



THOMAS KING  
FOUNDER & CEO

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DISCOVER THE FUTURE OF FOOD

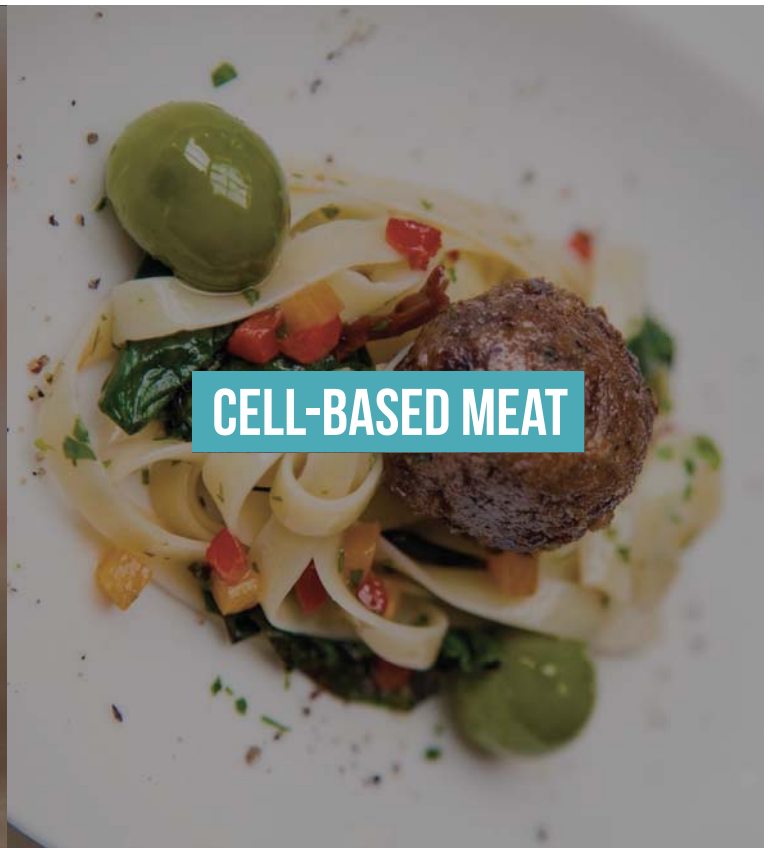
[foodfrontier.org/report](http://foodfrontier.org/report)

**MEAT  
RE-IMAGINED**  
THE GLOBAL EMERGENCE  
OF ALTERNATIVE PROTEINS  
- WHAT DOES IT MEAN FOR AUSTRALIA?





**PLANT-BASED MEAT  
ALTERNATIVES**



**CELL-BASED MEAT**

## PLANT-BASED MEAT ALTERNATIVES - GROWTH

- Plant-based meat alternative market estimated to be worth US \$4.3B – \$6.4 in 2018
- In the US, sales of plant-based meat alternatives increased 23% in 2018
- The Beyond Burger is now available in over 20,000 grocery stores and 11,000 restaurants
- Tyson Foods and General Mills have invested in Beyond Meat
- Acquisitions: Pinnacle Foods bought Gardein for US\$154M in 2014, Monde Nissin bought Quorn for US\$832M in 2015, Maple Leaf Foods bought Nightlife Foods and Field Roast Grain Co for \$260M in 2017.
- Impossible Foods alone has raised over US\$400M
- Considerable opportunities exist in crop optimisation, ingredient exploration and processing advancements
- Price: typically the same range as premium conventional meat



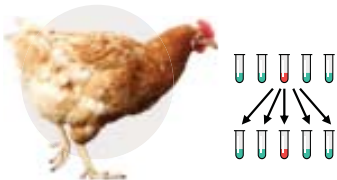


## CELL-BASED MEAT

- Began at NASA in 2005
- First cell-based burger prototype announced in 2013 by Professor Mark Post
- Since then, more than 25 companies have emerged globally
- Over US \$100M invested in cellular agriculture companies, including from some of the biggest meat producers in U.S. and Europe.
- Greatest challenges include cell media optimisation and bioreactor scale-up
- 2018 production costs per/kg AUD:  
\$6000 (Memphis Meats)  
\$1100 (Future Meat Technologies)
- Regulation: U.S. and Singapore have express interest in fast-tracking
- Consumers: the more information they have, the more interested they are to try it

**CELL LINE DERIVATION**

A small sample of cells is obtained from an animal.

