



Israel - State of Alternative Proteins

February 2023



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Introduction

gfi / Good Food Institute Israel Photo Credit: Meala →



MEALA
CLEAN BITE | REAL TASTE

01

Bottom lines from our experts



“2022 brought immense challenges, from failures in global food supply, to macroeconomic declines and geopolitical tensions. Yet the threat to our climate persists, and it is clear - we can’t reach net zero emissions and create resilient food systems without shifting away from industrial animal farming. Alternative proteins are the only scalable solution, and the Israeli ecosystem is paving the way.”

Nir Goldstein
CEO, GFI Israel



“Israel continues to lead as a global hub for alternative proteins with over \$1 B in VC funding in the last two years. However, growth rounds became more challenging due to the global market slowdown. This is an opportunity for different, non-equity funding models, and governments to step in to support infrastructure and scale-up to meet climate goals and attract the future of the food tech industry to their region.”

Aviv Oren
Director of Business Engagement and Innovation, GFI Israel



“The Israeli government is leading the effort to support and leverage the alternative protein ecosystem to meet the global food and climate challenges. Further government investment in alternative protein research, infrastructure and regulation has the potential to accelerate the entire national innovation effort and foster a new industry.”

Alla Voldman-Rantzer
VP of Strategy & Policy, GFI Israel



“To accelerate the transition to alternative proteins we must invest in multidisciplinary research centers that will bring together brilliant minds and millions of dollars, increase collaboration with the industry, address white spaces and promote innovation. Exciting announcements of the establishment of such research centers by the Hebrew University of Jerusalem and the Technion – Israel Institute of Technology are the initial steps in the right direction.”

Michal Halpert, PhD
Director of SciTech, GFI Israel

From seed to scale, Israel has a complete innovation ecosystem

Research & Academia

Entrepreneurship & Investment

Scale up & Industry

Demand & Market

- **60** active researchers, **300+** potential researchers
- **\$12 million** in IIA support
- **15** new research projects from the GFI - government research grant
- World's first alternative protein research center, with a **\$20 million** budget
- Food tech declared national research priority by the government

- **\$454** million raised in 2022
- Israel is 2nd globally with **15%** of 2022 VC investments
- Over **\$1B** invested in two years
- **30%** of climate tech investments
- Food tech saw $\frac{1}{2}$ the reduction in investment as the national average
- **185%** YoY growth in Series A investments
- **12** new companies were established in 2022

- **\$14** million government funded fermentation pilot facility
- **4** companies launched commercially, **2** in the US
- Believer Meats broke ground on world's largest cultivated meat facility

- **8X** YoY growth of plant-based retail sales as compared to animal products
- Plant-based milk made up **18%** of all milk retail sales

Government backing could unlock alternative protein's full potential

Opportunity

Alternative proteins present many opportunities for Israel. GFI, together with EY, conducted in-depth research to identify the opportunities and bottlenecks in the field. A model was built to determine the necessary investments in each sector, as well as the forecasted return on investment. EY determined that government support to help alleviate the bottlenecks could lead to significant benefits to Israel's economy, leadership and food security. These include: **over 380 startups founded, 55,000 jobs created with wages 65% higher than the national average, making Israel a global leader on climate action, increasing food security, reducing reliability on imports and increasing exports.**

To fully realize these opportunities, government investment in the following spheres is required:



Research

- Funding for research centers
- Accelerating research commercialization
- Dedicated research grants
- Academic training programs



Startups

- R&D infrastructure
- Financial support due to the market slowdown
- Professional training programs
- Supporting technology (equipment, growth medium, etc)



Industry

- Infrastructure for scale-up
- Encouraging traditional food manufacturers to enter the alternative protein field



Regulation

- Regulatory pathway for cultivated and fermentation-derived proteins
- Other regulation: factories, manufacturing licenses, etc

Bottlenecks

Investments



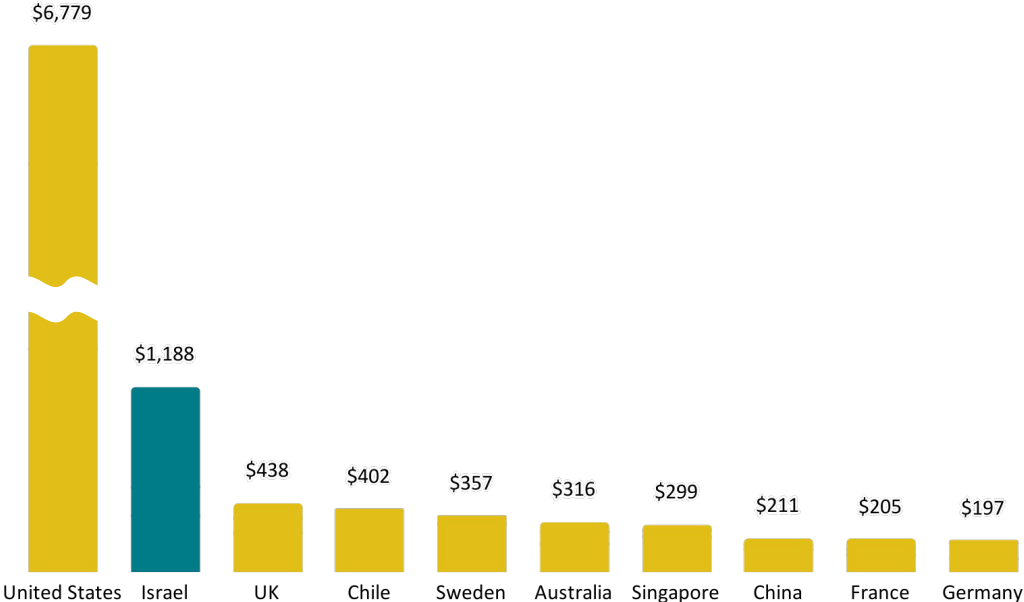
Israel shows sustained leadership in the alternative protein sector since 2020

3 year global investment in alternative proteins in millions of USD (2020-2022).

10% (\$1.2 billion) of global investment in all alternative protein companies

#2 after only the US in alternative protein investments, with over double the investments of the next country

24% (\$637 million) of cultivated meat investment globally



Israel is second only to the US in alternative protein investments in 2022

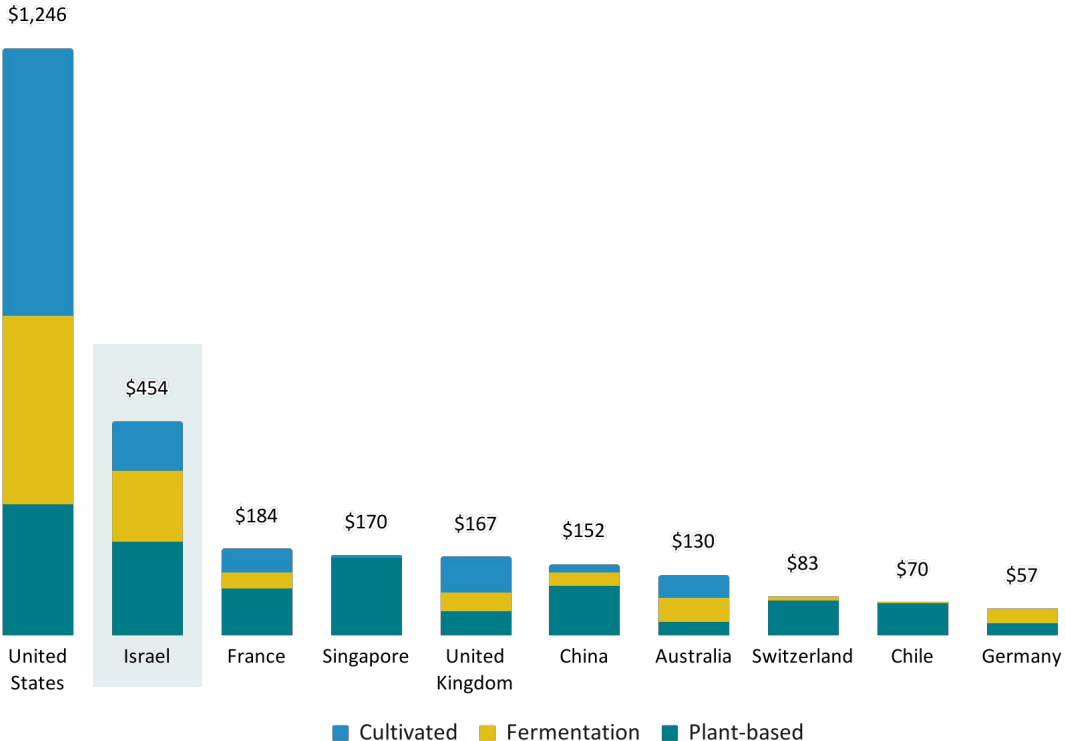
15% (\$454 million) of alternative protein investment globally

