



Stephen M. Hinshaw

Assistant Professor (Research) of Molecular and Cellular Physiology

Bio

BIO

Stephen Hinshaw is an Assistant Professor in the Department of Molecular and Cellular Physiology and the Faculty co-Director of the Stanford Cryo-Electron Microscopy Center (cEMc). His laboratory develops and applies cutting-edge tools in chemical and structural biology to uncover fundamental cellular mechanisms and translate these insights into powerful new pharmacological strategies.

Stephen received his undergraduate degree from Stanford University and earned his Ph.D. from the Harvard Program in Genetics and Genomics, where he discovered fundamental mechanisms governing chromosome segregation during mitosis. He then conducted postdoctoral research as a Helen Hay Whitney Fellow supported by the Howard Hughes Medical Institute at Harvard Medical School, with additional training as a visiting postdoctoral fellow at the Janelia Research Campus. During this period, he used cryo-electron microscopy to determine the structures of protein complexes that underlie genetic inheritance in normal and cancer cells. Prior to joining the Stanford faculty, Stephen led discovery efforts for new therapeutic modalities as a Senior Research Scientist in the Center for Therapeutics Discovery and at the Stanford Cancer Institute.

ACADEMIC APPOINTMENTS

- Assistant Professor (Research), Molecular and Cellular Physiology
- Member, Bio-X

HONORS AND AWARDS

- Helen Hay Whitney Postdoctoral Fellow, HHWF/HHMI (2018)
- Janelia Visiting Scientist Program, HHMI/Janelia (2017)
- Albert J. Ryan Foundation Fellow, Ryan Found. (2013)
- NSF Graduate Research Fellow, NSF (2011)

PROFESSIONAL EDUCATION

- Postdoc, Harvard Medical School/JFRC (2021)
- PhD, Harvard Medical School (2016)
- BA, Stanford University (2008)

LINKS

- Hinshaw Lab Site: <https://hinshawlab.stanford.edu/>

Publications

PUBLICATIONS

- **Charged molecular glue discovery enabled by targeted degron display.** *Nature chemical biology*
Zhuang, Z., Byun, W. S., Chrustowicz, J., Kozicka, Z., Li, V. L., Abeja, D. M., Donovan, K. A., Sepic, S., You, I., Stabicki, M., Fischer, E. S., Hinshaw, S. M., Ebert, et al
2026
- **A bivalent molecular glue linking lysine acetyltransferases to oncogene-induced cell death**
Nix, M., Gourisankar, S., Nettles, S., Bowman, K., Yang, H., Dwyer, B. G., Sarott, R. C., Abuzaid, H., Martinez, M., Krokhotin, A., Chen, L., Davis, M. M., Fernandez, et al
AMER ASSOC CANCER RESEARCH.2026
- **Epigenetic rewiring of BCL6 drives responses and unveils synthetic dependencies in large B cell lymphoma.**
Yang, H., Bowman, K., Ji, W., Gourisankar, S., Wilson, A. L., Yang, Z., Marszalek, E., Hinshaw, S. M., Zhang, T., Liu, X., Krokhotin, A., Nettles, S., Kundu, et al
AMER ASSOC CANCER RESEARCH.2026
- **A small molecule PTER-selective inhibitor reduces food intake and body weight.** *Cell chemical biology*
Fu, S., Wang, L., Li, V. L., Lyu, X., Wei, W., Shi, X., Deng, S., Barber, J. L., Tahir, U. A., Adams, C., Carson, A., Hidalgo, B., Raffield, et al
2026
- **A small molecule PTER-selective inhibitor reduces food intake and body weight.** *bioRxiv : the preprint server for biology*
Fu, S., Wang, L., Li, V. L., Lyu, X., Wei, W., Shi, X., Deng, S., Barber, J. L., Tahir, U. A., Adams, C., Carson, A., Hidalgo, B., Raffield, et al
2026
- **Design and Development of DNA Damage Chemical Inducers of Proximity for Targeted Cancer Therapy.** *Journal of the American Chemical Society*
Qiu, T., Lee, Y. T., Dwyer, B. G., Tan, Y. J., Chen, T., Romero, B. A., Wang, Y., Deng, J., Zhang, T., Crabtree, G. R., Hinshaw, S. M., Wong, K., Gray, et al
2026
- **An AKR1C3-activated kinase inhibitor prodrug.** *RSC chemical biology*
Li, Z., Martinez, M., Byun, W. S., Thathireddy, A., Qiu, T., Wang, Y., Katzengruber, L., Chouldjian, A., Lu, W., Ji, W., Che, J., Zhang, T., Hinshaw, et al
2025
- **Selective CDK6 Degradation via the KLHDC2 E3 Ubiquitin Ligase** *JOURNAL OF MEDICINAL CHEMISTRY*
Jeon, E., Kim, Y., Ahn, H., Martinez, M. J., Hwang, K., Cho, S., Dwyer, B. G., Romero, B. A., Hinshaw, S. M., Gray, N. S., Sim, T.
2025
- **Design and Development of DNA Damage Chemical Inducers of Proximity (DD-CIP) for Targeted Cancer Therapy.** *bioRxiv : the preprint server for biology*
Qiu, T., Lee, Y. T., Dwyer, B. G., Tan, Y. J., Chen, T., Romero, B. A., Wang, Y., Deng, J., Zhang, T., Crabtree, G. R., Hinshaw, S. M., Wong, K. K., Gray, et al
2025
- **Therapeutic targeting of the nuclear pore complex with molecular glue degraders in pancreatic cancer**
Yuan, L., Ji, W., Dwyer, B. G., Lu, J., Bian, J., Colombo, G. M., Martinez, M. J., Fernandez, D., Phillips, N. A., Tang, M. T., Zhou, C. W., Jones, H. M., Calla, et al
AMER ASSOC CANCER RESEARCH.2025
- **Defining the antitumor mechanism of action of a clinical-stage compound as a selective degrader of the nuclear pore complex.** *Cancer discovery*
Yuan, L., Ji, W., Dwyer, B. G., Lu, J., Bian, J., Colombo, G. M., Martinez, M. J., Fernandez, D., Phillips, N. A., Tang, M. T., Zhou, C. W., Quispe Calla, N. E., Guzman Huancas, et al
2025
- **Generating Surprisingly Powerful Pharmacology from Chemically Induced Protein Interactions.** *Accounts of chemical research*
Hinshaw, S. M., Banik, S. M., Gray, N. S.

