Stanford



Steven Higginbottom

Director of Gnotobiotics, Microbiology and Immunology

Bio

CURRENT ROLE AT STANFORD

Maintain and operate Gnotobiotic research facility.

HONORS AND AWARDS

- Marcia J. Cohen Inspiring Change Leadership Award, Stanford University (2023)

Publications

PUBLICATIONS

- **Indole-3-acetic acid production is rare among gut bacteria and reflects OFOR-driven amino acid oxidation in acetogens.** *Gut microbes*
  DeFeo, M. E., Liu, Y., Zhou, Z., Higginbottom, S. K., Dodd, D.
  2026; 18 (1): 2689610
- **Within-host evolution and transmission of a human gut symbiont across ecological scales.** *Cell host & microbe*
  Vasquez, K. S., Wong, D. P., Kotaka, K., McKeithen-Mead, S., Pedro, M. F., Brian Yu, F., Jain, S., Meng, X., Higginbottom, S. K., DeFelice, B. C., Neff, N., Bhatt, A., Tropini, et al
  2026
- **Functional Divergence in Gut Clostridia from Hadza Hunter-Gatherers Reveals Diet-Adapted Metabolic Machinery That Shapes Gut Ecology.** *bioRxiv : the preprint server for biology*
  Takeuchi, T., Reddy, A., Robinson, E. K., Kotaka, K. M., Higginbottom, S. K., Sonnenburg, E. D., Sonnenburg, J. L.
  2026
- **A single-strain dropout screen reveals mechanistic links between microbial ecology and metabolism.** *bioRxiv : the preprint server for biology*
  Zeng, X., Meng, X., Weakley, A. M., Higginbottom, S., Lopez, E. M., Cabrera, A. V., Gray, I. J., DeFelice, B. C., Terasaki, M., Zhao, A., Hall, K. R., Levia, M., Arreola, et al
  2026
- **Ecology and engineering to modify the bile acid output of a defined microbial community.** *bioRxiv : the preprint server for biology*
  Zeng, X., Meng, X., Weakley, A. M., Jarrett, K. E., Higginbottom, S., Lopez, E. M., Cabrera, A. V., Gray, I. J., DeFelice, B. C., Terasaki, M., Lai, R., Brearley-Sholto, M., Zhao, et al
  2026
- **Indole-3-acetic acid production is rare among gut bacteria and reflects OFOR-driven amino acid oxidation in acetogens.** *bioRxiv : the preprint server for biology*
  DeFeo, M. E., Liu, Y., Zhou, Z., Higginbottom, S. K., Dodd, D.
  2026
- **Gut microbiota gate host exposure to cholinesterase inhibitors from dietary Solanums.** *bioRxiv : the preprint server for biology*
  Liou, C. S., Louwies, T., Iakiviak, M., Rajniak, J., Murugkar, P. P., Higginbottom, S. K., Weakley, A., Meng, X., Htet, P., Cabrera, A. V., Jasper, M., Dimas, A., Schulman, et al

2025

- **Genome-scale resources in the infant gut symbiont Bifidobacterium breve reveal genetic determinants of colonization and host-microbe interactions.** *Cell*
  Shiver, A. L., Sun, J., Culver, R., Violette, A., Wynter, C., Nieckarz, M., Mattiello, S. P., Sekhon, P. K., Bottacini, F., Friess, L., Carlson, H. K., Wong, D. P., Higginbottom, et al
  2025

- **A gut pathobiont regulates circulating glycine and host metabolism in a twin study comparing vegan and omnivorous diets.** *medRxiv : the preprint server for health sciences*
  Carter, M. M., Zeng, X., Ward, C. P., Landry, M., Perelman, D., Hennings, T., Meng, X., Weakley, A. M., Cabrera, A. V., Robinson, J. L., Nguyen, T., Higginbottom, S., Maecker, et al
  2025

- **Improved mouse models of the small intestine microbiota using region-specific sampling from humans.** *bioRxiv : the preprint server for biology*
  Culver, R. N., Spencer, S. P., Violette, A., Lemus Silva, E. G., Takeuchi, T., Nafarzadegan, C., Higginbottom, S. K., Shalon, D., Sonnenburg, J., Huang, K. C.
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- **Metabolic diversity in commensal protists regulates intestinal immunity and trans-kingdom competition.** *Cell*
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  2023

- **Hadza Prevotella require diet-derived microbiota-accessible carbohydrates to persist in mice.** *Cell reports*
  Gellman, R. H., Olm, M. R., Terrapon, N., Enam, F., Higginbottom, S. K., Sonnenburg, J. L., Sonnenburg, E. D.
  2023; 42 (11)

- **Hadza Prevotella require diet-derived microbiota-accessible carbohydrates to persist in mice** *CELL REPORTS*
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- **A mutant fitness compendium in Bifidobacteria reveals molecular determinants of colonization and host-microbe interactions.** *bioRxiv : the preprint server for biology*
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  Nagashima, K., Zhao, A., Atabakhsh, K., Bae, M., Blum, J. E., Weakley, A., Jain, S., Meng, X., Cheng, A. G., Wang, M., Higginbottom, S., Dimas, A., Murugkar, et al
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- **Region-specific sampling from humans improves mouse models of the small intestine microbiota**
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- **Strain dropouts reveal interactions that govern the metabolic output of the gut microbiome.** *Cell*
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- **Hadza Prevotella Require Diet-derived Microbiota Accessible Carbohydrates to Persist in Mice.** *bioRxiv : the preprint server for biology*
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- **Host-microbe co-metabolism via MCAD generates circulating metabolites including hippuric acid.** *Nature communications*
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- **Butyrate Differentiates Permissiveness to Clostridioides difficile Infection and Influences Growth of Diverse C. difficile Isolates.** *Infection and immunity*
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- **Establishment and characterization of stable, diverse, fecal-derived in vitro microbial communities that model the intestinal microbiota.** *Cell host & microbe*
  Aranda-Díaz, A., Ng, K. M., Thomsen, T., Real-Ramírez, I., Dahan, D., Dittmar, S., Gonzalez, C. G., Chavez, T., Vasquez, K. S., Nguyen, T. H., Yu, F. B., Higginbottom, S. K., Neff, et al
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- **Quantifying rapid bacterial evolution and transmission within the mouse intestine.** *Cell host & microbe*
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