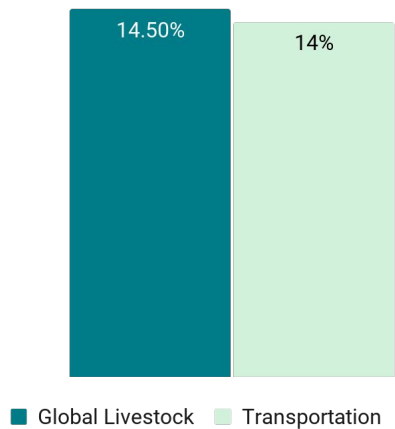


Figure 2.7: Percent of global GHG emissions by sector, according to data from the US Environmental Protection Agency (EPA) and the Food and Agriculture Organization of the United Nations (FAO).

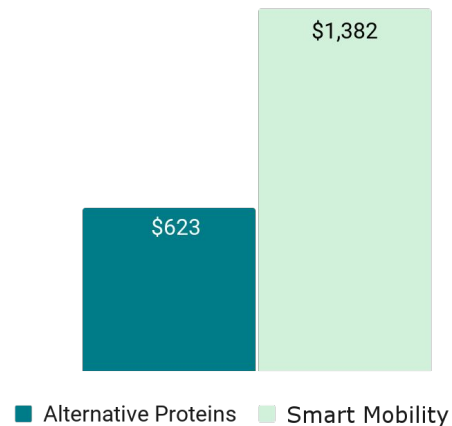


Figure 2.8: Funding by sector in Israel in millions of USD (2021). Smart mobility funding information taken from [SNC Finder](#).

Most Active Investors

Ranking of investors by number of deals in Israel

| | | | |
|----|---|---|---|
| 11 | CPT Capital, The Kitchen FoodTech Hub | 4 | Tyson Ventures, Emerald Technology Ventures, EIT Food |
| 6 | Strauss Group, Unovis Asset Management | 3 | Good Seed Ventures, Hanaco Venture Capital, Israel Innovation Authority, Jerusalem Venture Partners, Manta Ray Ventures, Peregrine Ventures, Stray Dog Capital |
| 5 | Bits x Bites, S2G Ventures | | |

● Israeli investors ● Foreign investors

Top 10 Lead Investors

Hanaco Ventures
ADM Ventures
L Catterton
Disrupt AD
Happiness Capital
The Phoenix
JVP
S2G Ventures
Emerald Technology Ventures
MoreVC

Business & Industry

gfi / Good Food Institute, Israel Photo Credit: Yo! →



Partnerships

Food giants are betting on plant and cultivated meat



SavorEat signed a partnership with Sodexo for the launch of its plant-based burger in US colleges in 2022.



CBC (Coca-Cola Israel) signed an agreement to provide Wilk with access to expertise and dairy manufacturing plants, and distribute Wilk's products.



BRF, one of the largest meat producers in the world, will co-develop and produce cultivated meat using Aleph Farms' patented production platforms, and distribute the products in Brazil.



Tnuva, Israel's largest food company, and Pluristem, a stem cell company, announced the launch of new cultivated meat company NewCo. Tnuva will invest \$7.5M in the new venture.



Nestlé, the world's largest food company, is working with Future Meat Technologies to evaluate technologies to produce cultivated meat and together create a blended product.



Strauss partnered with Belgian company Alpro, the world's leading producer of plant-based dairy products, to produce fresh plant-based milk for the Israeli market.



Equinom signed a deal with alternative meat brand Meatless Farm to provide them with improved pea protein, increasing the protein content of their alternative meat products by up to 50%.



Tnuva will work with Migros, Switzerland's largest food retail group, to produce dairy substitutes for the European market.

Product Launch: Case Study - Redefine Meat

250

Over 250
Restaurants

4

Four Countries
United Kingdom,
Germany,
Netherlands, Israel

7

Seven
Products

Product Launch - 'New-Meat™'

Redefine Meat launched their New-Meat™ line, **the first ever 3D printed whole-cut plant-based steak** to hit the market. Backed by renowned **Michelin-starred chefs** such as **Marco Pierre White** and **Ron Blaauw**, the product launched in select European and Israeli restaurants in November. Redefine Meat plan on building factories in Europe, America and Asia over the coming years as they scale up production.



2021 Product Launches: Israeli plant-based startups launch products overseas



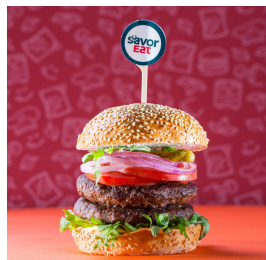
Yo!

Yo! launched the first-ever plant-based fried and poached eggs to hit the market. Currently available at select restaurants in Israel, expansion is planned to the EU.



INNOVOPRO

Innovopro released two new products based on their flagship chickpea protein: CP-XTURA™ 65 - a textured chickpea protein for meat alternatives, and CP-FOAM™ 1001 - an egg white replacement for desserts.



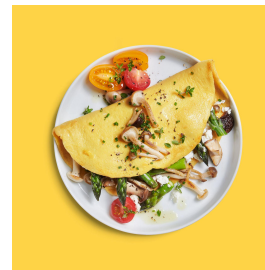
SavorEat

SavorEat launched their 3D-printed, robot chef cooked, plant-based burger at Israeli restaurant chain BBB.



ChickP

ChickP released their second product, Chickpea Native Starch, developed for food and beverage applications.



ZERO EGG

Zero-egg entered international markets with two powdered products: EGG Basics and BAKE Basics. In 2021 they increased their offerings to include Zero Egg Liquid and the Zero Egg Patty.

Scale-ups and Acquisitions

Future Meat Technologies opens pilot plant



Future Meat Technologies opened a pilot plant in Rehovot to ramp up production of their cultivated meat products. The plant can produce up to 500kg a day. They have announced plans to build a larger, U.S.-based, production facility in the coming year.

Strauss acquires tofu producer



Strauss, one of Israel's largest food producers, acquired Israel's leading tofu producer Meshek Weiler, further expanding their growing offering of alternative proteins. The deal is pending regulatory approval.

Chemical MNC ICL expands alternative protein efforts



ICL opened a facility in St. Louis for transformation of plant protein into fibers with meat-like texture. The facility is expected to produce more than 15 million pounds of product a year at full capacity.

Redefine Meat to build new factories in Israel and the EU



Redefine Meat announced plans to build new factories in Israel and the Netherlands for their 3D plant-based meat, allowing them to increase production.

2021 New Established Startups

2021 saw a record **eleven new alternative protein startups** founded: six cultivated, four plant-based, and one fermentation derived.

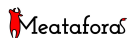
- Cultivated
- Plant-based
- Fermentation



Sea2Cell is a Fresh Start company developing cultivated fish based on proprietary immortalized fish cell lines.



E-FISHient Protein is a joint venture of Biomeat Foodtech and Volcani Center for the development of cultivated Tilapia.



Meatafora isolates and cultures farm animal stem cells inside plant-derived collagen microcarriers to produce cultivated meat.



Forsea is a cultivated seafood company with a proprietary platform technology to produce seafood and fish meat.



Wanda Fish is a cellular agriculture company aiming at producing cell-based fish meat.



Profuse, a Fresh Start company, have developed technology for optimization of the cell differentiation, fusion and maturation production-stage of cultivated meat.



Plantish is developing technology for the additive manufacturing of plant-based fish fillets.



Egg'n'up, a subsidiary of Savor-Eat, creates novel plant-based egg solutions



Alfred's is developing technology for whole-cut food texturization, for the creation of plant-based food.



MEALA is developing new ingredients and processes to replace methyl cellulose and hydrocolloids in alternative proteins.



MUSH, a The Kitchen company, grows edible mushroom mycelium to create innovative raw ingredients with high nutritional values.

Table 3.1.
Alternative protein
startups in Israel
by stage

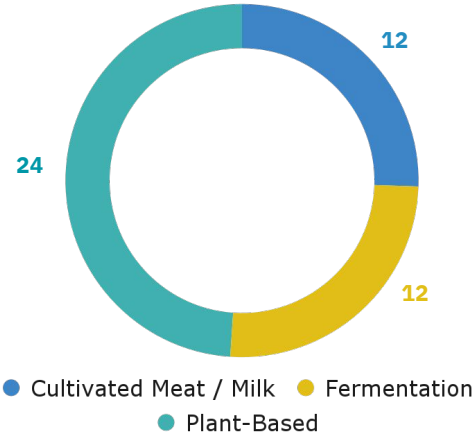


















































Figure 3.1. Companies by sector

| | Seed | Development | Pilot & Scaleup | Commercialisation & Growth |
|--------------|---|--|---|---|
| Cultivated |       |    |    | |
| Fermentation |    |        |  |  |
| Plant-based |     |       |    |            |

Map of Startups in Israel

Tel-Aviv District

Tel-Aviv

Mediterranean Food Lab
SuperBrewedFood
Chunk Foods
Else Nutrition
More Foods
Hinoman
MUSH
CHKP
Meat the End
Fantastic Farms
Image
Simpliigood

Central District

Rehovot

ReMilk
MeaTech
Aleph Farms
SuperMeat
Wilk
Equinom
NRGene
Redefine Meat
Plantish
Egg'n'up
Chick.p
Future Meat
Kinoko-tech
SavorEat

Modiin

Alfred's Food Tech

Rishon

EFISHient

Southern District

Ashdod

Yeap
Forsea
YoFix
Wanda Fish

Shekef

Brevel

Northern District

Kiryat Shmona

Profuse
Biobetter
Sea2cell
Yemoja

Yotneam

Imagindairy
NextFerm

Shlomi

Wonders of Nature

Haifa

Meala

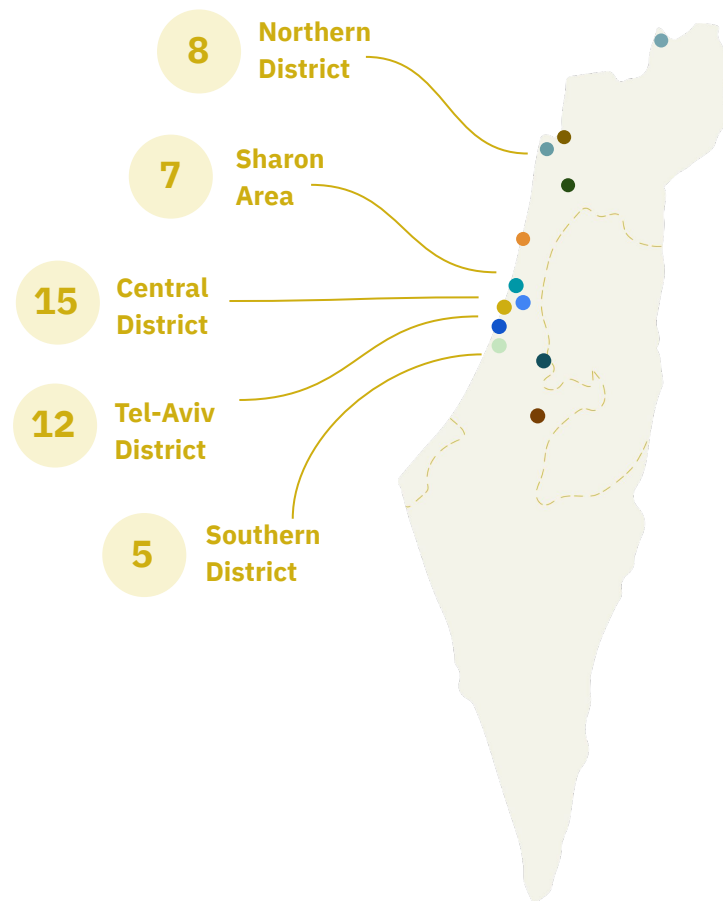
Sharon Area

Hasharon

Biofood
Zero Egg
Innovopro
Yo

Netanya

Meatafora
RilBite



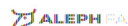
Food-tech Incubators

The Kitchen and Fresh Start are the leading incubators for alternative protein ventures

The Kitchen
FoodTech Hub

The Kitchen FoodTech Hub

The Kitchen FoodTech Hub is a seed investor and incubator, owned and supported by the Strauss Group, an Israel-based international food-product manufacturer. Among its global partners are food giants PepsiCo, Danone, Mondelēz, Givaudan, and Mitsui. Its alternative protein startups include: Aleph Farms, Yofix, Zero Egg, RilBite, Imagindairy, Wanda Fish, Forsea, MUSH, and Yeap. The Kitchen FoodTech Hub offers a pre-seed or seed investment of between \$650,000 to \$1 million.



