These Women Are Making the Plant-Based Meat of the Future

By Kat Smith, guest writer

In December 1903, physicist and chemist Marie Curie became the first woman in history to earn a Nobel Prize, for her breakthrough research in radioactivity. Augusta Ada King, the daughter of poet Lord Byron and better known as Ada Lovelace, is referred to as “the first computer programmer.” The British mathematician’s translation and personal notes on Charles Babbage’s Analytical Engine—a prototype for a mechanical computer—inspired Alan Turing’s work on the first modern computer in the 1940s and made her a figurehead for women in technology. West Virginia-born mathematician Katherine G. Johnson’s work was critical to the first U.S.-crewed spaceflights and has been recognized as one of the first African-American women to work for NASA.

These are just a few examples; women have long been pioneers in the field of science, technology, engineering, and mathematics (STEM). But, there’s still a huge disparity between the number of women and men in the field. According to data from the National Science Board, women make up just 28 percent of the STEM field. Breaking that down even further, white women hold the majority of those jobs.

The American Association of University Women points to a few reasons why this may be the case. The belief that men are innately superior at understanding math and science remains persistent. This feeds into another reason, which is that many people still believe that girls...
are “just not that interested” in science and math. Shelley Correll, a professor of sociology at Stanford University, has extensively studied and spoken on how these beliefs are linked to the underrepresentation of women in STEM.

The third reason is linked to issues in the workplace. Women are more likely to encounter the “motherhood penalty”—being less likely to be hired if they are married with children. And implicit biases such as viewing STEM fields as traditionally “masculine,” continue to hinder women. Sexism that’s so ingrained in our culture that the white cis heterosexual patriarchy may fail to realize is there. A 2020 recent study from New York University found that men are more likely to be seen as “brilliant,” which is likely to hold women back from certain career choices.

**Women in Food Tech**

Food technology is a fast-growing field that’s increasingly being recognized for its potential to address a wide range of global issues, ranging from the climate crisis to food insecurity. Like many other STEM industries, it’s largely dominated by white men. But, as with much of history, women are leading innovators in the space.

And the representation of women in tech is growing. A reason why we’re seeing more women starting food tech companies, investing in food technology, innovating with plant-based proteins, launching brands, and researching better science to make us all healthier comes down to one factor: representation.

The more diversity we see in the food tech space—particularly in positions of leadership and job creation—directly leads to more representation overall.

Across the broad scope of food tech—from cell-based meat innovations to developing plant-based protein to bioengineering—women are influencing the future of food. And they all deserve their moment in the spotlight. This is our first in a series on women in food tech.

LIVEKINDLY spoke with three women from the field of food science about their love for innovation and their journey to their careers.
Kimberlie Le, CEO and Co-founder, Prime Roots
Kimberlie Le is the CEO and co-founder of Prime Roots, a Bay Area, California-based company that makes plant-based proteins like bacon, beef, and chicken.

The daughter of two restaurateurs, Le tells LIVEKINDLY that she has had a connection to food since a very young age. “Some of my earliest memories are just me sitting next to boxes of produce and boxes of food that were bigger than me,” she says.

Having such a close relationship with the restaurant industry also gave her an appreciation of food. She learned how to chop food from her mother, a chef, and was always “very intimately involved in the creation of food.”

Le learned about where food came from as her family interacted directly with farmers. But, she didn’t realize the environmental impact of animal agriculture until she began studying microbiology at the University of California, Berkeley. “I think the stat that really woke me up was how animal agriculture accounts for more greenhouse gas emissions than all transportation combined,” she says.

So, Le began looking for more sustainable alternatives to meat and found the number of direct replacements to the foods she loved the most, such as bacon. Like many people in the world, Le didn’t grow up vegan or vegetarian—the meals she and her family enjoyed put meat at the center of the plate. Getting people to eat less meat would mean taking matters into her own hands. “And so I just wanted to make things for myself,” says Le.

Le found her answer in koji, a fungi that has been used in Japanese cuisine for thousands of years to ferment soybeans into miso, rice into sake, and soybeans and wheat into soy sauce.

Le’s first memories of koji go back to when she was just five-years-old, helping her mother ferment rice wine and other rice products. So, koji had always been familiar to her, and when Le began thinking about how she could recreate foods people love, it quickly moved to the forefront.

Koji naturally grows into long, stringy fibers that resemble the strands of muscle fiber in meat, like chicken breast. When it’s used to make miso, koji is placed on the soybeans. Over time, it transforms the soybeans into an umami-rich paste.

Prime Roots feeds the koji nutrients (mostly simple sugars) so that it grows into fibers, “and then we can take those fibers and turn them into everything from bacon to seafood to chicken,” Le explains.
As a CEO and co-founder, Le says that listening to customers is important, especially when it comes to offering an alternative that will replace their favorite foods. Prime Roots regularly puts out surveys asking consumers which products they would like to see. “People have been really supportive and we got thousands of people to vote on what products they wanted to see first.”

That’s how bacon became their first product. When they launched it about a year ago, it sold out almost immediately. But, the goal has always been to provide an alternative to food produced by some of the world’s biggest companies.

“We know that we can tackle the Nestles of the world, the Kraft-Heinz… We have this platform which we know can build and create all these different meats and seafoods,” says Le.

Laura Kliman, Senior Food Scientist, Impossible Foods

During a virtual press conference last October, Laura Kliman, senior food scientist at Impossible Foods, explained how the company’s plant-based milk would function and behave just like the real thing—no curdling in coffee, like so many dairy alternatives, tend to do.

