# Next-Generation Plant-Based Meat Alternatives and Their Impact on Human Health and Environmental Sustainability

Participating journal:
**Discover Food**

**Open for submissions**

Submission deadline
**18 February 2027**

As the global food system moves toward sustainable solutions, next-generation plant-based meat alternatives (PBMAs) represent a critical frontier. To establish their role in global nutrition, it is essential to provide quantitative evidence regarding their real-world impact. This Collection focuses on evaluating PBMAs and their specific effects on both human health and environmental sustainability.

We prioritize contributions that utilize measurable endpoints to substantiate health and environmental claims. Regarding human health, the emphasis is on longitudinal studies and randomized controlled trials (RCTs) that explore physiological outcomes through specific biomarkers and clinical endpoints. These include, but are not limited to, biomarkers of lipid metabolism (e.g., ApoB, LDL-C), glycemic response, and gut-derived metabolites such as TMAO and SCFAs. The goal is to provide a mechanistic understanding of how PBMA consumption influences clinical outcomes like cardiovascular risk and metabolic syndrome development.

Regarding environmental impact, we encourage Life Cycle Assessments (LCAs) that employ standardized metrics, such as greenhouse gas emissions, water footprint, and land-use efficiency, to ensure comparability and scientific integrity, and as a key criterion for comparing PBMAs and animal products. We particularly welcome studies employing integrated assessment frameworks to elucidate the nexus between the nutritional profile and ecological footprint of next-generation PBMAs.

This Collection considers next-generation PBMAs to include plant-based, fermentation-derived, products designed to replace or reduce conventional meat consumption through technological innovation and functional optimization.

By consolidating high-level evidence, this Collection aims not only to define the nutritional adequacy and ecological footprint of next-generation meat analogues within a balanced food system, but also to support evidence-based product reformulation, policy development, and future dietary recommendations aligned with global sustainability goals.

The scope of this Collection is to address the following specific questions:

- To what extent do next-generation PBMAs affect systemic biomarkers and long-term clinical outcomes for chronic diseases (e.g., cardiovascular health, adipose tissue function, insulin sensitivity) in humans?
- What is the quantitative evidence regarding the actual metabolic uptake and bioavailability of essential amino acids and micronutrients from next-generation plant- and fermentation-based matrices compared to conventional animal proteins?
- Using rigorous Life Cycle Assessment (LCA) frameworks, what is the quantified impact of next-generation PBMAs on greenhouse gas emissions, water-use efficiency, and land-use intensity?
- How do processing technologies and food structure design influence nutrient delivery, metabolic responses, and consumer acceptance of next-generation PBMAs?
- How do empirical data from controlled clinical trials and standardized environmental modelling support the role of next-generation meat analogues in achieving simultaneous gains in human health markers and planetary boundaries?

**Keywords:**

Meat Substitutes; Metabolic Syndrome; Cardiovascular Disease; Nutritive Value; Sustainability; Greenhouse Gases; Life Cycle Assessments; Plant-Based Meat Alternatives; Precision; Food Processing; Bioavailability; Environmental Impact Assessment; Sustainable Diets; Functional Food Innovation

This Collection supports and amplifies research related to SDG 3 and SDG 13.

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Journal

## Discover Food

Discover Food is an open access journal publishing research from across all areas of food science and technology, the global impact of the food sector, and nutrition.

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| Publishing model | **Open access** |
| Journal Impact Factor | **3.7 (2024)** |
| Downloads | **1.3M (2025)** |
| Submission to first decision (median) | **19 days** |

**Submit to this journal**

Submission guidelines

# Editors

**Dr. Gianluca Rizzo PhD**

**Independent Researcher, Messina , Italy.**

Gianluca Rizzo is a PhD-level nutritionist and independent researcher (Messina, Italy). He holds advanced degrees in Biotechnology, Biology, and Nutraceuticals from the University of Messina. In addition to his clinical and research activities, he serves as an Associate Editor for international scientific journals and acts as a Subject Matter Expert in Human Nutrition. His scholarly work focuses on plant-based diets, soyfoods, and the clinical implications of vitamin B12.

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**Dr. Andrea Armani PhD**

**Department for the Promotion of Human Sciences and Quality of Life, San Raffaele University of Rome, Rome, Italy.**

Andrea Armani is currently an Associate Professor at San Raffaele Roma Open University (Italy). The research interests of Andrea Armani focus on applications of ketogenic diet, gender differences in food preferences, functional foods, with long-term experience in preclinical studies in the field of obesity and atherosclerosis. He has conducted research as a visiting scientist at Tufts Medical Center, in Boston. He is the co-author of more than 50 publications in peer-reviewed scientific journals and and serves as a reviewer for international journals dedicated to nutrition and metabolism.