InNegev InNegev

InNegev is a technology incubator in southern Israel, dedicated to fostering Israeli innovation, including in the food-tech and agritech fields.



Fresh Start

FreshStart is an Israeli food-tech startup ecosystem. Part of the Israeli government's \$100 million program to build a food-tech cluster in northern Israel, the incubator is supported by four strong and equal partners: Tnuva, Tempo, Ourcrowd fund, and Finistere Ventures. Fresh Start offers a minimum \$860,000 fund for two years, infrastructure and support services, professional technological and business mentoring, local and global industry access, funding platform access, and holistic assistance in relocating to the north. Its alternative protein startups include Sea2Cell and Profuse.



trendlines
medical · agrifood · labs

The Trendlines Group

Trendlines invests in and incubates food-tech and medical-device startups. The company invests through its two incubators located in Israel and Singapore, which local government agencies support and the company funds through the Trendlines Agrifood Fund and the Bayer Trendlines Ag Innovation Fund.

Food-tech Accelerators



ICL Planet Startup Hub

ICL Planet Startup Hub is ICL's vehicle for working with innovative companies, synergizing with their novelties, and shortcutting their path to becoming global players. ICL Planet seeks to invest in and grow game-changing tech companies in the crop-nutrition and food domains that address critical global needs and intend to positively impact the environment.

STUDIO.GALIL

STUDIO.GALIL

STUDIO.GALIL is a food and agritech cultivation platform launched by JVP chairman and founder Erel Margalit. The platform offers start-ups access to top-tier investors, corporate partners, 1:1 mentorship with industry leaders and instant global reach as part of the international Margalit Start Up City network.



IFF Innovation Israel

This international flavor and fragrance giant has established the IFF Innovation Israel Lab, together with the Israel Innovation Authority, for food-tech startups in the initial stages.



EIT Food Accelerator Network

The EIT Food Accelerator Network (FAN) is an accelerator in partnership with the Technion Institute of Technology. The program delivered across Europe, supporting high impact agrifood startups to maximize their success.



MASSCHALLENGE

MASS Challenge

MassChallenge is a non-profit organization dedicated to innovation. In partnership with Modern Agriculture Foundation (MAF) their accelerator will serve as a platform for creating partnerships and networking opportunities across the alternative protein ecosystem.

Israel Plant-Based Retail Market Data



Market Size and Growth

Plant-based products are a significant engine for growth in the retail market

To account for variance due to lockdown related changes in retail activity, we chose to display two-year growth.

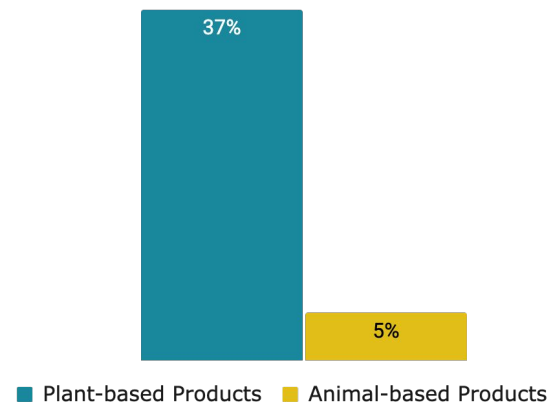


Figure 4.1: Israeli animal-based vs. plant-based retail two-year growth (2019-2021). (Data from StoreNext)

Growth across the entire retail industry slowed in 2021 as the end of lockdowns saw a return to food-service.

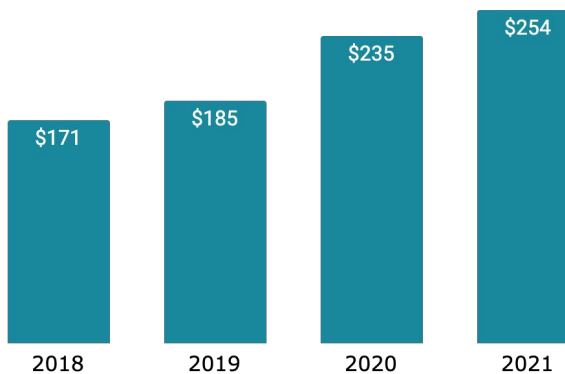


Figure 4.2: Israeli plant-based retail market size in millions of USD (2018-2021). (Data from StoreNext)

Plant-Based Dairy

Milk is at the forefront of the plant-based dairy retail industry, with the plant-based cheese market still in its infancy

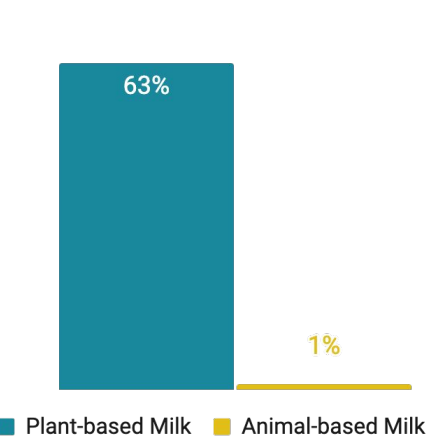


Figure 4.3: Israeli retail animal-based vs. plant-based milk market two-year growth (2019-2021). (Data from StoreNext)

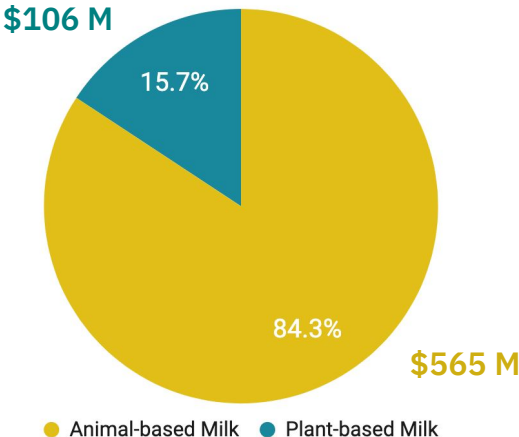


Figure 4.4: Israeli plant-based and animal-based milk retail sales as percentage of market share in millions of USD (2021). (Data from StoreNext)

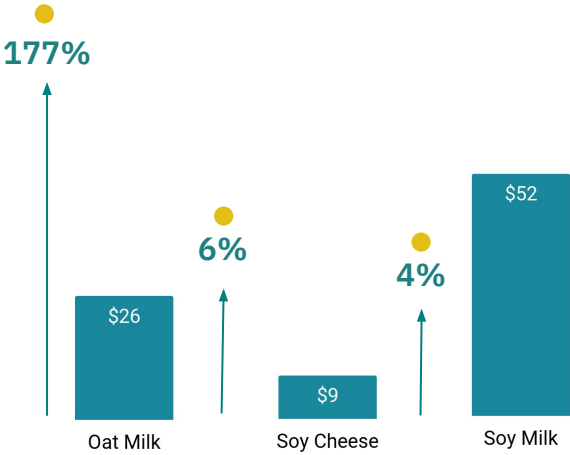


Figure 4.5: Market size and YoY growth of the fastest growing plant-based dairy categories in millions of USD (2021). (Data from StoreNext)

Plant-Based Meat

Unlike in the rest of the world, plant-based meat in Israel forms a notable percentage of the overall meat retail industry, showing consumers are ripe for adoption

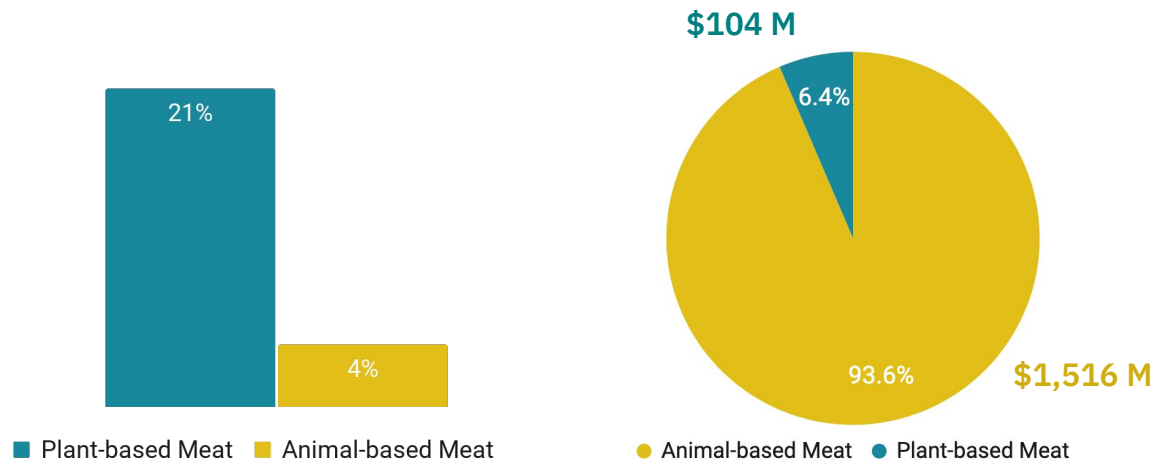


Figure 4.6: Israeli retail animal-based vs. plant-based meat market two-year growth (2019-2021). (Data from StoreNext)

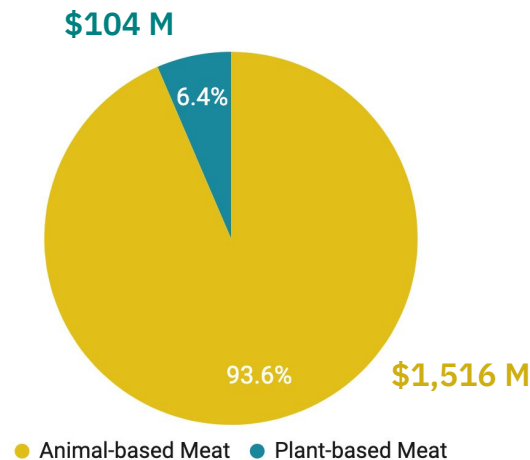


Figure 4.7: Israeli plant-based and animal-based meat retail sales as percentage of market share in millions of USD (2021). (Data from StoreNext)

* Plant-based meat includes plant-based schnitzel, ground beef, burgers, sausages, chicken breast, ready-made meals and tofu

**Animal-based meat includes meat and fish

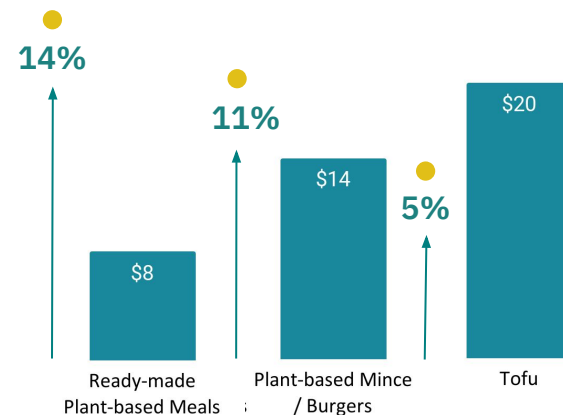


Figure 4.8: Market size and YoY growth of the fastest growing plant-based meat categories in millions of USD (2021). (Data from StoreNext)

Policy



Global Government Investment in Alternative Proteins

Several countries have identified the potential of **alternative proteins** as an engine for growth and strategically advance it through **monetary investments, expanding research and regulation**.

However, **no country has implemented a broad national plan** to promote alternative proteins across all government ministries. This presents an **opportunity for the Israeli government** to be the **first to fully realize** the potential of this field.

£75M

United Kingdom

Government investment of £50M for the development of an innovation cluster to assist researchers and innovators in the development, testing and upscaling of innovative alternative solutions. Government investment of £75M over 5 years for alternative protein research.

\$100M

Canada

\$100M investment in production and manufacturing of plant-based rich food; A network of innovation and trading centers estimated at \$65M, and work with over 100 companies a year.

€168M

Denmark

Government decision to invest €168M in development and promotion of plant-based alternative protein.

R&D
Center

India

Building of cultivated meat R&D center. Support for protein development research facilities.

Research
Fund

United States

A regulatory outline for cell agri-tech for the production of cultivated meat. First of its kind government grant for collaborative research on cultivated meat. A research fund for the alternative-protein field set by USDA.