2025

- **A Bivalent Molecular Glue Linking Lysine Acetyltransferases to Oncogene-induced Cell Death.** *bioRxiv : the preprint server for biology*
Nix, M. N., Gourisankar, S., Sarott, R. C., Dwyer, B. G., Nettles, S. A., Martinez, M. M., Abuzaid, H., Yang, H., Wang, Y., Simanaukaite, J. M., Romero, B. A., Jones, H. M., Krokhotin, et al
2025
- **Concatemer-assisted stoichiometry analysis: targeted mass spectrometry for protein quantification.** *Life science alliance*
Cai, J., Quan, Y., Zhang, C. Y., Wang, Z., Hinshaw, S. M., Zhou, H., Suhandynata, R. T.
2025; 8 (3)
- **Development of Potent and Selective CK1 α Molecular Glue Degradors.** *Journal of medicinal chemistry*
Geng, Q., Jiang, Z., Byun, W. S., Donovan, K. A., Zhuang, Z., Jiang, F., Jones, H. M., Razumkov, H., Tang, M. T., Sarott, R. C., Fischer, E. S., Corsello, S. M., Hinshaw, et al
2025
- **Discovery of CRBN-Dependent WEE1 Molecular Glue Degraders from a Multicomponent Combinatorial Library.** *Journal of the American Chemical Society*
Razumkov, H., Jiang, Z., Baek, K., You, I., Geng, Q., Donovan, K. A., Tang, M. T., Metivier, R. J., Mageed, N., Seo, P., Li, Z., Byun, W. S., Hinshaw, et al
2024
- **Activating p53Y220C with a Mutant-Specific Small Molecule.** *bioRxiv : the preprint server for biology*
Zhu, X., Byun, W. S., Pieńkowska, D. E., Nguyen, K. T., Gerhartz, J., Geng, Q., Qiu, T., Zhong, J., Jiang, Z., Wang, M., Sarott, R. C., Hinshaw, S. M., Zhang, et al
2024
- **Relocalizing transcriptional kinases to activate apoptosis.** *Science (New York, N.Y.)*
Sarott, R. C., Gourisankar, S., Karim, B., Nettles, S., Yang, H., Dwyer, B. G., Simanaukaite, J. M., Tse, J., Abuzaid, H., Krokhotin, A., Zhang, T., Hinshaw, S. M., Green, et al
2024; 386 (6717): ead15361
- **Concatemer Assisted Stoichiometry Analysis (CASA): targeted mass spectrometry for protein quantification.** *bioRxiv : the preprint server for biology*
Cai, J., Yun, Q., Zhang, C. Y., Wang, Z., Hinshaw, S. M., Zhou, H., Suhandynata, R. T.
2024
- **Discovery of bivalent small molecule degraders of cyclin-dependent kinase 7 (CDK7).** *European journal of medicinal chemistry*
Ji, W., Du, G., Jiang, J., Lu, W., Mills, C. E., Yuan, L., Jiang, F., He, Z., Bradshaw, G. A., Chung, M., Jiang, Z., Byun, W. S., Hinshaw, et al
2024; 276: 116613
- **Convergence of coronary artery disease genes onto endothelial cell programs.** *Nature*
Schnitzler, G. R., Kang, H., Fang, S., Angom, R. S., Lee-Kim, V. S., Ma, X. R., Zhou, R., Zeng, T., Guo, K., Taylor, M. S., Vellarikkal, S. K., Barry, A. E., Sias-Garcia, et al
2024
- **Recognition of centromere-specific histone Cse4 by the inner kinetochore Okp1-Ame1 complex.** *EMBO reports*
Deng, S., Cai, J., Harrison, S. C., Zhou, H., Hinshaw, S. M.
2023: e57702
- **Chemical Specification of E3 Ubiquitin Ligase Engagement by Cysteine-Reactive Chemistry.** *Journal of the American Chemical Society*
Sarott, R. C., You, I., Li, Y. D., Toenjes, S. T., Donovan, K. A., Seo, P., Ordonez, M., Byun, W. S., Hassan, M. M., Wachter, F., Chouchani, E. T., Słabicki, M., Fischer, et al
2023
- **Targeted kinase degradation via the KLHDC2 ubiquitin E3 ligase.** *Cell chemical biology*
Kim, Y., Seo, P., Jeon, E., You, I., Hwang, K., Kim, N., Tse, J., Bae, J., Choi, H., Hinshaw, S. M., Gray, N. S., Sim, T.
2023
- **Structure-Based Design of Y-Shaped Covalent TEAD Inhibitors.** *Journal of medicinal chemistry*
Lu, W., Fan, M., Ji, W., Tse, J., You, I., Ficarro, S. B., Tavares, I., Che, J., Kim, A. Y., Zhu, X., Boghossian, A., Rees, M. G., Ronan, et al

