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John Rose  
*Duquesne University*

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# FDA Greenlights Lab-grown Meat for Human Consumption

By John Rose

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Staff Article

The FDA has been monitoring the recent emergence of lab-grown meat as a potential contender of regular meat. Instead of relying on livestock for meat supply, this alternative is able to take cells from living animals and grow them in controlled environments. Currently, there is no lab-grown meat available for the general consumer to purchase.<sup>1</sup>

On November 16, 2022, the FDA finished its first pre-market consultation with lab-grown meat company, UPSIDE. The business' current model is to use cells from chickens and cultivate them in lab conditions to make cultured meat. Though this is a large step for the artificial meat industry, it should be noted that this does not allow UPSIDE to begin selling, marketing, or distributing its synthetic meat. The FDA has only completed a voluntary evaluation of the company's shared data and statistics and has not endorsed the sale of lab-grown meat products. As UPSIDE begins to ready their product for the market, they will still need to obtain a grant of inspection from The United States Department of Agriculture Food Safety and Inspection Service (USDA-FSIS) as well as a mark of inspection before it can be sold to consumers.<sup>2</sup>

Though the FDA has recently approved UPSIDE's production of lab-grown meat, artificial meat can also encompass meat analogue. Analogue meat is a vegan/vegetarian alternative and includes products made from plants or fungus. Many consumers are likely

already aware of meat substitutes such as Quorn, soya meat, tempeh, tofu, kinema, seitan (wheat gluten), and edamame (soybeans).<sup>3</sup> As opposed to lab-grown meat, meat analogue has already been successfully mass-produced, distributed, and sold to a variety of grocery stores and chains. Of course, some consumers are hesitant or uninterested in meat analogue due to challenges with sensory characteristics such as taste, smell, texture, etc.<sup>3</sup> However, this has not prevented analogue meat from being a viable alternative to traditional livestock meat.

Likewise, cultured meat may be divided into two categories: in-vitro and GMO. The general approach for most lab-grown meat is to produce a large amount of cells in-vitro using stem cells.<sup>4</sup> Under carefully regulated conditions, these stem cells can multiply in-vitro to form multinucleated myotubes. Further stem cell growth forms muscle fibers, which eventually mature into muscle. Finally, this muscle can then be used to create a variety of products like sausage, beefsteak, and burgers.<sup>4</sup> Though it sounds simple, a large challenge of lab-grown meat is achieving mass-production. Stem cell scaffold and bioreactor innovation is necessary to optimize production and create an efficient process. Other challenges revolve around the need to ensure a healthy nutritional value and replicate taste, color, and other sensory characteristics.

Compared to traditional meat options, lab-grown meat has experienced difficulty in producing the same level of nutrients. For example, B12 is produced by gut bacteria and is found in regular meat. Since lab-grown meat has no similar gut bacteria, B12 would need to be supplemented to provide this missing nutrition.<sup>3</sup> Similarly, iron would need to be added to

compete with the nutritional value of livestock meat.<sup>3</sup> The required supplementation can become costly and make the meat appear overly processed. Other challenges include a high cost of development, no meat texture, an absence of color, carbon dioxide production, and high energy requirements.

Livestock accounts for a major portion for the world's total food and protein supply. Unfortunately, such a large industry requires a significant land and freshwater requirement, and also accounts for 18% of global greenhouse gas.<sup>4</sup> As the world population is projected to continue growing, some scientists feel that an alternative option must be made available. Lab-grown meat may provide another potential option for reducing the meat industry's carbon footprint and deliver a more sustainable food choice.

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Photo Source:

[https://en.wikipedia.org/wiki/Cultured\\_meat](https://en.wikipedia.org/wiki/Cultured_meat)

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