Stanford



Christoph Thaiss

Associate Professor of Pathology

Bio

BIO

Christoph A. Thaiss is an Assistant Professor of Pathology at Stanford University. His lab studies how interactions between environment, body, and brain impact physiology and disease over the lifespan. Christoph received his undergraduate training from the University of Bonn, Yale University, ETH Zurich, and the Broad Institute of MIT and Harvard. Following his Ph.D. studies at the Weizmann Institute of Science, he joined the faculty at the University of Pennsylvania. Among the recognitions he has received for his work are an NIH Director's New Innovator Award, an NIDDK Catalyst Award, a Pew Biomedical Scholars Award, the Science & SciLifeLab Grand Prize for a Young Scientist, the Agilent Early Career Professor Award, a McKnight Brain Research Foundation Innovator Award, and a Burroughs Wellcome Fund Investigator in the Pathogenesis of Infectious Disease Award.

ACADEMIC APPOINTMENTS

- Associate Professor, Pathology
- Member, Bio-X
- Member, Wu Tsai Human Performance Alliance
- Member, Stanford Medicine Children's Health Center for IBD and Celiac Disease
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Core Investigator, Arc Institute, (2025- present)

LINKS

- Arc Lab Webpage: https://arcinstitute.org/labs/thaisslab

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The Thaiss Lab at the Arc Institute focuses on understanding the dynamic interactions between the gut, brain, and microbiome. Their research explores how microbial communities within the gut influence neurological and metabolic functions, contributing to both health and disease. By leveraging advanced multi-omic technologies, computational biology, and animal models, the lab investigates the bidirectional communication along the gut-brain axis.

One major research focus is identifying how microbial metabolites and immune signals generated in the gut affect brain function and behavior. The lab examines how disruptions in microbiome composition can lead to neuroinflammation, contributing to the development of neurological and psychiatric disorders, including depression, anxiety, and neurodegenerative diseases.

In addition to neurological impacts, the lab studies how microbiome-host interactions regulate metabolic processes, immune responses, and systemic inflammation. Their work sheds light on the molecular mechanisms connecting gut health to conditions such as obesity, diabetes, and cancer.

Recognizing the individuality of gut microbiomes, the Thaiss Lab emphasizes the importance of personalized medicine. By analyzing large-scale microbiome and host datasets, they aim to uncover biomarkers and therapeutic targets that can inform precision treatments. Their research has the potential to translate microbiome science into actionable medical insights, improving diagnostic accuracy and therapeutic efficacy.

Ultimately, the lab's interdisciplinary approach advances our understanding of the gut-brain axis, paving the way for innovative strategies to prevent and treat a range of neurological, metabolic, and inflammatory diseases. Through collaborations and cutting-edge research, the Thaiss Lab contributes to a deeper understanding of how our microbial ecosystems shape human health.

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Niklas Blank, Jing Huang, Michelle Lee, Hyungyu Min, Baylee Russell, Andrea Francesca Salvador, Xue Yang

Doctoral Dissertation Advisor (AC)

Sabrina Bond, Shuaitong Liu, Alana McSween, Brent Perlman, Jared Xia

Doctoral Dissertation Co-Advisor (AC)

Ashley Yeh

Publications

PUBLICATIONS

- **Author Correction: Resolving tissue complexity by multimodal spatial omics modeling with MISO.** *Nature methods*
  Coleman, K., Schroeder, A., Loth, M., Zhang, D., Park, J. H., Sung, J. Y., Blank, N., Cowan, A. J., Qian, X., Chen, J., Jiang, J., Yan, H., Samarah, et al
  2025
- **Author Correction: Resolving tissue complexity by multimodal spatial omics modeling with MISO.** *Nature methods*
  Coleman, K., Schroeder, A., Loth, M., Zhang, D., Park, J. H., Sung, J. Y., Blank, N., Cowan, A. J., Qian, X., Chen, J., Jiang, J., Yan, H., Samarah, et al
  2025; 22 (3): 635
- **Resolving tissue complexity by multimodal spatial omics modeling with MISO.** *Nature methods*
  Coleman, K., Schroeder, A., Loth, M., Zhang, D., Park, J. H., Sung, J. Y., Blank, N., Cowan, A. J., Qian, X., Chen, J., Jiang, J., Yan, H., Samarah, et al
  2025; 22 (3): 530-538
- **Dietary manipulation of intestinal microbes prolongs survival in a mouse model of Hirschsprung disease.** *bioRxiv : the preprint server for biology*
  Tjaden, N. E., Liou, M. J., Sax, S. E., Lassoued, N., Lou, M., Schneider, S., Beigel, K., Eisenberg, J. D., Loeffler, E., Anderson, S. E., Yan, G., Litichevskiy, L., Dohnalová, et al
  2025

- **Spatiotemporal dynamics during niche remodeling by super-colonizing microbiota in the mammalian gut.** *Cell systems*
  Urtecho, G., Moody, T., Huang, Y., Sheth, R. U., Richardson, M., Descamps, H. C., Kaufman, A., Lekan, O., Zhang, Z., Velez-Cortes, F., Qu, Y., Cohen, L., Ricaurte, et al
  2024; 15 (11): 1002-1017.e4

- **Dietary restriction impacts health and lifespan of genetically diverse mice.** *Nature*
  Di Francesco, A., Deighan, A. G., Litichevskiy, L., Chen, Z., Luciano, A., Robinson, L., Garland, G., Donato, H., Vincent, M., Schott, W., Wright, K. M., Raj, A., Prateek, et al
  2024; 634 (8034): 684-692

- **Serotonin reduction in post-acute sequelae of viral infection.** *Cell*
  Wong, A. C., Devason, A. S., Umana, I. C., Cox, T. O., Dohnalová, L., Litichevskiy, L., Perla, J., Lundgren, P., Etwebi, Z., Izzo, L. T., Kim, J., Tetlak, M., Descamps, et al
  2023; 186 (22): 4851-4867.e20

- **Aging disrupts circadian gene regulation and function in macrophages.** *Nature immunology*
  Blacher, E., Tsai, C., Litichevskiy, L., Shipony, Z., Iweka, C. A., Schneider, K. M., Chuluun, B., Heller, H. C., Menon, V., Thaiss, C. A., Andreasson, K. I.
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