



Israel State of Alternative Protein Innovation Webinar

June 2021

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Aviv Oren, Business Engagement, GFI Israel

Agenda



Welcome & introduction to the Good Food Institute

- Alternative proteins: the why



How Israel emerged as an alt protein powerhouse?



2021 Israel state of alternative protein innovation:

- Commercial review: investments & market
- Industry landscape: ecosystem & startups
- Science and technology
- Policy



Q&A



1. A (very) brief intro to alternative proteins and GFI

Intensive farming presents numerous risks



14.5%

GLOBAL GREENHOUSE
GAS EMISSIONS



NO.1

USER OF FRESHWATER
RESOURCES ON THE PLANET



NO.1

CAUSE OF DEFORESTATION
DUE TO CATTLE RANCHING
AND SOY PRODUCTION



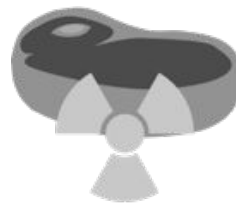
MANURE

& FERTILIZER RUNOFFS ARE
CAUSING WIDESPREAD LAND
& WATER POLLUTION



NO.1

GLOBAL USER OF
ANTIBIOTICS, INCLUDING
SHARED-CLASS ANTIBIOTICS



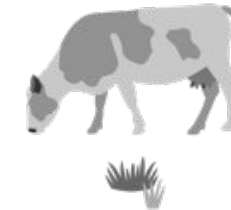
HEALTH

HIGH RISK OF
NON-COMMUNICABLE DISEASES
& FOOD-BORNE ILLNESS



LABOUR

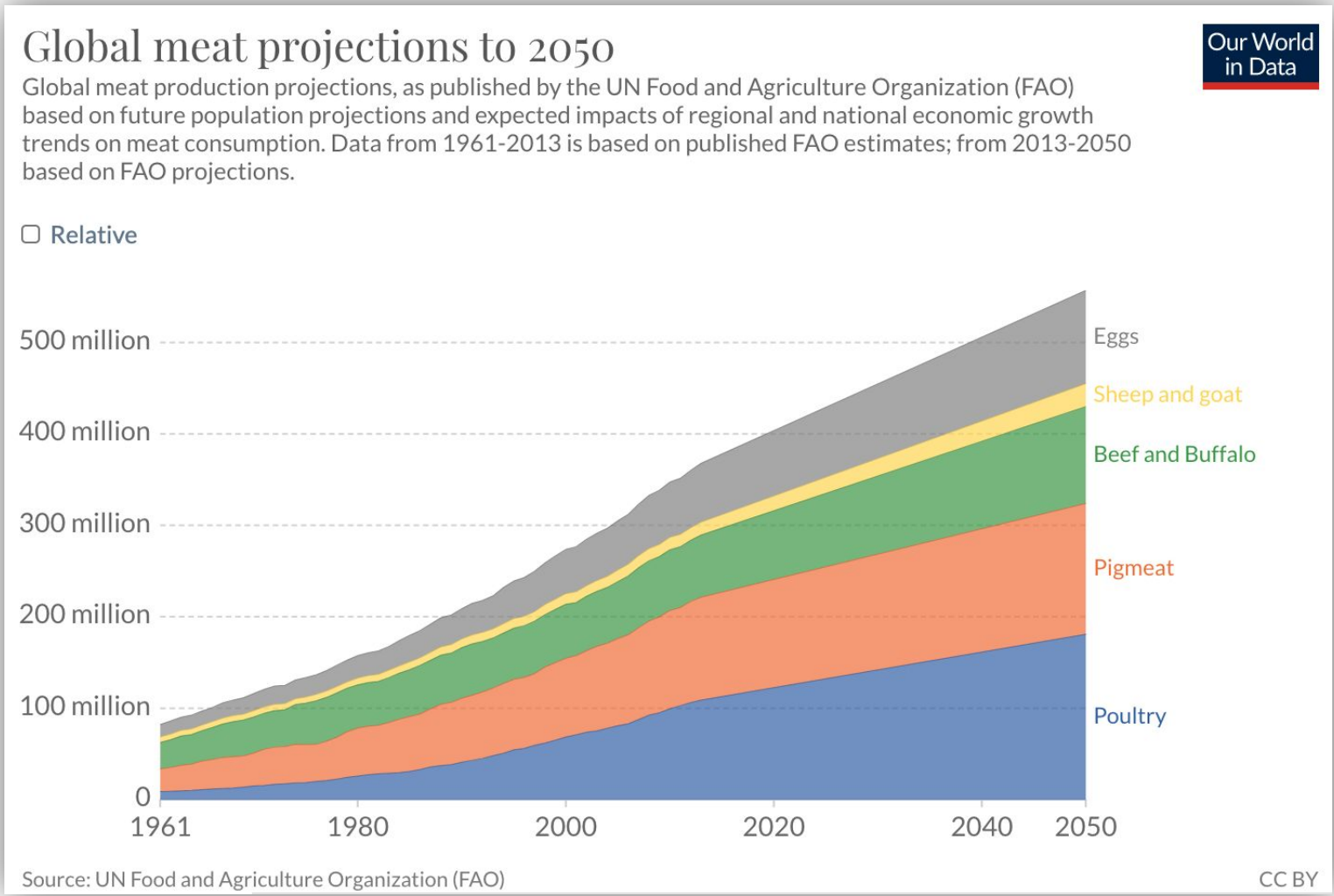
POOR VISIBILITY OF
SUPPLY CHAINS



WELFARE

CLOSE CONFINEMENT AND
MUTILATIONS

Global meat production



So let's make meat...but in a better way.



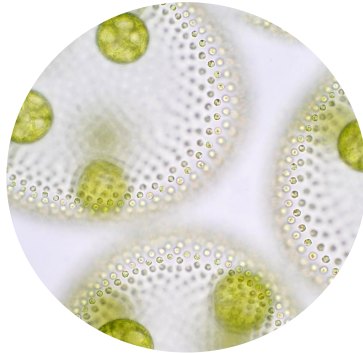
Plant-based burger

The alternative protein landscape

Plant-based



Fermentation



Cultivated



Photo courtesy of Beyond Meat

Photo courtesy of Ecovative Design: Atlast Food Co.

Photo courtesy of Memphis Meats



The Good Food Institute

We are developing the roadmap for a sustainable, secure, and just protein supply.

We identify the most effective solutions, mobilize resources and talent, and empower partners to make alternative proteins accessible, affordable, and delicious.



Science & technology



Industry



Policy

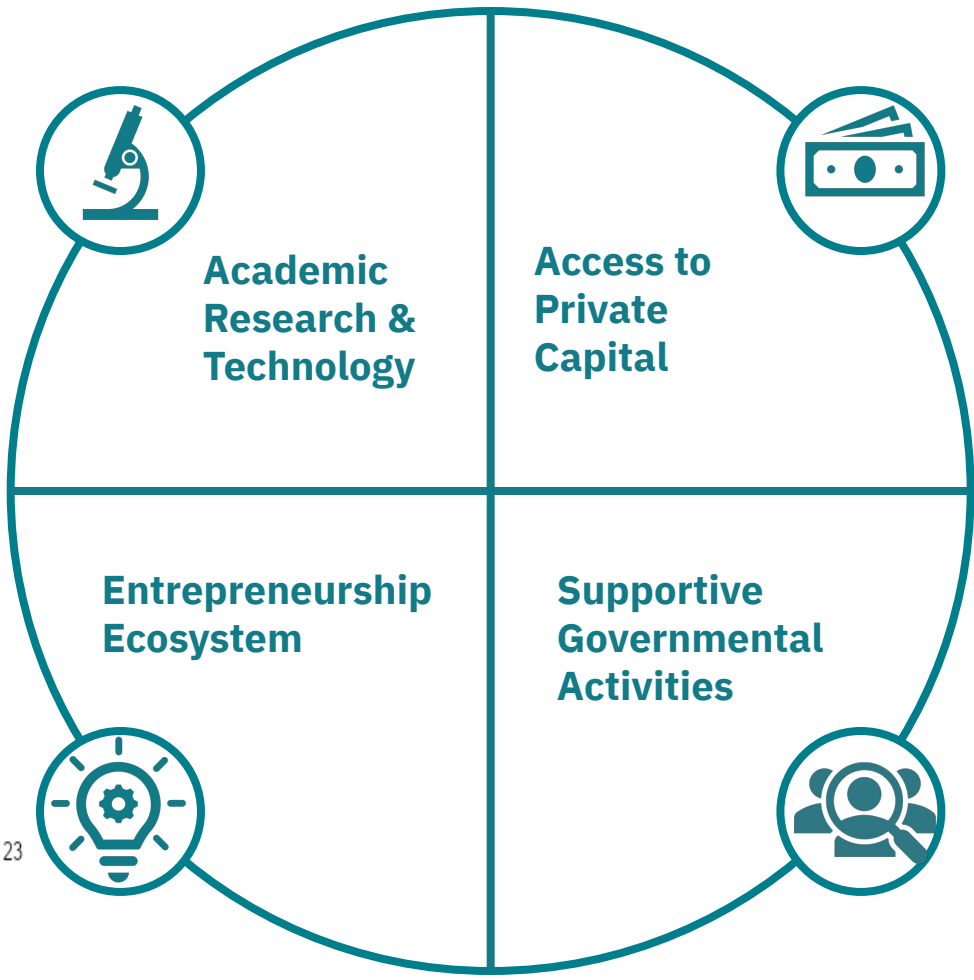
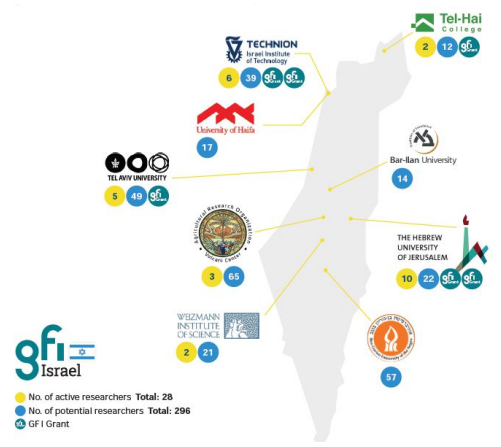
We act as a force multiplier, collaborating around the world for maximum impact.



