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Characterization of Meat-like Constructs for 3D Food Bioprinting

Filippo Bracco
Politecnico Di Milano, Italy

For the following decades, growing demand for food is expected due to environmental changes and an increase in the world population. In this perspective, the food industry will need to be revolutionized. Emerging techniques, namely lab-grown meat and 3D food bioprinting, can help in this direction, allowing for the expected meat demand fitting while reducing the bioresources utilization, animal exploitation, and the ecological footprint of the food production sector. Moreover, healthier and customized in-vitro meat analogue can be produced with improved chemical and nutritional properties, while also assuring organoleptic properties close to the real ones. Within this context, 3D bioprinting can be exploited to achieve repeatable and reproducible products of competitive quality on the market, and at the same time enhancing customization and personalized nutrition as well as scale-up possibilities for mass production. In this work, meat-like constructs are bio-fabricated using pneumatic extrusion-based and inkjet- based bioprinting approaches. Different biomaterials are tested and used with different cell types (myocytes, adipocytes and supporting cells). The work discusses open issues for biomaterial selection, optimal bioprinting and settings influencing the meat texture and nutritional properties.

Speaker Biography

Filippo Bracco has got the Master of Science Double Degree in Mechanical and Biomedical Engineering at the Politecnico di Milano (Milan, IT) in 2021. He is a PhD candidate in Mechanical Engineering in the same university, and now he is working on data-driven integrated methods for monitoring and control of additive manufacturing for food engineering and biomedical applications.

e: filippo.bracco@polimi.it