Stanford

David Cox

Assistant Professor of Genetics and, by courtesy, of Medicine (Hematology)

Bio

BIO

David Cox is an Assistant Professor of Genetics and by courtesy of Medicine (Hematology) at Stanford University and Principal Investigator of the Cox Lab (coxlab.bio), which is opening in July 2025. He is also a ChEM-H Institute Scholar and Chan Zuckerberg Biohub Investigator.

He completed his undergraduate studies in biology at Stanford University, where he worked with Irving Weissman on understanding how the innate immune system recognizes cancer cells. He then entered the Harvard-MIT MD-PhD program, earning his MD from the Harvard-MIT program in Health Sciences and Technology (HST) and his PhD in biology from MIT. His doctoral dissertation with Feng Zhang focused on the discovery and development of CRISPR-Cas enzymes as novel DNA and RNA editing tools. During his final year of medical school, he worked as a visiting scientist with David Baker, where he initiated efforts to design sequence-specific DNA binding proteins de novo.

Following medical school, Cox completed internal medicine residency and a clinical fellowship in hematology at Stanford, where he concurrently conducted postdoctoral research in Rhiju Das's lab. In the Das lab, he fine-tuned large language models for RNA structure prediction and developed new methods for highly multiplexed detection of RNA-protein interactions.

His current list of publications and patents is available here: https://scholar.google.com/citations?user=ZohHoFYAAAAJ&hl=en&oi=ao

ACADEMIC APPOINTMENTS

- Assistant Professor, Genetics
- Assistant Professor (By courtesy), Medicine - Hematology
- Member, Bio-X
- Institute Scholar, Sarafan ChEM-H

PROFESSIONAL EDUCATION

- Fellowship, Stanford University School of Medicine , Hematology (2025)
- Residency, Stanford University School of Medicine , Internal Medicine (2022)
- B.Sc., Stanford University , Biology (2009)
- Ph.D., Massachusetts Institute of Technology , Biology (2018)
- M.D., Harvard Medical School, Harvard-MIT Health Sciences and Technology (2020)

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Gabriella Estevam

Doctoral Dissertation Advisor (AC)

Antony Chang

Publications

PUBLICATIONS

- **Ribonanza: deep learning of RNA structure through dual crowdsourcing.** *bioRxiv : the preprint server for biology*
  He, S., Huang, R., Townley, J., Kretsch, R. C., Karagianes, T. G., Cox, D. B., Blair, H., Penzar, D., Vyaltsev, V., Aristova, E., Zinkevich, A., Bakulin, A., Sohn, et al
  2024

- **Computational design of sequence-specific DNA-binding proteins.** *bioRxiv : the preprint server for biology*
  Glasscock, C. J., Pecoraro, R., McHugh, R., Doyle, L. A., Chen, W., Boivin, O., Lonnquist, B., Na, E., Politanska, Y., Haddox, H. K., Cox, D., Norn, C., Coventry, et al
  2023

- **A cytosine deaminase for programmable single-base RNA editing** *SCIENCE*
  Abudayyeh, O. O., Gootenberg, J. S., Franklin, B., Koob, J., Kellner, M. J., Ladha, A., Joung, J., Kirchgatterer, P., Cox, D. B. T., Zhang, F.
  2019; 365 (6451): 382-+

- **RNA editing with CRISPR-Cas13** *SCIENCE*
  Cox, D. B. T., Gootenberg, J. S., Abudayyeh, O. O., Franklin, B., Kellner, M. J., Joung, J., Zhang, F.
  2017; 358 (6366): 1019-1027

- **Engineered Cpf1 variants with altered PAM specificities** *NATURE BIOTECHNOLOGY*
  Gao, L., Cox, D. B. T., Yan, W. X., Manteiga, J. C., Schneider, M. W., Yamano, T., Nishimasu, H., Nureki, O., Crosetto, N., Zhang, F.
  2017; 35 (8): 789-792

- **Diversity and evolution of class 2 CRISPR-Cas systems** *NATURE REVIEWS MICROBIOLOGY*
  Shmakov, S., Smargon, A., Scott, D., Cox, D., Pyzocha, N., Yan, W., Abudayyeh, O. O., Gootenberg, J. S., Makarova, K. S., Wolf, Y. I., Severinov, K., Zhang, F., Koonin, et al
  2017; 15 (3): 169-182

- **Cas13b Is a Type VI-B CRISPR-Associated RNA-Guided RNase Differentially Regulated by Accessory Proteins Csx27 and Csx28** *MOLECULAR CELL*
  Smargon, A. A., Cox, D. B. T., Pyzocha, N. K., Zheng, K., Slaymaker, I. M., Gootenberg, J. S., Abudayyeh, O. A., Essletzbichler, P., Shmakov, S., Makarova, K. S., Koonin, E. V., Zhang, F.
  2017; 65 (4): 618-+

- **RNA targeting with CRISPR-Cas13.** *Nature*
  Abudayyeh, O. O., Gootenberg, J. S., Essletzbichler, P. n., Han, S. n., Joung, J. n., Belanto, J. J., Verdine, V. n., Cox, D. B., Kellner, M. J., Regev, A. n., Lander, E. S., Voytas, D. F., Ting, et al
  2017; 550 (7675): 280–84

- **Engineering and optimising deaminase fusions for genome editing** *NATURE COMMUNICATIONS*
  Yang, L., Briggs, A. W., Chew, W., Mali, P., Guell, M., Aach, J., Goodman, D., Cox, D., Kan, Y., Lesha, E., Soundararajan, V., Zhang, F., Church, et al
  2016; 7: 13330

- **C2c2 is a single-component programmable RNA-guided RNA-targeting CRISPR effector** *SCIENCE*
  Abudayyeh, O. O., Gootenberg, J. S., Konermann, S., Joung, J., Slaymaker, I. M., Cox, D. B. T., Shmakov, S., Makarova, K. S., Semenova, E., Minakhin, L., Severinov, K., Regev, A., Lander, et al

2016; 353 (6299): aaf5573

- **The Progranulin Cleavage Products, Granulins, Exacerbate TDP-43 Toxicity and Increase TDP-43 Levels.** *The Journal of neuroscience : the official journal of the Society for Neuroscience*
  Salazar, D. A., Butler, V. J., Argouarch, A. R., Hsu, T. Y., Mason, A., Nakamura, A., McCurdy, H., Cox, D., Ng, R., Pan, G., Seeley, W. W., Miller, B. L., Kao, et al
  2015; 35 (25): 9315-28

- **CRISPR/Cas9 cleavage of viral DNA efficiently suppresses hepatitis B virus** *SCIENTIFIC REPORTS*
  Ramanan, V., Shlomai, A., Cox, D. B. T., Schwartz, R. E., Michailidis, E., Bhatta, A., Scott, D. A., Zhang, F., Rice, C. M., Bhatia, S. N.
  2015; 5: 10833

- **Therapeutic genome editing: prospects and challenges** *NATURE MEDICINE*
  Cox, D., Platt, R., Zhang, F.
  2015; 21 (2): 121-131

- **RNA-guided editing of bacterial genomes using CRISPR-Cas systems** *NATURE BIOTECHNOLOGY*
  Jiang, W., Bikard, D., Cox, D., Zhang, F., Marraffini, L. A.
  2013; 31 (3): 233-239

- **Multiplex Genome Engineering Using CRISPR/Cas Systems** *SCIENCE*
  Cong, L., Ran, F. A., Cox, D., Lin, S., Barretto, R., Habib, N., Hsu, P. D., Wu, X., Jiang, W., Marraffini, L. A., Zhang, F.
  2013; 339 (6121): 819-823