



main sequence  
ventures



## **Planetary Health Diet.**

Why venture is excited

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CSIRO INNOVATION  
FUND 1 LP

# Waves

Inevitable,  
unstoppable forces

When they come, which companies will  
need to be paid? Who is running into the  
wave?





Science has transformed food production ... but it has also come at a cost.

Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems

THE LANCET

#### 1961-2000

- Population increased **98%**
- Food production increased **146%**
- Yields more than **doubled**
- Arable land in use rose **8%**
- Agricultural inputs rose
  - Nitrogen fertilizer (x7)
  - Phosphate fertilizer (X3)
  - Irrigation water (x2)

The Science of Food Security - Cole, Augustin



THE LANCET

Food production occupies **40%** of land, causes **30%** greenhouse gas, uses **70%** of water.

#### Crossed

- Climate change
- Biosphere integrity
- Biogeochemical flows (nitrogen/phosphorous)

#### Will Cross

- Fresh water
- Change in land use
- Ocean acidification

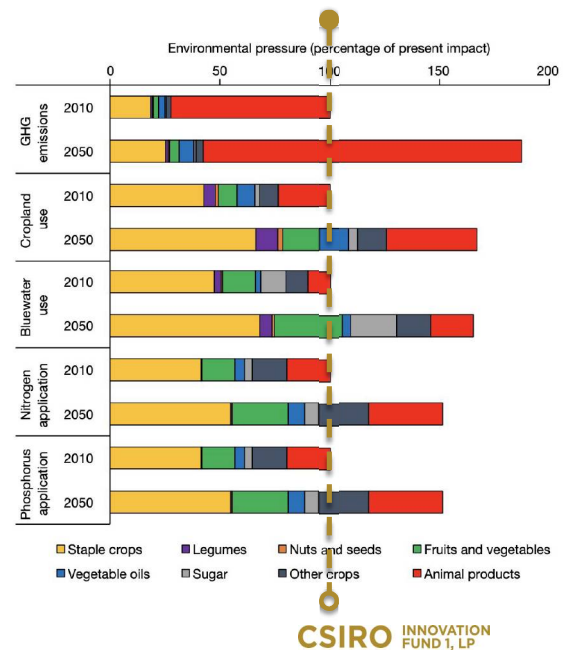
Regulatory functions upon which human populations depend.

# Keep eating meat, keep growing, get richer...

Environmental pressure across all planetary boundaries will be breached.

Meat production will be a major part of that.

**Options for keeping the food system within environmental limits.**  
Springmann et al 2018



## Planetary Option Space - What is possible?

Options for solutions that startups can and are building combine **diet** change, **tech** optimisations and **waste** reduction.

**Options for keeping the food system within environmental limits.** Springmann et al 2018

Diet scenario	Tech scenario	Loss and waste scenario	GHG emissions			Cropland use			Bluewater use			Nitrogen application			Phosphorus application		
			SSP2	SSP1	SSP3	SSP2	SSP1	SSP3	SSP2	SSP1	SSP3	SSP2	SSP1	SSP3	SSP2	SSP1	SSP3
Baseline	Baseline	Baseline	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4
		Waste/2	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4
		Waste/4	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4
	Tech	Baseline	4	4	4	4	4	4	3	3	3	4	4	4	4	4	4
		Waste/2	4	4	4	3	3	3	2	2	2	4	4	4	4	4	4
		Waste/4	4	4	4	2	2	2	2	2	2	4	4	4	4	4	4
Guidelines	Baseline	Baseline	4	4	4	3	3	3	3	3	3	3	3	3	2	2	2
		Waste/2	4	4	4	3	3	3	3	3	3	3	3	3	2	2	2
		Waste/4	4	4	4	3	3	3	3	3	3	3	3	3	2	2	2
	Tech	Baseline	4	4	4	2	2	2	2	2	2	3	3	3	2	2	2
		Waste/2	4	4	4	2	2	2	2	2	2	3	3	3	2	2	2
		Waste/4	4	4	4	2	2	2	2	2	2	3	3	3	2	2	2
Flexitarian	Baseline	Baseline	4	3	4	1	1	1	2	2	2	3	3	3	2	2	2
		Waste/2	3	2	3	4	4	4	3	3	3	4	4	4	4	4	4
		Waste/4	1	1	2	4	4	4	3	3	3	3	3	3	4	4	4
	Tech	Baseline	2	1	2	3	3	3	2	2	2	3	3	3	4	4	4
		Waste/2	1	1	2	4	4	4	3	3	3	3	3	3	4	4	4
		Waste/4	1	1	1	1	1	2	2	2	2	3	3	3	3	2	3
Tech+	Baseline	Baseline	1	1	2	2	2	2	2	2	2	3	3	3	2	2	2
		Waste/2	1	1	1	1	1	1	2	2	2	3	2	3	2	2	2
		Waste/4	1	1	1	1	1	1	2	2	2	2	2	2	1	2	2
	Tech+	Baseline	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
		Waste/2	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2
		Waste/4	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2

Business as usual.

