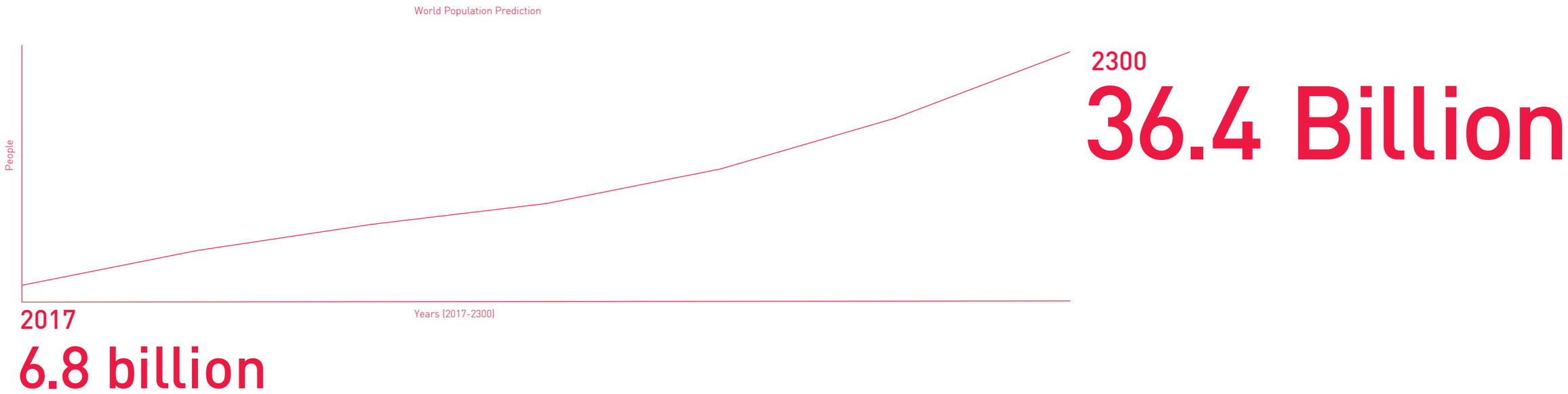
Meat the Future

Humans on Earth

To sustain human life on this planet food consumption, specifically meat, needs to be reconsidered in response to this increase.



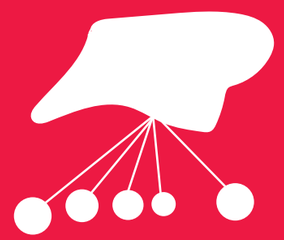
Figures based off 2015 United Nations report on major human developments.

What is In Vitro Meat?

Researchers believe that in vitro meat could offer a health beneficial alternative to the future of meat eating.

This is the in vitro process:

Tissue is extracted from cow via biopsy.

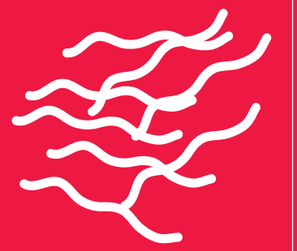


Stem cells are extracted from the tissue.

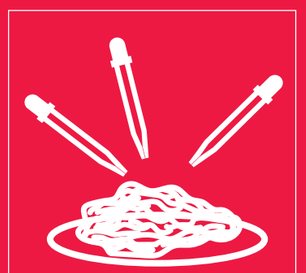
Growth serum is added to multiply the cells.

Muscle multiplies and grows.

Muscle pressed into cultured meat cake.



Cake is ground up into strips.



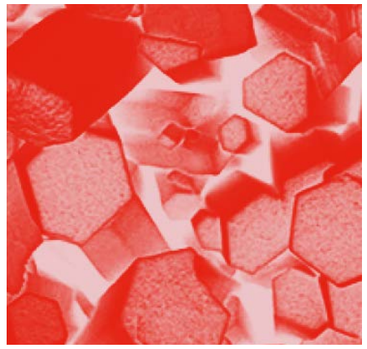
Flavour, nutrients and other alterations happen as necessary.

Ready for consumption.