18% (\$147 million) of fermentation-derived protein investment globally

16% (\$200 million) of plant-based protein investment globally

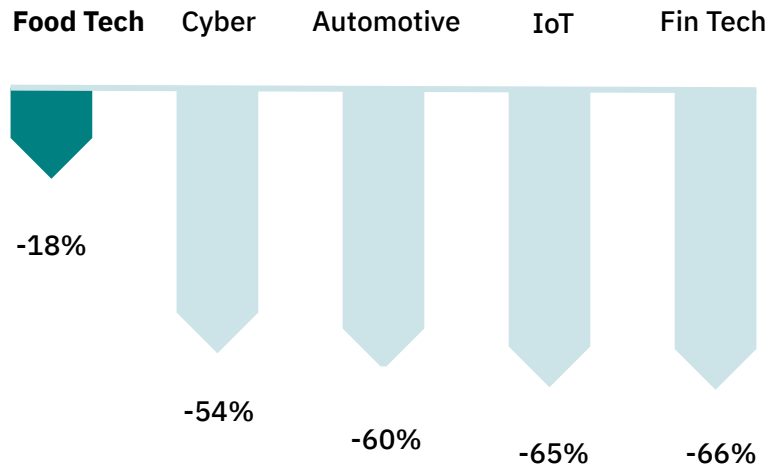
12% (\$105 million) of cultivated meat investment globally

Global investment in alternative proteins in millions of USD (2022).



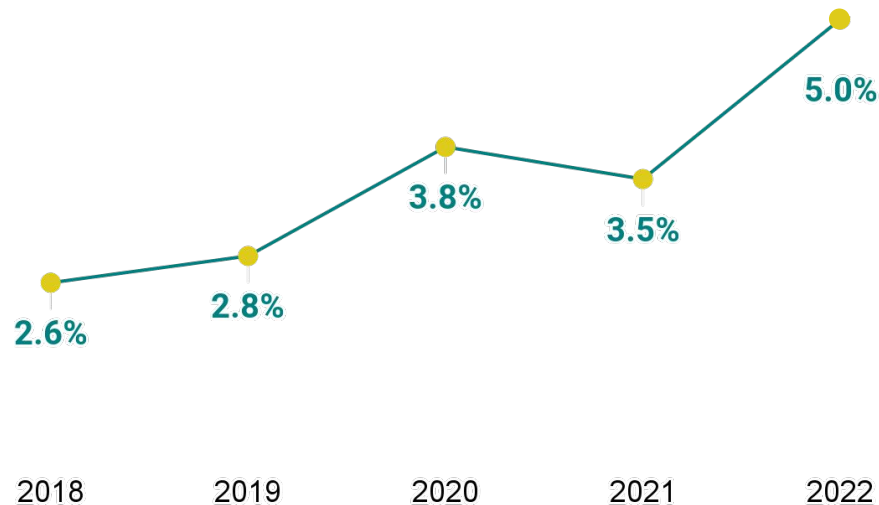
Food tech investments in Israel were impacted the least by the market slowdown compared to other verticals

YoY drop in investments by vertical (2021-2022).



Source: IVC Tech Review 2022.

Ratio of food tech investment out of all tech investments in Israel (2018-2022).



Source: IVC Tech Review 2022.

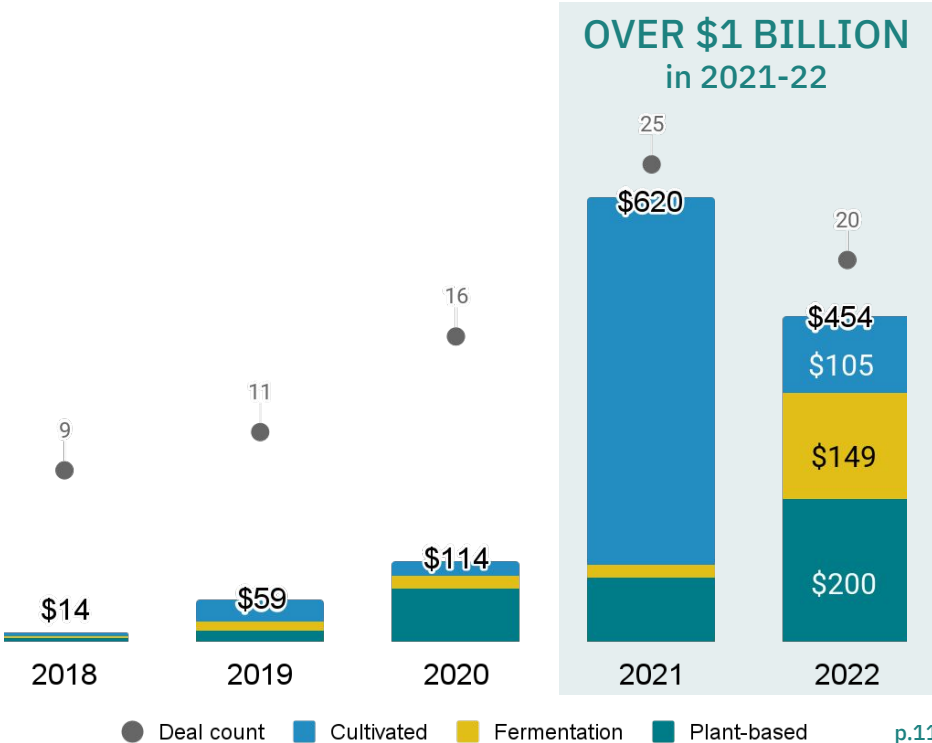
Investments in Israeli alternative proteins remained high relative to the global market slowdown in 2022

Israeli startup fundraising by alternative protein sector in millions of USD (2018-2022).

In 2022 private investments in Israel across **all tech verticals fell by 42% YoY, while private investments in alternative proteins fell by only 20%**, from \$553 million to \$445 million.

The amount raised by alternative protein startups from the stock market fell by 88% YoY, from \$68 million to \$9 million.

Source: GFI analysis of Pitchbook data, IVC Tech Review 2022.



Data sources and calculations:
 GFI analysis of Pitchbook data. Additionally, since a few Israeli early-stage 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.

Despite market slowdown, early stage investments in Israel are rising and maintaining good momentum

12 startups were founded or newly entered the alternative protein space

130% growth in total seed investments in 2022 as compared to 2021

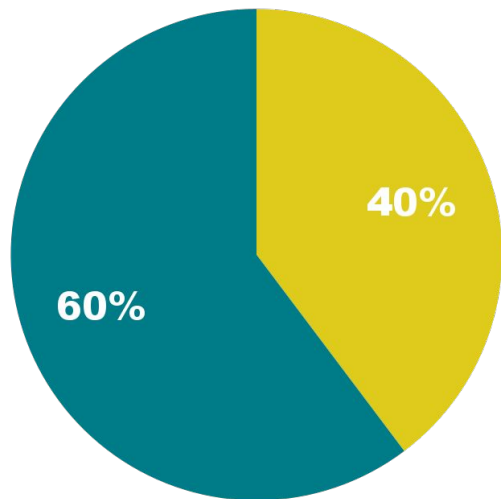
185% growth in total series A investments in 2022 as compared to 2021

Average investment by round in millions of USD (2020-2021).

| | 2020 | 2021 | 2022 |
|----------|------|-------|-------|
| Seed | 1.0 | 1.5 | 4.0 |
| Series A | 6.5 | 11.7 | 25.1 |
| Series B | 14.0 | 159.6 | 129.9 |

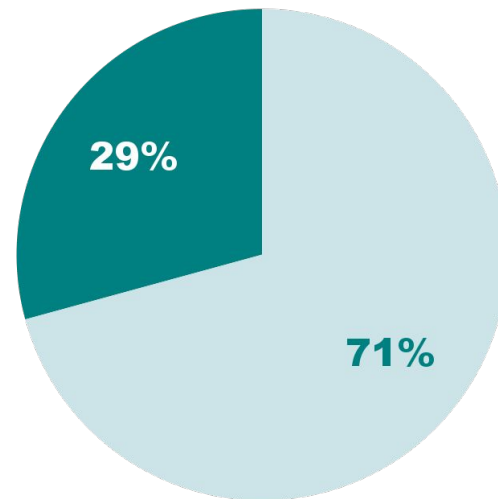
Alternative proteins make up a significant share of food and climate tech investments in Israel

Private alternative protein investments out of food tech investment (2021-2022).



● Rest of food tech ● Alternative proteins

Private alternative protein investment out of climate tech investment (2022).