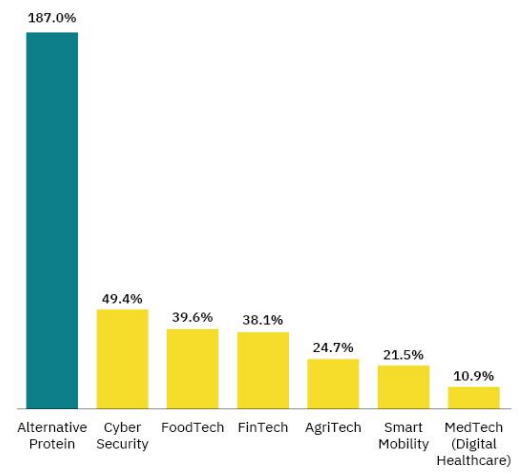


Israel- A Global Hub for Alt-Protein Innovation

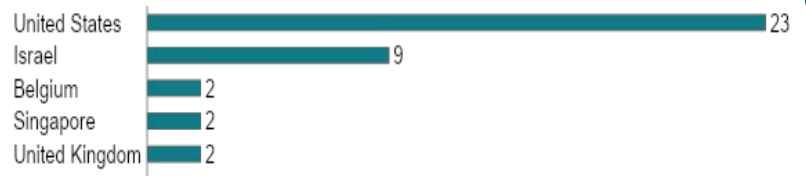
How Israel has developed as an alt protein powerhouse?



Industries by average investment CAGR (2018-2020) in Israel



Israel is ranked 2nd in the world in the # of fermentation startups





Industry Landscape

Alt-protein startups in Israel by stage

Early Stage Venture Creation

30+ early stage startups in the pipeline

Seed

Development

Pilot & Scaleup

Commercialisation
& Growth

Cultivated
meat / dairy



Fermentation



Plant-based



Israeli cultivated companies

ALEPH FAI
MEAT GROWERS



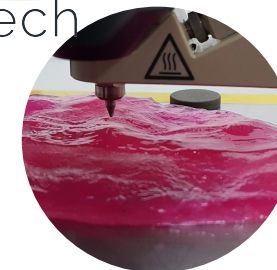
**FUTURE
MEAT**



SuperMeat



MeaTech



BIOMILK™



Focus	Whole cut beef steak	Mostly fat (beef, chicken, lamb)	Chicken	Beef- 3D printed steaks	Milk
Total \$ raised	~\$14M	~\$43M	~\$4M	~\$36M	~\$5M
Type	Private	Private	Private	Public: Nasdaq; TASE	Public: TASE
Strategic Investors		  			
Partnerships	 				

Israeli fermentation companies

Precision fermentation

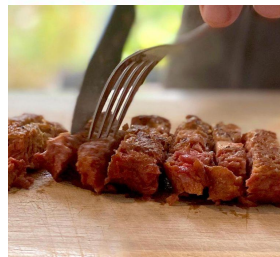


ReMilk uses microbial fermentation to reproduce milk proteins. Raised \$11M in Series A.



Using computational systems biology integrated with AI technology for precision fermentation to increase the expression of milk proteins in microflora.

Biomass fermentation



Plant-based ingredients and fermentation to create realistic, clean-label whole muscle cut meat analogues



Fermentation technology uses fungal mycelium, legumes, and grains.



Cultivates microalgae using a combination of fermentation technology



Develops natural solutions for the plant-based meat-flavoring industry



Yeast-based single-cell proteins for the meat analogue industry.

Israeli plant-based meat companies



3D printed technology for whole cut plant-based meat analogue products. Advancing for scale up phase.



Novel technology to produce cold-cut plant based meat and cheese analogue products



Novel, scalable technology for plant-based seafood products.



3D printed technology for plant-based burgers.



Rilbite's technology blends and binds eight fresh ingredients to produce a minced meat equivalent.



Meat analogue from yeast and other plant protein sources.



Plant-based meat analogues products. In commercial phase, expending for international markets.



Meat analogue from yeast and other plant protein sources.

Israeli plant-based dairy & eggs companies

Ingredientes

CHICK.P



Non-GMO, 90% chickpea plant protein isolate, for products, such as plant-based meat, egg and dairy. Began commercial stage to APAC and U.S

INNOVOPRO



Protein concentrate that is 70 percent chickpea. InnovoPro raised \$18 million. in 2020. Began commercial and scale up stage.

Plant-based eggs



Plant-based egg. Secured a \$5 million Series A investment and expanding to the U.S market.



Plant-based sunny-side up egg, Aims to penetrate the foodservice market soon.

Plant-based dairy



Clean-label, soy-free, fermented plant-based prebiotic and probiotic foods. Began its commercial stage under the brand ONLY.



Plant-based formulas for infants and toddlers. Selling across the United States e-commerce and retail. Listed on TSX

