



# Why We're Excited About Alternative Proteins

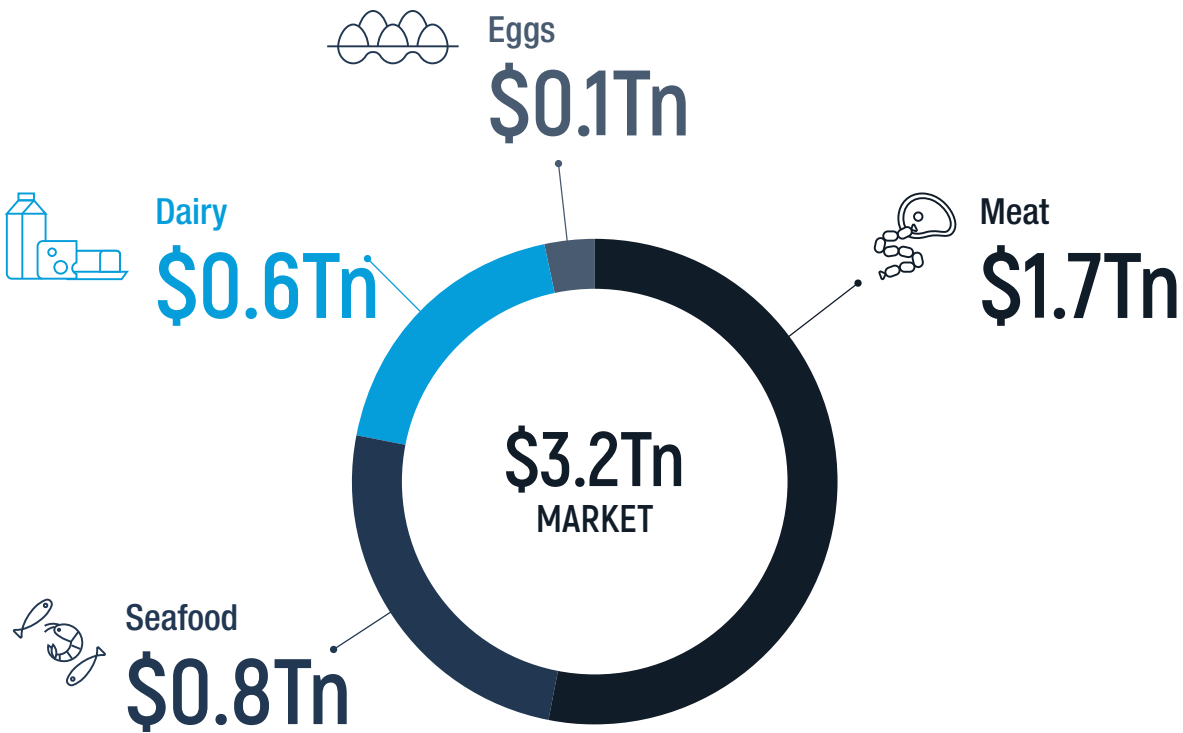


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# Animal-Based food is a >\$3Tn market, undergoing massive disruption

Animal-Based food is a >\$3Tn market, broken into:



Source: Synthesis Capital, GFI, Reuters, Agfunder

Heavily disrupted by new technologies

	\$ invested in 2020	\$ invested YoY growth	# of startups	Notable IPOs
Plant-based	\$2.1Bn	221%	1,200	Beyond Meat (2019) \$6.7Bn <sup>1</sup>
Cellular ag (fermentation/cultivation)	\$1Bn	179%	127	Impossible Foods (2021) ~\$10Bn <sup>2</sup>
Total	\$3.1Bn		1,327	

1 Beyond Meat’s market cap as of Oct 18, 2021  
2 Impossible Foods’ IPO is expected to take place during the next 12 months, with a reported valuation of ~\$10Bn; it’s latest round valuation was \$4Bn

# 5 mega trends are disrupting the market

1



**Demand is exceeding supply**

2



**Technological developments**

3



**Consumer behavior is shifting**

4



**More money is being invested**

5



**Incumbents are embracing change**

# 1 Demand is exceeding supply

## Global demand for animal-based products is rapidly growing

Demand for animal-based food is projected to grow by >50% from 2005 to 2050, due to increase in global population and in per capita consumption



Per capita consumption is significantly growing, especially in emerging markets due to the rise of a more affluent global middle class. In India, for example, 850% increase in poultry demand is projected between 2000 and 2030, mostly due to the shift in consumption patterns.

