

Cultured/Cultivated Meat

By Alex



Cultured, or cultivated, meat presentation by Alex



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Overview slide



History pt. 1



- Context: for decades, there's been extensive cell research and culturing
 - Biotechnology dates to leavened bread from Ancient Egypt¹
- 1897: Sci-Fi novel *Auf Zwei Planeten*² first mentions the concept³
- 1931: Winston Churchill predicts cultured meat eight decades earlier:

"We shall escape the absurdity of growing a whole chicken in order to eat the breast or wing, by growing these parts separately under a suitable medium. Synthetic food will, of course, also be used in the future." ⁴

Cell research and culturing have been some of the most profound subjects in science for the last hundred years. Biotechnology itself (manipulation of biological processes for self gain) dates back to Ancient Egypt. In 1897, German Sci-Fi novel *Auf Zwei Planeten* first suggested the concept of cultured meat. And in 1931, Winston Churchill suggested that humans would develop cultured meat in the future.

1 "History of Biotechnology." *Lone Star College*, LSC-Montgomery Biotechnology Department, n.d.

2 Swartz, Elliot, and Claire Bomkamp. "The science of cultivated meat." *Good Food Institute*, n.d.

3 Lasswitz, Kurd. *Auf Zwei Planeten*. Southern Illinois University Press, translated 1971.

4 "No Bull." *International Churchill Society*, Winston Churchill, 14 Jan. 2018.



History pt. 2

- Late 1990s: Willem van Eelen files first cultured meat patent⁵
- 2013: Dutch scientist reveals the first cultured-meat burger on live TV
- 2 years later: the first four cultured meat burger companies emerge
- Currently: there are more than 60 companies “...backed by \$450M+ in investments...”⁵

In the late 1990s, Willem van Eelen filed the first cultured meat process patent. And in 2013, a Dutch scientists revealed the first cultured meat burger on live TV, blowing away viewers.

2 years later, the first four cultured meat burger companies emerged. Now, there are over 60 companies in the cultured meat industry, backed by 450 million in investments.

5 Hildreth, Cade. “The History of Cultured Meat and Where We’re at Today.” *BioInformant*, 13 Jan. 2023

Plans and Implementation



- The cultured meat industry is striving to entirely replace traditional mass meat production
- U.S. start-up Eat Just has begun serving lab-grown chicken in a few restaurants in Singapore
 - The Singaporean Government approved the sales of the company's lab-grown meat in late 2020⁶



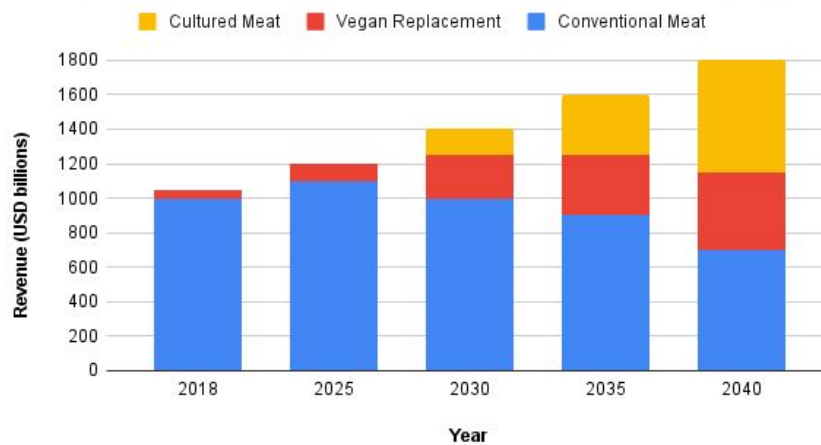
The cultured meat industry plans to replace traditional mass meat production entirely. U.S. start-up Eat Just began serving lab-grown chicken in 2020.