Better diet + best tech optimisation + max waste reduction.





THE LANCET

The same system is also making us sick through diet and this is going to get worse.

**2b**

overweight or obese

**2x**

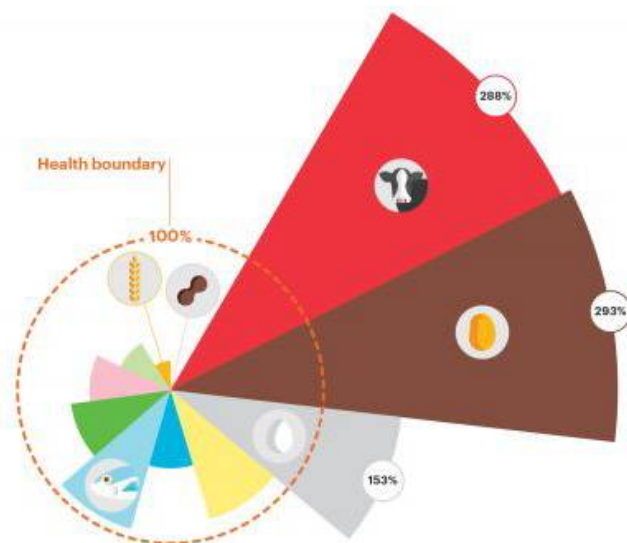
diabetes in last 30 years

**11.6m**

avoidable deaths annually

## Current Diets vs Planetary Health Diet

### Global



# Hacking Health

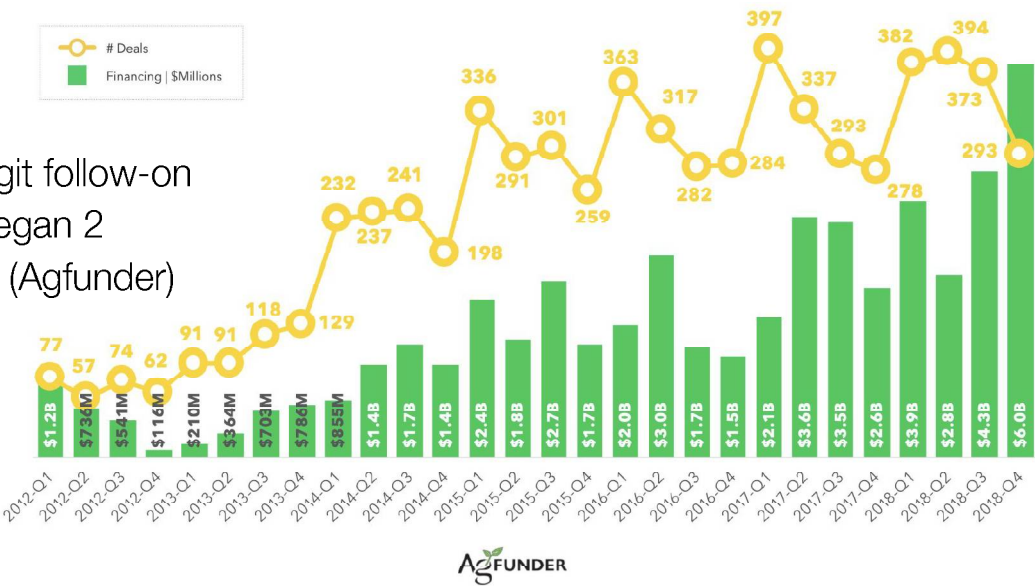
Health by stealth

Less animal protein + more plant protein in one mouthful.



# Quarterly Deal Volume and Activity

Double digit follow-on funding began 2 years ago (Agfunder)