● Rest of climate tech ● Alternative proteins

Government Activity

gfi / Good Food Institute Israel Photo Credit: Biobetter →



BioBetter™

03







The Israel Innovation Authority provides critical support for alternative proteins

The IIA provides support for alternative proteins at every stage of development. From funding research through the **\$18 million cultivated meat consortium**, to critical infrastructure such as the **\$14 million fermentation facility tender**, to providing seed and growth funding for startups. The IIA's backing continues to be a significant factor in Israel's alternative protein leadership.



“R&D in the field of food tech, and alternative proteins in particular, is continuously growing in Israel. The IIA engages with all key stakeholders to identify technological gaps and position Israel as a world-leader in this field. Despite challenges, we are thrilled to see the ecosystem mature. Going forward, the greatest opportunity is to develop scale-up technologies to production plants and expand our reach to consumers in the global market.”

IIA support for alternative proteins in 2018-2022 vs 2022 alone

| | 2018-2022 | 2022 Alone |
|---|-----------|------------|
|  Total Support | ~\$35M | ~\$12M |
|  R&D Programs Supported | 96 | 32 |
|  Knowledge Infrastructure | ~\$9M | ~\$6M |
|  Startup & Seed | ~\$10M | ~\$3M |
|  Product Development | ~\$12M | ~\$2M |
|  Development to Production | ~\$4M | N/A |

Government to provide up to NIS 50 million in funding for fermentation infrastructure

In recognition of the limited fermentation capacity as well as insufficient fermentation infrastructure in Israel and across the world, the Israel Innovation Authority put out a call for proposals to help bridge this gap, with particular emphasis on fermentation for alternative proteins. The Israel Innovation Authority will provide up to **NIS 50 million (\$14.6 million USD)** in funding. Proposals will be considered for fermentation infrastructure at the pilot scale (10-1,000 litre), demo scale (1,000-20,000 litre), or both. The stated purpose of the tender is to maintain Israeli leadership in the alternative protein field, by providing infrastructure for R&D and scale-up.



The government provides initial support for alternative protein research



\$1.2M for Alternative Protein Research Grants:

In June 2022, the Ministry of Innovation, Science and Technology, the Ministry of Agriculture and Rural Development, and GFI Israel published a research grant in the field of alternative proteins. The grant provided up to **\$1.2M in total funding**, and up to \$85,000 per project. 25 proposals were submitted, of which the top 15 received a grant.



Ministry of Agriculture
& Rural Development

Food Tech Declared National Research Priority:

The National Council for Civilian Research and Development (NCCRD) named food tech, with an emphasis on alternative proteins, one of Israel's top five research priorities. The Ministry of Science and Technology's research grants fund, which distributes **NIS 180 million a year**, will place significant emphasis on the priority areas, with national programs to be established in these areas.



Israel Ministry of
Science & Technology
משרד המדע והטכנולוגיה

Alternative proteins are at the focal point of climate diplomacy



Israel's ambassador to Germany Ron Prozor speaking at the *Future of Food* event held at the ambassador's residence in Germany



Alternative protein Rosh Hashanah (new year's) celebration at the Ministry of Foreign Affairs

Photo credit: Ministry of Foreign Affairs



GFI Israel's VP of Strategy & Policy Alla Voldman-Rantzer presents the need for alternative proteins at the food systems pavillion at COP27



Israel's Permanent Representative to the UN Gilad Erdan tastes Remilk's cream cheese at an alternative protein Independence Day celebration at the UN

Photo credit: Uri Westrich

The Israeli regulator must advance cultivated meat regulation or risk Israel's industry being left behind

November saw a historic milestone reached as the U.S. Food and Drug Administration (FDA) gave the “green light” to a cultivated meat product for the first time, as part of the agency’s pre-market review process—paving the way for consumers to be able to access these products in U.S. restaurants and retail. UPSIDE Foods successfully completed FDA’s rigorous pre-market safety review for its cultivated chicken, demonstrating that it is as safe as conventional chicken.

With this news, UPSIDE Foods will now be able to move onto the standard process comparable to what conventional chicken products follow to ensure the safe production and handling of its chicken, including securing a U.S. Department of Agriculture grant of inspection. UPSIDE Foods’ cultivated chicken is now closer than ever before to becoming available to meat-lovers who desire chicken made more sustainably.

This significant decision paves the way for further investment and development of cultivated meat products, by proving the safety and viability of the cultivation process. The Israeli regulator must follow suit, to avoid losing Israel’s leadership in the field.



Photo credit: UPSIDE Foods



Business & Industry

gfi / Good Food Institute Israel Photo Credit: Chunk →



chunk

04

| | Seed (22) | Development (12) | Pilot & Scaleup (10) | Commercialisation & Growth (13) |
|-------------------|-----------|------------------|----------------------|---------------------------------|
| Cultivated (16) | | | | |
| Fermentation (16) | | | | |
| Plant-based (25) | | | | |

Startups grouped around two hubs: a big hub in the center and a smaller one up north

Tel-Aviv Area

- Mediterranean Food Lab
- Chunk Foods
- Else Nutrition
- More Foods
- MUSH
- CHKP
- Meat.The End
- Simpliigood
- Fabumin
- Wanda Fish
- Gavan

Rehovot Area

- SuperBrewedFood
- ReMilk
- Steakholder Foods
- Aleph Farms
- SuperMeat
- Wilk
- Equinom
- NRGene
- Redefine Meat
- Plantish
- Egg'n'up
- Chick.p
- Believer Meats
- Kinoko-tech
- SavorEat
- Bee-io
- Forsea
- E-FISHient
- Polopo

South

- Yeap
- YoFix
- Rilbite
- Brevel

Northern District

- Imagindairy
- NextFerm
- Wonders of Nature
- Meala
- Optium
- PluriNuva
- Imagene

Kiryat Shmona

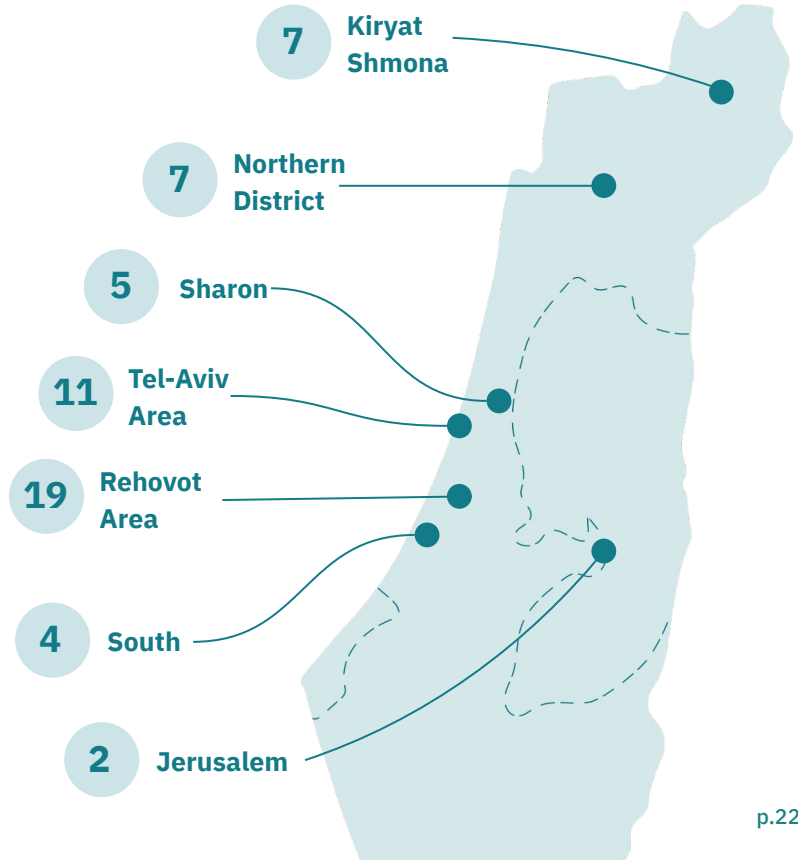
- Profuse
- Biobetter
- Sea2cell
- Yemoja
- Medium Well
- Pigmentum
- Eggmented Reality

Sharon

- Biofood Systems
- Innovopro
- Yo Egg
- Zero Egg
- Meatafora

Jerusalem

- Mermade
- Alfred's Food Tech



Plant molecular farming is an emerging technology with several new companies entering the field over the last two years

One of the most significant challenges facing alternative proteins is their cost and scalability. Plant molecular farming can help overcome these barriers.

In plant molecular farming, plants serve as expression platforms for proteins, similar to microorganisms used in precision fermentation. This may require minimal processing into value-added ingredients, and offers scalability with less need for expensive manufacturing facilities and downstream purification to isolate proteins of interest.



Imagen was founded by experienced executives from the industry with a novel, patent protected approach that enables a cost effective platform for production of high-functional protein complex.



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



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.



