Stanford

Florian Hoffmann, Ph.D.

Postdoctoral Scholar, Hematology

Bio

BIO

Florian is a postdoctoral researcher in Dr. Ami Bhatt's laboratory at Stanford University. He earned his Ph.D. in Biochemistry working in Dr. Sam Sternberg's group at Columbia University where he studied atypical CRISPR systems in prokaryotes, in search of molecular tools for programmable gene editing and gene regulation. His studies elucidate the mechanisms of a novel RNA-guided transposition system, the evolutionary ancestors of the gene editing enzymes Cas9 and Cas12, and an unprecedented Cas12f enzyme that creates custom de novo transcription start sites without requiring promoter elements. Florian is fascinated by the vast untapped resources of novel gene functions encoded in bacteria and their viruses (bacteriophages). He is an inventor on multiple patents related to his doctoral work. During his postdoctoral work at Stanford, he aims to discover novel paradigms of bacteria-virus interactions and how these shape the human gut microbiome, and human health. To investigate these systems, he harnesses interdisciplinary approaches, combining computational gene discovery with experimental techniques in Molecular Biology, Genetics and Biochemistry.

HONORS AND AWARDS

- David Hirsh Thesis Prize 2025, Columbia University (May 2025)
- Early Career Researcher Award, CRISPR Meeting Committee 2025 (November 2024)
- FASEB Journal Early Career Researcher Award, Federation of American Societies for Experimental Biology (FASEB) (June 2024)
- Global Experience Bursary Travel Grant for Columbia University Research Internship, University College London (UCL) (March 2019)
- Global Experience Bursary Travel Grant for Universität Greifswald Research Internship, University College London (UCL) (May 2018)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Elected Member, Sigma Xi, The Scientific Honor Society (2025 - present)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Columbia University (2025)
- Master of Philosophy, Columbia University (2023)
- Master of Arts, Columbia University (2023)
- Bachelor of Science, University College London (2020)
- Postdoctoral Fellowship, Stanford University, Stanford, USA , Microbiology, Genetics, Bioinformatics
- Ph.D., Columbia University, New York, USA , Biochemistry, Molecular Biophysics, Genetics, Microbiology, Bioinformatics (2025)
- M.A., Columbia University, New York, USA , Biochemistry and Molecular Biophysics (2023)
- M.Phil., Columbia University, New York, USA , Biochemistry and Molecular Biophysics (2023)

- B.Sc., University College London (UCL), London, UK , Biochemistry (2020)

STANFORD ADVISORS

- Ami Bhatt, Postdoctoral Faculty Sponsor

PATENTS

- Samuel H. Sternberg, Florian T. Hoffmann, Tanner Wiegand. "United States Patent Invention disclosure filed. Compositions, Methods, and Systems for RNA-guided Transcription", Columbia University/Columbia Technology Ventures
- Samuel H. Sternberg, Tanner Wiegand, Florian T. Hoffmann. "United States Patent Invention disclosure filed. Compositions, Methods, and Systems for DNA Modification", Columbia University/Columbia Technology Ventures

Publications

PUBLICATIONS

- **Structural basis of RNA-guided transcription by a dCas12f-σE-RNAP complex.** *Nature*
  Xiao, R., Hoffmann, F. T., Xie, D., Wiegand, T., Palmieri, A. I., Sternberg, S. H., Chang, L.
  2026
- **Exapted CRISPR-Cas12f homologues drive RNA-guided transcription.** *Nature*
  Hoffmann, F. T., Wiegand, T., Palmieri, A. I., Glass-Klaiber, J., Xiao, R., Tang, S., Le, H. C., Meers, C., Lampe, G. D., Chang, L., Sternberg, S. H.
  2026
- **Temperate phages enhance host fitness via RNA-guided flagellar remodeling.** *bioRxiv : the preprint server for biology*
  Walker, M. W., Richard, E., Wiegand, T., Wang, J., Yang, Z., Casas-Ciniglio, A. A., Hoffmann, F. T., Shahnawaz, H., Gaudet, R. G., Arpaia, N., Fernández, I. S., Sternberg, S. H.
  2025
- **Structural basis of RNA-guided transcription by a dCas12f-σE-RNAP complex.** *bioRxiv : the preprint server for biology*
  Xiao, R., Hoffmann, F. T., Xie, D., Wiegand, T., Palmieri, A. I., Sternberg, S. H., Chang, L.
  2025
- **Exapted CRISPR-Cas12f homologs drive RNA-guided transcription.** *bioRxiv : the preprint server for biology*
  Hoffmann, F. T., Wiegand, T., Palmieri, A. I., Glass-Klaiber, J., Xiao, R., Tang, S., Le, H., Meers, C., Lampe, G. D., Chang, L., Sternberg, S. H.
  2025
- **TnpB homologues exapted from transposons are RNA-guided transcription factors.** *Nature*
  Wiegand, T., Hoffmann, F. T., Walker, M. W., Tang, S., Richard, E., Le, H. C., Meers, C., Sternberg, S. H.
  2024; 631 (8020): 439-448
- **Transposon-encoded nucleases use guide RNAs to promote their selfish spread.** *Nature*
  Meers, C., Le, H. C., Pesari, S. R., Hoffmann, F. T., Walker, M. W., Gezelle, J., Tang, S., Sternberg, S. H.
  2023; 622 (7984): 863-871
- **Selective TnsC recruitment enhances the fidelity of RNA-guided transposition.** *Nature*
  Hoffmann, F. T., Kim, M., Beh, L. Y., Wang, J., Vo, P. L., Gelsinger, D. R., George, J. T., Acree, C., Mohabir, J. T., Fernández, I. S., Sternberg, S. H.
  2022; 609 (7926): 384-393