

# Food system researcher unpacks the narratives driving a race for new protein sources

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Across Silicon Valley and beyond, tech entrepreneurs are making big promises to disrupt our diets. Their aim is to tackle global hunger,

climate change, and animal welfare issues by replacing meat with alternative proteins derived from increasingly far-out sources, like insect larvae, plastic waste, or even thin air. This race to develop new sources of protein has become the leading edge of a rapidly growing agri-food innovation space. But are novel proteins really the most productive focus for so much attention and investment?

To try to answer that question, UC Santa Cruz professor and [food system](#) expert Julie Guthman took a deep dive into the tech industry's [protein](#) engineering efforts. In her latest paper published in *BioSocieties*, she argues that deeply-rooted cultural mythologies around protein are being adopted and spread by [tech companies](#) as they market and fundraise for novel protein products. And those efforts may be obscuring other existing food system solutions that could be readily implemented with more public support and awareness.

"There's so much hype and interest in entrepreneurship to develop these new technologies as alternatives without necessarily thinking about other ways to deal with the problem," Guthman explained. "So what we're looking at in our latest research is what kinds of assumptions innovators are bringing to the table in how they pitch and frame what they're doing and how those assumptions square with prior social science research."

Guthman and her coauthor studied this issue using databases, market maps, and directories of the sector—as well as published programs from Bay-Area food and agriculture tech events—to compile a comprehensive list of companies working in agri-food innovation that were either based in or connected with Silicon Valley. The team then reviewed information on these companies from websites and media, listened in on nearly 100 industry events, and conducted over 80 interviews with entrepreneurs, investors, and other sector leaders.

The analysis identified 84 companies and products developing foods

from new sources or processes, and of those, the vast majority were focused on alternative proteins. 24 were working on plant-based simulations of animal products, 12 were investing in technologies to grow meat at the [cellular level](#), and 27 were using other novel sources to make protein ingredients. Researchers also looked closely at how companies communicate about products like these.

## **What's behind the focus on protein?**

Guthman says the intense interest in protein development is driven in part by concerns around the livestock industry's animal welfare issues and carbon footprint. But many companies also discuss their products as solutions to a looming global protein shortage.

This perceived protein crisis, Guthman says, is one of the most prominent myths at play in the industry. The paper argues that projections of future protein scarcity are based largely on increased demand for animal products among a growing global middle class, but these shifting dietary preferences are not the same thing as an actual global nutritional need.

Another prominent narrative used to support the development of alternative proteins is the assumed nutritional goodness of protein, in any form or amount. Guthman says this ultimately stems from a diet and nutrition culture that promotes fad-like vilification of other macronutrients, most notably fats and carbohydrates.

"There's this popular sense that you can eat as much protein as you want, but you should really watch how many carbohydrates or fats you eat," Guthman explained. "Protein somehow gets to remain uniquely heroic. There are long histories of protein being associated with masculinity and strength and being advertised for energy and growth that may contribute to that perception."

Guthman's team also found that the next generation of alternative proteins, which are being engineered at the [molecular level](#), often use narratives about global need and inherent nutritional benefit to advocate that the molecular building blocks of protein can be derived from any source material, including those not traditionally thought of as food. Guthman says this illustrates how edibility is both physically and socially constructed.

"The sector is trying to convince people that these novel proteins will be food largely by making nutritional equivalences that, because it's protein, it must be food," she said. "But proteins are ubiquitous in the environment in many forms that are not necessarily food, and it's not known yet if some of this stuff will actually be digestible."

## **Broadening the solutions conversation**

Guthman theorizes that companies in Silicon Valley may be drawn to some of these narratives around protein in part because their [business models](#) rely on [venture capital](#), and investors are looking for both profitability and world-changing impact on short timelines. But as alternative protein products successfully capture public attention, other solutions may be overlooked.

For example, Guthman says many people already get plenty of protein in their diets and could opt to eat less animal products without negative nutritional impact. Plants also provide abundant, ready-made forms of protein, without the need for heavy processing. And the livestock industry could be better regulated to improve animal welfare and reduce environmental impacts.

"There are a lot of other questions around protein that are regulatory or socioeconomic in nature that have been just outside of the conversation in this haste to develop new technologies," she said.

Guthman also worries about the environmental impact of alternative proteins themselves. While many products are portrayed as being inherently beneficial compared with [livestock production](#), Guthman says the details of production processes for alternative proteins are often patented trade secrets, which can prevent independent evaluation of their environmental merits.

"We don't often get to hear details about what products or crops or energy or other inputs go into these alternative proteins, where those things are going to come from and under what conditions, nor where the waste from that process will go," she said. "It's as if it's magic. But something doesn't really come from nothing. And we have no way of evaluating it."

Ultimately, Guthman says she doesn't think investment in alternative protein is necessarily harmful, but she would like to see more transparency in the process and a similar level of societal interest applied to existing methods for producing food with fewer toxic inputs, more humane conditions for animals, and better soil practices.

"The tech sector is kind of like this new kid on the block that comes along and says, "We're here to save the food system," Guthman said. "And there's no doubt that we do need to seriously rethink how we produce food. But I also want people to understand that these aren't the only answers. There are existing solutions and alternatives that could really use the kind of resources that the tech sector is now getting."

**More information:** Julie Guthman et al, Agri-food tech's building block: narrating protein, agnostic of source, in the face of crisis, *BioSocieties* (2022). [DOI: 10.1057/s41292-022-00287-3](https://doi.org/10.1057/s41292-022-00287-3)

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