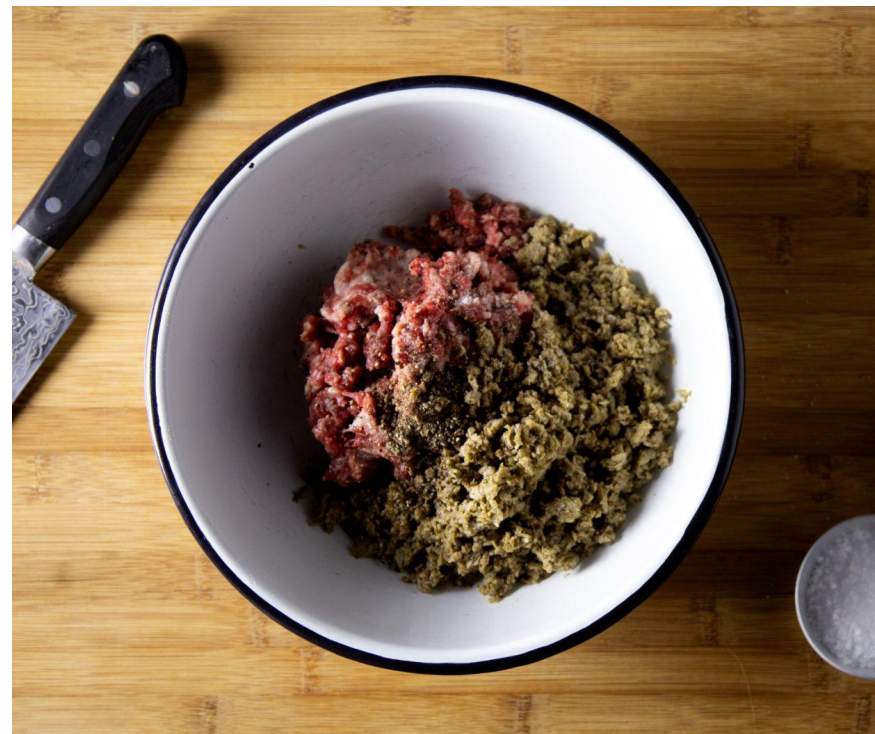
Biobetter is a biotech company working on a tobacco-based platform technology to manufacture advanced growth factors, for use in food tech.

Blends present an opportunity to smooth the transition to alternative proteins












The transition to a world where alternative proteins are no longer alternative will take time and require significant new infrastructure and technological advances. One innovative solution to help bridge that gap is 'blends', companies which take alternative proteins and mix them with animal products to dramatically reduce the animal-derived content without affecting the taste or nutritional profile of the product.



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



2022 saw a record 12 new startups founded or newly entering the alternative protein space: four cultivated, four plant-based, and four fermentation-derived

| | | |
|--------------|--|--|
| Cultivated |  <p>Optium uses AI to support cultivated meat companies' smooth transition to industrial scale production.</p> | <p>PluriNuva</p> <p>PluriNuva is a collaboration between Pluristem and Tnuva, working to develop cultivated meat products.</p> |
| |  <p>Medium Well aims to solve the cultivated meat market barriers (cost and scale) with an innovative medium recycling and monitoring system.</p> |  <p>Mermade is a cultivated fish company with a recyclable fermentation-based process for the sustainable creation of seafood.</p> |
| Fermentation |  <p>Pigmentum offers a proprietary molecular technology platform which can turn crops into efficient producers of high-value compounds.</p> |  <p>PoLoPo is developing a plant bio-factory for high scale, custom-made production of proteins. Its first candidate is egg protein (ovalbumin) in an edible plant.</p> |
| |  <p>Bee-io, a fermented honey company, recently announced it will develop fermentation-derived Buffalo dairy proteins.</p> |  <p>Eggmented Reality creates fermentation-based non-GM functional proteins for the food industry, starting with vegan ovalbumin and related proteins.</p> |
| Plant-based |  <p>Gavan is a biotech company developing a technology to extract proteins from plant-based sources.</p> |  <p>Genesea is a seaweed food tech company, producing alternative protein & ingredients from macro-algae.</p> |
| |  <p>Fabumin is creating a plant-based replacement for albumin and emulsifiers for the food industry, for diverse use in sauces, ice creams, pastries, and more.</p> |  <p>Enzymofit is developing an enzyme-based production process that boosts ingredient capabilities for plant-based proteins.</p> |

Meat.The End's partnership with Burger King is a clear success story

110%

Total sales growth at pop-up location

x3

Sales for Meat.The End's plant-based option compared to previous option

Meat.The End had its commercial debut in October with **Burger King** in Israel, launching a line of plant-based burgers and nuggets. Meat.The End's plant-based products were sold at a price identical to their meat-based counterparts. The launch was highlighted with the transformation of Burger King Israel's largest branch into a vegan-only pop-up that was planned for one week, and was extended for two months due to sales that surpassed expectation.



Several new products were launched in 2022, as more and more products hit the shelves in retail and foodservice



CHPK launched a line of chickpea yoghurts, available in Whole Foods' in the US.



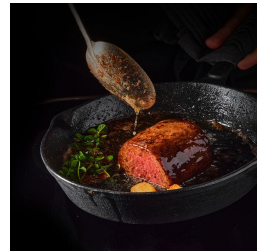
NextFerm commercial launched their fermentation-derived protein powder, ProteVin™.



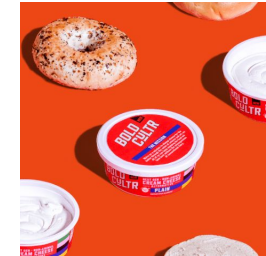
Zero Egg increased their offerings with Zero Egg Scoopable Scramble, a ready-to-eat frozen scrambled egg.



More Foods launched their first products made out of upcycled seeds in restaurants across Israel.



Redefine Meat added new tenderloin and bratwurst products, expanding to 70+ restaurants across Europe.



Remilk's dairy proteins became available in the US, featured in General Mill's *Bold Cultr* cream cheese.

Israeli startups continue to form partnerships with global brands



SuperMeat



AJINOMOTO

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



SuperMeat

MIGROS

SuperMeat signed an MOU with Migros, Switzerland's largest supermarket chain and leading meat manufacturer, to expedite production and distribution of SuperMeat's cultivated meat.

SIMPLiiGOOD
PURE. FRESH. SPIRULINA.

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



EQUINOM

AGT
FOODS

Equinom and AGT Foods, one of the largest pulse processors in the world, announced a collaboration to co-create minimally processed ingredients from Equinom's new pea varieties.



Remilk began cooperation with General Mills, an international manufacturer of consumer foods, for use of Remilk's dairy protein in General Mill's *Bold Cultr* cream cheese.

BREVEL
a new era for algae

Brevel and plant-based cheese maker Vgarden announced a collaboration to create high-protein cheeses using Brevel's protein.

BELIEVER



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



RILBITE

MONOPRIX

Rilbite signed a deal with French retailer Monoprix, to distribute Rilbite products across Monoprix's 700 stores.

Top Israeli food tech competitions were won by alternative protein companies



Coller Startup Competition:

The Coller Startup Competition started in 2017, for teams formed by Tel Aviv University students or alumni. These startups compete on three different tracks - the Deep Tech track, The Online track and the Food Tech track - for an investment of \$100,000 on each track. This year the food tech track was won by PoLoPo, which is developing a plant bio-factory for high scale, custom-made production of proteins.



Tnuva-Calcalist Food Tech Competition:

This up to \$100,000 prize competition was created by Tnuva Ventures, the investment arm of Israel's largest food corporation Tnuva, and business publication Calcalist. This year the competition was won by Biobetter, a biotech company working on a tobacco-based platform technology to manufacture growth factors for the cultivated meat industry.

Israeli companies continue to scale-up, majority move abroad

Abroad



Remilk publicized plans to build a 750,000 sq. ft. facility in Denmark. Meanwhile, they began to scale production with CMOs in Europe.



Believer Meats broke ground on their 200,000 sq. ft. facility in Wilson, North Carolina, which they claim will be the largest cultivated meat facility in the world, able to produce at least 10,000 metric tons of cultivated meat.



Else Nutrition is opening a manufacturing facility in Oregon for their plant-based formula. They have also expanded sales to Canada and China.



Steakholder Food'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.



Rilbite opened their new factory in Ashdod, Israel.



Illustration of new Peace of Meat pilot plant, Belgium

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

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. The Kitchen won a new tender in 2022 to continue operation in the coming years. 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, Meala and Yeap. The Kitchen FoodTech Hub offers a pre-seed or seed investment of between \$650,000 to \$1 million.



FreshStart is part of the Israel's northern food tech cluster, and 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 support, technological and business mentoring, local and global industry access, and funding platform access. Its alternative protein startups include: Sea2Cell, Medium Well, Pigmentum, Eggmented Reality and Profuse.



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



Accelerators offer opportunities for early-stage ventures

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 is a food and agri tech 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.