Early Stage Programs



Partners



About the program

Incubator
\$650K-1M

Incubator
\$860K, 2 yrs

Incubator

Incubator

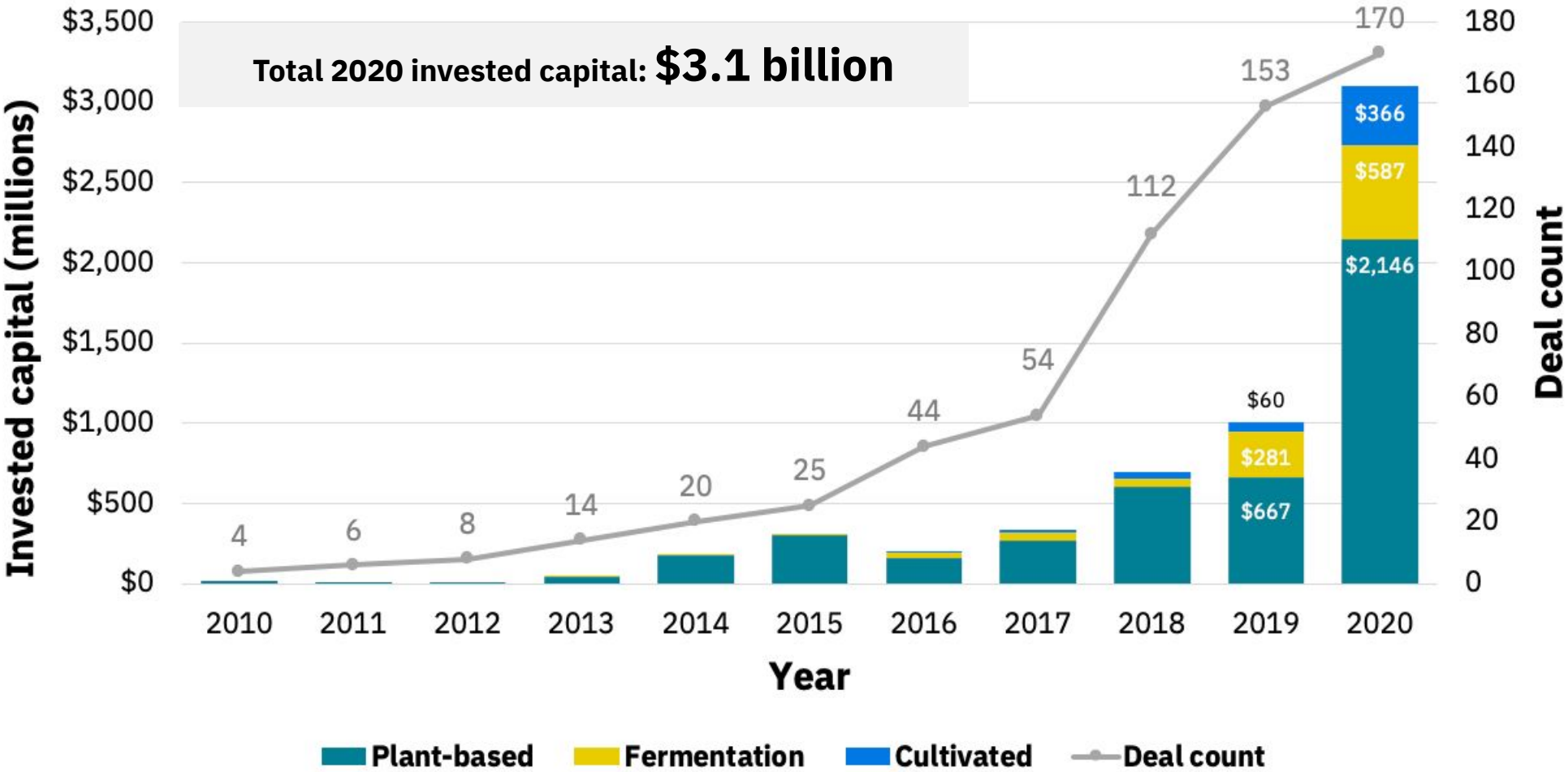
Accelerator
Innovation lab
with IAA

Accelerator
with alt protein
focus



Investments

Private investments- global snapshot

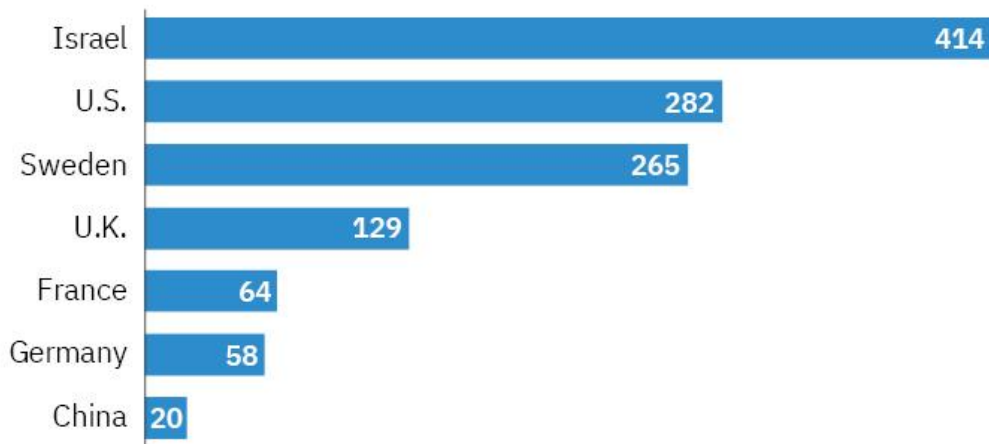


Source: GFI analysis of PitchBook Data, Inc. Invested capital includes accelerator and incubator funding, angel funding, seed funding, equity and product crowdfunding, early-stage venture capital, late-stage venture capital, private equity growth/expansion, capitalization, corporate venture, joint venture, convertible debt, and general debt completed deals.
 Note: Data has not been reviewed by PitchBook analysts.

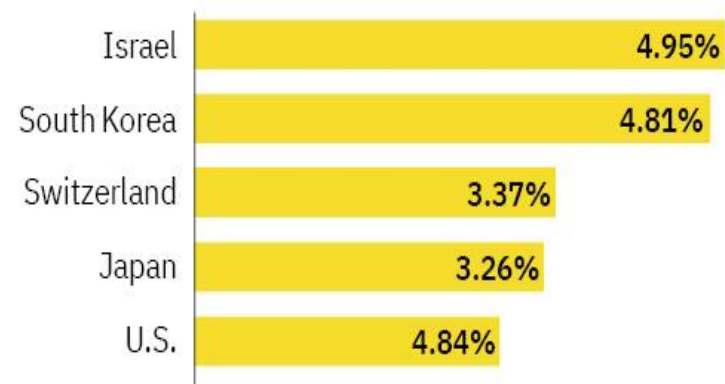


Israel fundraising ecosystem

Countries by VC investment in of USD per capita
(statista)



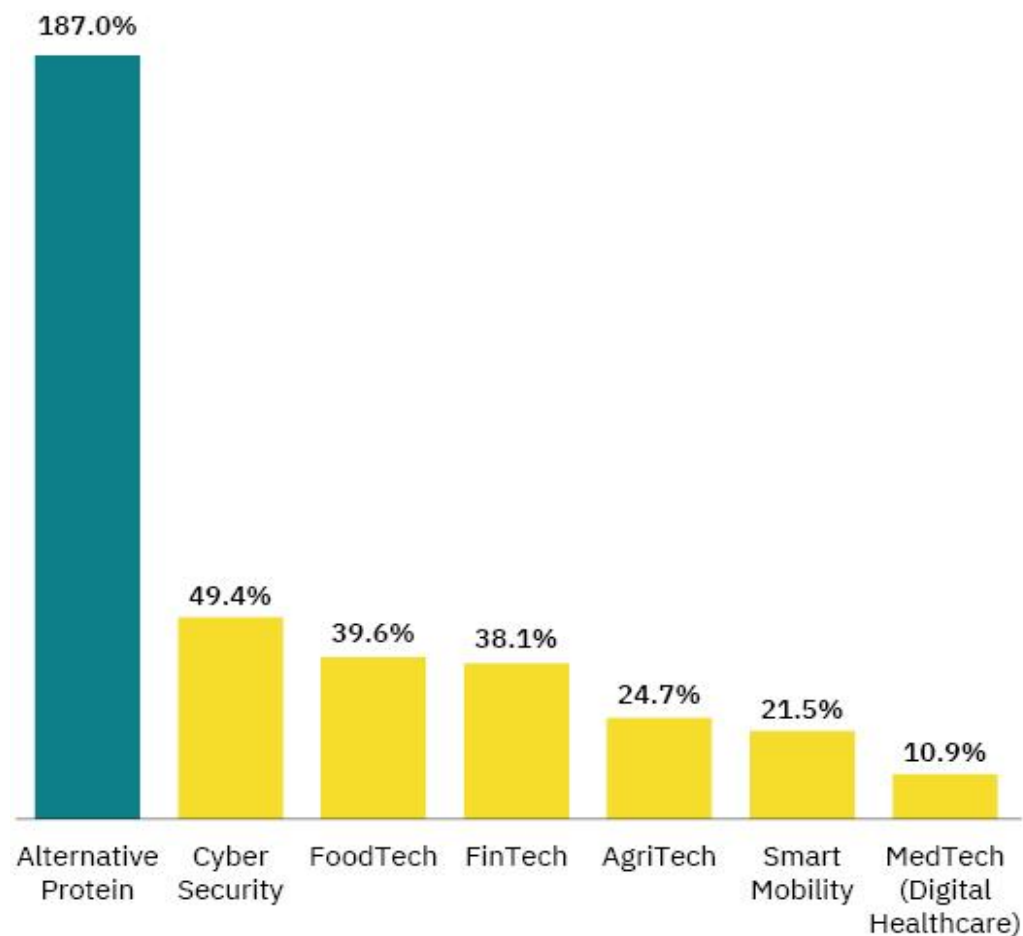
Countries by R&D spending as a percentage per capita
(world bank)




 רשות החדשנות
 Israel Innovation
 Authority

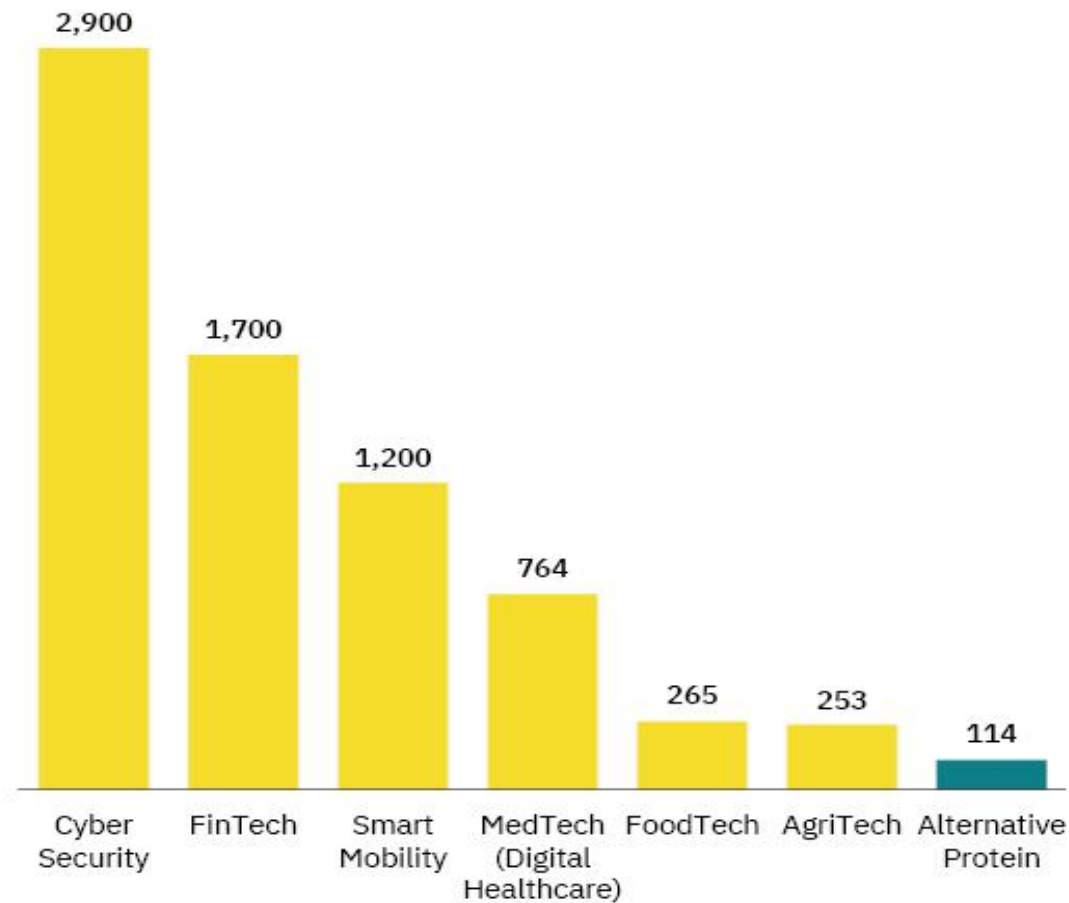
Alt protein is the fastest growing tech industry in Israel

