Food Fax®

From **Carol T. Culhane, PHEc, CFS, MBA**
Leading food regulatory compliance expert

Written to inform since 1994

A publication of
International Food Focus Limited

Protein Wars Part 4 of 4 — December 2023

☼ Cellular Agriculture

Health Canada defines cellular agriculture as "an emerging technology in the production of food usually derived from animals (meat, seafood, eggs, milk products) using cell culture methods instead of live animals." The USDA & FDA use the phrase Human Food Made with Cultured Animal Cells. Common terms are cell-cultured, cultivated or lab-grown meat/food.

☼ Singapore first out of the gate (or...lab)

The first regulator-approved cell-cultured food, Eat Just's cellular chicken, was approved for sale by the Singapore Food Agency (SFA) of the Republic of Singapore in December 2020. The following month, the SFA published "Food for Thought | A growing culture of safe, sustainable meat" (pun intended) in which the SFA foresees a society which "[…] escapes the absurdity of growing a whole chicken in order to eat the breast or wing, by growing these parts separately under a suitable medium." The SFA had signaled its intention to embrace novel food innovations in a public address at the Asia-Pacific Agri-Food Innovation Week in November 2019 so as to address potential food security issues: more than 90% of the country's food supply is imported, an unsustainable situation.

☼ FDA/USDA joint oversight

In March 2019, the FDA & USDA's FSIS entered into a joint agreement to regulate this technology as applied to cell lines from livestock and poultry. The FDA regulates cell collection, cell banks and cell growth and differentiation. FSIS oversees cell harvest, production and labelling. The FDA approved the cultivated chicken of UPSIDE Foods in November 2022 and that of GOOD Meat Inc. in March 2023. The Agency maintains an online Human Food Made with Cultured Animal Cells Inventory. Both manufacturers have received FSIS' production clearance.

☼ Economic and scale-up issues

Producers in this space repeatedly refer to the high cost of "growth factors" for which there is limited supply. This is a collective term for specific nutrients such as recombinant proteins (which means GMO), amino acids, vitamins, minerals, glucose, etc..

☼ Consumer acceptance issues

The established hurdles of taste, texture and labelling are at play. To date, the cultivated chicken is a no-skin, no-fat variety. Parts such as breast, thigh or wing are not discussed, most likely because the extraction and multiplication of muscle cells, an intricate part of some cuts, is complicated. As explained in a The Economist interview, skin-on would require separate lab work and production lines for each of chicken fat, skin and meat, which would then be assembled in proportion to, and in resemblance of, the animal-based counterpart. Understandably, it will be many years yet before cultivated chicken is ready for the southern-fried chicken platter and more still, before a cell-cultured egg is laid, given Mother Nature's natural eggs. (Eggs 101).

Labelling issues are multi-faceted. In late 2021, the USDA opened a 90-day public consultation on the labelling of cell-cultured meat, which received 1,207 comments. As expected, the scope of questions was comprehensive, broad and deep. Some USA meat producers issued public statements, adamant that terms such as "chicken" and "beef" not be permitted. Nutrition labelling is important. Will the end product contain "trace nutrients", each present in minute amounts yet together, provide nourishment and, the golden nugget – taste.

☼ Taste is king, as is cost

Part of a The Economist podcast was broadcast from the high-end, four-fork restaurant Bar Crenn in San Francisco, CA. Owner/chef Dominique Crenn had vowed never to serve animal-based food. In July 2023 the Michelin-star restaurant featured Upside Foods' Lab-Grown Chicken served with a "butter" sauce, earning oohs and ahs from her patrons. Elsewhere in California, Upside Foods' test kitchen had developed three entrées – a sausage and a pot-sticker dumpling, each composed of a hybrid blend of ~ 60% cultivated chicken and ~ 40% plant-based protein – as well as the company's "North Star", a 100% cultivated chicken fillet. It is hoped that the blended products will provide a reasonable food cost, vital to achieve the economics of production scale-up.