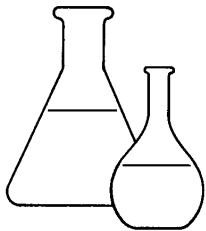


# LAB GROWN MEAT

## HOW IS IT MADE?



Stem cells are taken from the muscle tissue of an animal (such as a cow) and put in a petri dish along with amino acids, lipids and other nutrients. Once they have replicated and grown, the cells are put on a scaffold of collagen gel which allows them to organize themselves into muscle fibres. Just

like any other muscle tissue, the lab grown muscle needs to be exercised, so electrical impulses are used to stimulate the tissue.

## BENEFITS

Oxford University researchers have predicted that lab grown meat is produced with:

- 96% fewer greenhouse gasses
- 99% less land use
- 96% less water

PETA (People for the Ethical Treatment of Animals) are in favour of growing meat in a lab and support the attempts to make it possible. They say it will greatly diminish the amount of animal suffering as donor animals do not have to be harmed or killed when taking muscle cells. One sample of muscle tissue can provide up to 20 000 tonnes of meat. PETA do however agree that lab-grown meat is still meat, and not an option for vegetarians.

## FUTURE

Despite its recent attention in the media, lab grown meat will not be available on the market for another 10-20 years.

In 2008, PETA set a prize of \$1 million for the first laboratory to grow commercially viable meat (this award has since expired). In 2013, the worlds first lab grown burger was taste tested in London, the two year project cost £220 000. Although this project was a huge success, scientists still have a long way to go refining the technology so that one day this meat will become available in the supermarkets.



# RESOURCES

This leaflet was made as part of a Science Baccalaureate by Aidan Morrison, Stromness Academy 2014.

Here are my sources of information.

**Christine Skene** - Scottish National Heritage

**James Robertson** - Retired farmer

**Orkney Islands Council Economic Review 2012** -

[http://www.orkney.gov.uk/Files/Business-and-Trade/Economic\\_Review/Orkney\\_Economic\\_Review\\_2012-13.pdf](http://www.orkney.gov.uk/Files/Business-and-Trade/Economic_Review/Orkney_Economic_Review_2012-13.pdf)

**SciShow** - <http://www.youtube.com/watch?v=MOfZtuKeTyM>

(SciShow's sources -

[https://docs.google.com/document/d/1OrEWyRd04UGMVyu2\\_khwguq5mw-64xWVlKkkzGiv1zM/edit](https://docs.google.com/document/d/1OrEWyRd04UGMVyu2_khwguq5mw-64xWVlKkkzGiv1zM/edit))

**Maria Cheng** (<http://phys.org/>) -

<http://phys.org/news/2013-08-world-lab-grown-burger-london.html>

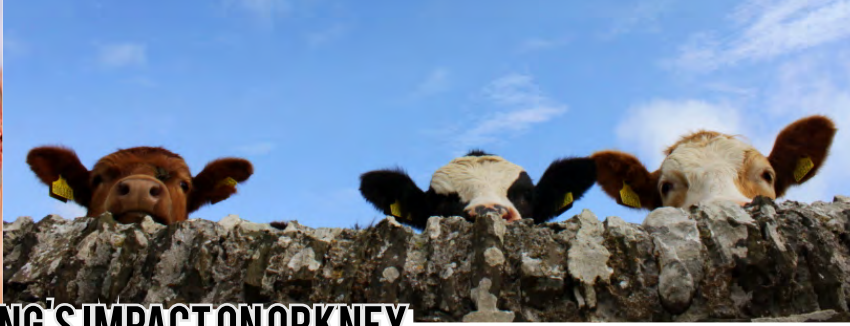
<http://www.orkney.com/agriculture>

[https://www.myjobscotland.gov.uk/fe/tp\\_orkney.asp](https://www.myjobscotland.gov.uk/fe/tp_orkney.asp)

**PETA** - <http://www.peta.org/features/vitro-meat-contest/>





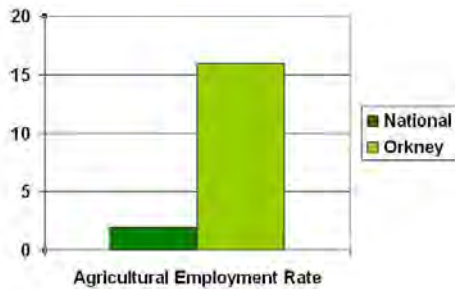


## FARMING'S IMPACT ON ORKNEY

## WHAT DOES THE PUBLIC THINK?

### ECONOMY

In 2012, a total of 1821 Orcadians were employed in the farming industry. Apart from the public sector, the farming industry remains the most significant employer in Orkney.



### LAND USE

93% of Orkney's land is used for agriculture, 93% of this land is used for grazing by cattle and sheep. In fact, Orkney has the highest density of beef cattle in Europe with 4.2 cows for every person.

### ENVIRONMENTAL IMPACT

In the 1950s, after the second world war, the farming industry in Orkney has mostly involved intensive farming - where the yield is much higher than extensive. To make the change from extensive to intensive there have been a lot of changes to the natural environment. In fact, the pre intensive-farming landscape would have looked a lot different from the landscape we see in Orkney today. Many of the natural moorlands (habitat to many species of plant and animals) have been drained to make way for grassland. Areas of heather previously used for extensive sheep farming has been cleared away, also for grassland.

Harry loch has become eutrophic as a result of over-fertilisation when growing crops (including fodder crops). There has been an increase in algae in the loch due to the high levels of nutrients - this can be detrimental to the ecosystem in the loch due to a reduced oxygen level. Schemes by SEPA have been set up to control this.

Only 33% of those asked would buy lab grown meat should it become available on the market, 43% wouldn't feel comfortable eating it at all. Interestingly, young people are more in favour of the new meat alternative, only 27% of 16-25 year olds wouldn't feel comfortable eating it. When the public were asked *why* they would / would not feel comfortable eating it there were a lot of differences in opinion:

"Why eat lab grown meat when the Orcadian farmers are doing a good job producing the best meat in the world for us."

"It would be basically the same as eating meat from animals, but more ethical."

"Why not. It doesn't involve harm to anyone. Lots of food is reliant on strange chemicals/non-natural ways of production nowadays"

"I think it would creep me right out, it's not natural it's CLONED meat yuck"

"Would rather support local farmers."

What about the vegetarians? Would they feel comfortable eating lab grown meat? When asked in the survey, 40% would not feel comfortable and 40% would, 20% are undecided.

When asked if meat grown in a lab would be able to compete with livestock meat, Orcadian farmer James Robertson said "probably, if the meat is cheap and nutritious enough, people will buy it."