2023

- **Lactate regulates cell cycle by remodeling the anaphase promoting complex.** *Nature*
Liu, W., Wang, Y., Bozi, L. H., Fischer, P., Jedrychowski, M. P., Xiao, H., Wu, T., Darabedian, N., He, X., Mills, E. L., Burger, N., Shin, S., Reddy, et al
2023
- **Multi-site phosphorylation of yeast Mif2/CENP-C promotes inner kinetochore assembly.** *Current biology : CB*
Hinshaw, S. M., Quan, Y., Cai, J., Zhou, A. L., Zhou, H.
2023
- **Recognition of Divergent Viral Substrates by the SARS-CoV-2 Main Protease.** *ACS infectious diseases*
MacDonald, E. A., Frey, G., Namchuk, M. N., Harrison, S. C., Hinshaw, S. M., Windsor, I. W.
2021
- **Ctf3/CENP-I provides a docking site for the desumoylase Ulp2 at the kinetochore.** *The Journal of cell biology*
Quan, Y., Hinshaw, S. M., Wang, P., Harrison, S. C., Zhou, H.
2021; 220 (8)
- **The Structural Basis for Kinetochore Stabilization by Cnn1/CENP-T** *CURRENT BIOLOGY*
Hinshaw, S. M., Harrison, S. C.
2020; 30 (17): 3425-+
- **The structure of the Ctf19c/CCAN from budding yeast (vol 8, e44239, 2019)** *ELIFE*
Hinshaw, S. M., Harrison, S. C.
2020; 9
- **The structure of the yeast Ctf3 complex** *ELIFE*
Hinshaw, S. M., Dates, A. N., Harrison, S. C.
2019; 8
- **The structure of the Ctf19c/CCAN from budding yeast** *ELIFE*
Hinshaw, S. M., Harrison, S. C.
2019; 8
- **Kinetochore Function from the Bottom Up** *TRENDS IN CELL BIOLOGY*
Hinshaw, S. M., Harrison, S. C.
2018; 28 (1): 22–33
- **The Kinetochore Receptor for the Cohesin Loading Complex** *CELL*
Hinshaw, S. M., Makrantoni, V., Harrison, S. C., Marston, A. L.
2017; 171 (1): 72-+
- **Molecular Structures of Yeast Kinetochore Subcomplexes and Their Roles in Chromosome Segregation**
Jenni, S., Dimitrova, Y. N., Valverde, R., Hinshaw, S. M., Harrison, S. C.
edited by Stewart, D., Stillman, B.
COLD SPRING HARBOR LABORATORY PRESS.2017: 83–89
- **Structural evidence for Scc4-dependent localization of cohesin loading** *ELIFE*
Hinshaw, S. M., Makrantoni, V., Kerr, A., Marston, A. L., Harrison, S. C.
2015; 4: e06057
- **The Bioactive Lipid 4-Hydroxyphenyl Retinamide Inhibits Flavivirus Replication** *ANTIMICROBIAL AGENTS AND CHEMOTHERAPY*
Carocci, M., Hinshaw, S. M., Rodgers, M. A., Villareal, V. A., Burri, D. J., Pilankatta, R., Maharaj, N. P., Gack, M. U., Stavale, E. J., Warfield, K. L., Yang, P. L.
2015; 59 (1): 85–95
- **An Iml3-Chl4 Heterodimer Links the Core Centromere to Factors Required for Accurate Chromosome Segregation** *CELL REPORTS*
Hinshaw, S. M., Harrison, S. C.
2013; 5 (1): 29–36