Customer Specific

Scientists are able to replace aspects of in vitro meat for any kind of nutritional component during the in vitro process.

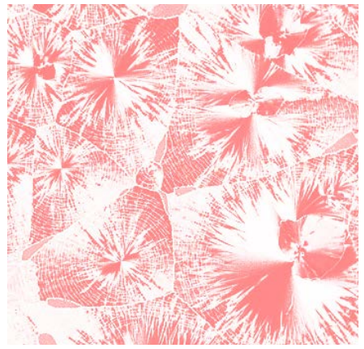
This could eventually become customer specific and based on health needs.



Zinc

Helps the immune system function. Heals wounds and is needed for the senses of smell and taste.

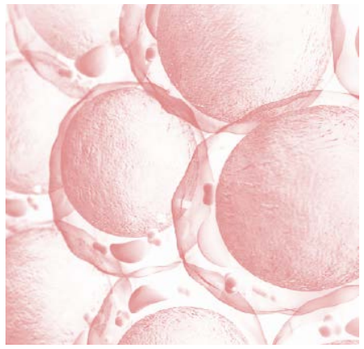
Could be increased for people with hair loss.



Niacin

Functionss the digestive system aswell as skin and nervous system.

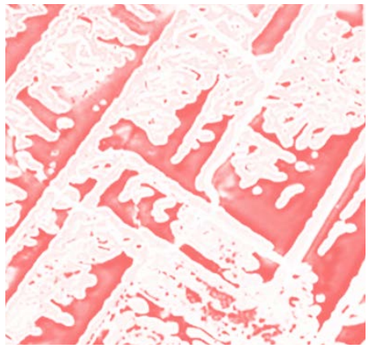
Could be increased for people with mouth ulcers.



Vitamin B-12

Nutrient that helps keep the body's nerve and blood cells healthy and helps make DNA.

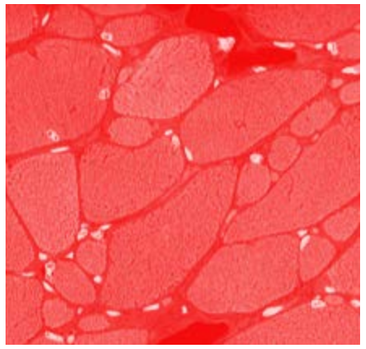
Could be increased for people who are tired.



Cholestoral

Some cholesterol is needed to make hormones and help digest foods. The body makes all the cholesterol it needs.

Could be omitted for people with type 2 diabetes.



Protein

Used to repair tissue in the body. It is a building block of bones, muscles, cartilage, skin and blood.

