



# Build a Burger

**Within the next 10 years you will be able to buy meat that has been produced without the need to kill an animal. Scientists have developed a way of growing meat in a laboratory. But would you eat it? Read on to find out more.**

## **What's the problem with meat?**

Farming animals for meat is an environmental disaster. First, we have to clear forests for space to house them and grow crops to feed them. Then we have to use limited freshwater to water the crops, so they grow. On top of this, animals, especially cows, produce pollution in the form of methane gas by burping it out. Methane is a greenhouse gas which contributes to climate change.

Also, many people don't agree with killing animals for food or are against the way they are treated when they are alive.

But many people want to eat meat. They enjoy its taste, texture, and versatility. Eating meat is part of their daily lives and meat dishes form part of their culture.



So, what is the alternative? If you look in the supermarket today you will see lots of 'meat-substitutes'. These are products that you can use to replace meat in your diet. They might be made from soybeans (like tofu and tempeh), wheat, peas, or jackfruit. They try and copy certain aspects of meat like its taste, texture, and appearance. However, even though some may hit one of these targets nobody, yet, has made a meat substitute that achieves them all.

However, a new alternative is just emerging that could be the perfect solution – a substitute that is produced with no harm to animals that tastes identical to meat. Because...it is meat – just meat that is grown in a laboratory by scientists, not on a farm by farmers. Welcome to the new world of lab-grown meat.

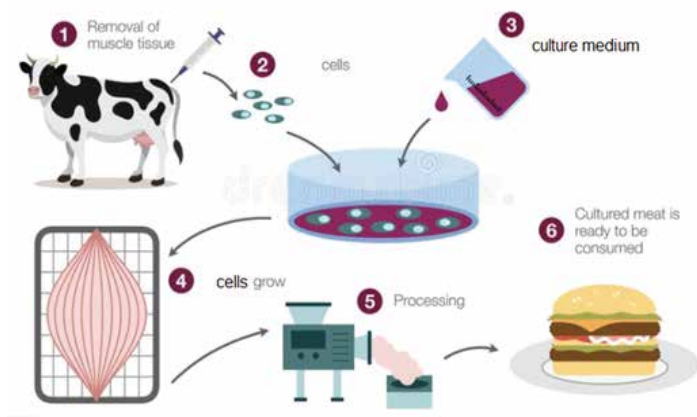
## So, what is lab-grown meat?

Lab-grown meat is properly known as cell-cultured meat because the meat is made by growing cells.

If you look at a piece of meat under the microscope you will see that it is made up of lots and lots of tiny compartments called cells. In fact, all parts of all living things are made of up cells.

Scientists can take a few cells from a live, healthy animal without hurting it. The cells are put into a large steel tank called a cultivator along with nutrients and water (called the culture media). The mixture is heated to 37°C and the cells start to multiply. The process takes two to three weeks, and at the end you are left with a whole meat piece, which can be shaped into burgers, nuggets, or strips.

### How cultured meat is made



## Sounds good... what are the benefits?

1. Very little pollution. Compared to farming meat, growing meat in a lab produces very little pollution in the form of greenhouse gases plus it uses a lot less water and energy too.

2. Nothing goes to waste. With lab-grown meat everything produced in the lab is sold to be eaten. This is not the case with farmed meat. Farmers grow crops to feed the animals, which eventually get eaten by humans. Only a very small amount of the nutrients in the original crops ends up being eaten by humans.

3. It prevents the risk of virus transfer. It's thought that COVID-19 was transferred from animals to humans in a meat market. Lab-based meat doesn't present this risk.

4. The options are endless. Scientists can change the meat by varying what they feed the cells and how they process the cells after they have grown. They can adjust the taste, texture, aroma and in some cases the amount of different nutrients in the meat.





## Great! Where can I buy it?

Not many places, at the moment. One restaurant in Singapore is selling three dishes on their menu that uses lab grown chicken. We are a few years off being able to buy lab-grown meat in the supermarket, but it won't be long.

## How much will it cost?

As with all new technologies, lab grown meat was very expensive at first. The first lab-grown hamburger in 2013 cost an eye watering £210,000. That is about the same price as a house! But, as the technology improves, the price will drop. The chicken dishes in the Singapore restaurant cost around £12. In the future lab-grown meat could well cost the same or even less than farmed meat.

Now you know the facts, what do you think of lab-grown meat? Would you eat it and do you think in the future all our meat will be produced this way, or will we still see animal farms in the countryside?



# Worksheet

1. Explain what lab-grown meat is.
2. Write out a list of benefits and drawbacks of making meat in a laboratory, compared to farming animals for meat.
3. Explore the website of a company that makes lab-grown meat. Write down five interesting facts about their product.
4. Imagine you own a company that makes lab-grown meat. Design a poster or a leaflet advertising your product.

## Curriculum links

### KS2

Working scientifically: identifying scientific evidence that has been used to support or refute ideas or arguments.

### KS3

Cells and organisation: cells as the fundamental unit of living organisms.

Earth and atmosphere: Earth as a source of limited resources. The production of carbon dioxide by human activity and the impact on climate.



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