Kliman has a technical background in chemistry and growing up, always knew that she wanted to study science.

“When I took organic chemistry my sophomore year of college, I completely fell in love with solving problems related to the mechanisms of how different molecules react. I also loved the artistic aspects of visualizing molecules in 3D space,” she tells LIVEKINDLY. Kliman worked as a medicinal chemist in pharmaceuticals outside of college, but her heart would eventually lead her elsewhere.

“That throughout grad school, I realized that I would be happiest in a job where I could use my technical skills to develop scientific solutions to climate change,” she says. “Ever since studying the rainforest and selling Rainforest Crunch in the 3rd grade, I have been devoted to saving this beautiful planet. And going back into pharma wasn’t going to cut it for me.”

She briefly worked for a biofuel startup after grad school where she learned a lot about microbiology and chemical engineering. But, when the company pivoted to natural gas, “that was no longer aligned with my principles, and I knew I had to find something else.”

Kliman pursued her other passion, the culinary arts, for a brief time, working
as a pastry chef and starting her own catering company. In 2016, she read an article about Impossible Foods on NPR. “It was the perfect combination of the three things I loved most: chemistry, sustainability, and cooking,” she says. She began working for the company that year.

“I had been focused on solving problems related to energy, when actually the most energy-intensive and inefficient technology humans use today is producing food from animals,” Kliman explains.

At Impossible Foods, Kliman has led the R&D teams that developed the 2.0 version of the company’s flagship product, the Impossible Burger, as well as the development of the Impossible Sausage that’s now available in a Starbucks breakfast sandwich.

Kliman has also worked on what are called “product extensions, like developing the specific format for the patties we sell in retail.” Unlike conventional meat, companies that produce plant-based food have the ability to upgrade and improve their recipes.

“So we continue to innovate and come out with brand new products and improved versions of our current products,” she says.

“We not only have the ability to understand the specific chemical reactions that are going on when we cook food—we can also uncover what the most important flavor compounds are for the best sensory experience. Then we can modify our products in order to select for those delicious flavors, or remove an undesirable flavor,” Kliman explains.

Applying this same strategy, Kliman says that you could even create meat that tastes better than anything we have tasted from animals.

“It has always captivated me that chemistry is literally everywhere, and humans have experimented with different ways of preparing foods since we first came into existence. Now we have the ability to understand those experiments at the molecular level, and use that knowledge to make delicious foods that will save the planet!”

Cynthia Betterson, Innovator at Everything Legendary

Cynthia Betterson’s love for science started curiosity and a love for problem-solving.

“Growing up my mother was extraordinarily healthy for the time,” Betterson tells LIVEKINDLY. Her household was stocked with fruits and vegetables but processed snacks, not so much. Soda, except for a very rare occasion, was right out, but it’s the sweet, bubbly beverage that sparked Betterson’s fascination with how food is made.
“[My mother] would split an 8 ounce can amongst me and my 5 siblings,” Betterson reminisces. “I recall on one occasion, she gave us 7 Up. My portion was just a little more than an ounce, but when I drank it, my mind went wild!”

It was in that moment that Betterson told herself that she needed to learn to make soda herself. And so, she followed her curiosity into the kitchen: “I wasn’t interested in the culinary aspect of foods but the scientific one. I was curious how the bubbles were formed in the soda. I was interested in how a clear beverage that resembled water could taste so delicious. I was curious how they got the cream inside of the middle of the Twinkie. Questions like this hit me all of the time and I would go into the kitchen as a young child 7 and 8 years old and conduct experiments, trying to recreate these things. Always failing miserably but never quitting.”

In high school, Betterson excelled at math and science, leading her to architectural engineering. But it wasn’t quite what she was looking for and so she paid a visit to her University of Minnesota college advisor. “I told her that I wanted to wear a white lab coat, have a clipboard, and see food moving across a conveyor belt. She advised me that I wanted to be a food scientist and I promptly changed my major.”

Betterson’s resume includes 25 years of working for some of the world’s top food brands—The Kraft Heinz Company, ConAgra, the Campbell Soup Company, and Perdue Farms—where she brought innovative new products to market. Her connections eventually led her to a job posting at Everything Legendary.

“Chef Jumoke [Jackson] reached out to his LinkedIn network in search of a food scientist,” she says. The Largo, Maryland-based startup had created a plant-based burger made from soy, but it sought to convert it to a pea-based version.

“Chef had the culinary angle nailed, but needed a solve for the texture issues that come with a pea-based burger. He went to college with my cousin and when she saw his request, she pointed him in my direction,” says Betterson. The brand’s pea-based burger is already on the market—and it helped the scrappy startup nab a $300,000 investment from Mark Cuban on ABC’s Shark Tank, who remarked on the flavor and texture.

“Everything Legendary is coloring outside of the lines, they are charting their own path to something extraordinary,” says Betterson.

She adds that she loves the fast-paced nature of working for a small company (“The approval process includes no more than five individuals.”)

And better, yet, she gets to see her impact firsthand, and she loves the challenges that come with working for the maverick startup.

“The company is made up of individuals who are not from the food industry, a group of young millennials who are saying let’s change the world. Everything Legendary team is unaware of the ‘how things are done’ in the food industry. This creates a blank slate that challenges me as a food industry veteran to push the boundaries of our work in an effort to make new and great things.”

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