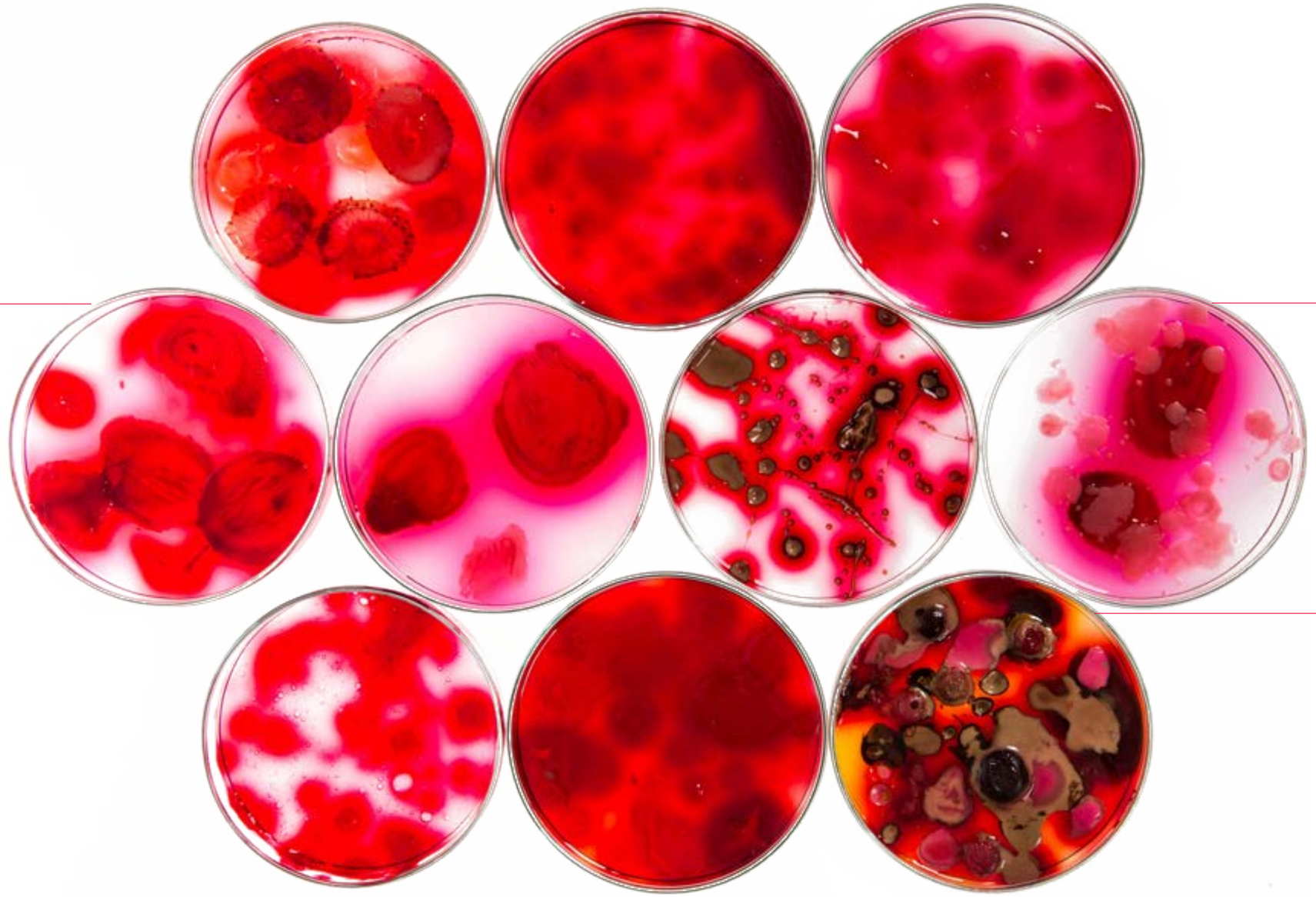
Could be increased for people with weak muscles.

Lab Grown Lamb

Researchers are currently exploring a lab grown design of adapted lamb cells using the fermentation process.

.

Microbial Lambs meat uses bacterial cultures to break down the cells.



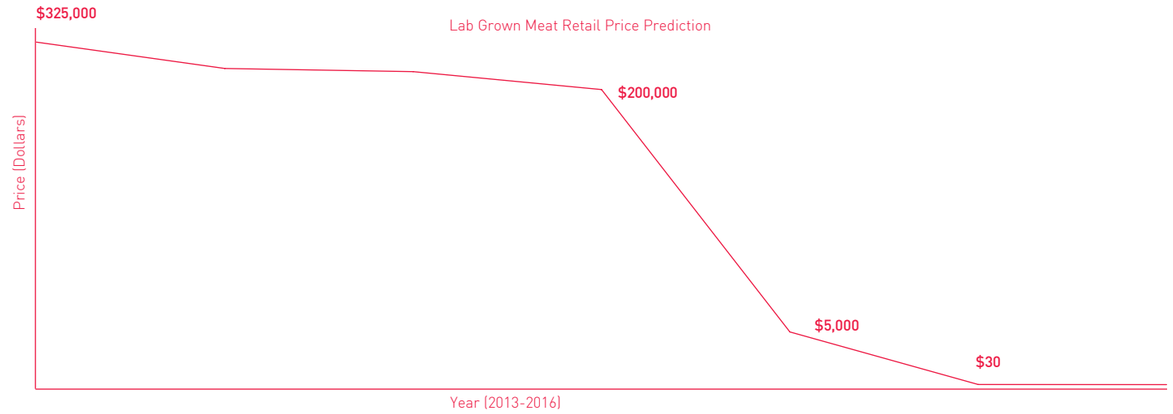
The bacteria and this process are part of an experiment to see if the preparation type can alter flavours in the meat.