## While supply is limited

Increasing supply of animal-based food by 50% using current means is not doable because our natural resources are limited

Land

33%

of the world's croplands are used to grow animal feed.

Water

30%

of global water consumption is used for animal products.

Fisheries

>90%

of the world's marine fish stocks are fully exploited / overfished.

Capital Gas Emissions

>15%

of total GHG emissions are caused by livestock farming.

Source: EEA, FAO

## Food for thought



16kg of grain are enough to either feed 20 people or produce only 1kg of beef that is sufficient for 2 people.



On average, the ecological footprint of an Israeli person is 5.5 planets and of a U.S. person is 8 planets. Neither is ideal, but mostly impacted by diet.

Want to check out your personal ecological footprint? [Visit here](#)







# Technological developments are enabling healthy and tasty alternatives at scale

## Innovation is unlocking solutions that deliver a "zero-compromise" experience

Innovation in precision biology (e.g., genetic engineering, synthetic biology) has enabled multiple solutions, most notably in fermentation and cultured meat.

Costs of underlying technologies (e.g., genome sequencing, computing) are falling exponentially, enabling scale.

## We are currently witnessing 3 types of solutions:

	Plant-based	Fermentation	Cultured
Resource	Ingredients from plants (e.g., pea, almond, beetroot)	Gene from a natural resource / DNA code	Animal cells (mainly muscle and fats) extracted from an animal tissue
Process	Cooking and processing (or printing) to mimic animal products	Inserting gene into yeasts / bacteria to reproduce it; resulting proteins are identical to animal protein	Acquiring cells from an animal and then growing them in bioreactors while feeding them with growth media. Cells are then harvested, prepared, and packaged.
Challenges	Ability to mimic taste / texture / appearance, Technological moats	Cost, GMO, Regulation, production facilities	Cost, GMO, Regulation, Scalability of 100% cultured solutions
Applications			
Notable startups			

# Consumer behavior is shifting

## Consumers vote with their wallets through the food they eat:

Climate Change is a major catalyst: consumers realize it is real and want do something about it. Food allows consumers to vote with their wallets and it is the easiest way to do so (e.g., much easier than buying a Tesla).

Consumers care more about health, environment, animal welfare and transparency and are willing to change their diets and even pay more.

Studies show that **80% of Americans** will replace some of their real meat consumption over the next year.

## Flexitarians are the future:

**Flexitarian = Flexible Vegetarian**

Flexitarians are more likely to be **foodies**, **female millennial** or **Gen Z**.

**34%**

of meat-eating millennials eat 4+ plant-based dinners each week.

**30%**

Of the U.S. population identifies as Flexitarian.