€32M

EU

Categorization of the alternative protein field as one of Horizon Europe's 2021-22 focus areas. Financing plans totaling €32M through the Horizon 2021-2027 program.

Approval
of Sale

Singapore

First regulatory approval in the world to sell cultivated meat. Investments in international R&D facilities. Building of first pilot protein production apparatus.

Israeli Government Activity

Growing interest across ministries presents an opportunity for a holistic, long-term national plan



Israeli President Isaac Herzog tastes Future Meat Technologies' cultivated meat

Picture credit: Amos Ben Gershom



Israeli **President Isaac Herzog** became the first president to taste cultivated meat, produced by Future Meat Technologies, as part of Israel's national climate strategy ahead of COP26.



The Israel Innovation Authority (IIA), has published an industry-academy survey for alternative protein infrastructure requirements to evaluate the possibility of launching a tender in the field.



The Ministry of Science Technology and Innovation has opened a call for research proposals in the total value of 25 million USD, including alternative proteins among the fields of research.



In collaboration with **the IIA, The Food Safety Authority (Ministry of Health)** has constructed a pilot program for establishing a transparent and clear regulatory pathway for cultivated meat and fermentation companies.



The Minister of Agriculture and Rural Development is considering embracing GFI's alternative protein national policy plan, and bringing the entire food sector within the ministry's responsibility. The ministry also approved the funding of cultivated meat research.



Alternative protein technologies as a climate and food crisis mitigator, and important growth factor for the Israeli ecosystem, have been incorporated in the syllabus of diplomatic courses provided to cadets of **the Ministry of Foreign Affairs**.



The Economic mission of the Ministry of Economy has been incorporating the field of alternative proteins into their agendas and talking points in its branches worldwide and is promoting events to expose and connect the Israeli ecosystem with the local food industry and leading investors.

The Israeli Innovation Authority (IIA) Provides Increasing Support for Alternative Proteins

Alternative proteins have garnered increasing support from the IIA over the last decade. Over that period the IIA have provided approximately **\$33 million** in funding to alternative protein ventures, close to 80% of which have been provided in the last three years.

In 2021 total IIA support for alternative protein was approximately **\$13 million**, which amounted to 60% of IIA funding for all food-tech ventures in 2021. This trend shows the continuing recognition of the importance of alternative proteins in the food-tech sector as well as to the Israeli economy at large.

רשות החדשנות
Israel Innovation
Authority







| | 2011-2021 | 2021 Alone |
|--|-----------|------------|
|  Companies Supported | 47 | 19 |
|  Total Support | ~\$33M | ~\$13M |
|  New Startups | ~\$18M | ~\$9M |
|  Academia Based | ~\$8M | ~\$1M |
|  Growing Companies | ~\$6M | ~\$2M |
|  Intl Programs | ~\$1M | ~\$0.5M |

Table 5.1: IIA support for alternative proteins in 2011-2021 vs 2021 alone

World's Largest Cultivated Meat Consortium Receives Initial IIA Approval

Led by Tnuva's innovation department, the consortium will bring together companies and academic establishments to develop advanced and scalable technology for the creation of cultivated meat. The founding of a consortium of this size will facilitate the exchange of ideas between the academy and the industry, a critical step for the development of new and innovative solutions.



Expected Funding ~\$15M



Companies 10



Academic Institutions 10

רשות החדשנות
Israel Innovation
Authority

" The IIA works to enable, grow and position Israel as a leader in the food-tech sector, and in the field of alternative proteins in particular, and invests in startups in the field at every stage of their development. We are excited to see startups which were supported by the authority at the beginning of their journey now in very advanced stages after significant raises and becoming a large and prosperous industry in Israel. "



Dror Bin,
IIA CEO

Untapped Opportunities for Growth

While government recognition of the importance of alternative proteins is growing, there are still several untapped opportunities for growth that require government intervention to realize. **Together with EY, GFI conducted in depth interviews with the industry, academia and the government to identify the following three axes as the most promising:**



Research

The ecosystem's accelerated development leads to ever more complex challenges. Boosting innovation and development requires:

Increasing the number of researchers in the field of alternative proteins.

Designated academic programs in alternative proteins and related fields.

Further recognition of the field among research-financing entities.



Infrastructure

As startups mature and begin production, further growth could be fueled by improved infrastructure, including:

Dedicated special, complex and expensive equipment for production and scale-up.

Trained personnel to assist and guide the work.

Scale-up infrastructure could reduce the chances of companies moving their production facilities abroad.



Regulation

New food regulation is a focal criterion for alternative-protein companies in selection of target countries for development and production.

Adequate regulatory framework would set the basis for food companies to establish their production facilities in Israel.

GFI's National Plan for Capitalizing on Opportunity

Following the identification of the three axes for the most fruitful government intervention, GFI worked with EY to identify the most significant steps that could be taken along each of the axes. A model was built to determine the necessary investments in each field, as well as the forecasted return on investment which can be seen in the next slide.



Investment In Research

Founding of a multidisciplinary research center (577M)

Making academic knowledge accessible to the industry (520M)

Designated research grants (234M)

Attracting foreign researchers (32M)

Training personnel (33M)

NIS 1,396 M

*Total investment needed



Investment in Infrastructure

Cultivated hub (104M)

- Bioreactors
- Laboratory equipment

Fermentation hub (81M)

- 3 sizes of fermenters
- Tailored bio-reactors

Plant-based hub (50M)

- Extruder
- Protein texturizing equipment
- Spray drying equipment

NIS 236 M

*Total investment needed



Regulation

Build regulatory expertise in alternative protein technologies by the Israeli regulator.

Establish a transparent framework for companies to submit their application for regulatory approval.

GFI's National Plan - Forecasted Economic Benefits



Creation of new entities

760 Israeli entities

Over 760 Israeli entities dealing with alternative-protein

383 Startups

63 local alternative-protein factories

Over 30 global players attracted to Israel



Creation of new jobs

55,000 Jobs

Creation of over 55,000 jobs in the Israeli alternative-protein ecosystem

Over 22,000 high-tech jobs

Over 32,000 new jobs

Over 32,000 new jobs in industrial & global companies and support services

Wages 65% higher

Wages 65% higher than the national average salary



Taxes paid

Taxes paid totaling over NIS 26 B

NIS 19 B capital gains

NIS 19 B capital gains tax from Israeli shareholder acquisitions

Ability to repatriate 300 life sciences academics

Innovation in production technologies, upskill of capacities and investment in physical capital to improve productivity and products



Sustainability & economy

Attract foreign capital of over NIS 74 B

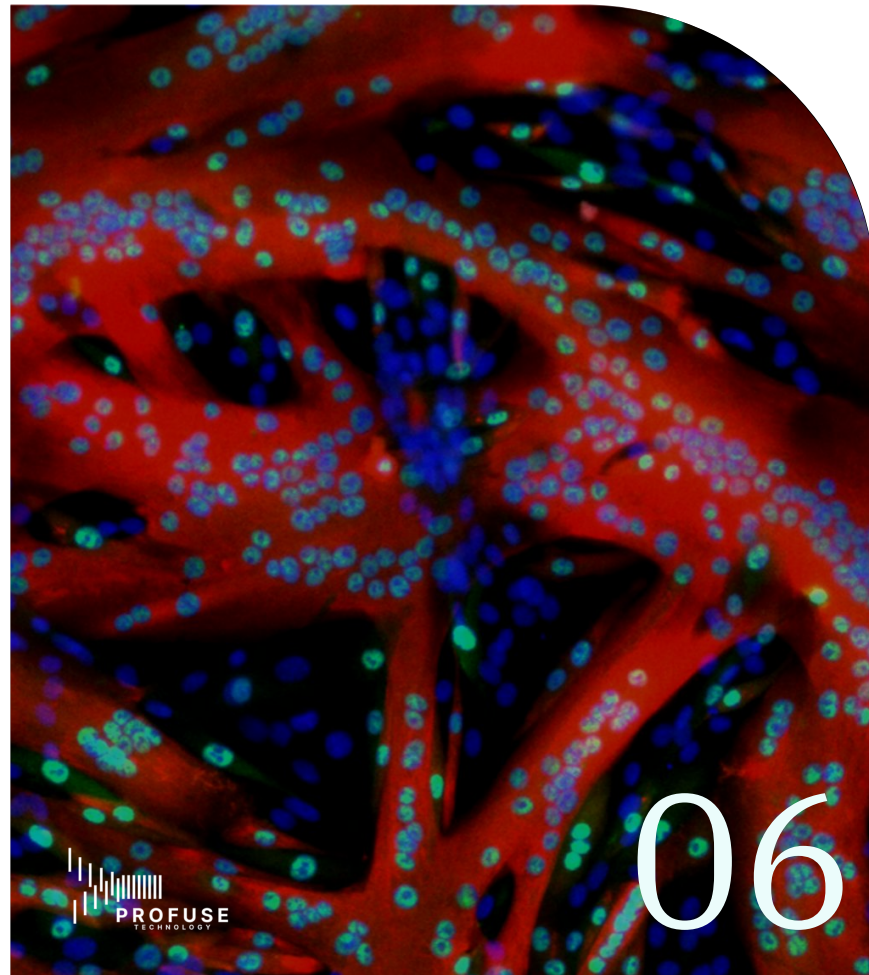
Contribution to climate and sustainability target goals by **cutting 89%** of emissions, 87% water consumption, and over 60% of pastures

Expand exports, limit impact of cost of imports, lower dependence on foreign elements

Position Israel as a world leader in the field

Academic Research

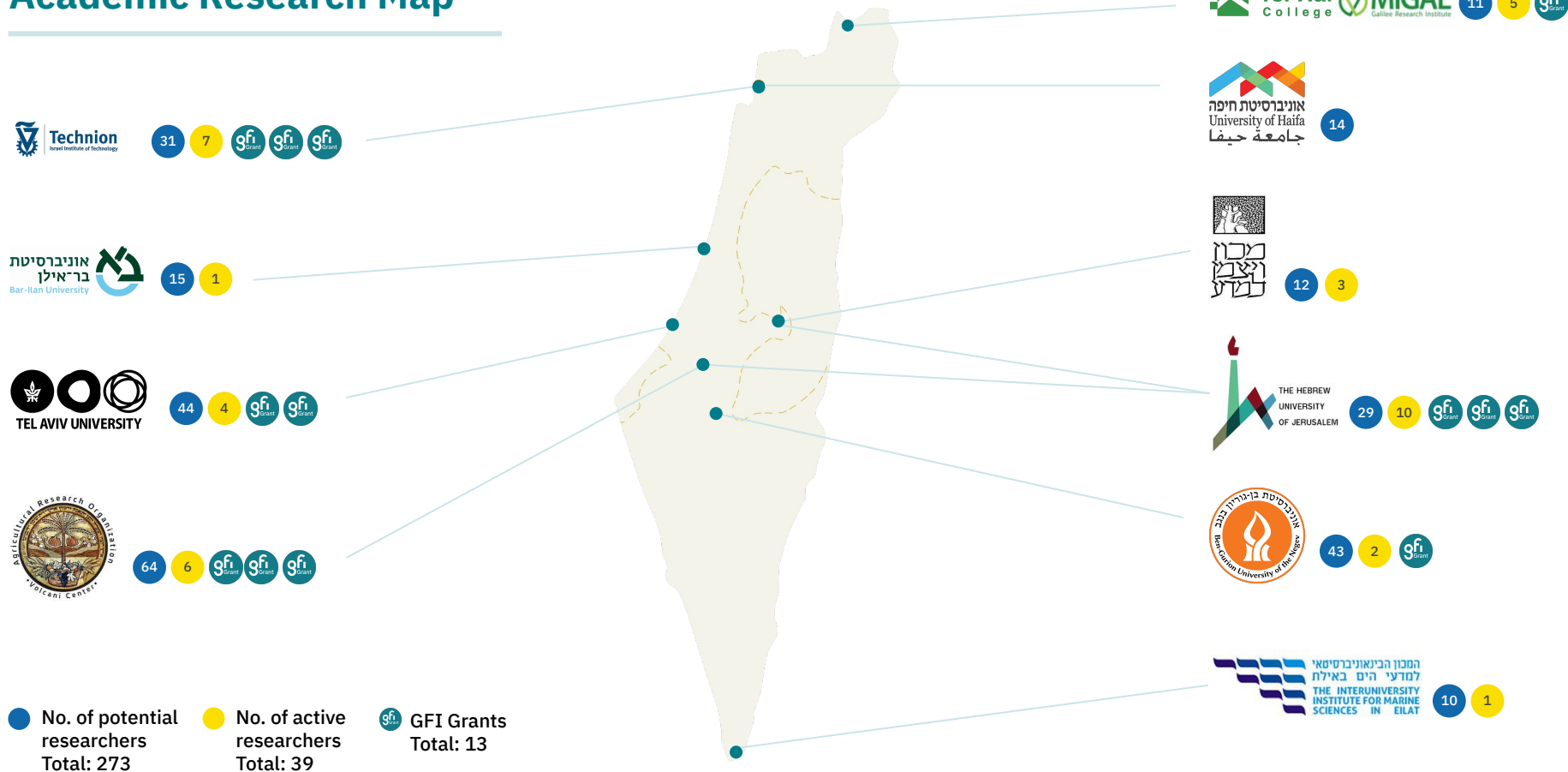
gfi / Good Food Institute Israel Photo Credit: Profuse →



PROFUSE
TECHNOLOGY

06

Academic Research Map



Startups Founded by GFI Grantees

GFI grants ensure research into whitespaces
and push academics to innovation

“The GFI 2-year research grant that was granted to us in 2019 was actually the opening shot of my research on cultivated meat, which has ultimately led to the establishment of a startup company, Meatafora. Once starting to execute the GFI-funded research, the field of clean meat platforms has fascinated me, thus constantly leading to new ideas that were rapidly translated into diverse additional projects harnessing different aspects of my tissue engineering research experience to the cultivated meat field.”



