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Author(s)	Yu, Chong; Okamura, Koichiro
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Description	一般講演要旨

# Assessing the Evolution of Cultured Meat Technology: A Patent Analysis Approach

*Chong Yu, Koichiro Okamura*

Graduate School of Business Administration,  
Kwansei Gakuin University, Japan.

## **Abstract**

Meat production, particularly from livestock such as cattle and dairy cows, significantly contributes to greenhouse gas (GHG) emissions (Lala et al., 2020)<sup>1</sup>. Cultured meat, which is produced by cultivating animal cells directly, has been identified as a promising alternative to traditional meat production systems in terms of reducing GHG emissions (Tuomisto & Mattos, 2011). The technology is currently moving into the development phase from the basic research, thanks to the recent advancements in tissue culturing engineering, and start-up companies have been very active in commercialization of the technology and some of them have been beginning to scale up the production of the cultured meat in recent years.

This study analyzes the U.S. patents (1997-2022<sup>2</sup>) of the cultured meat technology, majority of which are applied by the start-up companies and universities, and assesses the development and transfer process of the technology among the industry players and the role of the start-up companies from a viewpoint of technology convergence with a help of co-classification analysis and social network analysis (e.g., Kim, Cho & Kim, 2014; Lim & Park, 2010; Song, C. H., Elvers, D., & Leker, J., 2017).

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<sup>1</sup> Livestock contributes about 14.5% of human induced GHG emissions globally (Gerber et al., 2013).

<sup>2</sup> Cultured meat was commercialized in Singapore in 2020. In the U.S. FDA gave the first regulatory permission to distribute the cultivated chicken in 2022.

It finds that in early period (1997-2006), the technologies flowed from pharmaceutical to biotechnology, crossing over the technology sectors. The flow was rather limited within the biotechnology after 2006. They suggest the rise of the dominant design of the cultured meat technology while biotechnology plays the role of technology brokerage that promoted and facilitated other technologies converged into cultured meat technologies in recent years.

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