Industries by average investment CAGR (2018-2020) in Israel



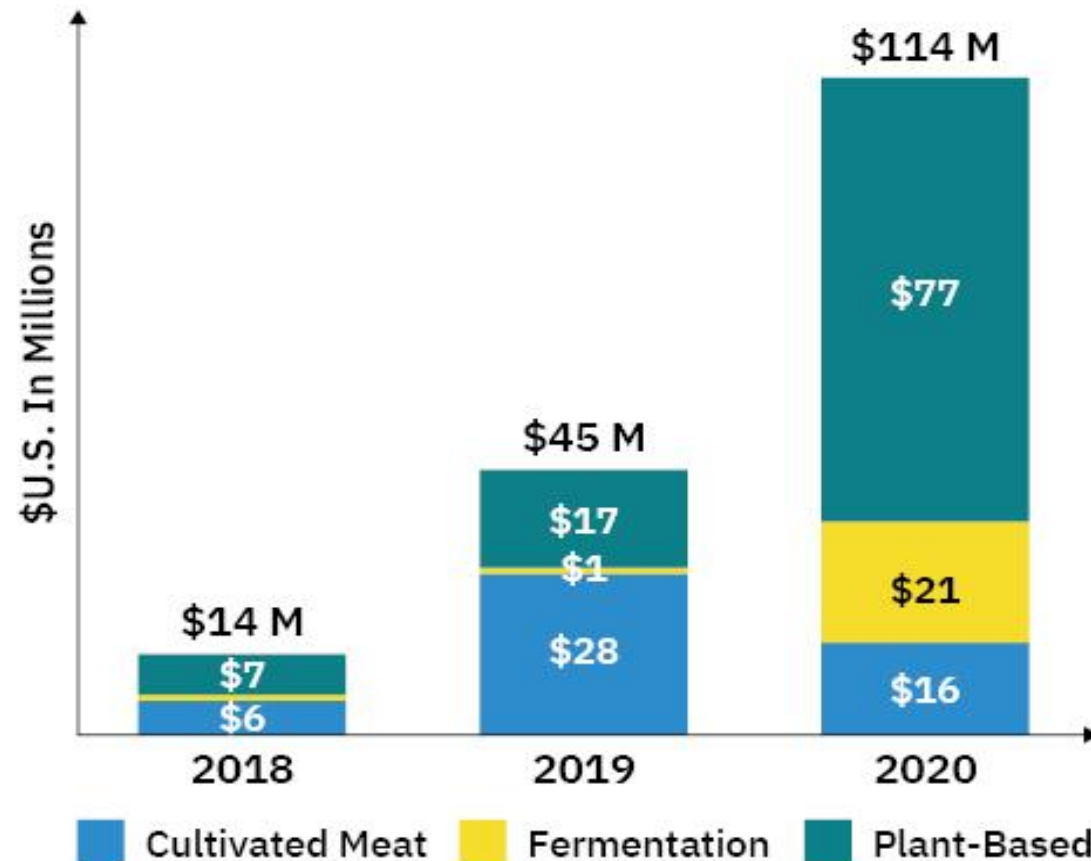
Investments in alt-protein are still in its infancy

Industries by 2020 investment in millions of USD in Israel






Israel - investment

Startup fundraising by alternative protein sector in millions of USD (2018-2020)



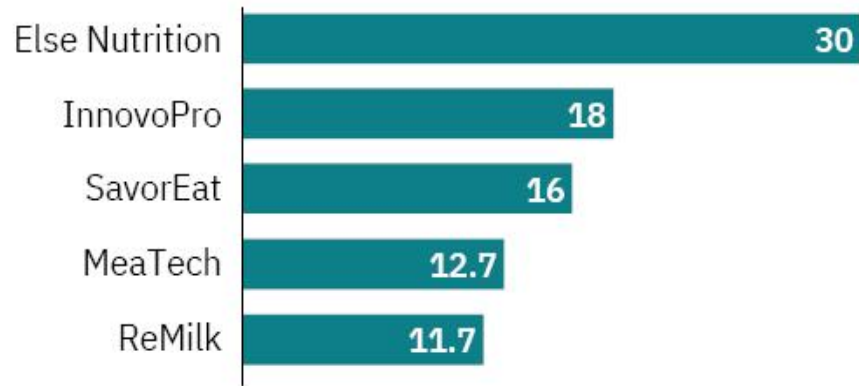
	2019	2020
Number of Deals	10	18
Avg deal amount	\$4.9M	\$7.6M

Top deals- global overview

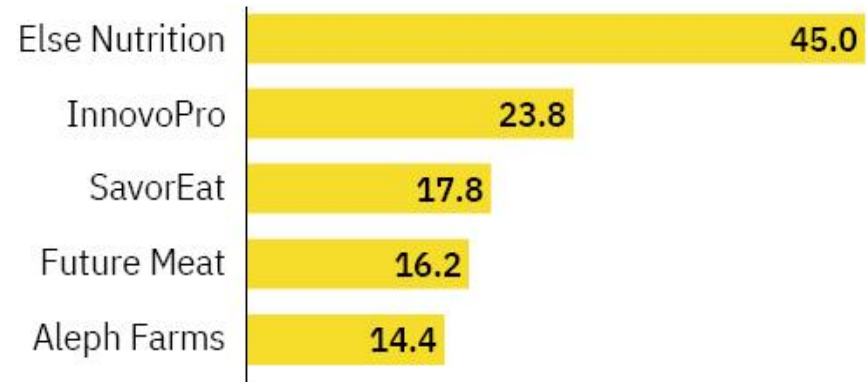
Category	Invested capital, 2020	1-year growth	Largest round
 Plant-based	\$2.1 billion	3x	\$500 million Impossible Foods Series F
 Fermentation	\$590 million	2x	\$300 million Perfect Day Series C
 Cultivated	\$360 million	6x	\$186 million Memphis Meats Series B

Top deals- Israel

2020 deals ranked by millions of USD



Companies ranked by total capital raised as of end of 2020



Q1 2021 leading deals

**FUTURE
MEAT**

Future Meat Technologies has raised **\$26.75 million** in series B funding. Among the investors in the series B round were Tyson Foods, ADM, Müller Group, alongside leading venture capital investors such as S2G Ventures

FT

FINANCIAL
TIMES

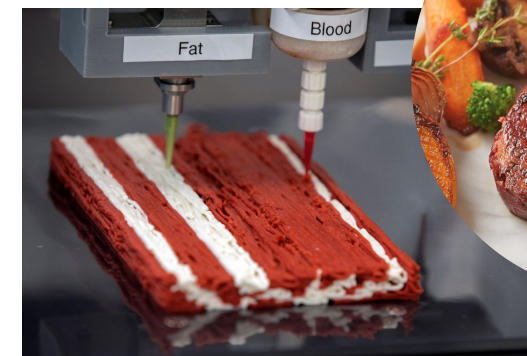
Lab-grown chicken start-up slashes production costs

Israel's Future Meat pulls forward timetable for reaching price parity with real poultry