Prof. Marcelle
Machluf - Meatafora



“In our exploratory grant from GFI we have worked on developing a novel muscle-bovine derived-bESC progenitor organoid and gained the knowledge in porting the 3D organoid generation process, from ESC to somite, to bovine cells. This proof of concept has helped us in raising additional funding and to expand our research to different cell lines.”



Dr. Iftach
Nachman - Forsea



2021 Competitive Research Grant - up to \$250K

GFI's Competitive Research Grant Program

was focused this year on whole cuts of meat and seafood. A total of **\$5 million** was awarded to 21 projects from eight countries, two of which are from Israel:

Prof. Oded Shoseyov (The Institute of Plant Sciences and Genetics) in collaboration with **Dr. Sharon Schlesinger** (Animal sciences) both from the Robert H. Smith Faculty of Agriculture, Food and Environment, The Hebrew University of Jerusalem are working on the development of **cost-effective "Smart Scaffold" production for the cultivated meat industry application**. They are offering an innovative approach in the field of tissue engineering that will enable the cost effective production of complex cultivated meat products that require multiple cell types to be organized in a preordered shape tissue. **BioBetter Ltd.** is another collaborator in this project.



Prof. Oded Shoseyov



Dr. Sharon Schlesinger



Dr. Iftach Nachman

Dr. Iftach Nachman from the School of Neurobiology, Biochemistry and Biophysics, Faculty of Life Sciences, Tel Aviv University is working on the **assembly and maturation of skeletal muscle organoid building blocks into thick whole-cuts**. His lab is working on bridging the gap between the single muscle organoid level and the whole-cut cultivated meat tissue by developing methods for the assembly of multiple organoid building blocks into aligned and mature skeletal muscle tissue.

For more information about projects funded by GFI, please explore [this page](#).

2021 Exploratory Research Grant - up to \$50K

GFI's [exploratory research grants](#) are dedicated to experimental ideas and investigative research that could lead to big breakthroughs. During 2021 three proposals from Israel were funded through this program:

Prof. Ayelet Fishman from the department of Biotechnology and Food Engineering, Technion is **developing a fermentation process for potato patatin**. Patatin is a functional protein that is used in food applications and in meat replacements. It is currently manufactured from potato fruit juice with low yields. The goal of this research is to produce and characterize recombinant patatin for the food sector and investigate its potential applications.

Dr. Iftach Nachman worked on **developing a novel bESC-derived bovine muscle progenitor organoid** that will be scalable and economical due to its suspension nature and use of intra-organoid signaling, reducing the need for external factors in the differentiation medium.



Prof. Ayelet Fishman



Dr. Roni Rak



Dr. Iftach Nachman

Dr. Roni Rak from the Institute of Animal Science, Agriculture Research Organization, Volcani center is studying **the genetic basis of proliferation and differentiation in cultured meat**. The goal of this research is to search for genes and pathways controlling the proliferation rate and capacity of bovine mesenchymal stem cells (bMSC). To this end, a CRISPR/Cas9 whole-genome targeting library will be used to measure, in pool competition, the effect of each gene on the proliferation rate of bMSC.

You are invited to explore all GFI funding opportunities [here](#).

2021 Local Israeli Grant

During 2021-2 GFI Israel launched a new local grant program looking for the next promising solutions to the field's most pressing challenges

- **Prof Zeev Wiesman**, Head of Phyto-Lipid Biotechnology Lab (PLBL), Department of Biotechnology Engineering, Ben Gurion University of the Negev together with **Prof. Niva Shapira** from Ashkelon Academic College will work to design and optimize natural nano-emulsion systems of omega-3 nutritive lipids with other nutrients dispersed within edible vegetable meat-like products for enhanced nutritional value.
- **Dr. Ariel Shabtay** together with **Dr. Miri Cohen-Zinder** and **Dr. Roni Rak** all from Volcani Center will work on defining the genetic variance of proliferative capacity and adipogenic potential of bovine adipocytes.
- **Dr. Oren Shelef** and **Dr. Jakob Shimshoni** both from Volcani Center together with **Prof. Rachel Amir** from Migal and **Dr. Loai Basheer** from Tel-Hai College will work on evaluating the functionality of wild lupine proteins for novel food production.
- **Prof. Yaacov Nachmias** from the faculty of Natural Sciences at the Hebrew University of Jerusalem is working on developing an injection molding steak system.
- **Prof. Oded Shoseyov** from the Faculty of Agriculture, Food, and Environment at the Hebrew University of Jerusalem is developing a cost-effective extraction method of high-quality Rubisco protein from green waste of common crops.

Alternative Protein Courses in Israeli Academia

Motivation:

Expected industry bottleneck and demand for alternative protein scientists.

>100 students

life science students taught per year in Israel

Scope: 2 credits

Lectures on cultivated meat, plant-based meat and fermentation technology written by GFI experts.

Our course materials support **8 universities globally with 10 additional courses opening** with over 100 life science students taught per year in Israel

High demand and student engagement beyond course requirements

Contact us to open a course in your university





Israel State of Alternative Protein Innovation Report

July 2022 Mid-year Update



Alternative Protein Fundraising in Israel

Investments in alternative protein in Israel grew 160% as compared to H1/2021, from \$120 million to \$320 million in H1/2022

The plant-based and fermentation sectors saw significant growth in H1/2022, with investments in fermentation over five times those in all of 2021

Following large funding rounds in the cultivated sector in H2/2021, during 2022 we see the establishment of new startups raising seed and pre-seed rounds

Data sources and calculations:

GFI Israel compiled a list of companies focused primarily on producing alternative proteins or serving those who produce them. Our analysis relied on PitchBook, Crunchbase, Startup Nation Central and other public data sources.

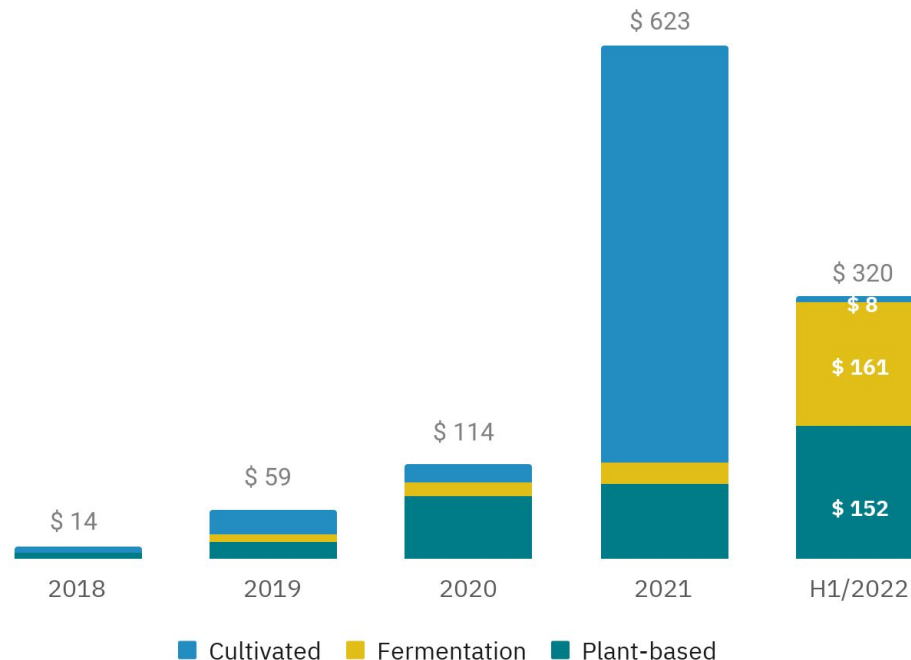


Figure 7.1: Israeli startup fundraising by alternative protein sector in millions of USD (2018-2021).

Alternative Protein Investment by Country

Global investments totaled \$1.75 billion in H1/2022, with **Israel's \$320 million in investments accounting for 18% of total investments**

#1

Israel is **#1 in the world** in **plant-based** investments H1/2022, comprising **22% of global investments** in the field - \$161 million

38%

38% of global investments in **fermentation-derived** proteins were in Israeli startups - \$152 million

#2

Israel is **#2 in the world** in **total investments** after only the US

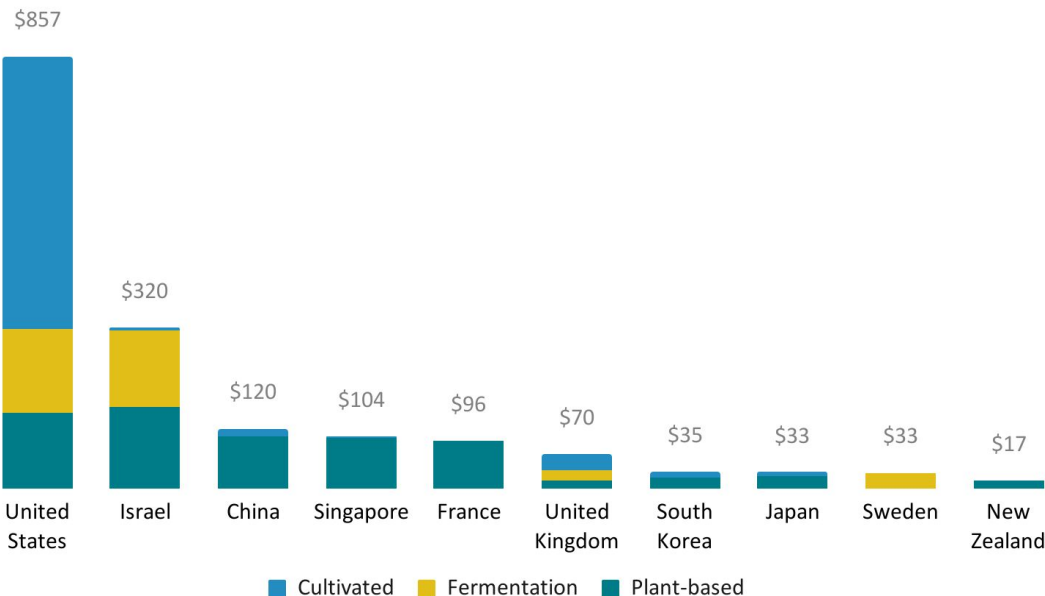


Figure 7.2: Global investment in alternative proteins in millions of USD (H1/2022).

Source: GFI analysis of PitchBook Data, Inc, additional \$7.5 million investment in cultivated meat company confirmed by news outlet Calcalist. Data has not been reviewed by PitchBook analysts.