6 Scipioni, Jade. "This restaurant will be the first ever to serve lab-grown chicken (for \$23)." *CNBC*, 18 Dec. 2020.



Plans and Implementation (Visual)

Projection of the Growth of the Global Meat Market By Type



The visual shows how three major meat market types are expected to grow over the next few decades



Pros (1): Environmental and Moral

- Use significantly less land and water
 - Agriculture, specifically animal husbandry, is infamous for using lots of land and water
- Reduce biodiversity loss, deforestation, greenhouse gas emissions, etc.
- reduce “agriculture-related pollution and eutrophication”²
 - eutrophication: the process of exaggerated plant and algae growth in water habitats resulting from an overabundance of nutrient, usually from farm, industrial, and city runoff
 - leading to algae blooms, oxygen deficiencies, and fish and seagrass death
- Cultured meat would eliminate dirty, tightly packed animal warehouses



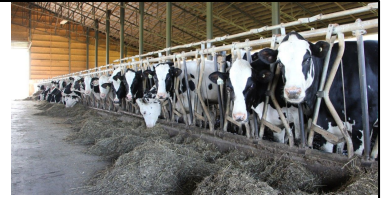
The pros of cultured meat include, using less land and water, reducing biodiversity loss and deforestation, producing less greenhouse gases, and reducing agriculture-related pollution and eutrophication.

Eutrophication is the process of water habitats—such as rivers, lakes, and coastal waters—becoming over exposed to nutrients, resulting in algae blooms, oxygen deficiencies, and the death of marine life.

Cultured meat would eliminate dirty, tightly packed animal warehouse, infamous for cruelty.



Pros (2): Welfare



- Expected to entirely omit the use of antibiotics in livestock²
 - reduce the threat of antibiotic resistance in germs
 - reduced medication costs
- Less exposure to pathogens meaning less foodborne illness in consumers
 - fewer incidents of zoonotic disease outbreaks
- Grab a market share from the \$1.7 trillion standard meat and seafood industry²
- The increased efficiency of production and flexibility to produce cultivate anywhere would mean cheaper meat products
 - Meaning more people across the world would have access to healthy meat⁷
- By 2030, cultured meat is expected to be price competitive with standard meat production²

Cultured meat is expected to entirely omit the use of antibiotics in livestock, thus reducing the costs of medication and the threat of antibiotic resistance.

Cultured meat is constantly monitored and exposed to fewer pathogens, meaning less foodborne illness outbreaks.

The inherent efficiency of cultured meat would mean market competition with the \$1.7 trillion standard meat and seafood industry

The image is of dairy cows (not for consumption).



Cons

- Cultured meat is currently unable to compete with standard meat prices and comes at a premium
- Cultured meat currently requires similar, if not more, energy to produce⁷

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⁷ Huddleston, Tom Jr. "How this 42-year-old CEO went from \$3,000 in savings to creating a \$1.2 billion food startup." *CNBC*, 29 June 2022.



Summary

- If cultured meat is able to reduce price and natural resource consumption from standard practices, it should entirely replace the standard meat industry.
- There is zero possibility that people worldwide will give up meat; it is a fundamental part of the human diet. However, current animal husbandry is unsustainable. At the moment, cultured meat is the only viable long-term alternative for an increasing global population.



Sources

- 1 “History of Biotechnology.” [Lone Star College](#), LSC-Montgomery Biotechnology Department, n.d.
- 2 Swartz, Elliot, and Claire Bomkamp. “The science of cultivated meat.” [Good Food Institute](#), n.d.
- 3 Lasswitz, Kurd. *Auf Zwei Planeten*. Southern Illinois University Press, translated 1971.
- 4 “No Bull.” [International Churchill Society](#), Winston Churchill, 14 Jan. 2018.
- 5 Hildreth, Cade. “The History of Cultured Meat and Where We’re at Today.” [BioInformant](#), 13 Jan. 2023
- 6 Scipioni, Jade. “This restaurant will be the first ever to serve lab-grown chicken (for \$23).” [CNBC](#), 18 Dec. 2020.
- 7 Huddleston, Tom Jr. “How this 42-year-old CEO went from \$3,000 in savings to creating a \$1.2 billion food startup.” [CNBC](#), 29 June 2022.