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JUN 23, 2014

A select group of food experts received a special treat last summer: the world's first laboratory-grown hamburger. The dish's creator discusses what he's cooking up next.

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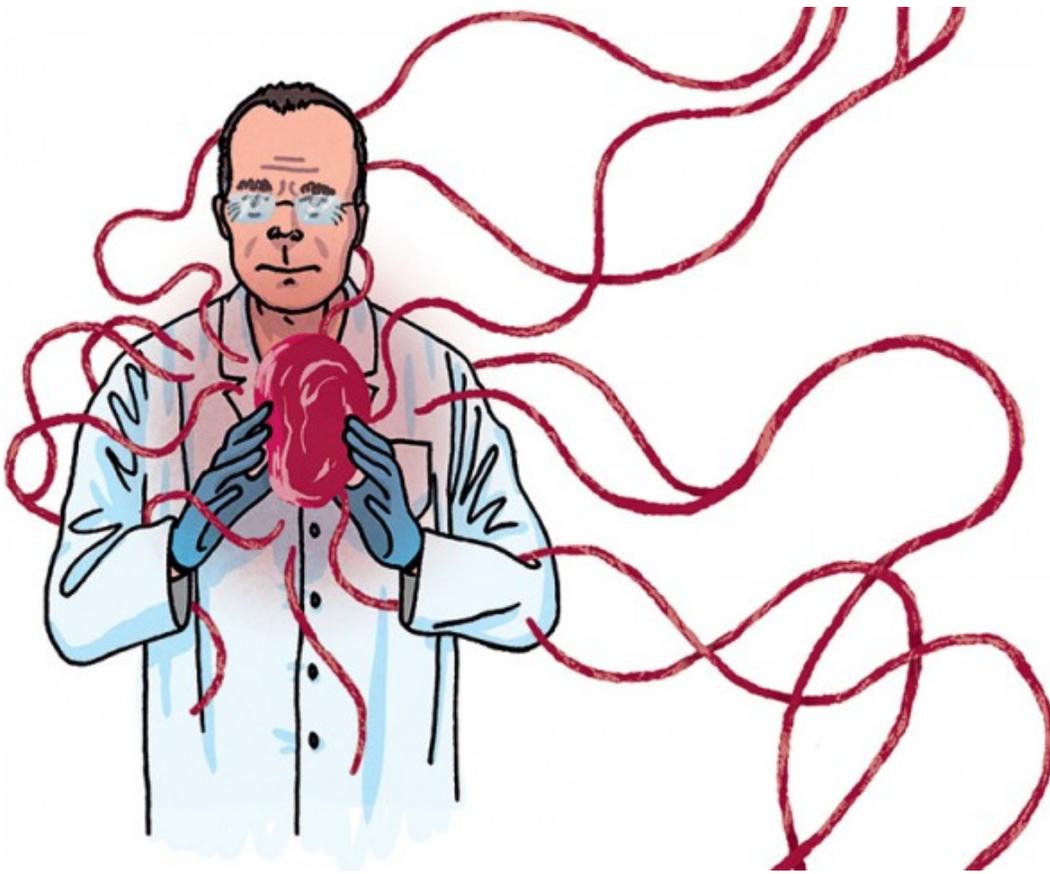
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Mr Lab-burger. Mark Post is chair of Physiology at Maastricht University. He now heads up the Cultured Beef team at the university, which is exploring ways to produce lab-grown meat as a method of sustainable food production. His lab-burger cost an estimated €250,000, bankrolled by Google co-founder Sergey Brin. Although Post cannot reveal his current sources of funding, he says he has enough to expand his lab from three people to 20.

Dutch scientist Mark Post says he wants to find environmentally friendly alternatives to humanity's unsustainable appetite for meat. Still, many hurdles remain before artificial burgers make it to the family dinner plate.

TECHNOLOGIST **How did your lab-grown burgers go down?**

MARK POST Most of the reactions were positive. Our intention was to get a discussion going, and that happened. The negative reactions were mostly from media framing this as artificial, Frankenstein food – but mainly in the headlines, not in the articles themselves.

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TECHNOLOGIST To make your burger you've grown individual muscle fibres separately. Is the next step a whole piece of meat?

MARK POST We haven't done that yet, but we're working on it. It's doable in theory, but it'll take a few years. You have to grow muscle tissue with its own oxygen supply and nutrients, just like in the body. It's more complicated than making a hamburger, but it's absolutely necessary.

TECHNOLOGIST Why?

MARK POST In many ways, hamburgers are by-products. They're the scrap meat from a carcass. But a cow is raised for whole cuts of meat, like steaks. Unless you grow the whole-cut meat, you're still not going to replace meat from livestock.

TECHNOLOGIST What other challenges do you face?

MARK POST We're working on scaling up cell production, so that instead of the laborious method we use right now we could use a larger tank and a different way to culture the cells. We also want to get the serum – which provides nutrients such as amino acids, vitamin and minerals – out of the cell culture. The serum we use now comes from cow blood, which is not a sustainable proposition. You won't have enough serum to grow cells if you reduce the number of cows worldwide by a factor of a million. So you need to come up with an alternative.

TECHNOLOGIST How do you do that?

MARK POST There are a number of commercially available culture mediums that don't use serum. We use these and try and work out whether we can improve them and use them for skeletal muscle stem cells.

TECHNOLOGIST Do you plan to grow other animal meat?

MARK POST No. It can be done, and I'd like to do it, but I have to prioritise. Besides, the environmental issues are more pressing for cows because of the inefficiency of the animals.

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It's less of an issue for pork and even less for chicken and fish.

TECHNOLOGIST **So, when can we expect to have lab-grown meat on our plates?**

MARK POST Three things have to happen first. One is improving the technique; second is scaling up production, which will take two to three years. Finally, the technique needs to be approved by regulatory agencies all over the world. Given these obstacles, it won't happen in five years; seven would be optimistic.

Interview by Catherine de Lange

Technologist 01.035

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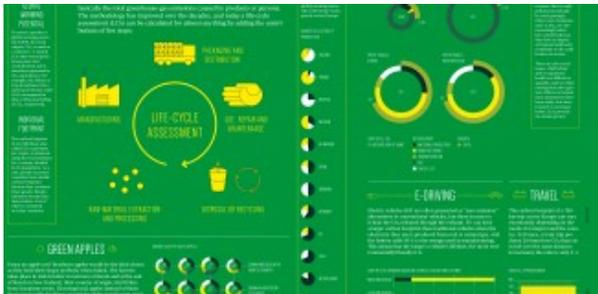
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The names of his calves, Hashtag and Jpeg, were suggested by his 3,200



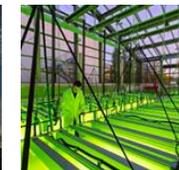
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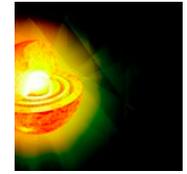
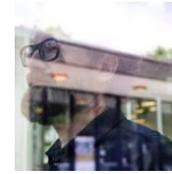
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