Although this concept is still in the early stages it broadens the scope of how meat growth can be developed through already existing processes.

1.

1. Bistro In Vitro, Lab Grown Beef, 2015, Web.

The first In Vitro meat patty cost $325,000 to engineer in 2013.



Prices have fallen to under $30 a kilogram in 2016.

Growth Time

In vitro meat requires scientists to easily divide stem cells, doing this at speed which is practical for meat production is another matter.

+

Engineering

Nutrients and oxygen need to be delivered to each growing cell. A bioreactor is needed to carry out this function, this equipment is costly.

+

Materials

The medium cells grow in has to be a mixture of the right ingredients and growth factors. Scientists are not in a place where such mediums can be mass produced currently.

+

Research

More research and technical development is needed to improve production to a point where mass meat can be produced.

Resources

Overview of the resources and emissions it takes to produce 1000kg of meat using two different techniques.

In Vitro Meat Resources

Water
521 cubic metres

Land
230 squared metres

Energy
33 giga joules

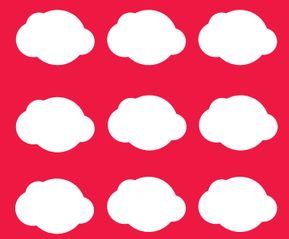
Green House Gas
72 kilo grams

Natural Meat Resources

Water
950 cubic metres

Land
450 squared metres

Energy
47 giga joules

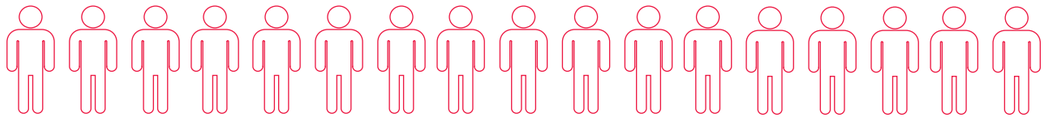


Green House Gas
1800 kilo grams

People Involved

According to Cattlemen's Association research report in vitro meat implementation in everyday life could cut down employees in the meat sector by a third due to automation, and less of a need for farming. This prediction has been applied to current NZ farming figures.

In Vitro Meat Employees



33,000

Natural Meat Employees

100,000

www.meatthefuture.org.nz

MEAT the FUTURE

Next Delivery
Tomorrow 11am-1pm

Sign In

$32.99

Product Kind

Beef
Lamb
- 3D Printed
- Nutritional Alteration
- Texture Change

Venison

Show me only

- Organic
- Gluten Free
- Low Sodium
- Sale

Nutritional Alteration

Lamb Patty grown in a lab for 4 months with low fat and sodium content. This product is made specially to order with the chosen nutritional booster adaptions, allow 2 days for processing.

Lamb Patty 5 Pack **$13.99**

Nutrition Booster $2.99 per 0.5g

	-	+
Iron		
Protein		
Vitamin B12		

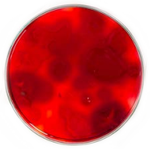
★★★☆☆

Add to Cart

Related Products

Hyper Protein Beef
$12.99

Fat Free Diced Beef
$10.99



DIY Lamb Patty
$17.99

3D Printed Nuggets
$5.99

Aminos Shake
$14.99

Beef Protein Pearls
$9.99

Future Implementation

In the not so distant future there could be touch screens in the meat aisle at the supermarket which will allow shoppers to 'build-a-steak' with their own nutritional adaptions.

References
1. Bistro In Vitro, Lab Grown Beef, 2015, Web
2. Dominique Schwartz, National Reporting Team, Lab Meat Future, Cattlemens Association, 2015, Web
3. OECD Data, Meat Consumption, 2017, Web
4. 123RF, Stock Photo, Meat Patty, 2016, Web

15054638 Georgina Stokes