

DEPARTMENT SPECIAL SEMINAR

HARNESSING MICROBIAL METABOLISM FOR HUMAN HEALTH, FLAVOR, AND SUSTAINABILITY

Thursday, April 6th • 12-1pm • 1207 RMI South
Light refreshments will be available. Space is limited.

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Microorganisms such as bacteria and fungi inhabit virtually every corner of the planet, including the human gastrointestinal tract and many of the foods we love. Engineering microbial metabolism in these contexts has the potential to transform human and planetary health, but microbial engineering efforts are often limited by our poor understanding of microbial metabolism and a lack of genetic tools. This talk will describe my multidisciplinary work dissecting and manipulating microbial metabolism in the human gut microbiota and in microbially produced foods. I will share how enzyme discovery in the human gut microbiota has enabled new strategies for disease treatment and revealed molecular links between the gut microbiota and our diet. I will also discuss recent work bridging gastronomy, synthetic biology, and biochemistry, to unlock the potential of filamentous fungi to produce sustainable and delicious foods. Conducted in collaboration with Michelin-star restaurants, this work has uncovered mechanisms for efficiently upcycling food waste into human food and enabled bioengineering of edible mycelium for meat-like flavor and appearance. Long-term, this work should enable efforts to design microbial foods for health, sustainability, and flavor.



Vayu Maini Rekdal PhD. Miller Institute Fellow, UC Berkeley
Faculty host: Jay Keasling

Vayu earned his PhD in Biochemistry from Harvard University working in the lab of Emily Balskus, where he identified and characterized strains and enzymes involved in the metabolism of prominent drugs and dietary compounds in the human gut microbiota. As a Miller Fellow at UC Berkeley, Vayu is bringing together his background from the kitchen and the laboratory to tackle challenges in the food system. His current research characterizes and engineers filamentous fungi to produce sustainable and delicious foods. This work is conducted in close collaboration with Michelin star restaurants Blue Hill at Stone Barns in New York and Alchemist in Copenhagen, where it has led to new dishes on the menu. In parallel to his scientific research, Vayu has training working as a chef and in culinary R & D – from molecular gastronomy to fermented foods. Vayu loves sharing his passion for food and STEM with the public, and runs the organization Young Chefs, which uses cooking to teach science in classrooms all around the world.