Israeli Tech Comparisons

Alternative proteins comprised ~70% of food-tech investment in Israel in H1/2022

While tech investments in Israel saw an 18% drop YoY from H1/2022 to H1/2022 according to IVC's Q2/2020 report, investments in alternative proteins saw a 160% YoY growth

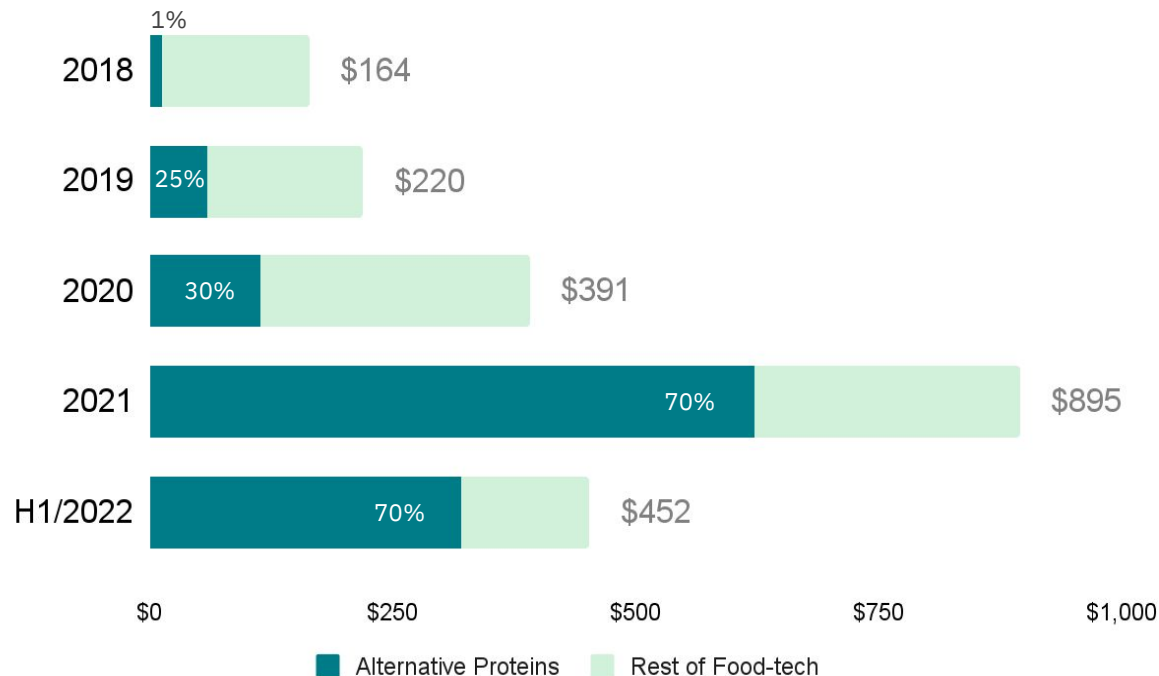


Figure 7.3: Investment in food-tech and alternative proteins in Israel millions of USD (2018-H1/2022). Data on food-tech from IVC Q2/2020 report.

Alternative Protein Investment by Company

Israeli plant-based steak developer Redefine Meat's \$135 million round was the largest by an Israeli company in H1/2022

Fermentation-derived dairy company Remilk followed in a close second with a \$130 million series B

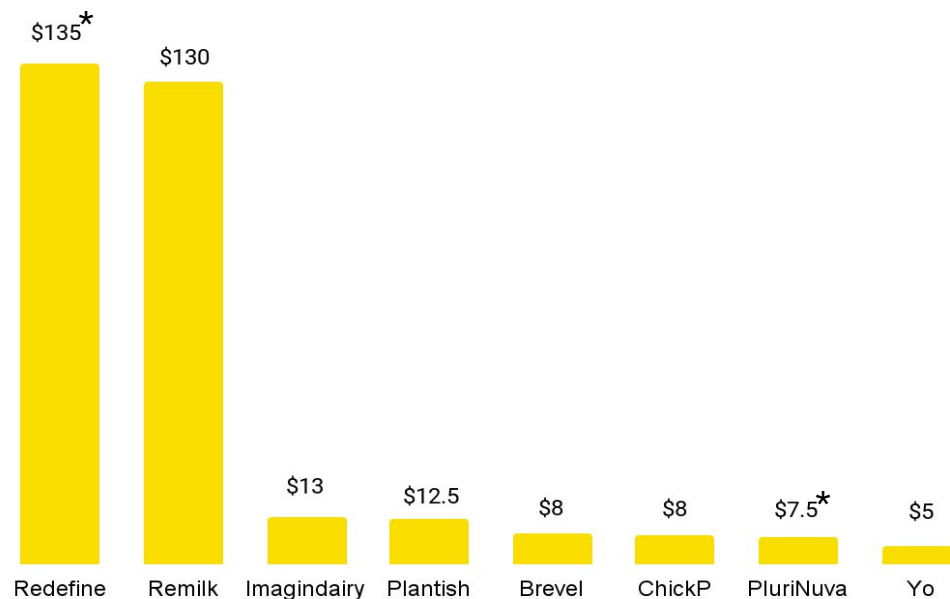





























Figure 1.6: Private investments in alternative protein companies in millions of USD (H1/2022).

Table 2.1. Alternative protein startups in Israel by stage (55)

| | Seed | Development | Pilot & Scaleup | Commercialisation & Growth |
|--------------------------|---|--|--|--|
| Cultivated (14) |         |    |    | |
| Fermentation (17) |       |        |    | |
| Plant-based (24) |       |     |    |            |

H1/2022 New Startups

The first half of 2022 saw a record **ten startups** founded or newly entering the alternative protein space: four cultivated, four plant-based, and two fermentation-derived.

- Cultivated
- Plant-based
- Fermentation



Optium uses AI to support cultivated meat companies' smooth transition to industrial scale production.



Enzymofit is developing an enzyme-based production process that boosts ingredient capabilities for plant-based proteins.



Gavan is a biotech company developing a technology to extract proteins from plant-based sources.



Pigmentum offers a proprietary molecular technology platform which can turn crops into efficient producers of high-value compounds.



Bee-io, a fermented honey company, recently announced they will develop fermentation-derived Buffalo dairy proteins.



PluriNuva is a collaboration between Pluristem and Tnuva, working to develop cultivated meat products.



Mermade is a cultivated fish company with a recyclable fermentation-based process for the sustainable creation of seafood.



Genesa is a seaweed food tech company, producing alternative protein extraction & ingredients from macro-algae.



PoLoPo is developing a plant bio-factory for high scale, custom-made production of proteins. Their first candidate is egg protein (ovalbumin) in an edible plant.



Eggmented Reality create fermentation-based non-GM functional proteins for the food industry, starting with vegan ovalbumin and related proteins.

Partnerships

Partnerships from R&D to production
show a maturing ecosystem



SuperMeat partnered with food and biotech company Ajinomoto for the development of alternative growth factors.



Future Meat and CPF will work together to develop hybrid cultivated meat products for the Asian market.



Simpliigood partnered with International Flavors and Fragrances (IFF) for the creation of spirulina-based smoked salmon.



MeaTech subsidiary Peace of Meat and mycoprotein company ENOUGH will develop hybrid cultivated and fermentation-based products.



Innovopro and macadamia milk company Milkadamia partnered to develop a chickpea-based ice cream.



Remilk signed a ten-year cooperation agreement with the Central Bottling Company (CBC), for production and marketing of fermentation-derived dairy products through Tara dairies in Israel.



Wanda Fish signed a licensing agreement with Tufts university for rights to IP in fish cell cultivation, as well as a two-year sponsored research agreement.

Scale-ups

Israeli companies continue to scale-up, majority move abroad



Illustration of new Peace of Meat pilot plant, Belgium

Abroad



Remilk announced construction of 750,000 sq. ft. facility at Kalundborg Denmark's Symbiosis Project.



Else Nutrition is opening a manufacturing facility in Oregon for their plant-based formula.



MeaTech's subsidiary Peace of Meat will build a 21,530 sq. ft. pilot plant in Belgium.

In Israel



Aleph Farms opened a 65,000 sq. ft. R&D and production facility in Rehovot, Israel.



Brevel announced it would use its seed round to build a commercial pilot factory in Israel.

Israeli Government Activity



Israel’s Permanent Representative to the UN Gilad Erdan tastes Remilk’s cream cheese

Picture credit: Uri Westrich



The UN Celebrates With an Alternative Protein Barbecue

Israel's Permanent Representative to the UN, Gilad Erdan, marked Israel's 74th Independence Day at the United Nations Headquarters in New York by transforming the traditional Israeli Independence Day barbecue into an alternative protein celebration. Featuring product sampling sessions from leading Israeli alternative protein startups - Innovopro, Remilk, Alfred's Food-Tech Ltd. Yo-Egg, and SuperMeat - the event included international UN ambassadors as well as key stakeholders and VIP guests.



World’s Largest Cultivated Meat Consortium Approved

| | | |
|--|------------------|--------|
| | Funding Received | ~\$18M |
| | Companies | 14 |
| | Academic Labs | 10 |

Investments in Startups Commercialized Based on Academic Research

Hebrew University has over eight times as many startups commercialized based on its research than any other institution in Israel

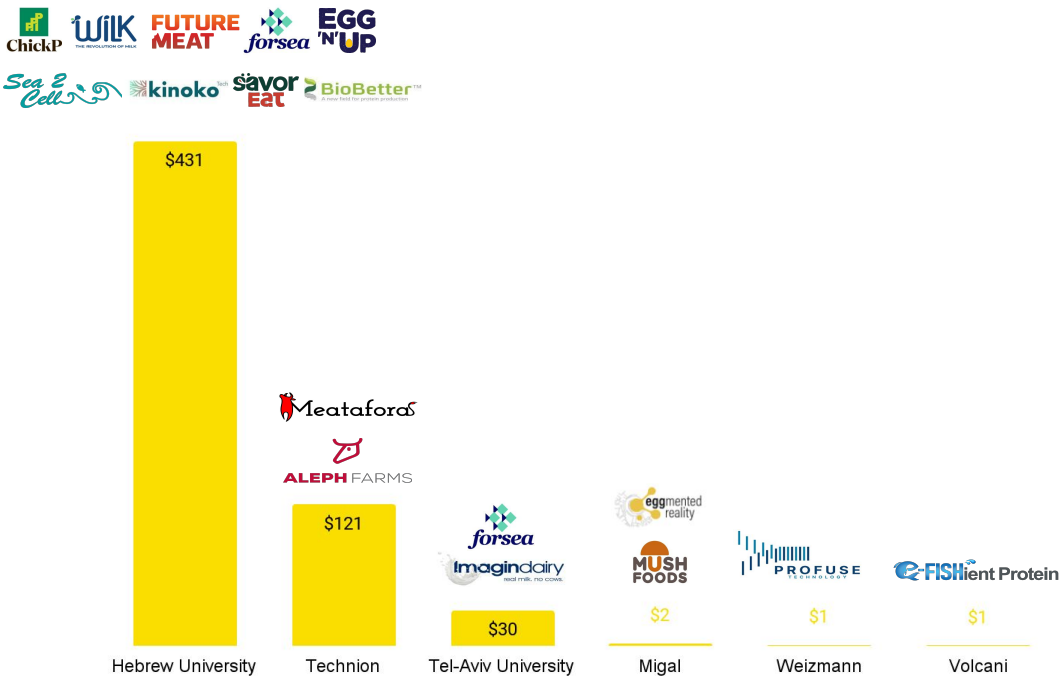


Figure 4.1: Investments in alternative protein companies commercialized based on academic research by university in millions of USD.

Source: University TTO's, funding data based on GFI analysis of Pitchbook and Crunchbase data.