Diet

Some companies





Calories



Nutritional load & functionality



## Impossible Foods

Plant-based meat

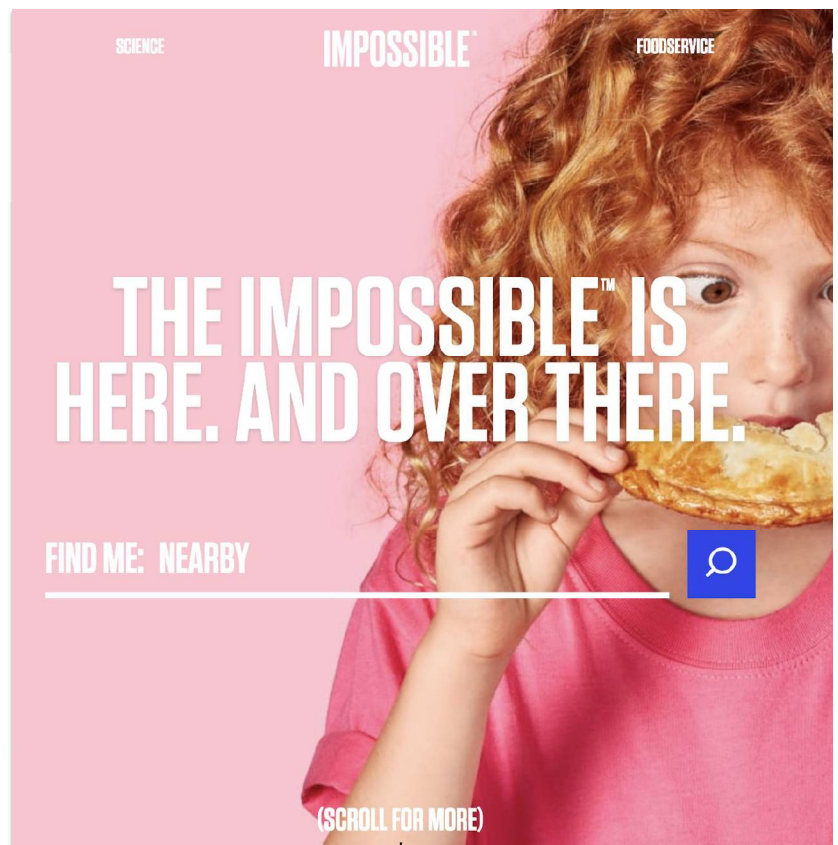
### Signals

Valuation: **\$1b**

Raised: **\$477m**

### Pull

Health by stealth. Less meat, more plants in diet.



# Soylent

Functional Food. Meal Replacement

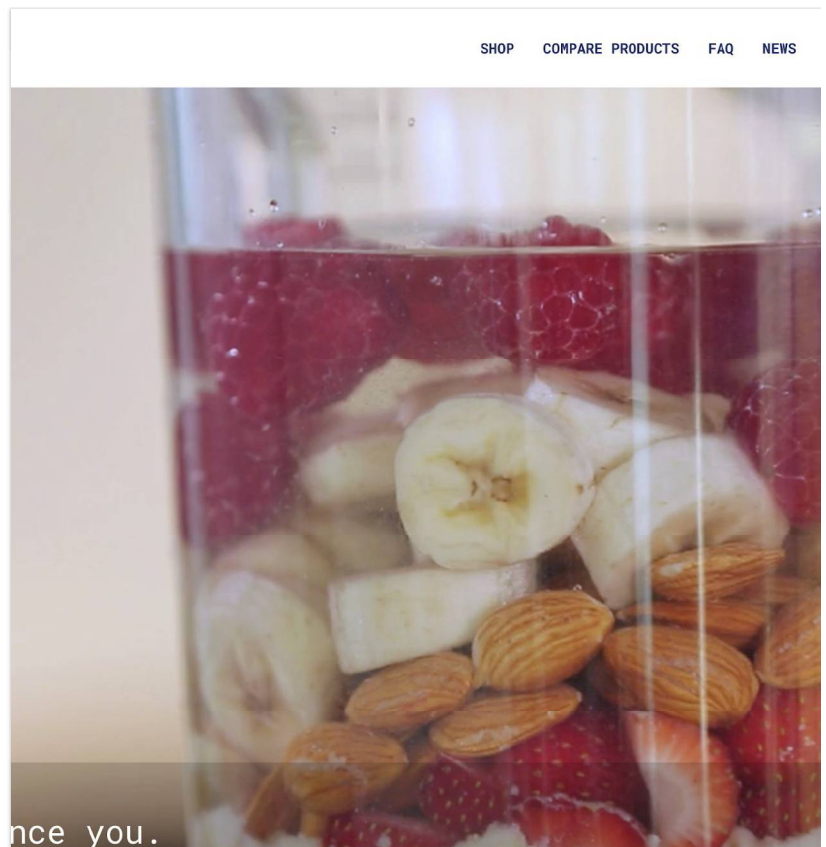
## Signals

Valuation: **\$430.9m**

Raised: **\$71.5m**

## Pull

Health by design.



# Motif Ingredients

Ingredients for plant based food through fermentation

## Signals

**90m** Series A! Spin out of Ginkgo Bioworks. Ex president of R&D at Pepsico

## Pull

Industries making alternatives to meat need base ingredients.







## Interesting!

**Solar Foods** in Finland is making protein from CO<sub>2</sub>.

## Bolt Threads

Bioengineered textiles inc. artificial leather and spider silk.

### Signals

**213m** capital raised.

### Pull

Textiles industry unsustainable use of water. Microfibres in oceans.



# Goterra

Insects for animal feed from waste

## Pull

More sustainable feed +  
contribution to the waste problem.





# ‘More’ not ‘Instead’

Traceability more  
important ... and  
harder

# The story as important as the science



# Star Trek meets paddock. New skills. Innovate





# Exponential not linear



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