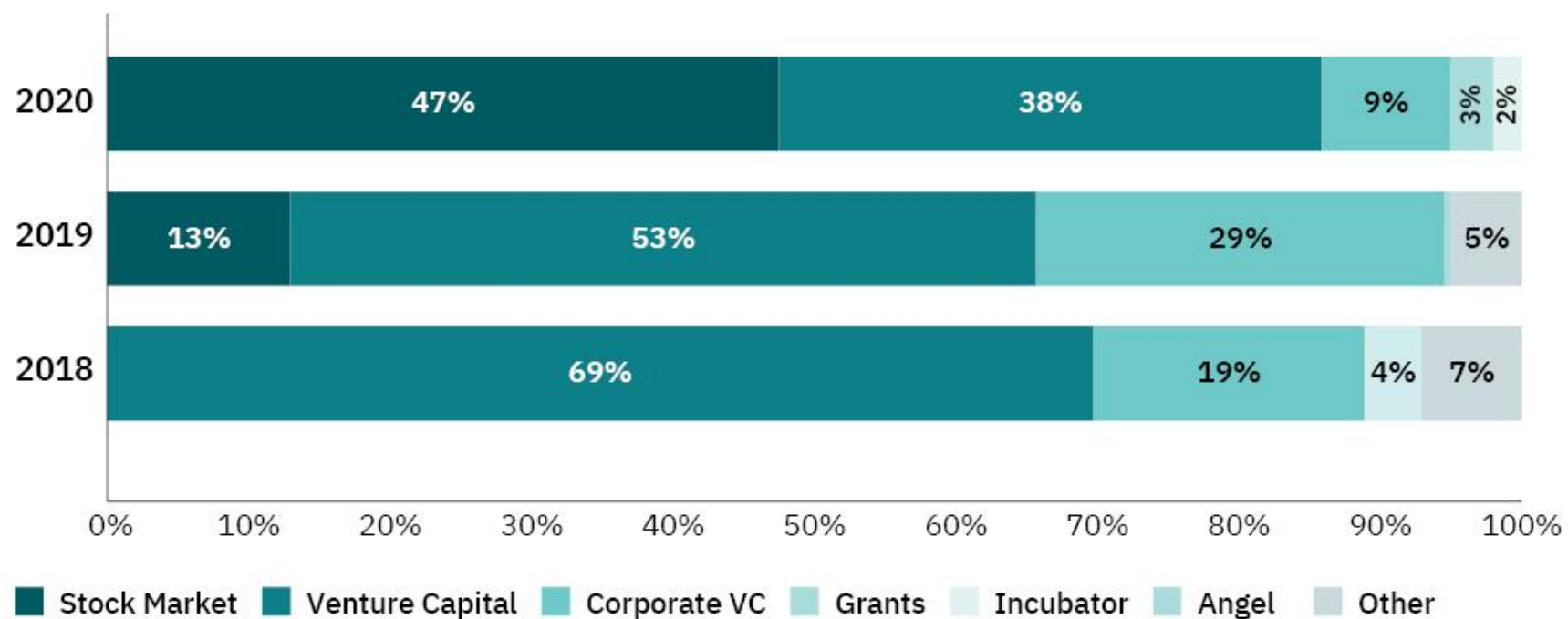

**redefine
meat**

Israeli 3D-printed plant-based steak developer **Redefine Meat** has completed a **\$29 million Series A** financing round led by Happiness Capital and Hanaco Ventures and with the participation of CPT Capital and other international investors.



gfi

Fundraising by investor types



Alternative proteins Israeli IPO's



SavorEat

BIO MILK™

NextFerm
Genuinely Fermented

MeaTech

R&D Partnerships

millennium
foodtech

BioMeat



more.
foods



MeaTech

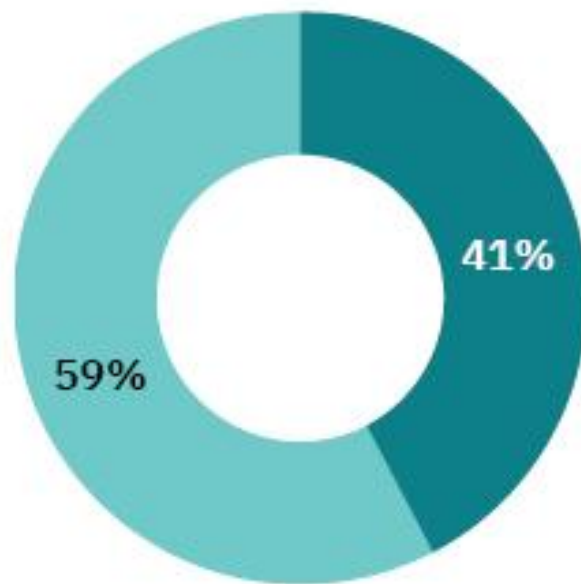
- 1st CM company to be traded on Nasdaq
- Raised \$22 million at \$10.30 per share.



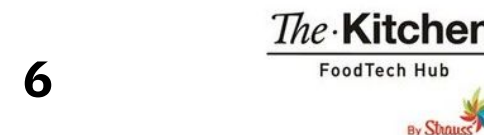
else™

- Raised so far \$45M since June 2018
- 176% rise on the 1st day

Leading investors in Israeli startups



■ Israeli Investors
■ International Investors



* In number of deals





The Market

Global alt- protein market forecast

\$85b by 2030 and up to \$370b by 2035 (meat only)

Global plant-based and cultivated meat market projections

Source	Projected market size	By year	Projected share of global meat market
Barclays	\$140b	2030	10%
Jeffries	\$240b	2040	9%



Global plant-based meat market projections

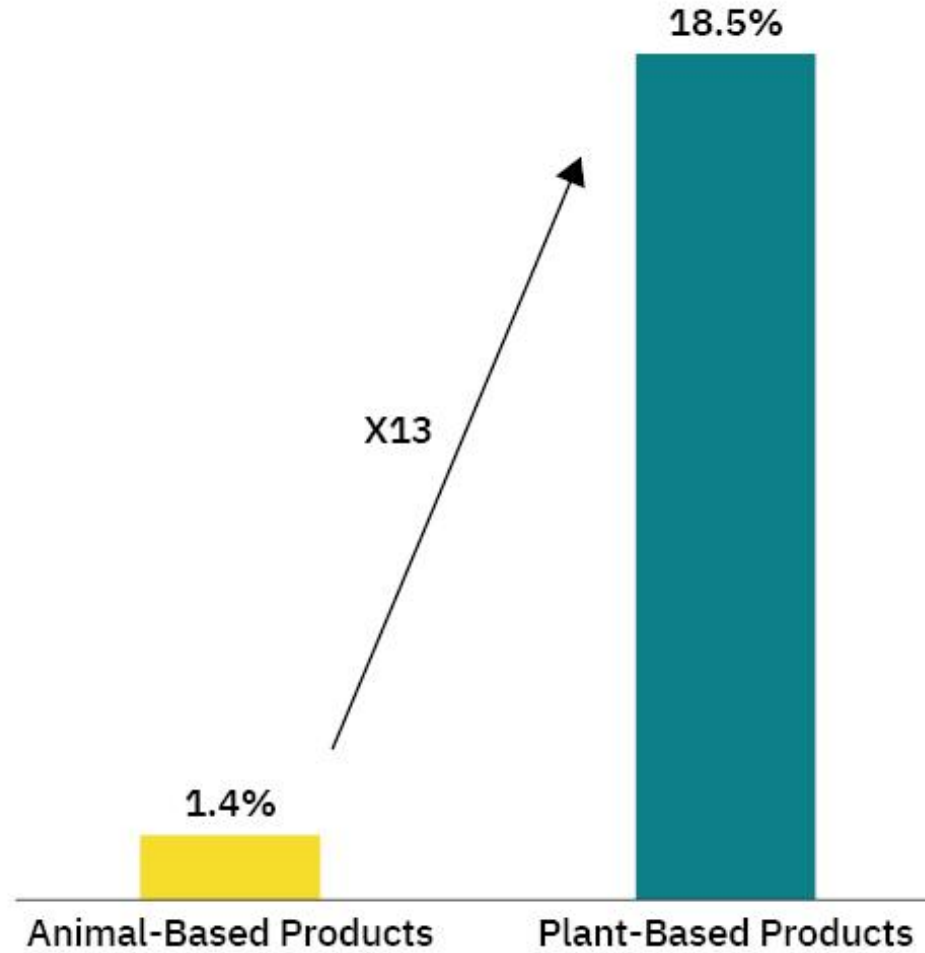
Source	Projected market size	By year	Projected share of global meat market
UBS	\$85b	2030	6%
J.P. Morgan	\$100b	2035	7%
A.T. Kearney	\$370b	2035	23%



The opportunity is with omnivores and flexitarians.