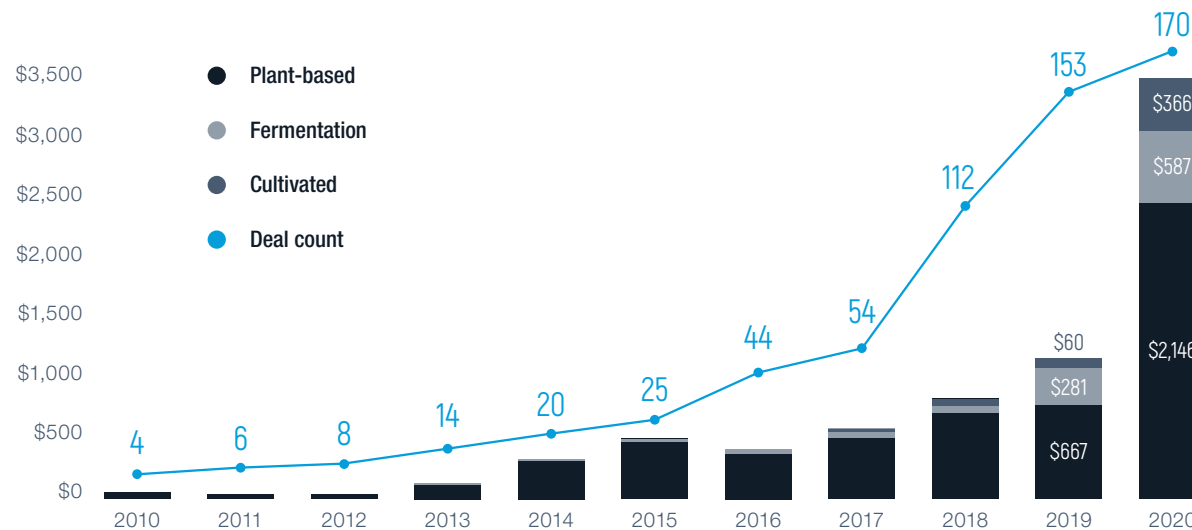
# More money is being invested

## Funding for alternative proteins has accelerated significantly

Record

# \$3.1Bn

invested in alt proteins in last year - 3x more than in any single year in the industry's history.



Source: GFI, Crunchbase, Deloitte

## IPOs and M&As are starting and attracting new investors to the space

In 2019 alone there were more than 10 acquisitions of plant-based companies by Food & Beverage corporates.



In 2019, Beyond Meat, a US plant-based hamburger company, was the 1<sup>st</sup> alternative-proteins company to IPO in a \$1.5Bn valuation and valued today at \$6.7Bn.



Impossible Foods, a US plant-based & fermentation-based hamburger company, is planning to go public during the next 12 months in a ~\$10Bn valuation.



A Swedish plant-based milk company, went public on May 2021 in a \$10Bn valuation.

# Select notable funds investing in alternative proteins



Synthesis  
Capital

a16z

AgFUNDER



CULTIVIAN  
SANDBOX



TEMASEK

khosla ventures



Mayfield





# 5 Incumbents are disrupted and embracing change

Industry giants are developing, acquiring and investing in alternative protein products

Incumbants are changing their core identities and positioning themselves more broadly as “protein companies”

“ We continue to invest significantly in our traditional meat business, but also believe in exploring additional opportunities for growth that give consumers more choices.”

Justin Whitmore, Chief Sustainability Officer at Tyson Foods



Source: CBInsights, Just-Food.com



Unilever eyes \$1Bn of plant-based meat and dairy alternatives sales by 2027



PepsiCo, Beyond Meat establish the PLANeT Partnership



Nestlé to build a new plant-based food facility in China under a \$100 million investment plan

# There are still challenges to overcome



## Cultivated meat is a nascent industry

Cost parity not yet achieved for cultivated solutions. Today, they are ~10x more expensive than animal-based.

No player has proven to date a viable cultivated solution at scale.

Pure cultivated meat will not be commercially available before 2025.



## Consumers require 0 compromise

Consumers fear of mediocre experience around taste, texture and appearance, coupled with relatively high prices.

Solutions require market education around the idea of 'fake' meat consumption, including health issues related to substitutes.



## Regulation is lagging behind

Singapore is the only country that has approved the use of cultivated meat to date – Eat Just (took 2 years).

In the U.S. it requires both USDA and FDA approval and 1st approval likely only to be given in 2022.

GMO products in Europe likely not to be approved/accepted.



## Raising large rounds is a struggle

Companies still struggle to raise large follow-on rounds from generalist funds.

Long R&D processes coupled with high valuations pre-revenues (i.e., similar to pharma).