EIT Food Accelerator Network



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

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 Retail Market Data

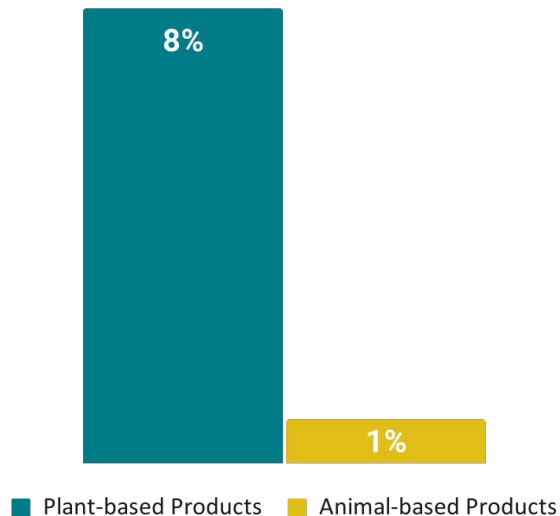
gfi / Good Food Institute, Israel Photo Credit: Alfred's Food Tech →



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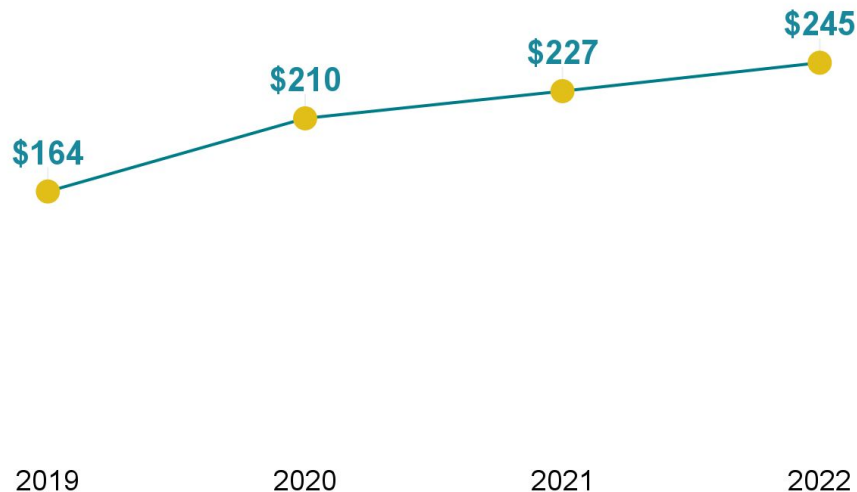
Plant-based products continue to grow at a faster rate than animal products

Israeli animal-based vs. plant-based retail dollar sales YoY growth (2021-2022).



Source: GFI analysis of StoreNext data.

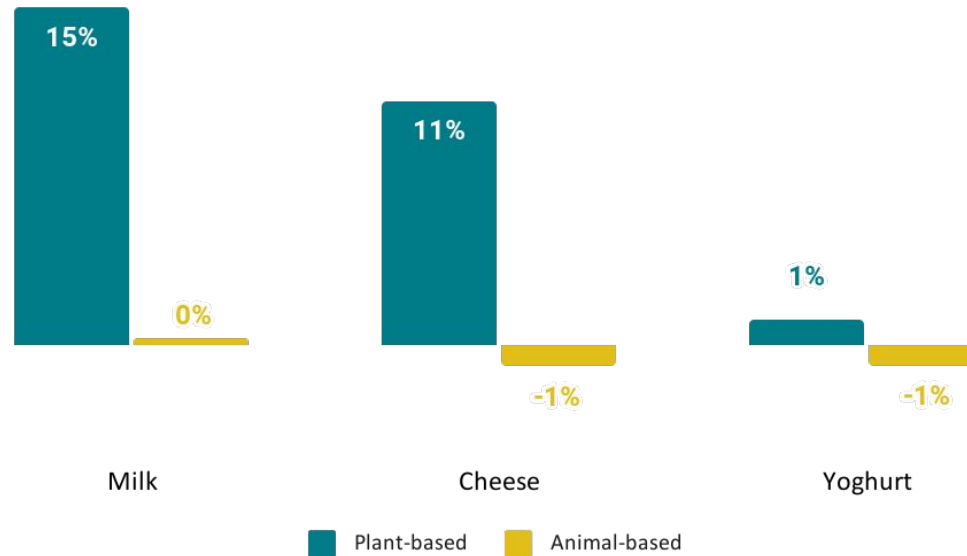
Israeli plant-based retail market size in millions of USD (2019-2022).



Source: GFI analysis of StoreNext data.

Milk remains the leading growth engine for the plant-based sector

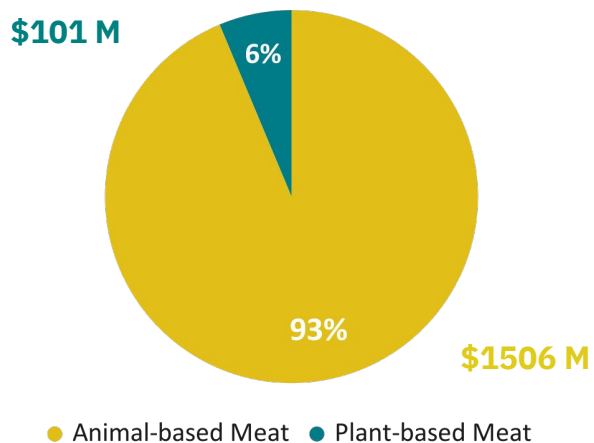
Israeli retail animal-based vs. plant-based dairy market dollar sales YoY growth (2021-2022).



Source: GFI analysis of StoreNext data.

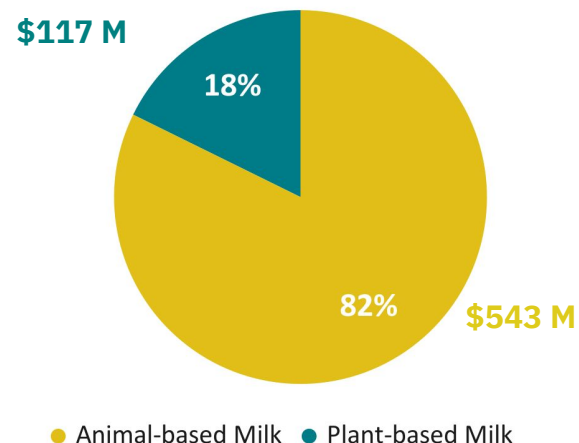
Plant-based products make up a significant share of retail sales

Israeli plant-based and animal-based meat retail sales as percentage of market share in millions of USD (2022).



Source: GFI analysis of StoreNext data.

Israeli plant-based and animal-based milk retail sales as percentage of market share in millions of USD (2022).



Source: GFI analysis of StoreNext data.

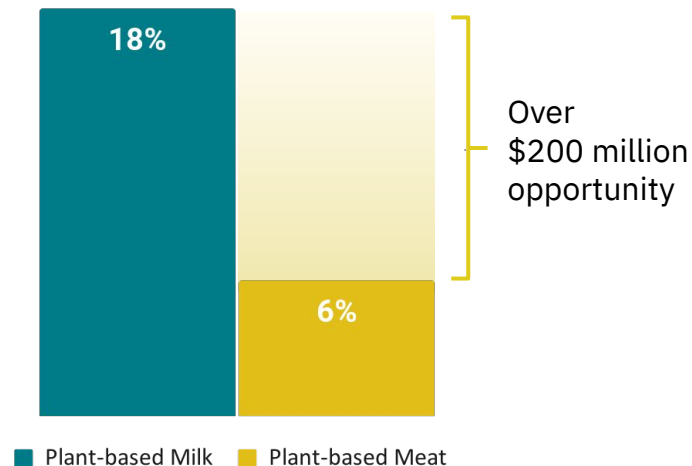
* Plant-based meat includes plant-based schnitzel, ground beef, burgers, sausages, chicken breast, ready-made meals and tofu **Animal-based meat includes meat and fish

Plant-based meat retail market represents a \$200 million dollar opportunity in Israel

Plant-based meat retail sales grew by 1% YoY, while animal-based meat retail sales grew by 2% YoY.

Limited growth in plant-based meat shows there's significant room for R&D to ensure price and taste parity with animal-based meat is reached.

Israeli plant-based milk vs. plant-based meat dollar sales market share (2022).



Source: GFI analysis of StoreNext data.

