Panel ABSTRACT

Panel 30: Health as Ecology: Promises of Health and Well-being in Biotechnological Approaches across Humans and More-than-humans

Organizers: Victor Secco, Charlotte Brives

Abstract: Contemporary biotechnologies like metagenomics and phage therapy and turn-of-the century paradigm shifts like postgenomics and One/Planetary Health are pushing medicine beyond single-pathogen models toward more ecological approaches to health and disease. While biomedicine has historically focused on identifying and eliminating individual pathogens, new technological capabilities are revealing the complex relationships between humans and environments. This panel aims to explore how these biotechnological approaches are reshaping fundamental concepts of health and well-being in biomedicine while raising critical questions about access, normativity, and the promises of merging human and environmental health in times of computation and control.

We invite papers examining how emerging technologies reconfigure human and more-than-human health in the biosciences in dealing with health and disease as ecological relations. Topics might include:

- how genomic sequencing and computational analysis reframe understandings of ecologies and what it means to the health of humans and more-than-humans;
- how artificial intelligence and big data reshape human ability to comprehend and intervene in complex biological systems and (re)define One/Planetary Health;
- how approaches based on ecological relations, such as rewilding, phage therapy and bioremediation navigate more-than-human/microbial adaptability and normative conceptions of cure and health.

We are interested in ethnographic investigations of how these technologies operate in practice, their promises and limitations, and their differentiated effects on communities, bodies, and environments. The panel aims to understand how technological engagements with ecological complexity are redefining concepts of health, disease, and therapeutic intervention, while critically examining questions of access and equity in these emerging biotechnological landscapes.

SESSION SCHEDULE

17.09.2025 | Slot 2 | 4-0-2

Luciano Ferrari: I Am Not Your Data: Valuable Microbes and the Measure of Goodness

Mikko Jauho: Health from Biodiversity: Microbes-mediated Interventions for Allergy Control

Sylvain Lallier: The Microbiome Multiple: Beyond a Metagenomics-driven Technological Determinism

SESSION PAPERS

I Am Not Your Data: Valuable Microbes and the Measure of Goodness

Luciano Ferrari

In the rapidly evolving field of microbiome-led personalized nutrition, the microbiome has emerged as both an ecological and commercial entity, shaping contemporary understandings and practices of health. The expanding role of data in these fields raises questions regarding what constitutes ‘good data’, how such data is validated, and who benefits from its valuation. This paper problematizes the notion of ‘good data’ by exploring its inherent contingency, dynamism, and relational enactment through different valuation practices. Inspired by Mol’s (2002; 2015) exploration of multiplicity and ontological enactments, it critically interrogates the assumptions underlying what constitutes ‘valid’ or ‘valuable’ data in microbiomics and to whom.

Through ethnographic engagements with a personalized nutrition startup and its academic partners active in microbiome research, I illustrate that ‘good data’ is not simply a matter of scientific accuracy or technological precision. Instead, ‘goodness’ emerges through diverse practices of knowledge production, speculative promises of health, marketing strategies, regulatory frameworks, and consumer expectations. Building on M'charek’s (2013) emphasis on relational ontologies, I highlight how data’s value shifts according to context, actor, and purpose, with different sociopolitical and economic implications.

Ultimately, I argue that 'good data' serves as boundary object, mediating complex interactions between scientific communities, market actors, and individual consumers, each mobilizing it according to distinct normative frameworks and expectations. Understanding the shifting contours of ‘good data’ reveals broader tensions within contemporary health ecologies—such as inclusivity versus exclusivity, democratization of health versus intensification of inequalities, and ecological complexity versus commercial simplification—all of which warrant continued exploration and critical analysis.

Health from Biodiversity: Microbes-mediated Interventions for Allergy Control

Mikko Jauho

In this paper I discuss tensions between ecosystems- and human-centered public health paradigms by looking at microbe-mediated biodiversity interventions for allergy control. In focus is a Finnish interdisciplinary research group, which is developing methods to combat allergies and other autoimmune diseases. The prevalence of allergies has steadily increased in the Global North, which has been linked to western lifestyle and urbanization. The current etiological view highlights biodiversity loss and insufficient contact with nature, presenting environmental microbes as a key protective factor. To mitigate this 'lack of nature', the research group has, on the one hand, developed and patented a safe and optimized microbial mixture that can be placed in built urban environment (e.g. kindergarten yards) and everyday consumer products (e.g. cosmetics, sheets, clothes). On the other hand, the group wants to promote microbial diversity in cities by developing and 'rewilding' urban green areas. The different goals and pathways of intervention reveal the tensions between ecosystems- and human-centered public health paradigms. The new biodiversity-driven model requires re-negotiation of both the hallmarks of healthy and safe urban environment, cleanliness and order, and the characteristics of biomedical evidence production, isolation of the contributing factor, standardization, and dose-response thinking, while the success of the model requires meeting these criteria. Through analyzing this dilemma, the paper contributes to our understanding of the challenges and frictions in the transition towards more ecological approaches to health and disease.

The Microbiome Multiple: Beyond a Metagenomics-driven Technological Determinism

Sylvain Lallier

An increasing number of biotechnology companies are selling a metagenomic profile of the dominant bacterial species in the intestinal microbiota based on a stool sample. But scientists warn: there is no consensus on what a 'healthy microbiota' is, the methods are not standardised and interpretation is limited. Still, metagenomics is advertised as a powerful indicator of microbiome impact on human health. Beyond such technological promises, I propose to examine how metagenomics is differently enacted in various socio-historical contexts. In doing so, I criticize the technological determinism associated with metagenomics and reintroduce the long historical and institutional period. Drawing on laboratory ethnographies and archives, I argue that metagenomics should be considered as an extension of pre-existing scientific practices, part of an economy of biotechnological promises. Firstly, research on microflora has been supported and shaped by public scientific policies and industrial interests since the 1950s in relation to antibiotic use, animal growth, nutrition and health, with recurrent circulations between microbial ecology and biomedical communities. Secondly, since the 2000s, although massive DNA sequencing capacities have reinforced a genetic vision of bacterial ecology, microbiome sciences rely on a diversity of styles of thought and practice, accumulated over time. Thus, rather than existing solely through metagenomics, the microbiome is multiple: it is shaped by epistemic communities that enact its different modes of existence i.e. ecological impact on microbial physiology, computer-modelled ecosystem, 'organ' of the human body.