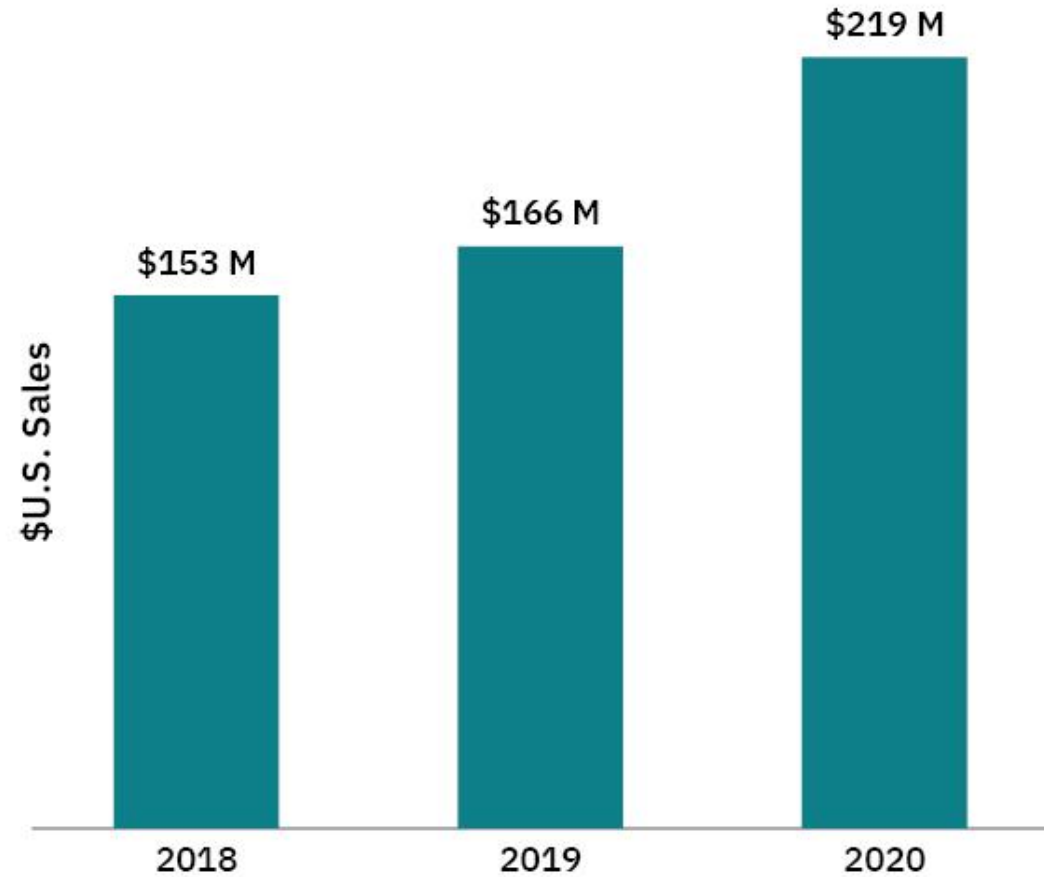


Plant-based vs animal-based retail sales growth in Israel 2019-2020



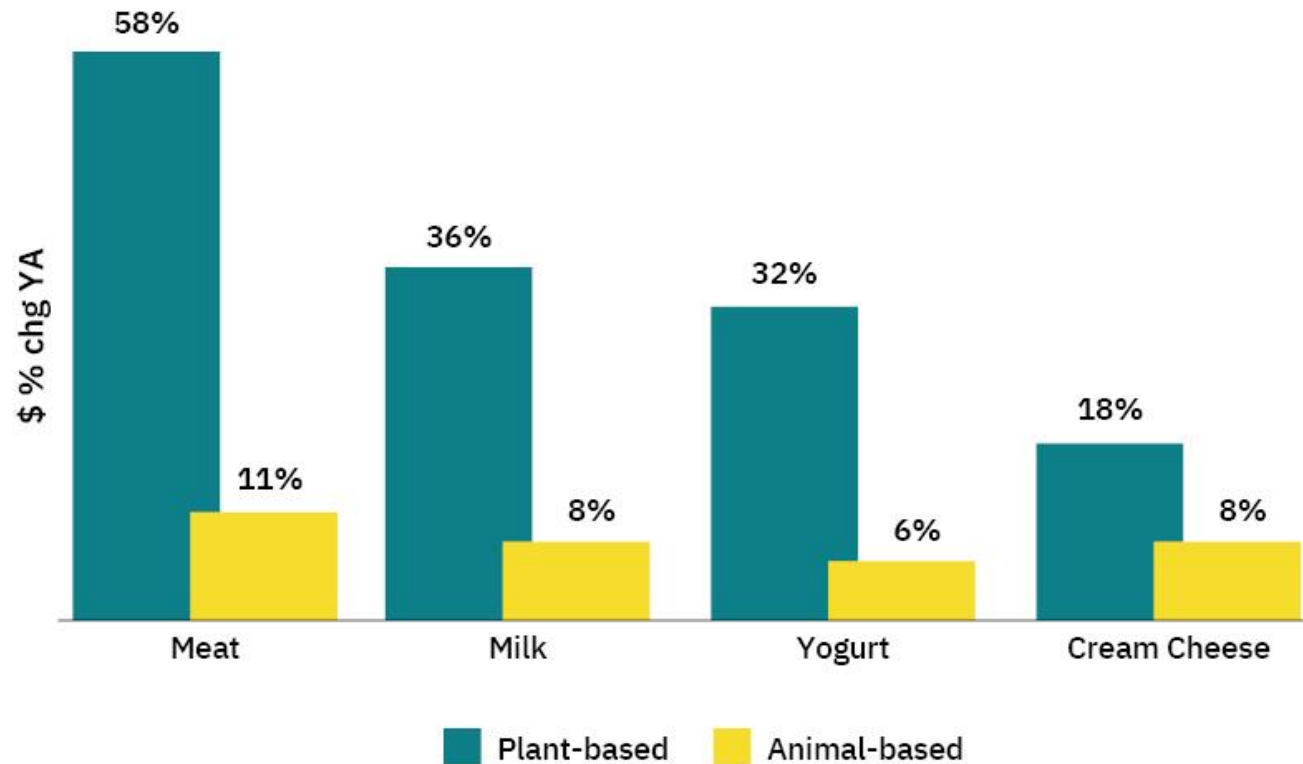
Excluding 9.5% growth from both categories in retail food purchases attributed to Covid-19

Israel retail sales of plant-based food

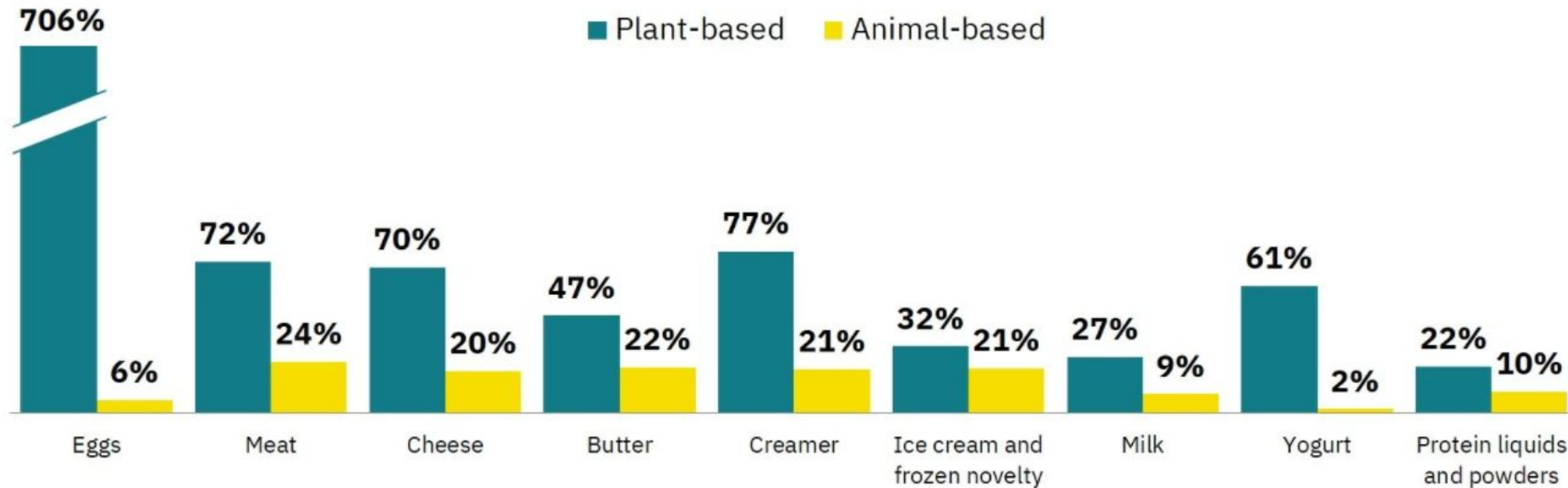


Israel sales growth by category

Plant-based vs animal-based retail sales growth in Israel by category 2019-2020



Animal-based and plant based product comparison: two year \$ sales growth 2020



Note: the data presented in this graph is based on custom-GFI plant-based categories that were created by refining standard SPINS categories. Due to the custom nature of these categories, the presented data will not align with standard SPINS categories.

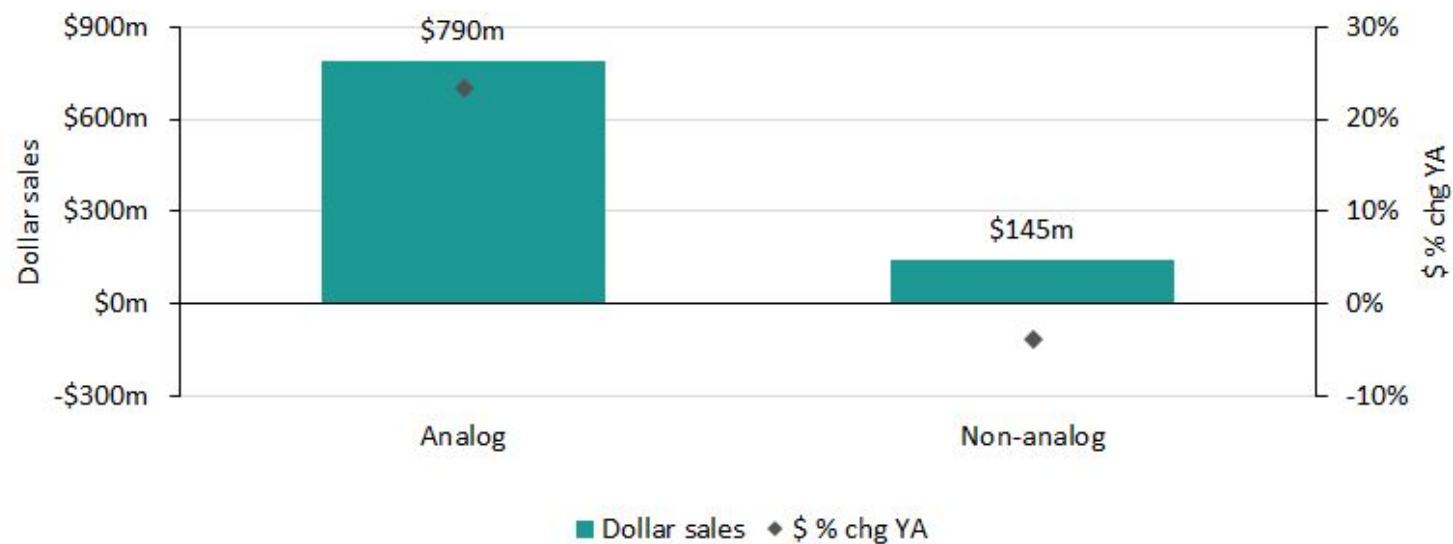
Source: SPINS Natural Enhanced Channel, SPINS Conventional Multi Outlet Channel (powered by IRI) | 52 Weeks Ending 12-27-2020