* 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

Academic Research

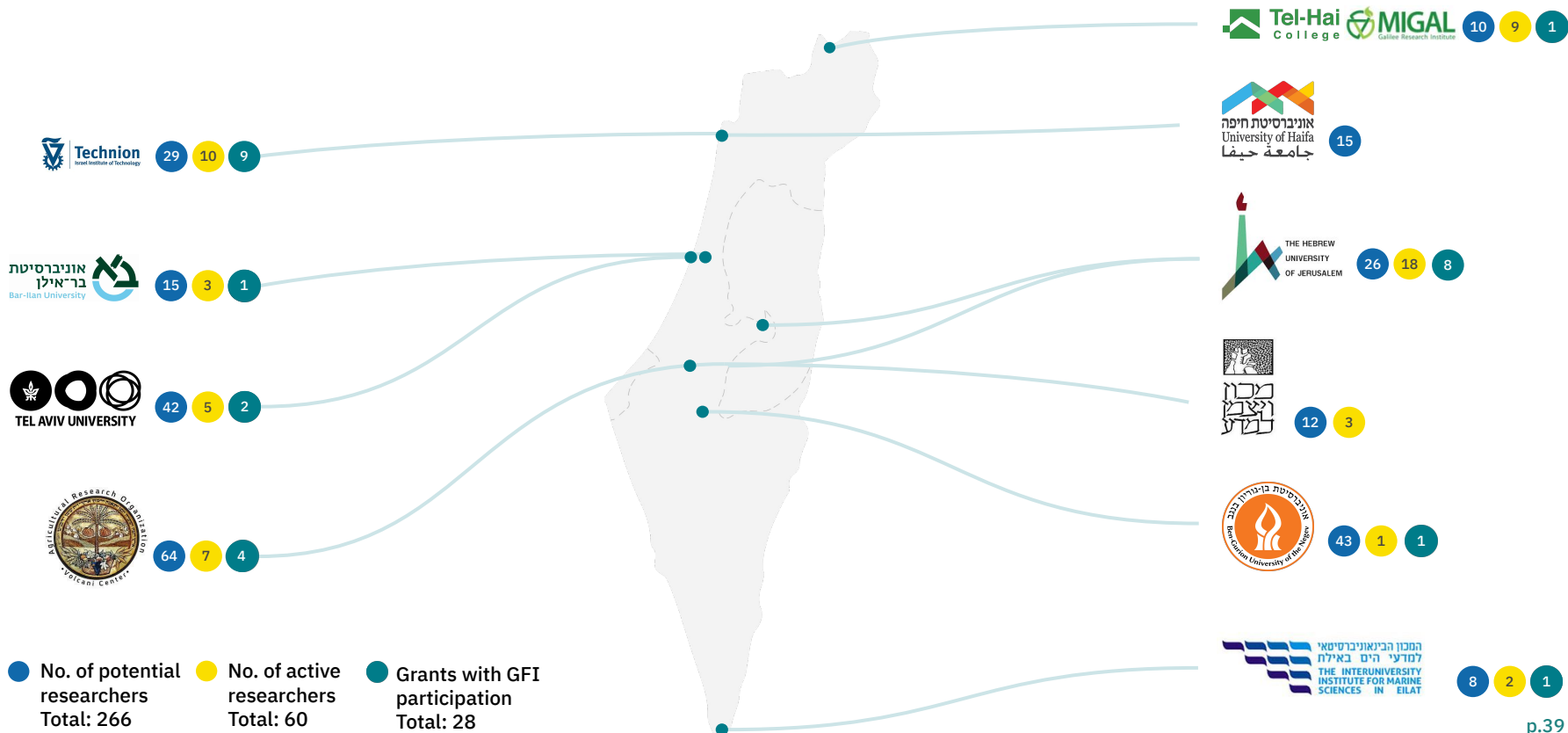
gfi / Good Food Institute Israel Photo Credit: Aleph Farms →



 **ALEPH FARMES**

06

50% growth in the number of active alternative protein researchers in 2022

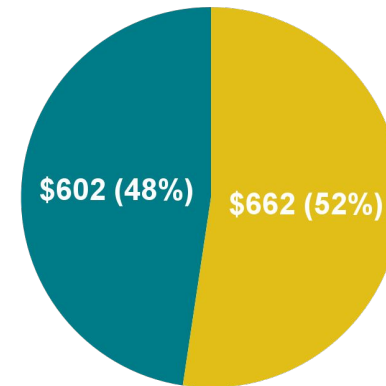


Investments in startups commercialized based off academic research make up almost half of investments, going to only 26% of startups

Academic research fuels the deep-tech innovation necessary for next generation alternative protein products

The leading institutions in terms of fundraising are: Hebrew University, The Technion and Tel-Aviv University

Investments in startups commercialized based off academic research as a percentage of total investments in millions of USD.



● Rest of investments ● Based on academic research

Academic research on alternative proteins is recognized by leading journals

13 academic papers on alternative proteins were published by Israeli researchers in 2022.

Papers were published by researchers from the Technion (6), Hebrew University (3), Tel-Aviv University (2) and more.

For a full list of academic papers, [click here](#).

nature food

Article

<https://doi.org/10.1038/s43016-022-00658-w>


Spontaneous immortalization of chicken fibroblasts generates stable, high-yield cell lines for serum-free production of cultured meat

Received: 13 April 2022

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Published online: 22 December 2022

 Check for updates

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Cellular agriculture could meet growing demand for animal products, but yields are typically low and regulatory bodies restrict genetic modification for cultured meat production. Here we demonstrate the spontaneous immortalization and genetic stability of fibroblasts derived from several chicken breeds. Cell lines were adapted to grow as single-cell suspensions using serum-free culture medium, reaching densities of $10^8 \times 10^6$ cells per ml in continuous culture, corresponding to yields of 36% w/v. We show that lecithin activates peroxisome proliferator-activated receptor gamma (PPAR γ), inducing adipogenesis in immortalized fibroblasts. Blending cultured adipocyte-like cells with extruded soy protein, formed chicken strips in which texture was supported by animal and plant proteins while aroma and flavour were driven by cultured animal fat. Visual and sensory analysis graded the product 4.5/5.0, with 85% of participants extremely likely to replace their food choice with this cultured meat product. Immortalization without genetic modification and high-yield manufacturing are critical for the market realization of cultured meat.

Government ministries work together to fund 15 academic studies

In June 2022, GFI Israel, the Ministry of Innovation, Science and Technology, and the Ministry of Agriculture announced a joint call for alternative protein proposals with a budget of **over 4 million NIS**. This funding will support 15 academic studies that offer scientific and technological solutions in the fields of cultivated, fermentation-derived, and plant-based meats:



The Hebrew University of Jerusalem

- Prof Masha Niv - Bitter taste of plant-based proteins
- Prof Yossi Buganim - Direct Reprogramming of Bovine Mesenchymal Stem Cells into Super Potent Pre-Adipocyte Progenitors for Large Scale Fat Production
- Prof Oded Yarden - Filamentous Fungal Food - Mycoprotein
- Prof Oded Shoseyov - A feasibility study for a groundbreaking, DME-based, plant protein extraction system
- Prof Zvi Hayouka - Novel non-antibiotic antimicrobial agents for cultured meat



Triangle Research & Development Center

- Dr Gnaim Jallal - Waste to Protein: Novel single-cell protein (SCP)/Polyhydroxyalkanoates (PHA) matrix production using archaea Haloferax mediterranei fermentation on wasted bread (ARCH-PROTEIN-PHA)



Bar-Ilan University

- Prof Tamar Juven-Gershon - Development of advanced systems for expression and highly sensitive detection of growth factors

Government ministries work together to fund 15 academic studies



Technion - Israel Institute of Technology:

- Prof Sigal Savaldi-Goldstein - Enhancing S-based compound levels in crops
- Prof Roei Amit - Building a library resource of secretion signals in yeasts *Saccharomyces cerevisiae* and *Pichia pastoris* for high-titer expression and secretion of *Thunnus albacares* (Yellowfin tuna) proteins
- Prof Yechezkel Kashi - Boosting alternative fat production by oleaginous yeast through genetic breeding
- Prof Eyal Zussman - The development of plant protein-based fibers as scaffolds for cultured meat
- Prof Avi Shpigelman - Techno-functional properties of legume cooking water (aquafaba), its protein concentrate and their modification by high pressure homogenization (HPH) and fractionation: Pea and chickpea aquafaba as models
- Prof Maya Davidovich-Pinhas - The development of fat mimetic system based on plant-based ingredients



Israel Oceanographic & Limnological Research

- Dr Na'ama Segal - Identification of algae-derived compounds to use in the alternative and cultivated seafood industry



Agricultural Research Organization (ARO) - Volcani Center

- Dr Elena Poverenov - New tailored biomaterials to enhance organoleptic and nutritional properties of food products based on non-animal proteins

World's first alternative protein research center announced

In 2022 there were two exciting announcements of the establishment of new research centers:

The Technion announced the establishment of the world's first multidisciplinary research center for alternative proteins, with a 5-year budget of \$20 million. Aiming to bring together leading faculty members to promote the field, the center will function as a hub for critical research, commercialization and entrepreneurship.