Alternative Protein Research Grants

[Israeli Government - GFI Research Grant](#)



- Sponsored by the Ministry of Science and Technology, the Ministry of Agriculture and Rural Development and GFI Israel
- **\$1.2M total funding**
- **Up to \$85,000 grant per project**
- Plant-based, fermentation-derived and cultivated proteins
- Deadline 08.08.2022

[Cultivated Meat Innovation Challenge](#)



- Sponsored by EIT and GFI Europe
- **€400,000 total funding**
- **€100,000 grant per project**
- Subsequent project funding
- Grants for media recycling technologies /low-cost cell culture media
- Open to applicants from all sectors across Europe
- Deadline 30.9.2022

[SIIRD Agrifood Tech Sector Track](#)



- Sponsored by SIIRD, a cooperation between Enterprise Singapore and the IIA
- **Up to \$1.5M grant per project**
- Three project types: feasibility, R&D, pilot
- Joint submission by a Singapore and Israel registered company
- Deadline 22.09.2022

[US-Israel Binational Agricultural Research and Development Fund](#)



- Sponsored by BARD
- Funding up to **\$600,000 per project**
- Grants for development of alternative quality protein sources including plants, fungi, algae, & tissue
- Affiliates of public or private non-profit research institutions are eligible for funding
- Deadline 13.09.2022

Startups in Israel by Sector

gfi / Good Food Institute Israel Photo Credit: SuperMeat →



07

Israeli Cultivated Startups: Cultivated Meat

Aleph Farms



- **Year Founded:** 2017
- **CEO:** Didier Toubia
- **Founders:** Didier Toubia, Prof. Shulamit Levenberg



- **Fundraising:** Total: \$119.4 M
Latest: \$105 M series B - July 2021
- **Investors:** L Catterton, Disrupt AD, ViVires New Protein, Leonardo DiCaprio
- **Research/ Program:** The Kitchen FoodTech Hub
- **Private/ Public:** Private
- **News:** In September 2021 [Leonardo DiCaprio joined Aleph Farms as an advisor](#), after investing an undisclosed amount as part of Aleph's series B.
- **About:** Aleph Farms grows beef steaks from non-genetically engineered and non-immortalized cells isolated from a living cow. Aleph Farms is ramping up production and aims to launch its first products in 2022.
- **Partnerships:** [Partnership agreement with Mitsubishi](#) for distribution in the Japanese market. [MOU signed with BRF](#) to co-develop and produce cultivated meat using Aleph's patent, and to distribute cultivated beef in Brazil.

Future Meat Technologies



- **Year Founded:** 2017
- **CEO:** Nicole Johnson-Hoffman
- **Founders:** Prof. Yaakov Nahmias



- **Fundraising:** Total: \$389.9 M
Latest: \$347 M series B - December 2021
- **Investors:** Tyson foods, ADM, Muller, Emerald Technology Ventures, Emerald Technology Ventures
- **Research/ Program:** Yissum, the technology transfer company of the Hebrew University of Jerusalem
- **Private/ Public:** Private
- **News:** Future Meat's series B is the single [largest raise by a cultivated meat company](#) to date anywhere in the world.
- **About:** Future Meat Technologies are developing a manufacturing platform that enables concurrent production of fat and muscle cells in the same bioreactor, for the non-GMO production of cultivated meat. Future Meat is ramping up production and aims to launch its first products in 2022.
- **Partnerships:** [Partnership signed with Nestle](#) to explore production of cultivated meat products.

Israeli Cultivated Startups: Cultivated Meat

MeaTech



- **Year Founded:** 2018
- **CEO:** Arik Kaufman
- **Founders:** Arik Kaufman, Omri Schanin, Sharon Fima



- **Fundraising:** Total: \$37.5 M
Latest: [\\$22 M IPO](#) - March 2021
- **Investors:** Psagot Investment House, Adom Group, Clal Finance Investment House, Meitav Dash Investments
- **Private/Public:** First publicly traded cultivated meat company on NASDAQ, trades under the ticker MITC
- **News:** In December, MeaTech succeeded in bioprinting a 3.67 oz (104-gram) cultivated steak, [the largest cultivated steak](#) produced to date.

- **About:** MeaTech is a B2B company which combines advanced 3D printing technology with cellular agriculture to produce a steak in its familiar shape. MeaTech is currently in the development stage.
- **Partnerships:** In the first M&A deal in the cultivated meat space, [MeaTech acquired the Belgian company Piece of Meat](#) in February 2021 for up to \$17.7 million in cash and equity.

SuperMeat



- **Year Founded:** 2015
- **CEO:** Ido Savir
- **Founders:** Ido Savir, Shir Friedman, Koby Barak



- **Fundraising:** Total: \$6.2 M
Latest: \$2 M - December 2020
- **Investors:** Stray Dog Capital, New Crop Capital, Agronomics Limited
- **Private/Public:** Private
- **News:** In January 2022 SuperMeat's chicken passed a [blind test-taste](#) with professional tester Michal Ansky, who failed to recognize the chicken as cultivated.

- **About:** SuperMeat is creating cultivated chicken meat for the B2B/B2B2C market. While their product is not yet commercially available, "The Chicken" is the company's test kitchen, which has been transformed into a restaurant to enable customer engagement and feedback.
- **Partnerships:** Partnership with [poultry producer PHW](#) on R&D and distribution in Europe.

Israeli Cultivated Startups: Cultivated Meat, Cultivated Dairy

Meatafora



- **Year Founded:** 2021
- **CEO:** Shmuel Yanai
- **Founders:** Prof. Marcelle Machluf

- **Fundraising:** \$1 M - August 2021
- **Investors:** Biomeat Foodtech
- **Research/Program:** Company developed from research funded by GFI grant.
- **Private/Public:** Private
- **About:** Meatafora is a seed stage company which isolates and cultures farm animal stem cells inside plant-derived collagen microcarriers to produce cultivated meat.

Wilk



- **Year Founded:** 2018
- **CEO:** Tomer Aizen
- **Founders:** Dr. Nurit Argov-Argaman, Dr. Maggie Levy, Dr. Kobi Buxdorf, Arik Kaufman, Yaron Kaiser



- **Fundraising:** Total: \$3.5 M
Latest: \$1 M in post-IPO equity - July 2021
- **Investors:** The Central Bottling Company
- **Research/Program:** Yissum, the technology transfer company of the Hebrew University of Jerusalem
- **Private/Public:** Wilk became the [first cultivated dairy company to go public](#) by completing a reverse merger with Fantasy Network in January 2021. They are traded on the Tel-Aviv Stock Exchange under the ticker BMLK.
- **About:** Formerly known as BioMilk, Wilk cultivates bovine milk cells for the B2B2C market. Based in Rehovot, the company is currently in the development stage.
- **Partnerships:** [MOU signed with the Central Bottling Company](#) (Coca-Cola Israel) for a \$2 million investment, access to expertise and use of their dairy manufacturing plant.

Israeli Cultivated Startups: Cultivated Media & Growth Factors

Biobetter



- **Year Founded:** 2015
- **CEO:** Amit Yaari
- **Founders:** Dr. Dana Yarden, Avi Tzur, Prof. Oded Shoseyov

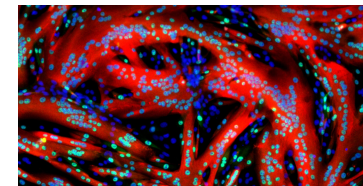


- **Fundraising:** \$3.5 M seed - June 2019
- **Investors:** G.O Innovation
- **Private/Public:** Private
- **About:** Biobetter are a biotech company working on a tobacco-based platform technology to manufacture advanced proteins — growth factors, antibodies, and others — for use in the food-tech, pharmaceutical, and other industries.

Profuse Technology



- **Year Founded:** 2021
- **CEO:** Guy Nevo Michrowski
- **Founders:** Dr. Tamar Eigler-Hirsh, Guy Nevo Michrowski, Prof. Eldad Tzohar, Dr. Ori Avinoam



- **Fundraising:** \$1.2 M Pre-seed - October 2021
- **Investors:** Fresh Start
- **Research/Program:** Fresh Start Incubator
- **Private/Public:** Private
- **About:** Profuse are developing technology for optimization of the cell differentiation, fusion and maturation production-stage of cultivated meat to dramatically reduce the cost of production.

Israeli Cultivated Startups: Cultivated Fish

Forsea



- **Year Founded:** 2021
- **CEO:** Roei Nir
- **Founders:** Roei Nir, Dr. Iftach Nachman, Dr. Yaniv Elkouby



- **Fundraising:** \$1 M
- **Investors:** IIA
- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private
- **About:** Forsea is a cultivated seafood company with a proprietary platform technology to produce seafood and fish meat, beginning with eel.

Wanda Fish



- **Year Founded:** 2021
- **CEO:** Daphna Heffetz PhD
- **Founders:** Daphna Heffetz PhD



- **Fundraising:** \$1 M
- **Investors:** IIA
- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private
- **About:** Wanda Fish is a cellular agriculture company aiming at producing cell-based fish meat.

Israeli Cultivated Startups: Cultivated Fish

EFISHient Protein



- **Year Founded:** 2021
- **CEO:** Jil Gamon
- **Founders:** Dr. Kobi Biran, Jil Gamon

- **Investors:** Biomeat Foodtech
- **Private/Public:** Private
- **About:** E-FISHient Protein is a joint venture of Biomeat Foodtech and Volcani Center for the development of cultivated Tilapia.

Sea2cell



- **Year Founded:** 2021
- **CEO:** Orna Harel PhD
- **Founders:** Avishai Levy, Dr. Itai Tzchori, Pablo Resnik, Prof. Berta Sivan, Dr. Orna Harel



- **Fundraising:** \$1.2 M Pre-seed - October 2021
- **Research/Program:** Fresh Start
- **Private/Public:** Private
- **About:** Sea2cell are developing proprietary immortalized fish cell lines for the production of cultivated bluefin tuna.

Israeli Fermentation Startups: Precision Fermentation - Dairy

Imagindairy



- **Year Founded:** 2016
- **CEO:** Dr. Eyal Afergan
- **Founders:** Prof. Tamir Tuller, Dr. Eyal Afergan



- **Fundraising:** Total: \$14.5 M
Latest: \$13 M raised in seed round - November 2021
- **Investors:** MoreVC, Strauss Group, S2G Ventures, Entrée Capital
- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private
- **About:** Imagindairy combines AI technology with system biology to create milk without any cows or even milk cells. The product, which is in the development stage, eliminates cholesterol, lactose, and somatic cells while retaining the color, smell, and taste of cow's milk.

ReMilk



- **Year Founded:** 2019
- **CEO:** Aviv Wolff
- **Founders:** Aviv Wolff, Ori Cohavi



- **Fundraising:** Total: \$131 M
Latest: \$120 M series B - January 2022
- **Investors:** Tnuva, fresh.fund, Hanaco Ventures, Rage Capital, CPT Capital, OurCrowd
- **Research/Program:** Jump TAU, Proveg Incubator
- **Private/Public:** Private
- **About:** ReMilk uses microbial fermentation to produce milk proteins and craft a product that has the same flavor, texture, and nutritional value as dairy from animals, while eliminating cholesterol and lactose.

Israeli Fermentation Startups: Traditional Fermentation

The Mediterranean Food Lab



- **Year Founded:** 2017
- **CEO:** B.Z. Goldberg
- **Founders:** B.Z Goldberg, Omer Ben Gal, Yair Yosefi

- **Fundraising:** \$122 K pre-seed - November 2020
- **Investors:** EIT Accelerator
- **Private/Public:** Private
- **About:** The Mediterranean Food Lab is developing fermentation technologies to transform simple commodities into high-value flavor and make plant-based products rich in meat or cheese flavors.

Chunk Foods



- **Year Founded:** 2021
- **CEO:** Amos Golan
- **Founders:** Amos Golan

- **Fundraising:** \$2 M in pre-seed round - April 2021
- **Investors:** Stray Dog Capital, Good Seed Ventures, E14
- **Private/Public:** Private
- **About:** Chunk Foods is developing a novel technology that combines plant-based ingredients and fermentation to create realistic, clean-label whole muscle cut meat analogues. Chunk is currently focused on scaling up its technology, and expanding its product portfolio of beef and seafood alternatives.

Israeli Fermentation Startups: Biomass Fermentation - Ingredients

Brevel



- **Year Founded:** 2016
- **CEO:** Yonatan Golan
- **Founders:** Ido Golan, Yonatan Golan, Matan Golan



- **Fundraising:** Total: \$1.8 M
Latest: \$1.7 M raised from grants in 2020
- **Investors:** Horizon Europe
- **Private/Public:** Private
- **About:** Brevel cultivates microalgae using a combination of fermentation technology and a high concentration of internal illumination, for use in a wide range of industries.