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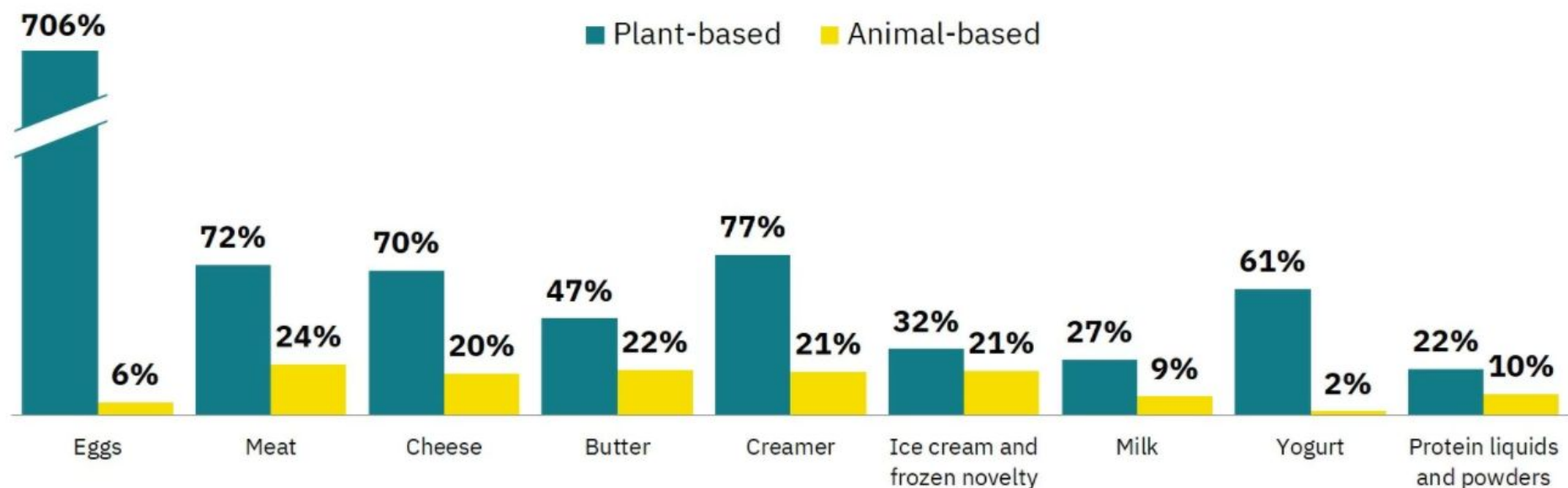


Products that are analogous to meat are growing faster

Analog vs non-analog plant-based meat product sales and YoY growth



U.S Animal-based and plant based product comparison: two year \$ sales growth 2020



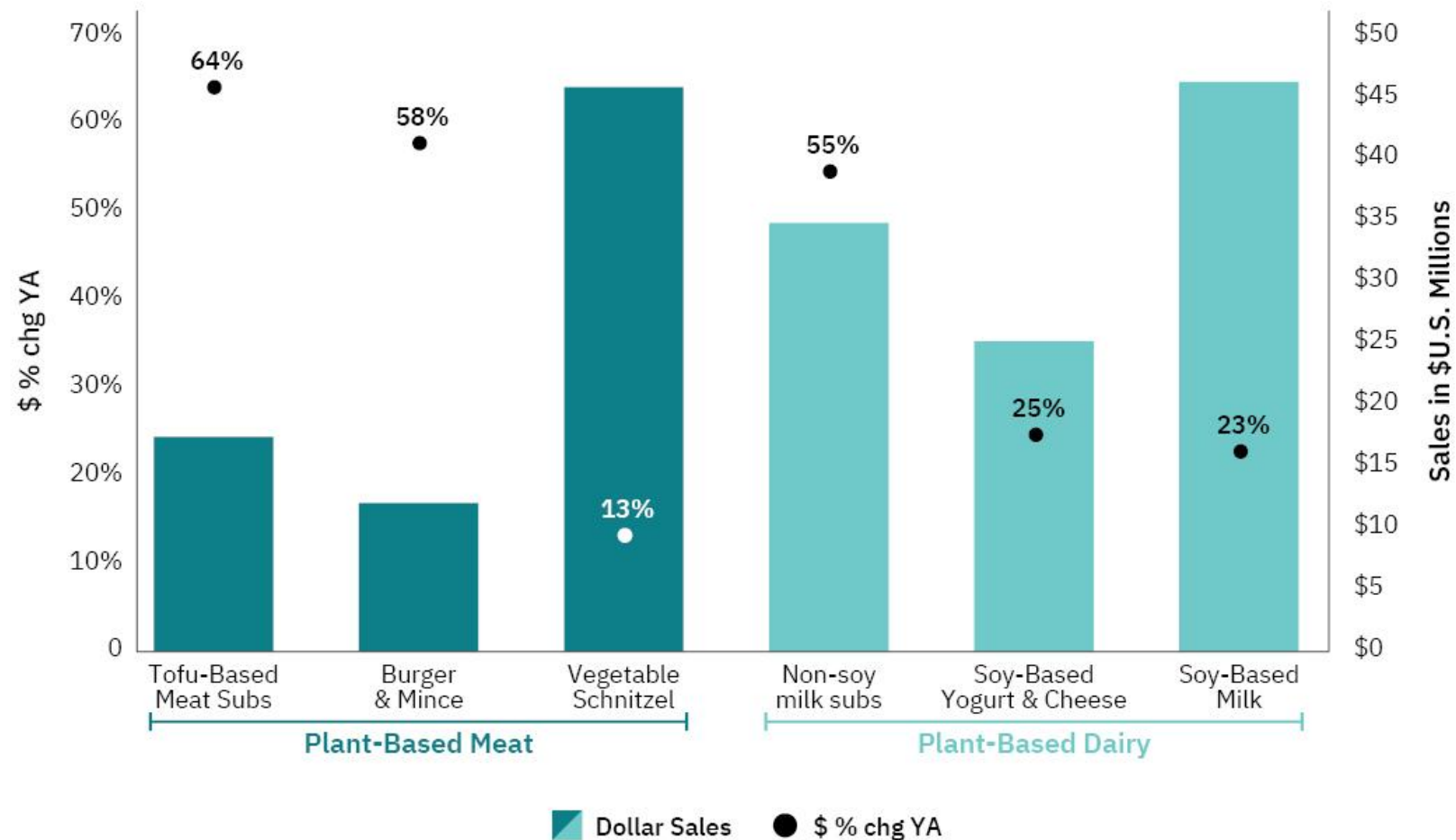
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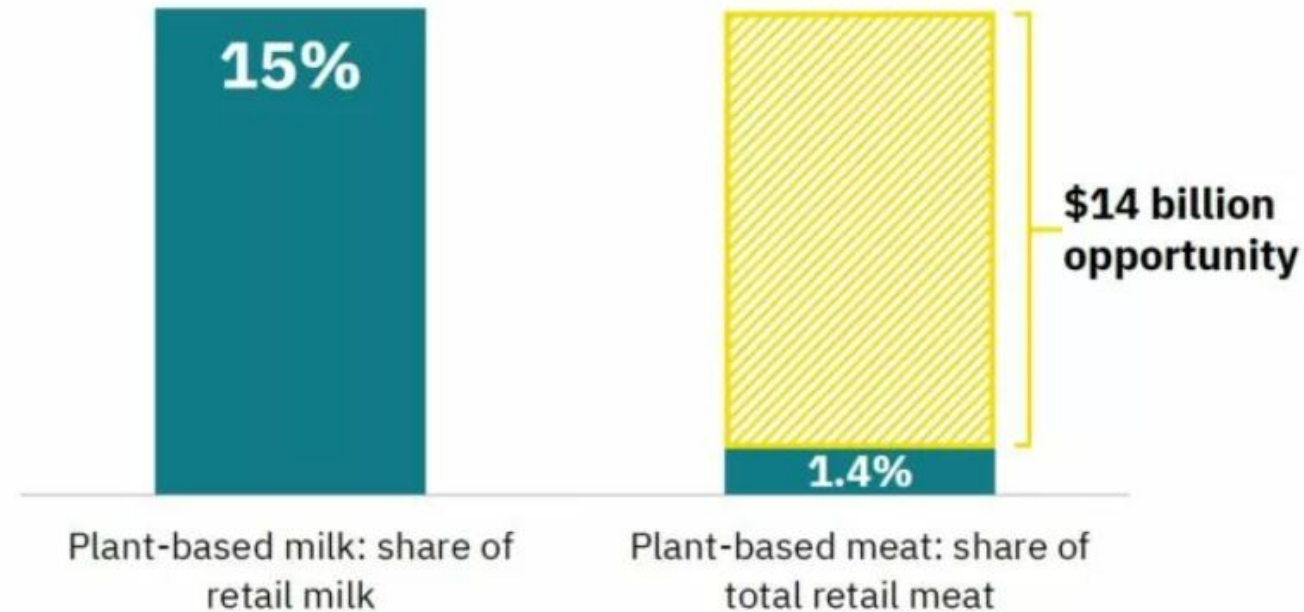