In October **the Hebrew University announced the establishment of an Innovation Food Tech Center that will work to provide innovative solutions for the growing problem of food security.** In addition, the center will also focus on and advance academic and industry collaboration as well as train future employees and researchers in the field.



Many of the startups in the Israeli ecosystem were commercialized based on academic research, emphasizing the importance of strengthening and investing in academic research that will boost innovation in the field. Multidisciplinary research centers that will bring together brilliant minds, collaborate with the industry, and invest in necessary infrastructure and equipment, in addition to a dedicated training track, are the next steps needed in order to advance a world where alternative proteins are no longer alternative.

Academic courses lay the foundation for alternative protein research



In 2022 alternative protein courses were held at four leading Israeli academic institutions: Tel-Aviv University, The Technion, Hebrew University and Tel-Hai. The courses covered both the scientific and industrial aspects of alternative proteins.



“There is no doubt that thanks to the course the students will gain a much better understanding about the topic and can have the needed tools to join companies who work in the field.”

Dr. Ofir Benjamin

Senior Lecturer and Researcher, Food Science Department, Tel-Hai College

Contact us

to open a course
in your university

Student groups from leading academic institutions get involved in alternative proteins

Food Tech Nation is an umbrella organization that brings together food tech programs from national universities: Reichman, The Technion, and Hebrew University. Independent student groups were also started at Ben Gurion and Tel-Hai. The programs are designed to provide students with a comprehensive understanding of the food tech industry, by providing them with lectures, lab tours, networking opportunities and even the possibility to create their own food tech project and pitch it to leading people from the ecosystem.

The food tech Facebook group was founded to bring together all members of the ecosystem under one umbrella to share their ideas and opportunities.

[Join it here!](#)



Academic conferences bring together leading alternative protein researchers

- In October the Hebrew University held a food tech conference at the Faculty of Agriculture, Science and Environment announcing the establishment of an Innovation Food Tech Center. The program heavily focused on alternative proteins, with two-thirds of the sessions dedicated to the topic.
- Also in October The Technion held a conference called "Taste of the Future" which focused on alternative proteins, discussing advancements and challenges in the field.
- The Israeli Fermentation Society held their annual conference at Technion University in May, with significant focus on alternative proteins and the startups in the field.
- In December the Israel Society for Biotechnology and Engineering held it's 6th conference. The conference featured a session on alternative proteins, with participation of Dr. Tom Ben-Arye Cohen, GFI's senior scientist.



Startup Catalog



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

- **About:** Aleph Farms grows beef steaks from non-genetically engineered and non-immortalized cells isolated from a living cow.
- **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.

Believer Meats



- **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

- **About:** Believer Meats is 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.
- **Partnerships:** [Partnership signed with Nestle](#) to explore production of cultivated meat products.

Cultivated Meat

Steakholder Foods

Steakholder
FOODS



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

- **Fundraising:** Total: \$44 M
Latest: \$6.5 M Registered Direct Offering - July 2022
- **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 STKH

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

SuperMeat



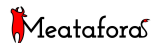
- **Year Founded:** 2015
- **CEO:** Ido Savir
- **Founders:** Ido Savir, Shir Friedman, Koby Barak

- **Fundraising:** Total: \$6.2 M
Latest: \$2 M - December 2020
- **Investors:** Stray Dog Capital, New Crop Capital, Agronomics Limited
- **Private/Public:** Private

- **About:** SuperMeat is creating cultivated chicken meat for the B2B/B2B2C market.
- **Partnerships:** Partnership with [poultry producer PHW](#) on R&D and distribution in Europe, and [with Ajinomoto](#) on for the development of alternative growth factors.

Cultivated Meat

Meatafora



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

- **Fundraising:** \$1 M - August 2021
- **Investors:** Biomeat Food Tech
- **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.

PluriNuva

PluriNuva

- **Year Founded:** 2022
- **CEO:** Eyal Rosenthal
- **Founders:**

- **Fundraising:** \$7.5 M
- **Private/Public:** Private

- **About:** A collaboration between Pluristem and Tnuva, PluriNuva will work to develop, manufacture and commercialize cultivated meat products.

Cultivated Dairy

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.

Cultivated Media & Growth Factors

Biobetter



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



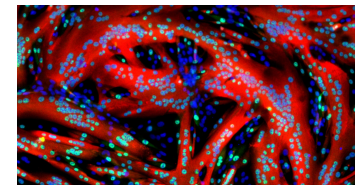
- **Fundraising:** Total: \$13.5 M
Latest: \$10 M Series A - July 2022
- **Investors:** JVP, Milk&Honey Ventures, G.O Innovation
- **Private/Public:** Private

- **About:** Biobetter is 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 Tzahor, Dr. Ori Avinoam



- **Fundraising:** Total: \$3.7 M
Latest: \$2.5 M seed - October 2022
- **Investors:** Fresh Start
- **Research/Program:** Fresh Start Incubator
- **Private/Public:** Private

- **About:** Profuse is developing technology for optimization of the cell differentiation, fusion and maturation production-stage of cultivated meat to dramatically reduce the cost of production.

Cultivated Media & Growth Factors

Optium



- **Year Founded:** 2022
- **CEO:** Motti Koren
- **Founders:** Amir Trifman, Shahar Trifman, Motti Koren

• **Private/Public:** Private

• **About:** Founded by three MGT executives, Optium is an AI driven platform that expedites the transition of cellular agriculture production to market volumes.

Medium Well



- **Year Founded:** 2022
- **CEO:** Shelly Lotan
- **Founders:** Dr. Roni Shapira, Dr. Nir Berdugo, Shelly Lotan

• **Research/Program:** Fresh Start Incubator

• **Private/Public:** Private

• **About:** Medium Well is working to solve the cultivated meat market barriers (cost and scale) with an innovative medium recycling and monitoring system.

Cultivated Fish

Forsea



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



- **Fundraising:** Total: \$6.2 M
Latest: \$5.2 M seed - October 2022
- **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:** Total: \$4 M
Latest: \$3 M seed - June 2021
- **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.
- **Partnerships:** 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.

Cultivated Fish

EFISHient Protein



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

- **Investors:** Biomeat Food Tech
- **Private/Public:** Private

- **About:** E-FISHient Protein is a joint venture of Biomeat Food Tech 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



- **Research/Program:** Fresh Start
- **Private/Public:** Private

- **About:** Sea2cell is developing proprietary immortalized fish cell lines for the production of cultivated bluefin tuna.

Cultivated Fish

Mermade Seafood



- **Year Founded:** 2021
- **CEO:** Dana Levin
- **Founders:** Dr. Tomer Halevy, Daniel Einhorn, Dr. Rotem Kadir

- **Funding:** Total: \$4.8 M
Latest: \$3.3 M seed - June 2022
- **Investors:** Our Crowd, Fall Line Capital
- **Private/Public:** Private

- **About:** Mermade is a cultivated fish company developing proprietary technology for the cultivation of seafood, beginning with scallops.

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 - May 2022
- **Investors:** Target Global, MoreVC, Strauss Group, S2G Ventures, Entrée Capital
- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private

- **About:** Imagindairy combines system and synthetic biology to create milk without any cows or even milk cells. The product 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: \$141 M
Latest: \$130 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.
- **Partnerships:** Ten-year [cooperation agreement](#) with the Central Bottling Company (CBC), for production and marketing of fermented dairy products through Tara dairies.

Precision Fermentation

Bee-io



- **Year Founded:** 2018
- **CEO:** Ofir Dvash
- **Founders:** Ofir Dvash, Dr. Efrat Dvash

• **Private/Public:** Publicly traded on TASE under the ticker BHNY.

• **About:** Fermentation technologies for the production of honey from nectar without bees, as well as Buffalo milk components.

Eggmented Reality



- **Year Founded:** 2022
- **CEO:** Jonathan Rathouser
- **Founders:** Jonathan Rathouser, Itai Bloch, Dr. Itamar Yadid

- **Fundraising:** \$1.2 M in seed funding - March 2022
- **Research/Program:** Fresh Start
- **Private/Public:** Private

• **About:** Eggmented Reality is creating fermentation-based non-GM functional proteins for the food industry, starting with vegan ovalbumin and related proteins.

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.

Biomass Fermentation - Ingredients

Brevel



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



- **Fundraising:** Total: \$10.2 M
Latest: \$8.4 M seed - June 2022
- **Investors:** HackCapital, Horizon Europe, FoodHack, Good Startup VC
- **Private/Public:** Private
- **About:** Brevel is an ingredients company that provides sustainable and affordable color and flavor-neutral alternative protein from microalgae based on a unique breakthrough fermentation technology.
- **Partnerships:** [Brevel and Vgarden](#) will work together to produce high protein vegan cheese.