NextFerm



- **Year Founded:** 2013
- **CEO:** Boaz Noy
- **Founders:** Tzafra Cohen, Boaz Noy



- **Fundraising:** Total: \$23.7 M
Latest: [\\$8.7 M raised in post-IPO round](#) - November 2021
- **Investors:** Merage Venture Fund, Cider holdings, Arancia
- **Private/Public:** NextFerm is publicly traded on the Tel-Aviv Stock Exchange under the ticker NXFR.
- **About:** NextFerm, a nutrition supplement company, produces fermented proteins (astaxanthin) from various improved yeast strains. The company's products range from functional protein and dietary supplements to specialized yeast biofuel. In addition to making its own products and selling them through mediators, NextFerm manufactures and delivers the astaxanthin ingredient to other brands.
- **Partnerships:** NextFerm signed an [agreement with GFR Ingredients](#) for the production of their ProteVin™.

Israeli Fermentation Startups: Biomass Fermentation

Kinoko-Tech



- **Year Founded:** 2019
- **CEO:** Dr. Jasmin Ravid
- **Founders:** Dr. Jasmin Ravid, Dr. Daria Feldman, Hadar Shohat



- **Fundraising:** Total: \$2 M
Latest: \$1M in seed funding - December 2021
- **Investors:** JVP, IIA
- **Private/Public:** Private
- **About:** Kinoko-Tech are developing a production process which improves the nutritional value, texture, and taste of fungal protein, creating a high-protein raw material that can be cooked and eaten as a product itself or incorporated into different products.

SuperBrewed Food



- **Year Founded:** 2012
- **CEO:** Dr. Bryan Tracy
- **Founders:** Dr. Bryan Tracy, Talli Somekh

- **Private/Public:** Private
- **About:** SuperBrewed Food (formerly White Dogs Labs) is a biotech company developing and scaling up a suite of nutritional products by leveraging the microbiome ecosystem to produce animal-free proteins. Founded in 2012 in the state of Delaware, its Israeli subsidiary and R&D lab were established in 2016.

Israeli Fermentation Startups: Biomass Fermentation

Yeap



- **Year Founded:** 2020
- **CEO:** Jonathan Goshen
- **Founders:** Dominik Grabinski, Didier Toubia, Jonathan Goshen



- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private

- **About:** Yeap produces sustainable protein (functional and TVP) made out of spent yeast.

MUSH Foods



- **Year Founded:** 2021
- **CEO:** Shalom Daniel
- **Founders:** Shalom Daniel



- **Fundraising:** \$1M pre-seed - May 2021
- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private

- **About:** MUSH are a seed stage company growing edible mushroom mycelium to create innovative raw ingredients with high nutritional values, for the food industry.

Israeli Fermentation Startups: Plant Molecular Farming

Fantastic Farms



- **Year Founded:** 2019
- **CEO:** Aviel Even
- **Founders:** Aviel Even, Dan Even

- **Fundraising:** \$1M in seed funding - April 2020
- **Investors:** CPT Capital, Strauss
- **Research/Program:** PentaLab Incubator
- **Private/Public:** Private
- **About:** Fantastic Farms produces milk proteins using genetically engineered soy.

Imagene



- **Year Founded:** 2020
- **CEO:** Daphna Miller
- **Founders:** Aviad Meizles

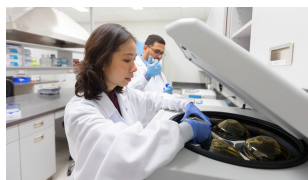
- **Private/Public:** Private
- **About:** Imagene are experienced executives from the industry with a novel-patent-protected approach that enables a cost effective platform for production of high-functional protein complex for the sustainable animal-free food industry.

Israeli Plant-Based Startups: Crop Optimization

NRGene

nrgene

- **Year Founded:** 2009
- **CEO:** Gil Ronen
- **Founders:** David Lieber, Gil Ronen, Guy Kol



- **Fundraising:** Total: \$41.6 M
Latest: \$30.6 M raised at IPO - January 2021
- **Private/Public:** Publicly traded on the Tel-Aviv Stock Exchange under the ticker NRGN.
- **About:** NRGene translate genomic big data into critical tools for plant & animal research and breeding, including research into and breeding of plant protein. NRGene already operate in several markets, and are planning to further increase their sales and partnerships.
- **Partnerships:** In July 2021 NRGene Canada, Farmer's Business Network Canada, Inc., Pulse Genetics and Manitoba Harvest [announced a collaboration](#) to develop new pea and hemp varieties for use in food and ingredient processing.

Equinom

EQUINOM

- **Year Founded:** 2012
- **CEO:** Gil Shalev
- **Founders:** Gil Shalev



- **Fundraising:** Total: \$37.6 M
Latest: \$20 M raised in series C - June 2021
- **Investors:** Phoenix Insurance, BASF Venture Capital, Roquette
- **Private/Public:** Private
- **About:** Equinom integrates computational science with a data-driven breeding method to design golden-trait seeds. Equinom breeds for and reintroduces high-value qualities: superior nutrition, functionality, organoleptics and yield (soybean, pea, sesame and special crops). Equinom intend to continue expanding their already existent product line.
- **Partnerships:** Partnerships with [Meatless Farm](#) and [Black Sheep Foods](#) to provide them with improved pea protein.

Israeli Plant-Based Startups: Ingredients

InnovoPro



- **Year Founded:** 2013
- **CEO:** Taly Nechushtan
- **Founders:** Dr. Ascher Shmulewitz



- **Fundraising:** Total: \$23.9 M
Latest: \$18 M series B - November 2020
- **Investors:** JVP, Migros, CPT Capital, Custos Privatstiftung, Erel Margalit
- **Private/Public:** Private
- **About:** InnovoPro has developed a technology capable of extracting protein concentrate that is 70% chickpea. InnovoPro's technology harnesses a biotechnological process that yields an emulsifying, foaming product suitable for a range of industry food applications.
- **Partnerships:** [Givaudan](#) for R&D on flavor and aroma.

ChickP



- **Year Founded:** 2016
- **CEO:** Liat Lachish Levy
- **Founders:** Prof. Ram Reifen



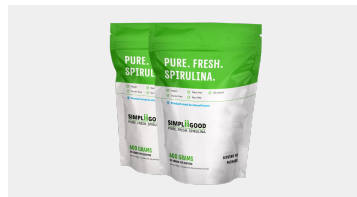
- **Fundraising:** Total: \$8.5 M
Latest: \$8 M series A - January 2022
- **Investors:** Genisys Capital Private, Aggrinovation, Growthwell Foods
- **Private/Public:** Private
- **About:** ChickP produces a non-GMO, 90% chickpea plant protein isolate, free of allergens and hormones and neutral in taste and odor. The product, which has been on the market since 2019, is sold for use as a raw material in commercial plant-based products.
- **Partnerships:** [Socius Ingredients](#)

Israeli Plant-Based Startups: Ingredients

Simpliigood

SIMPLIIGOOD
PURE. FRESH. SPIRULINA.

- **Year Founded:** 2015
- **CEO:** Lior Shalev
- **Founders:** Lior Shalev, Yoram Avidan, Baruch Dach



- **Private/Public:** Private
- **About:** Simpliigood produces fresh spirulina, a highly nutritional microalgae, for use in alternative protein products. Simpliigood's fresh spirulina is for sale directly to consumers in the US, EU, Asia and Israel. In Israel, a line of plant-based burgers is also available.

Hinoman

HINOMAN
CULTIVATING NATURE'S WONDER

- **Year Founded:** 2010
- **CEO:** Ron Salpeter
- **Founders:** Udi Elituv



- **Fundraising:** \$15 M series B - March 2017
- **Investors:** Ajinomoto
- **Private/Public:** Private
- **About:** Hinoman breeds, develops, and cultivates Mankai, a proprietary, protein-rich, whole-leaf vegetable which can be used as an ingredient in alternative protein products. Mankai is available for sale in the U.S, direct to consumers and to the foodservice sector.

Israeli Plant-Based Startups: Ingredients

Yemoja



- **Year Founded:** 2017
- **CEO:** Erez Ashkenazi
- **Founders:** Erez Ashkenazi, Moshe Avron, Amikam BarGil Ph.D



- **Private/Public:** Private
- **About:** Yemoja is a microalgae company producing high value bioactive compounds. They have created a microalgae-sourced heme substitute for plant-based burgers and cultivated meat.

Gavan



- **Year Founded:** 2018
- **CEO:** Itai Cohen
- **Founders:** Itai Cohen, Allen Hazan, Uri Jeremias



- **Private/Public:** Private
- **About:** Gavan is a biotech company developing a technology to extract proteins from plant-based sources while maintaining the protein's physical structure and functionality. Gavan produces a variety of plant-based protein isolates with a neutral taste, odor, and color. The technology is fully sustainable and enables the extraction of multiple products for efficient use of the entire plant source.

Israeli Plant-Based Startups: Plant-Based Meat

Meat.The.End



- **Year Founded:** 2020
- **CEO:** Dr. Yishai Mishor
- **Founders:** Dr. Yishai Mishor



- **Fundraising:** \$450 K pre-seed - September 2020
- **Investors:** Big Idea Ventures, Sustainable Food Ventures
- **Private/Public:** Private
- **About:** Meat.The.End is developing an enzymatic process for texturizing plant proteins to create nutritionally well rounded products with a meaty texture.

More Foods



- **Year Founded:** 2019
- **CEO:** Leonardo Marcovitz
- **Founders:** Leonardo Marcovitz



- **Fundraising:** \$550 K in convertible debt - March 2021
- **Investors:** BioMeat Foodtech
- **Private/Public:** Private
- **About:** More Foods crafts fibrous alternative proteins that give a whole muscle like type bite. It uses upcycled side streams from various sources including Sunflower oil and Pumpkin oil production. The company began pilot sales in February 2022.

Israeli Plant-Based Startups: Plant-Based Meat

Redefine Meat



- **Year Founded:** 2018
- **CEO:** Eshchar Ben-Shitrit
- **Founders:** Adam Lahav, Eshchar Ben-Shitrit

- **About:** Redefine Meat is designing printing technology to enable innovations in digital 3D printing for the food-tech industry. The company's proprietary technology, software, and formulations produce plant-based meat with the appearance, texture, flavor, and cooking properties of animal meat. Redefine launched its innovative "new-meat", the first 3D printed whole-cut plant-based product on the market, in select European and Israeli restaurants in November.
- **Fundraising:** Total: \$35 M
Latest: \$29 M series A - February 2021
- **Investors:** Hanaco Venture Capital, Happiness Capital, CPT Capital

- **Partnerships:** Marco Pierre White's Steak Houses
- **Private/Public:** Private
- **News:** Redefine announced two senior appointments in October: Edwin Bark, former Managing Director of Nestle's European Plant-Based Food Division joined as Senior Vice President and General Manager, EMEA; Adrian Sagman, who previously served in several senior business and marketing roles at Unilever food group was appointed to the role of Director of Global Sales and Business Development.



Israeli Plant-Based Startups: Plant-Based Meat

RilBite



- **Year Founded:** 2018
- **CEO:** Barak Melamed
- **Founders:** Barak Melamed, Shlomi Goren



- **Fundraising:** Total: \$3.2 M
Latest: \$1.1 M raised in convertible debt - March 2021
- **Investors:** BioMeat Foodtech, Strauss, The Kitchen
- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private
- **About:** RilBite is a plant-based meat producer whose technology blends and binds eight fresh ingredients to produce a minced meat equivalent. The company aims to enter the market via foodservice and eventually create a product that serves multilevel industry manufacturers.
- **Partnerships:** Non-committal MOU signed with [BioMeat Foodtech](#) for exclusive rights to provide Rilbite products in Israel's retail market, as well as license for the use of Rilbite's technology.

SavorEat



- **Year Founded:** 2018
- **CEO:** Racheli Vizman
- **Founders:** Racheli Vizman, Prof. Oded Shosayev, Prof. Ido Braslavsky



- **Fundraising:** Total: \$18 M
Latest: \$13 M raised in IPO - December 2020
- **Investors:** Meitav Dash, Millenium Food-Tech
- **Research/Program:** Yissum, the technology transfer company of the Hebrew University of Jerusalem.
- **Private/Public:** Publicly traded on the Tel Aviv Stock Exchange under the ticker SVRT.
- **News:** SavorEat [launched their 3D-printed, robot chef cooked, plant-based burger](#) at Israeli restaurant chain BBB.
- **About:** SavorEat is developing a processing method that will turn non-GMO plant-based ingredients into meat with various familiar textures. The company's method combines a 3D printing technology—patented in the European Union, the United States, and Australia—with a robot chef that cooks, grills, or bakes the ingredients into processed products.
- **Partnerships:** [Partnership with Sodexo](#) for launch of its plant-based burger in US colleges in 2022.

