



## Vayu Hill-Maini

Assistant Professor of Bioengineering

### CONTACT INFORMATION

- **Alternate Contact**

Jasmine Desiderio - Sr. Lab Operations Administrator

**Email** [jdes@stanford.edu](mailto:jdes@stanford.edu)

**Tel** 650-724-6032

### Bio

---

#### BIO

Vayu fell in love with cooking at a young age in his multicultural home in Stockholm, Sweden. He first moved to the U.S to work in restaurants, but the flavors, textures, and sensations of the kitchen eventually led him to scientific research. He received his B.A in Chemistry and Biology at Carleton College in 2015. He completed his PhD in Biochemistry from Harvard University in 2020, where he worked in the lab of Emily Balskus to characterize strains and enzymes from human gut microbiota responsible for the metabolism of drugs and dietary compounds. As a Miller Fellow at UC Berkeley, Vayu discovered and engineered filamentous fungi for sustainable foods in the lab of Jay Keasling. In addition, Vayu has trained at diverse gastronomic institutions, including Basque Culinary Center, Fundación Alicia, The Cultured Pickled Shop, and Michelin-star restaurants Alchemist, Blue Hill at Stone Barns. He is excited about building synthetic biology tools for fungi to unlock new discoveries within mycology, address sustainability challenges, and enable gastronomic creativity. His favorite fungi are *Neurospora intermedia* and chanterelles (both orange!).

#### ACADEMIC APPOINTMENTS

- Assistant Professor, Bioengineering
- Member, Bio-X

#### HONORS AND AWARDS

- Azrieli Global Scholar, Canadian Institute for Advanced Research (2025)
- Searle Scholar, Searle Scholars Program (2026)

### Research & Scholarship

---

#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

We study filamentous fungi, a diverse group of organisms that includes molds and mushrooms and are critical for a sustainable future. These organisms not only serve global roles in nutrient cycling, plant resilience, and agriculture, but have immense biotechnological potential for sustainable foods, medicines, enzymes, and materials. However, our ability to precisely manipulate fungal and metabolism and structure is still in its infancy, preventing both fundamental research and engineering efforts. Our lab integrates approaches from synthetic biology, biochemistry, and gastronomy to characterize and engineer fungi for food and sustainability applications, including creating new delicious, nutritious foods from readily available waste.

## Teaching

---

### COURSES

#### 2025-26

- Senior Capstone Design I: BIOE 141A (Aut)
- Senior Capstone Design II: BIOE 141B (Win)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Ravalika Damerla, Anna Johnson, Kyle Zolkin

#### Postdoctoral Faculty Sponsor

Jon Arizti Sanz, Braydon Black, Jaqueline Gerhardt, Alessandra Massa

#### Doctoral Dissertation Advisor (AC)

Peter Allen, Shreya Garg, Franklin Lurie, Deniz Sinar

#### Doctoral (Program)

Chad Hyer

## Publications

---

### PUBLICATIONS

- **Toward synthetic biology in mushroom-forming Agaricomycete fungi: from tools to applications.** *Microbiology and molecular biology reviews* : *MMBR*  
Allen, P. M., Sinar, D., Schwartz, S., Hill-Maini, V.  
2026: e0017825
- **Harnessing fungal fermentation for waste-to-food conversion.** *Trends in biotechnology*  
Black, B., Massa, A., Lurie, F. P., Preidl, A. K., Hill-Maini, V.  
2026