Only 2 large IPOs to date – Beyond Meat and Oatly

# Vintage's exposure to alternative protein companies continues to grow with time

<div><div>a16z</div><div>Stealth Mode</div><div>nobell</div></div>	<div><div>CREANDUM</div><div>NOQUO FOODS</div></div>	<div><div>ENTRÉE CAPITAL</div><div><div>Imagindairy</div><div>real milk. no cows.</div></div><div>ARTEMYS</div><div>EMPOWERING HUMANITY TO EAT SUSTAINABLY</div></div>	<div><div>Mayfield</div><div>Stealth Mode</div></div>	<div><div>true Ventures</div><div>Stealth Mode</div></div>
<div><div>Bessemer Venture Partners</div><div>Black Sheep FOODS</div></div>	<div><div>crv</div><div>WILDTYPE</div></div>	<div><div>fresh .fund</div><div>remilk.</div></div>	<div><div>Seedcamp</div><div>THIS</div></div>	<div><div>9</div><div>GOURMEY</div></div>
<div><div>Blue Yard</div><div>Meatable</div></div>	<div><div>DC &gt; C</div><div>MYCOWS</div></div>	<div><div>KLEINER PERKINS.</div><div>BYOND MEAT</div></div>	<div><div>SPARK CAPITAL</div><div>WILDTYPE</div></div>	

# Food in 2040 will be dramatically different



## When we go to a restaurant and order a steak, it will probably be an alternative one

By 2040, conventional meat will account for only 40% of the meat we consume.

Once cost-parity is achieved, alternative protein consumers will not be mostly flexitarians or vegetarians as is the case today, but practically everyone.

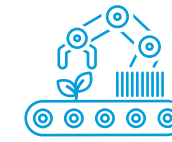
We will eat alternatives we are already familiar with like tuna steaks and mozzarella cheese, but not only. We will also order innovative products like steak with 0 cholesterol or fish without the sea taste.



## When we visit the supermarket, we will check the carbon labeling<sup>1</sup> before choosing a product

Recently, 50% of Europeans surveyed, agreed that carbon emissions are a factor in their purchasing decision.

Carbon labeling, currently done on a voluntary basis, may become an inherent part of our purchasing behavior, depending on marketing strategies (see 'Oatly' or 'Just Salad'), standardization, and regulation.



## Supply chains will be significantly more efficient and local

Instead of growing an animal, transporting it to the slaughterhouse and then to the processing facility, the production process of alternative protein products will be much shorter and localized – it will require one production facility and can even take place at the supermarket itself.

<sup>1</sup> Carbon footprint measures the full production journey, including agriculture, processing, packaging, refrigeration and transportation

Source: AT Kearny, Forbes, ClimatePartner, a16z – what we will eat in the future

# About Vintage

Vintage Investment Partners is a globally integrated venture platform combining Secondary Funds, Funds-of-Funds and Direct Co-Investment Funds. With approximately \$3.0 billion under management across 14 total funds in the U.S., Europe, Israel and Canada, the firm is invested in several of the world's leading venture funds and growth-stage startups and has exposure directly and indirectly to over 2,600 technology companies. Vintage leverages its broad network, and a database of over 14,000 companies to provide the Value-Added Services, a free of charge service, connecting venture-backed technology startups across the world to corporations seeking support in their digital journeys, helping drive an innovation ecosystem. The Value-Added Services (VAS) also offer funds and startups with access to exclusive data and market insights. VAS has a proven model that has so far helped generate over 225 POs and POCs globally exceeding \$100 million in revenues for its startups.

## About the Author

Shira Eting is a Senior Associate at Vintage Investment Partners. Shira leads the Healthcare and Sustainability sectors at Vintage. Previously, Shira worked for McKinsey & Company and did a Milken fellowship at the Ministry of Economy. Shira holds a BSc in Math and Computer Science from Ben Gurion University and an MSc in Environmental Change and Management from Oxford University.