

Agritech**The Impossible mission – to save the planet with a burger**

Pat Brown has developed plant-based meat that looks, tastes, and even bleeds like the real thing



Pat Brown founded Impossible Foods to develop a meat-free burger after taking a sabbatical as professor of biochemistry at Stanford University in 2010

Emiko Terazono and Tim Bradshaw in London YESTERDAY

As a 64-year-old former professor of biochemistry, Pat Brown stands out among the many twenty-something founders of billion-dollar start-ups in Silicon Valley.

But what he lacks in youth, he makes up for in ambition. Instead of merely changing the world, Mr Brown intends to save it, and a new deal announced this week between his plant-based meat start-up [Impossible Foods and Burger King](#) is a big step towards achieving [his goal](#) of reducing the carbon emissions generated by the meat industry.

Mr Brown is [renowned](#) in the scientific community for his research in genetics and microbiology — including defining the mechanism by which the HIV virus infects cells.

After taking a sabbatical from his role as a professor at Stanford University in 2010, he wanted to find a global issue where he could make a real difference.

He concluded that finding the causes of cancer or Alzheimer's were secondary to the environmental damage caused by eating meat and dairy. "Nothing comes remotely close to the catastrophic

Feedback

environmental impact of [the livestock] industry,” he says.

From greenhouse gases produced by livestock to the negative effects on land and water, he is convinced that humans are racing toward ecological disaster unless meat and dairy consumption is reduced or even eliminated.

He quickly realised that instead of preaching for a shift in eating habits or lobbying to change regulations, offering consumers tasty alternative proteins was the most effective way to trigger change.

A marathon-running vegan, he has not eaten meat for almost five decades or dairy for over 15 years. “If you can figure out what makes meat delicious . . . you can save the planet from an environmental catastrophe,” says Mr Brown with messianic fervour.

With the backing of Silicon Valley investor Khosla Ventures, he launched Impossible in 2011, putting together a team that included molecular biochemists, chemists, and data scientists to make plant-based meat from a molecular level.

For Pat Brown personally, his reason to do this is not to get rich

Samir Kaul, a founding partner at Khosla Ventures

Samir Kaul, a founding partner at Khosla with a background in genomics who looked up to Mr Brown in his days as a scientist, says it was an easy decision to back him. “He has a history of taking on big challenges and, frankly, winning.”

Impossible discovered that “heme”, an iron-containing protein molecule present in plants and animals, was the magic ingredient giving meat its

aroma, taste and texture. Heme, produced through genetic engineering and yeast fermentation, is also behind the “juices” that make the Impossible burger bleed.

In 2016 it introduced a burger made with wheat and potato proteins, coconut oil and heme, which looked, tasted, smelt, and sizzled like a real burger.

Even before Impossible launched a product, Mr Brown turned down an offer worth hundreds of millions of dollars for the company from Google in 2015. “For Pat Brown personally, his reason to do this is not to get rich. For Pat it’s to make the world a better place,” says Mr Kaul.

Fast forward to 2019, the company has introduced a [new and improved](#) burger after swapping wheat for soyabeans and using less salt. After signing its distribution deal with Burger King it is fundraising to increase the capacity of its production facility in Oakland, California.

Along with rival Beyond Meat, which is [preparing to float](#) in the US, Impossible has sought to lure meat-eating consumers who want to reduce their meat intake or are looking for tasty options,

casting the net wider than vegans.



Meaty proposition: the Impossible Burger 2.0, plant-based but using fermentation to give a convincing taste, is launched in Las Vegas in December © AFP

The Burger King trial is starting in St Louis, Missouri — the heart of barbecue and beef country — but Impossible hopes it could be available across the US by the end of the year. It has been gradually expanding the burger’s availability from high-end restaurants, such as Momofuku Nishi in New York and Jardiniere in San Francisco, to bigger US chains including Cheesecake Factory and White Castle.

Mr Brown seems to have slipped into his role as an entrepreneur with ease. He told investors that if they backed him, he was going to make them “insanely rich”.

His pronouncements that he was not bothered about exits have been perceived as arrogance by some venture capitalists. However he has still raised more than \$475m since 2011 and attracted plenty of other backers, including Viking Global, Bill Gates, and Li Ka-shing’s Horizons Ventures. Investors hope the latest fundraising will value the company at more than \$1bn.

Bruce Friedrich, who launched the Good Food Institute, a US not-for-profit that promotes alternative proteins and advises start-ups, calls Mr Brown “a prophet” and praises his “infectious optimism”.

It has not all been plain sailing. Impossible reduced the salt content of its new burger after health campaigners criticised it for having too much. It had to wait several years before the US Food and Drug Administration last year [acknowledged](#) that “heme” was “generally recognised as safe”. It also [defended](#) the testing of its products on rats after criticism from animal rights group Peta.

If the Impossible burger is successful, Mr Brown hopes to eliminate animal meat in the food chain by 2035, helping the earth to restore its vegetation cover.

“Half of earth’s land has been significantly and destructively disrupted by animal agriculture,” he says. “So our replacement of that industry with a tiny fraction of the land and environmental impact and resulting recovery of ecosystems will be visible from outer space.”

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