Israeli Plant-Based Startups: Plant-Based Meat

Wonders of Nature

- **Year Founded:** 2020
- **CEO:** Ronit Davidovich
- **Founders:** Ronit Davidovich



- **Investors:** Soglowek Food Group
- **Private/Public:** Private
- **About:** Wonders of Nature, creators of plant-based meat analogues, spun off established Israeli meat producer Soglowek Food Group. Soglowek financially backs the company in addition to manufacturing its own vegetarian non-analogue products under the brand Zoglos. Recently the company launched its line of burgers, kebabs, mince, and chorizos in the Israeli retail market, before expansion to further markets.

Alfred's Food Tech

- **Year Founded:** 2021
- **CEO:** Ronny Reinberg
- **Founders:** Rafi Shavit, Ronny Reinberg



- **Fundraising:** \$1.3 M seed round – June 2021
- **Private/Public:** Private
- **About:** Alfred's is developing innovative whole-cut texturization and manufacturing technology, applied with plant based and hybrid alternative protein products.

Israeli Plant-Based Startups: Plant-Based Meat

Meala

- **Year Founded:** 2021
 - **CEO:** Hadar Razmovich
 - **Founders:** Hadar Razmovich, Chef Liran Grouda, Tali Feldman-Sivan PhD
-

- **Private/Public:** Private
- **About:** MEALA is developing new ingredients and processes that allow a cleaner, healthier and tastier product with a better ecological footprint. The company's products will replace methyl cellulose and hydrocolloids in meat, eggs, dairy and fish substitutes.

Biofood Systems



- **Year Founded:** 2018
 - **CEO:** Arturo Geifman
 - **Founders:** Arturo Geifman, Yohai Ben Zikri
-

- **Private/Public:** Private
- **About:** Biofood Systems have created plant-based meat products, including salami, sausages and burgers. They expect to launch their products in the US through retail and foodservice by the end of 2022.

Israeli Plant-Based Startups:

Plant-Based Fish

Plantish



- **Year Founded:** 2021
 - **CEO:** Ofek Ron
 - **Founders:** Dr. Ron Sicsic, Ofek Ron, Dr. Hila Elimelech, Dr. Ariel Szklanny
-
- **About:** Plantish is developing a novel, scalable technology for plant-based seafood products, beginning with Salmon.
 - **Fundraising:** \$2 M in pre-seed - April 2021
 - **Investors:** TechAviv Founder Partners, Beni Nofech, Nas Daily, VegInvest
 - **Private/Public:** Private

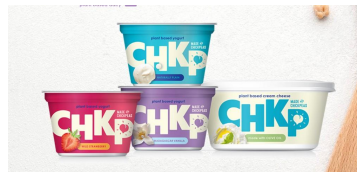


Israeli Plant-Based Startups: Plant-Based Dairy

CHKP



- **Year Founded:** 2019
- **CEO:** Noam Sharon
- **Founders:** Noam Sharon, Noam Dekkers



- **Private/Public:** Private

- **About:** Formerly known as Planterra, CHPK develops plant-based dairy products from chickpea protein, currently available for sale through select retailers in the US.

Yofix



- **Year Founded:** 2014
- **CEO:** Steve Grun
- **Founders:** Shlomi Alfia, Oded Ilan, Ronen Lavee



- **Fundraising:** Total: \$8.1 M
Latest: \$3.5 M series A - August 2021
- **Investors:** Millenium Food-Tech, Bel Group, LionTree, Möller Ventures, Pepsico, Strauss Group
- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private

- **About:** Yofix develops and manufactures clean-label, soy-free, fermented plant-based prebiotic and probiotic foods. The first products it brought to market are plant-based yogurt varieties, available through select retailers. Yofix has declared that the next generation of plant-based products will include drinkable yogurt, desserts, frozen yogurt, and an ice cream base.
- **Partnerships:** Yofix signed a [distribution agreement](#) for their Only brand through Strauss in Israel.

Israeli Plant-Based Startups: Plant-Based Dairy, Plant-Based Eggs

Else Nutrition



- **Year Founded:** 2012
- **CEO:** Hamutal Yitzhak
- **Founders:** Uriel Kesler, Michael Azar, Hamutal Yitzhak



- **Fundraising:** Total: \$30 M
Latest: \$24.3 M raised in post-IPO equity - September 2020
- **Investors:** H&H Group, Canaccord Genuity Group
- **News:** In January 2022 Else products became available for sale on [Walmart.com](https://www.walmart.com)

- **About:** Else Nutrition focuses on developing innovative plant-based dairy products and nutritional formulas for infants and children. The company's products sold across the United States directly, through e-commerce affiliates, and at retail stores.
- **Private/Public:** Publicly listed on the Toronto Stock Venture Exchange under the ticker BABY.

Egg'n'up



- **Year Founded:** 2021
- **CEO:** Billy Yanko
- **Founders:** Savoreat



- **Fundraising:** \$2.3 M seed round - October 2021
- **Investors:** Millenium Food-Tech, 2bAHEAD, IIA

- **About:** Egg'n'up is developing a proprietary, economical, clean label operating system that will replace eggs worldwide. The new system will run personalized applications, focusing on the B2B market.

Israeli Plant-Based Startups: Plant-Based Eggs

Yo!



- **Year Founded:** 2020
- **CEO:** Eran Groner
- **Founders:** Eran Groner, Nissim Ben Cohen, Yosefa Ben Cohen

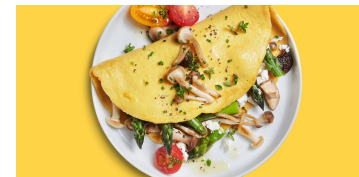


- **Private/Public:** Private
- **About:** Yo! has developed an advanced prototype for a plant-based sunny-side up egg. Yo! intends to make its sunny-side-up egg available across institutional markets and foodservice in Israel, with plans to expand in Europe starting with the U.K.
- **Partnerships:** Benedict restaurant chain.

Zero Egg



- **Year Founded:** 2018
- **CEO:** Liron Nimrody
- **Founders:** Tammy Meiron, Amiel David, Liron Nimrody



- **Fundraising:** Total: \$6.5 M
Latest: \$5 M series A - November 2020
- **Investors:** PowerPlant Partners, New Crop Capital
- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private
- **About:** Zero egg produces a plant-based egg in powder and liquid form. The company debuted its products through the US and EU foodservice, and is developing additional products for sale to consumers.
- **Partnerships:** Zero Egg signed a distribution deal with Diplomat, one of Israel's largest distributors.

Resources

Stay in the know with [GFI Israel's monthly newsletter](#).

View [global reports](#) on plant-based, cultivated and fermented proteins.

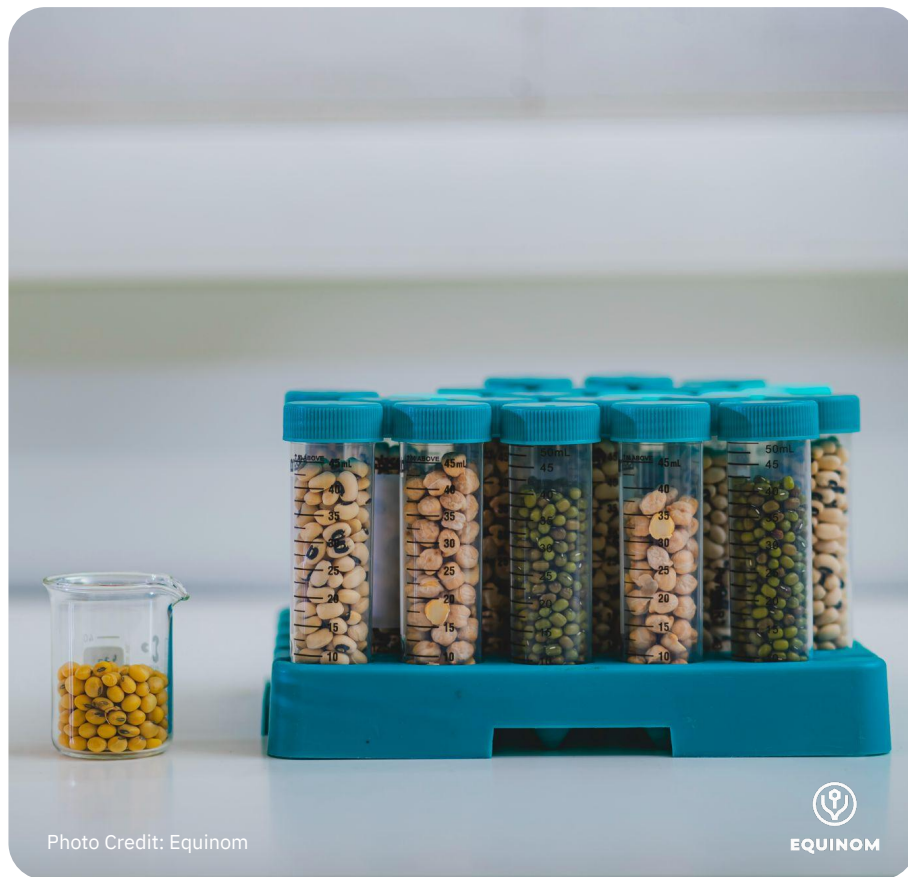
Learn more about the needs of the [plant-based meat industry by 2030](#).

Get started on your own business with our [start-up manual](#)

Dive deeper into the Israeli ecosystem with our [company](#) and [academic](#) databases.

And find many more business resources and insights at [gfi.org.il](#).

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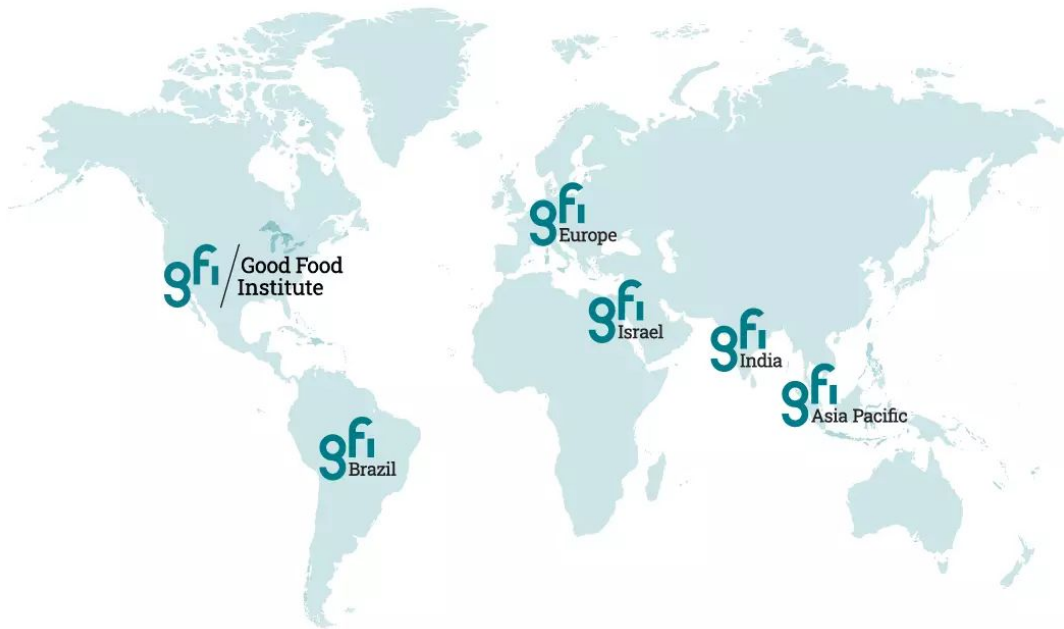
Are we missing something? Did we get something wrong? We'd appreciate your feedback at israel-user@gfi.org.

About GFI Israel

GFI Israel is an affiliate of The Good Food Institute, a 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.

Our vision

A world where alternative proteins are no longer alternative.



Our programmatic priorities:

Science and Technology

Advancing foundational, open-access research in alternative proteins and creating a thriving research and training ecosystem around these game-changing fields.

Corporate Engagement

Partnering with companies and investors across the globe to drive investment, accelerate innovation, and scale the supply chain—all faster than market forces alone would allow.

Policy

Advocating fair policy and public research funding for alternative proteins