

CLEAN MEAT

A world with meat, eggs and dairy products produced without harming animals may not be too far away.

Background

Clean meat means meat produced without animals. It can be either *cultured meat*, meaning meat produced from individual animal cells, or meat engineered from 100 percent plant components.

Engineered meat

Former Stanford biochemistry professor Patrick Brown started *Impossible Foods*¹ in 2011. His goal was to produce products made from plants that could compete head on with meat and win over meat lovers; producing things that taste like meat, except perhaps better.

Brown attracted the attention of former Microsoft boss turned philanthropist Bill Gates and an army of brilliant scientists who used cutting edge research to find out how to make plant proteins give the taste and mouth-feel of meat proteins. We all know how different bread is from wheat; the method to achieve this remarkable transformation has been known for thousands of years, but the chemistry is complex. Making plants taste like meat involves combining many types of plants and some complex science, but the proof is in the eating and reports are that the *Impossible Foods* burger is pretty bloody close² to the real thing; it even “bleeds” a little.

One of the tricks they use is soy leghemoglobin, this is a plant heme molecule analogous to the heme molecule in meat. This molecule is found naturally in the roots of soybean plants but Impossible Foods produce it using genetically engineered yeast. This is environmentally far better than harvesting the large amount of soybeans they would otherwise need.

The burger is just the first in a long set of meat mimicks that *Impossible Foods* aims to produce. These foods have the potential to create mainstream meat replacements for

people with little or no concern for animals. They will also be far less environmentally destructive than the animal production systems they replace.

Bill Gates has also invested in *Beyond Meat*, another company who has developed various plant based burgers based on either Soy or Pea protein. Like *Impossible Foods*, *Beyond Meat* aims to produce products that closely mimic the look, taste and cooking sensation of meat. Their burgers change colour and even “bleed” like meat through the use of beet colouring.

Cultured meat

The alternative approach is to start with an individual animal cell and grow this in a laboratory into a collection of animal muscle cells. The challenges in this case mainly revolve around gene programming and supplying the appropriate raw materials and conditions to encourage the development of the desired tastes and textures. This work is far less advanced and carries the intrinsic risk of reproducing meat’s adverse health impacts along with the taste.

Policy

The Animal Justice Party (AJP) will judge such meat replacements on a case by case basis as the evidence emerges. Engineered meats have considerable promise to both reduce animal production and all of the associated environmental issues.

Key Objectives

1. To ask the National Health and Medical Research Council (NHMRC) to report on the state and potential for engineered and cultured meat, dairy and egg products.

¹<https://www.impossiblefoods.com/>

²<http://www.npr.org/sections/thesalt/2016/06/21/482322571/silicon-valley-s-bloody-plant-burger-smells-tastes-and-sizzles-like-meat>