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 produces fermented proteins from various improved yeast strains. The company's products range from functional protein and dietary supplements to specialized yeast biofuel.
- **Partnerships:** NextFerm signed an [agreement with SpaceMilk](#), who are expected to produce a ProteVin™ based vegan protein powder.

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 is developing new fermentation products based on fungal mycelium that grows on legumes and grains. Their products can be cooked and eaten as a product itself or incorporated into different products.

SuperBrewed Food



- **Year Founded:** 2012
- **CEO:** Dr. Bryan Tracy
- **General Manager Israel:** Alon Karpol
- **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.

Biomass Fermentation

Yeap



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



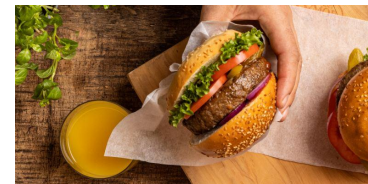
- **Research/Program:** The Kitchen FoodTech Hub
- **Private/Public:** Private

- **About:** Yeap produces sustainable protein 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

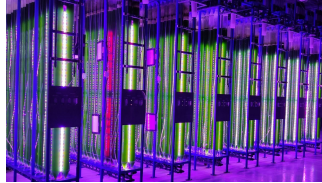
- **About:** MUSH is a seed stage company growing edible mushroom mycelium to create innovative raw ingredients with high nutritional values, for the food industry.

Biomass Fermentation

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.

Plant Molecular Farming

Pigmentum



- **Year Founded:** 2018
- **CEO:** Tal Lutzky
- **Founders:** Tal Lutzky, Amir Tiroler, Prof. Alexander Vainstein

- **Research/Program:** Fresh Start
- **Private/Public:** Private

- **About:** Pigmentum offers a sustainable and highly scalable proprietary molecular technology platform which can turn indoor or outdoor grown crops into efficient producers of high-value compounds.

Polopo



- **Year Founded:** 2022
- **CEO:**
- **Founders:** Dr. Maya Sapir-Mir, Dr. Raya Liberman-Aloni

- **Private/Public:** Private

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

Plant Molecular Farming

Imagene



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

• **Private/Public:** Private

• **About:** Imagene was founded by 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.

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 operates in several markets, and is 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: \$75.2 M
Latest: \$35 M raised in series D - December 2022
- **Investors:** Phoenix Insurance, BASF Venture Capital, Roquette, Synthesis Capital
- **Private/Public:** Private

- **About:** Equinom is a fully integrated food tech company, combining agricultural know-how, culinary expertise and deep technology to develop delicious, nutritious, affordable and sustainable non-GMO plant-based ingredients – from the ground up.
- **Partnerships:** Partnerships with [Meatless Farm](#) and [Black Sheep Foods](#) to provide them with improved pea protein.

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, [Ingredient](#) for distribution.

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](#)

Ingredients

Fabumin



- **Year Founded:** 2020
- **CEO:** Adi Yehezkeli
- **Founders:** Adi Lengel, Adi Yehezkeli

• **Private/Public:** Private

• **About:** Fabumin is a plant-based replacement for Albumin and emulsifiers for the food industry, for diverse use in sauces, ice creams, pastries, etc.

Enzymofit



- **Year Founded:** 2022
- **CEO:** Osnat Gur
- **Founders:** Dr. Sobhi Basheer

• **Private/Public:** Private

• **About:** Co-founded by Enzymocore and FEAT Investments, Enzymofit is developing an enzyme-based production process that boosts ingredient capabilities for plant-based proteins, to allow for more clean-label products.

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.
- **Partnerships:** [In cooperation with IFF](#), Simpliigood is developing spirulina-based smoked salmon, intended for launch by the end of 2023.

Genesea Advanced Technologies



- **Year Founded:** 2021
- **Founders:** Ivri Goren, Prof. Alex Goldberg, Alex Chemodanov

- **Private/Public:** Private

- **About:** Genesea is a seaweed food tech company, producing alternative protein extraction & ingredients from macro-algae.

Ingredients

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.

Plant-Based Meat

Meat.The End



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



- **Fundraising:** \$4 M seed - September 2022
- **Investors:** Big Idea Ventures, Sustainable Food Ventures
- **Private/Public:** Private

- **About:** Meat.The End develops protein ingredients that transform the texture of alternative meat. Its unique IP is in industrial extrusion processes and related protein treatment.

More Foods



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



- **Fundraising:** \$550 K in convertible debt - March 2021
- **Investors:** BioMeat Food Tech
- **Private/Public:** Private

- **About:** More Foods crafts fibrous alternative proteins using upcycled side streams from various sources including Sunflower oil and Pumpkin oil production. The company began pilot sales in February 2022.

Plant-Based Meat

Redefine Meat



- **Year Founded:** 2018
- **CEO:** Eshchar Ben-Shitrit
- **Founders:** Adam Lahav, Eshchar Ben-Shitrit
- **About:** Redefine Meat's proprietary technology, software, and formulations produce plant-based meat with the appearance, texture, flavor, and cooking properties of animal meat. Having launched its innovative "new-meat" in select European restaurants in 2021, 2022 saw Redefine Meat add several new cuts to their growing line.
- **Fundraising:** Total: \$170 M
Latest: \$135 M series B - January 2022
- **Investors:** Hanaco Venture Capital, Happiness Capital, CPT Capital

- **Partnerships:** Marco Pierre White's Steak Houses, [Giraudi Meats](#)
- **Private/Public:** Private



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 Food Tech, 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 five fresh ingredients to produce a minced meat equivalent.
- **Partnerships:** Rilbite signed a deal with French retailer Monoprix, to distribute Rilbite products across Monoprix's 700 stores.

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.

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, creator 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. Products currently available through retail in Israel.

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.

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 has created plant-based meat products, including salami, sausages and burgers.

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:** Total: \$14.5 M
Latest: \$12.5 M seed - January 2022
- **Investors:** TechAviv Founder Partners, Beni Nofech, Nas Daily, VegInvest
- **Private/Public:** Private



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.

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 are sold across the United States, Canada and China, 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.

Plant-Based Eggs

Yo Egg



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



- **Fundraising:** \$5 M seed - May 2022
- **Investors:** NFX Capital, Stray Dog Capital
- **Private/Public:** Private

- **About:** Yo! has developed an advanced prototype for a plant-based sunny-side up and poached egg, currently available through foodservice in Israel and the US.
- **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

Further reading

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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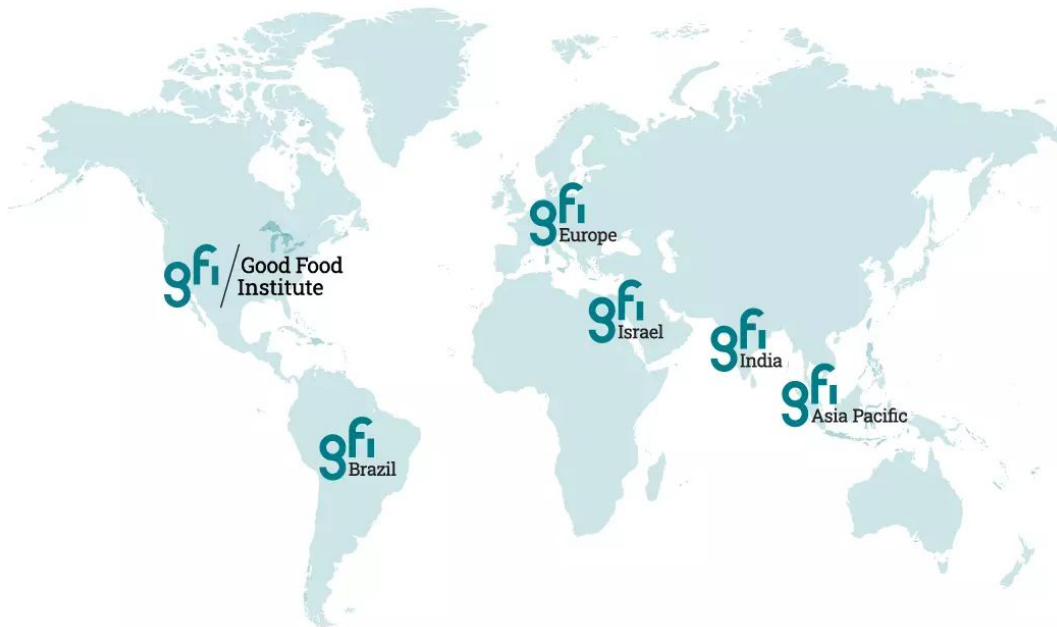
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About GFI

GFI Israel is an affiliate of The Good Food Institute, a nonprofit think tank working to make the global food system better for the planet, people, and animals. As a catalyst for the entire sector, we leverage the Israeli entrepreneurial mentality and partner with forward-thinking scientists, businesses and policymakers to advance alternative protein innovation.

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