

# A Powerful New Economic Opportunity for Australia

As the world's population is set to grow by another 1.2 billion people in the decade to 2030, there will be vast growth in global markets for food – especially for affordable sources of protein.

However, a lack of land and ability to access available resources will limit growth in traditional agricultural systems. Australia is currently the world's second largest exporter of beef, with a strong reputation for safe, quality products. By 2035, global demand for protein is projected to reach 370 million tonnes a year. By moving swiftly now with modest strategic public investment, Australia can seize a lucrative share of this vast global protein market.

To help meet the growing global demand for protein and complement our traditional agricultural industries, scientists have developed cellular agriculture as a new approach to support animal protein production.

Cellular agriculture uses biotechnology to create animal-derived products like meat, milk, eggs and leather from cells – rather than whole animals.

**Precision fermentation**, one of the two key cellular agriculture techniques, has been used safely for 40 years to produce insulin for diabetics and rennet for cheesemaking. In 2020, Singapore's food safety authority – known for its stringent safety standards – approved the sale and consumption of meat made via **cell cultivation**, the other key technique. Cultivated meat products are currently for sale there in high-end restaurants.

The United States and Israel are establishing regulatory frameworks now. Australia's food standards authority, FSANZ, notes its regulatory frameworks are already equipped to deal with novel foods, including those produced with cellular agriculture.

*Below: Cultivated Salmon Maki by Wildtype*



Australia's nascent cellular agriculture industry is led by scientists and engineers in emerging companies and at Australia's leading universities including Monash, Melbourne, UNSW, QUT and the University of the Sunshine Coast. Significant seed capital has flowed from reputable investors including CSIRO's Main Sequence Ventures fund, VC firm Blackbird Ventures, and the Clean Energy Finance Corporation. Since 2018, eight cellular agriculture companies have been created here – All G Foods, Change Foods, Eden Brew, Hueros, Magic Valley, MeAnd Food Tech, Nourish Ingredients and Vow.

These promising developments are at the stage where national strategic coordination and targeted public investment are needed now to propel a new advanced manufacturing opportunity in Australia. This opportunity will strengthen Australia's ambitions in advanced food and beverage manufacturing – and enhance our existing agriculture and biotechnology industries. Swift action across three key areas is needed to unlock this opportunity:

## **1 Developing a skilled and future-fit workforce to enable commercialisation and industry growth**

Growing the pool of Australian graduates skilled in biomedical engineering, food science, agricultural science and synthetic biology is key to seizing this opportunity. To be globally competitive, Australian universities will need to swiftly develop undergraduate subjects in synthetic biology applied to food products, livestock-applied cellular biology units, and engineering units on designing large scale bioprocesses and manufacturing.

***Immediate funding for courses and places in these priority fields would advance this need.***

## **2 Deepening Australia's cross-disciplinary, open access cellular agriculture research**

To enable the industry to scale, deeper fundamental research and applied R&D is needed. This will require investment to drive further research breakthroughs linked to common and core

challenges – and bring together cross-disciplinary expertise from biotechnology, agriculture, and food science to work closely alongside industry partners.

***An ARC Centre of Excellence or Cooperative Research Centre could drive industry growth.***

## **3 Establishing at-scale manufacturing capabilities and infrastructure**

To support the viable commercialisation of this industry, Australia will need publicly-funded facilities and plants to aid the transition to commercial scale. The 2021 [National Collaborative Research Infrastructure Roadmap](#) will guide the 2022 Investment Plan for Australia's research infrastructure. It cites synthetic biology as one of four urgent imperatives for additional infrastructure development and investment when this is considered later in 2022.

***Shared research infrastructure for precision fermentation funded under NCRIS would accelerate industry development.***

CSIRO estimates precision fermentation could generate between A\$374 million and A\$1.1 billion in direct revenue by 2030 and create up to 2,000 jobs. McKinsey has predicted cell cultivation could generate global sales of A\$26 billion by 2030. There are currently less than 200 skilled jobs across the cellular agriculture sector in Australia.

Cellular Agriculture Australia seeks to convene a series of facilitated workshops in 2022 to bring together industry, researchers, capital investors and policymakers to develop a shared plan for the industry's growth.

Cellular Agriculture Australia is a non-profit organisation dedicated to advancing cellular agriculture research and education in Australia to support the development of this emerging industry. We welcome the chance to brief policymakers further on this exciting economic opportunity for Australia.

Other questions? Please contact us at [hello@cellagaustralia.org](mailto:hello@cellagaustralia.org)

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