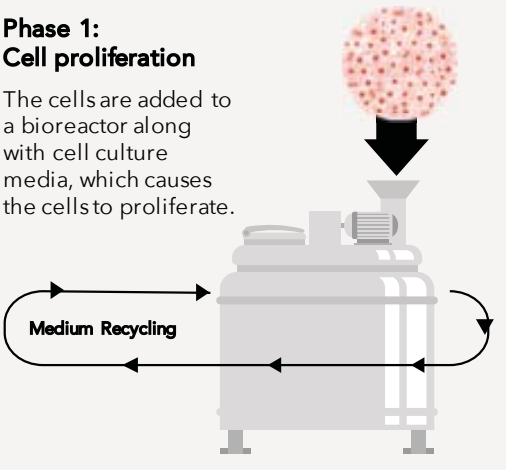


**CELL STARTER CULTURE**



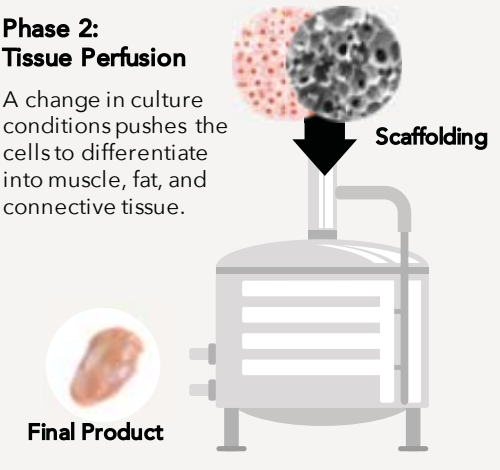
**Phase 1:  
Cell proliferation**

The cells are added to a bioreactor along with cell culture media, which causes the cells to proliferate.



**Phase 2:  
Tissue Perfusion**

A change in culture conditions pushes the cells to differentiate into muscle, fat, and connective tissue.



**CELLS AT MATURATION**  
Primarily muscle, fat, and connective tissue.

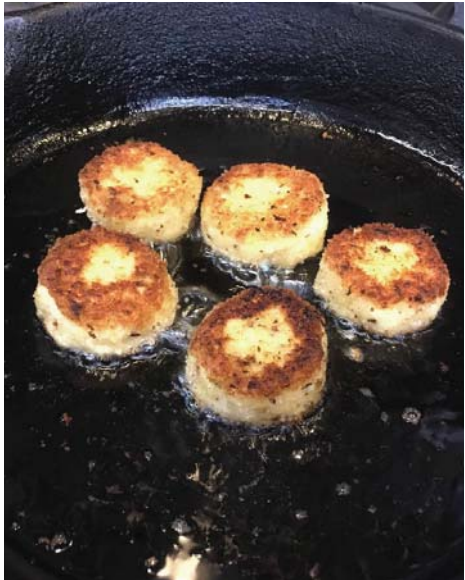
Fat Cell



Muscle Cell



Fibroblast Cell



# AUSTRALIA & NZ'S STRENGTHS



1.

Outstanding Reputation  
for Quality, Safe Food

2.

Close Proximity &  
Direct Trade Channels

3.

Strong Food Industry  
Infrastructure

4.

World-Class Research &  
Development Capabilities

5.

Safe and Secure  
Commercial Environment

6.

Governments Eager to  
Support New Innovation



# FOOD FRONTIER



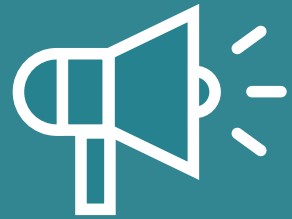
## ACTIVATE

Activating new plant-based and cell-based meat R&D, start-ups and investment.



## ACCELERATE

Accelerating market supply of quality products within a fair regulatory environment.



## ADVOCATE

Advocating the adoption of those options amongst consumers and food outlets.

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