Israel plant-based market size and growth by category 2019-2020



U.S plant-based milk and meat shares of total categories

U.S retail plant-based milk and meat shares of total categories
2020



Israel plant-based milk and meat shares of total categories



2020 Plant- based milk market share



2020 Israel plant-based milk share of total retail milk market



2020 Israel plant-meat share of total retail meat market

Immediate opportunity

Israel retail meat market (including frozen, chilled fish and chicken) ~\$1.3B



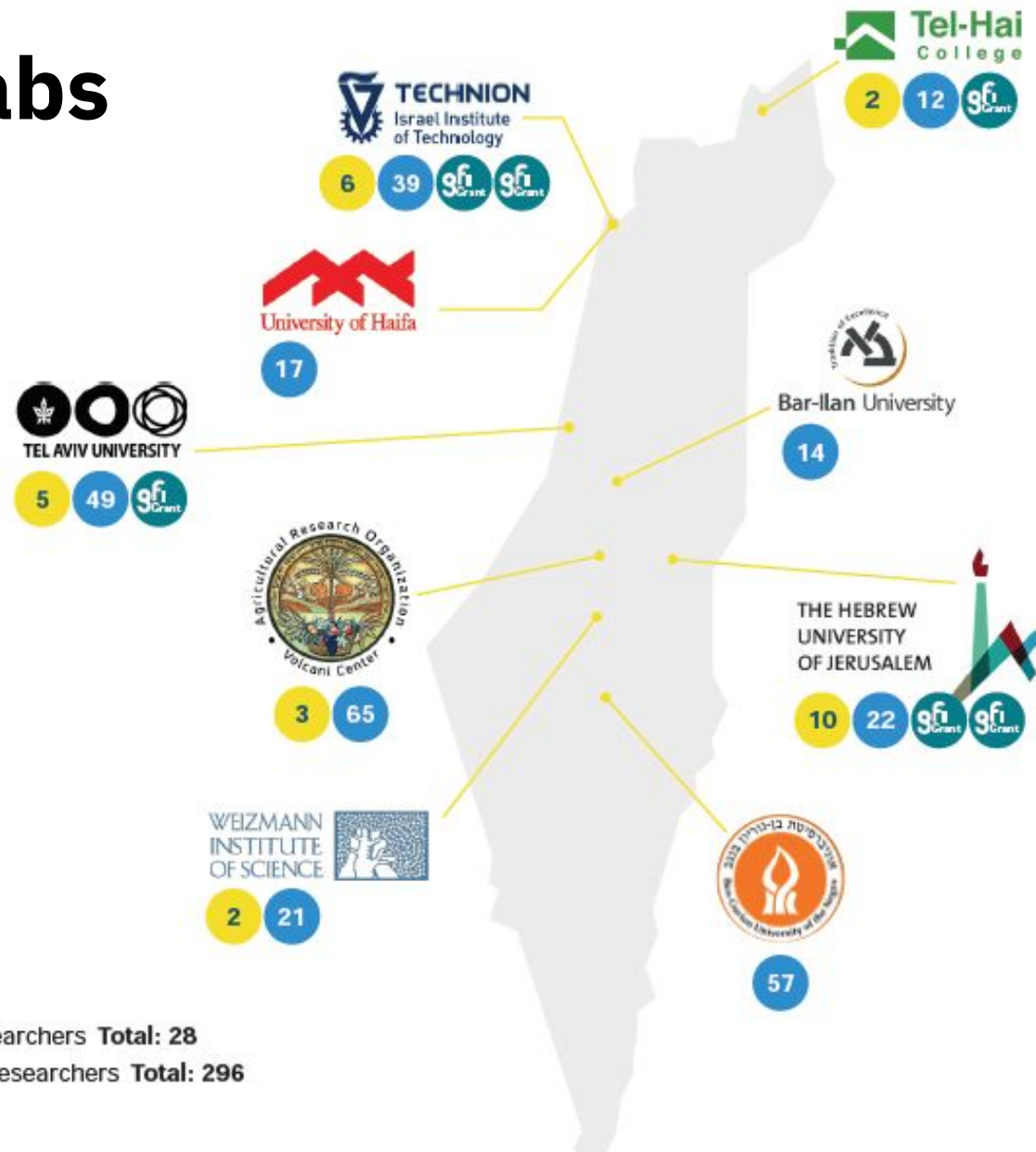
Science and Technology

Active Israeli research labs




- **28 active** research labs in the fields of cultivated meat, fermentation and plant-based
- **296 potential** and related research labs for alternative proteins



- No. of active researchers **Total: 28**
- No. of potential researchers **Total: 296**
- GFI Grant






Alt protein research in Israel

Researcher	Research Center	Field	Description
Dr. Ofir Benjamin	Tel-Hai College	Plant based meat	Food sensory and food structure. 
Prof. Ido Braslevsky	The Hebrew University	Plant based meat, 3D printing	Food biophysics and cryobiology lab. Co-founder of Savor Eat.
Prof. Yoav D. Livney	Technion	Plant based meat	Lab of biopolymers for food and health. 
Prof. Ram Reifen	The Hebrew University	Plant based products	Nutritional quality and safety of foods. Founder of ChickP.
Prof. Oded Shoseyov	The Hebrew University	Plant based meat, 3D printing	Nanobiotechnology, protein engineering, and plant molecular biology lab. Co-founder of Savor Eat. 
Dr. Zvi Hayouka	The Hebrew University	Fermentation	Novel antimicrobial agents for food applications. Advisor - The Mediterranean Food Lab.
Prof. Tamir Tuller	Tel Aviv University	Fermentation, milk alternative	Computational Systems and Synthetic Biology. Co-founder of <u>Imagindairy</u> .



Alt protein research in Israel

Researcher	Research Center	Field	Description
Prof. Yaacov Nachmias	The Hebrew University	Cultivated Meat	Application of tissue engineering and microfluidics. 
Prof. Shulamit Levenberg	Technion	Cultivated meat	Stem Cell and Tissue Engineering. Scientific advisor- Aleph Farms.
Dr. Iftach Nachman	Tel Aviv University	Cultivated meat	Organoid development for suspension-based muscle mass production. 
Prof. Marcelle Machluf	Technion	Cultivated meat	Lab for cancer drug delivery and cell-based technologies. 
Prof. Shlomo Magdassi	The Hebrew University	3D printing	Formation and stabilization of inorganic and organic nanomaterials. Advisor - MeaTech.
Dr. Sharon Schlesinger	The Hebrew University	Cultivated meat	Epigenetic regulation in embryonic stem cells
Dr. Nurit Argov-Argaman	The Hebrew University	Cultivated milk	Metabolism and lactation biology. CO-founder of BioMilk.
Dr. Marganit Levy	The Hebrew University	Cultivated milk	Plant-pathogen interactions and glucosinolate accumulation. Co-founder of BioMilk





Policy

Israel alt- protein national plan



Securing adequate funding for basic and applied scientific research



Transitioning from applied research to product development and scaleup



Obtaining regulatory approval and launching products



Resources - gfi.org.il

Reports



REPORT

Israel State of Alternative Protein Innovation Report 2021

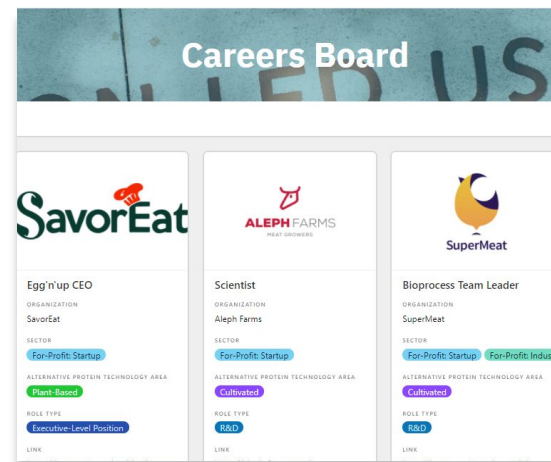
Startup Manual



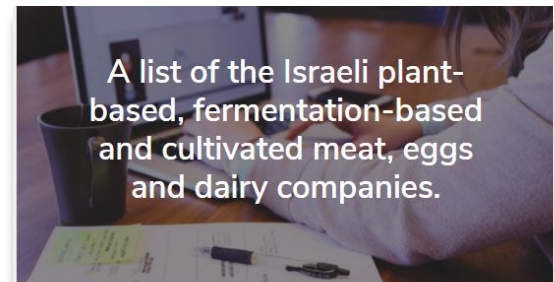
GUIDE

The Good Food Startup Manual – Israel Edition

Careers Board



Company Database



A list of the Israeli plant-based, fermentation-based and cultivated meat, eggs and dairy companies.

DATABASE

Israel Alternative Protein Company Database

GFI Israel Experts



**Nir
Goldstein**
*Managing
Director*



**Aviv
Oren**
*Business
Engagement*



**Alla
Voldman**
*Strategic
Relations*



**Or
Benjamin**
*Director of
Operations*



**Tom Ben
Arye**
*PhD, Senior
Scientist*



**Michal
Halpert**
*PhD,
Academic
Engagement*



Hadas Karshai
*Marketing
Communications*

Q&A



Join us in reimagining protein.



Thank you!

