**Meat Without The Animals**

Meat cultivated from cells — with no need to raise and slaughter an animal — is now a reality. But can it be made cheaply enough to displace animal agriculture?

Based on “The Protein Problem”, a report by *The Associated Press*, 2023

More than 150 startups are chasing an ambitious goal: meat that doesn’t require raising and killing animals that is affordable and tastes and feels like the meat we eat now. They are part of a young industry aiming to use cell biology to reduce the environmental impact of the world’s ever-increasing demand for meat and change global protein production the way electric cars are shaking up the auto industry.

“We are addicted to meat as a species. It’s part of our evolution.” said Believer company founder Yaakov Nahmias. But “we thought about quantity rather than the environment, rather than sustainability.”

Companies making so-called “cultivated,” or “cultured” meat, which is also popularly known as “lab-grown” meat, are trying to scale up quickly — partnering with traditional meat companies, drawing more and more investors and breaking ground on new production facilities in the U.S. and elsewhere.

Wide adoption of meat from cells is nowhere near assured, however. This meat is expensive to make. There are scientific challenges, such as learning how to mimic the complex structure of steak. Government regulation is another obstacle. Only Singapore and the U.S. allow sales of cultivated meat.

And while many people who have tried it say they like it, others find the idea distasteful. A recent poll from The Associated Press found that half of adults in the meat-hungry U.S. would be unlikely to try it.

Unlike traditional agriculture, this process starts with cells. Depending on the company, the cells may come from a piece of tissue, a fertilized egg or a cell “bank.”

These cells are placed inside vessels of various sizes called bioreactors and bathed in a nutrient-rich broth where they multiply. Once the bioreactor is full, the paste of cells is harvested and mixed with plant proteins, then pressurized and pushed out to create meat fibers.

Believer now makes cultivated chicken and lamb and has plans for beef, which is harder to make because it’s more difficult to create genetically-stable cell lines from bigger animals.

Other companies are pursuing cultivated beef anyway. It’s the focus of Believer’s competitor Aleph Farms. The cell line for their product started with a fertilized egg from a Black Angus cow named Lucy living on a California farm.

Producing meat this way could also dramatically reduce the impact of meat on the environment because it would reduce the need for land for the animals and for feed. Multiple studies show that traditional livestock production is responsible for about 10% to 20% of greenhouse gas emissions.

But transforming the ecosystem is a distant vision. Scientists and industry experts say cultivated meats have a way to go before they’re indistinguishable from conventional meats, especially when it comes to the texture of products other than burgers or nuggets.