Stanford



Jessica Feldman

Professor of Biology

Bio

BIO

Cells, like whole organisms, have an incredible diversity of form which enables diverse functions. In the Feldman Lab, we are interested in understanding the mechanisms underlying cell patterning during multicellular development. In particular, we are currently focused on understanding how microtubules become spatially organized, a key aspect of differentiation across different tissues and organisms. In addition, we study fundamental aspects of cell polarization, focusing on symmetry breaking cues that establish polarity in epithelia. We generally ask mechanistic cell biological questions in a living, developing organism using a genetic, biochemical, and live imaging approach in the nematode C. elegans.

This research program was shaped by my previous training. As a graduate student at University of California, San Francisco, I studied the genetic regulation of centrosome structure, function, and positioning and the mechanisms dictating internal cellular organization using the unicellular alga Chlamydomonas. I went on to characterize the role of the centrosome during epithelial polarization in C. elegans, working as a postdoctoral fellow at the Fred Hutchinson Cancer Research Center. I started my lab in the Biology Department in 2014 and aim to maintain a fun, supportive, and inclusive research group.

ACADEMIC APPOINTMENTS

- Professor, Biology
- Member, Bio-X

HONORS AND AWARDS

- Dean’s Award for Distinguished Teaching in the School of Humanities and Sciences, Stanford University (2021)
- Stanford Chambers Fellow, Stanford University (2021)
- Terman Fellowship, Stanford University (2017)
- David Huntington Dean’s Faculty Scholar Award, Stanford University (2015)
- New Innovator Award, NIH (2015-2020)
- Basil O’Connor Starter Scholar Research Award, March of Dimes Foundation (2015-2017)
- Postdoctoral Fellowship, American Heart Association (2013)
- Postdoctoral Fellowship, Helen Hay Whitney Foundation (2010-2013)
- Predoctoral Fellowship, National Science Foundation (2003-2006)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Board of Directors, West Coast Representative (re-elected), Society for Developmental Biology (2022 - present)

- Board of Directors, West Coast Representative, Society for Developmental Biology (2019 - 2022)
- Women in Cell Biology Committee, Associate Member, American Society for Cell Biology (2018 - 2021)

PROFESSIONAL EDUCATION

- Postdoc, Fred Hutchinson Cancer Research Center , Cell and Developmental Biology (2013)
- Ph.D., University of California, San Francisco , Cell Biology (2008)
- B.A., Columbia University , Biology (2000)

LINKS

- Feldman Lab Website: http://web.stanford.edu/group/jfeldman_lab

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Cell differentiation requires cells to polarize, translating developmental information into cell-type specific arrangements of intracellular structures. The major goal of the research in my laboratory is to understand how cells build these functional intracellular patterns during development, specifically focusing on the molecules and mechanisms that build microtubules at cell-type specific locations and the polarity cues that guide this patterning in epithelial cells.

Teaching

COURSES

2026-27

- Biology PhD Lab Rotation: BIO 299 (Aut, Win, Spr)
- Cell Biology: BIO 86 (Spr)
- Pattern Formation: BIO 139, BIO 259 (Spr)
- Problem Solving in Biochemistry and Molecular Biology: BIO 83X (Aut)
- Problem Solving in Cell Biology: BIO 86X (Spr)
- Problem Solving in Genetics: BIO 82X (Win)

2025-26

- Cell Biology: BIO 86 (Spr)
- Pattern Formation: BIO 139, BIO 259 (Win)

2024-25

- Cell Biology: BIO 86 (Spr)
- Pattern Formation: BIO 139, BIO 259 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Nadia Haghani, Dane Kawano, Lauren Lubeck, Lindsey Meservey, Meghan Nolan, Allen Yesin, Junqin Zhu

Postdoctoral Faculty Sponsor

Caitlin Devitt, Wenzhe Li

Doctoral Dissertation Advisor (AC)

Ayaka Kasamatsu, Nabor Vazquez Martinez

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (PhD Program)

Publications

PUBLICATIONS

- **Reciprocal E-cadherin signaling aligns apical surfaces between neighboring epithelial tissues to complete the C. elegans digestive tract.** *Current biology : CB*
  Cote, L. E., Sallee, M. D., Ng, R. K., Pickett, M. A., Magescas, J., Feldman, J. L.
  2026

- **Dynamic remodeling of centrioles and the microtubule cytoskeleton in the lifecycle of chytrid fungi** *MOLECULAR BIOLOGY OF THE CELL*
  Long, A. F., Vasudevan, K., Swafford, A. J. M., Venard, C. M., Stajich, J. E., Fritz-Laylin, L. K., Feldman, J. L., Stearns, T.
  2025; 36 (12): mbcE24120577

- **Inactivation of microtubule organizing center function of the centrosome is required for neuronal development and centriole elimination.** *bioRxiv : the preprint server for biology*
  Ng, R., Magescas, J., Feldman, J. L.
  2025

- **Dynamic remodeling of centrioles and the microtubule cytoskeleton in the lifecycle of chytrid fungi.** *Molecular biology of the cell*
  Long, A. F., Vasudevan, K., Swafford, A., Venard, C. M., Stajich, J. E., Fritz-Laylin, L. K., Feldman, J. L., Stearns, T.
  2025: mbcE24120577

- **Somatic polyploidy supports biosynthesis and tissue function by increasing transcriptional output.** *The Journal of cell biology*
  Lessenger, A. T., Skotheim, J. M., Swaffer, M. P., Feldman, J. L.
  2025; 224 (3)

- **MAP9/MAPH-9 supports axonemal microtubule doublets and modulates motor movement.** *Developmental cell*
  Tran, M. V., Khuntsariya, D., Fetter, R. D., Ferguson, J. W., Wang, J. T., Long, A. F., Cote, L. E., Wellard, S. R., Vazquez-Martinez, N., Sallee, M. D., Genova, M., Magiera, M. M., Eskinazi, et al
  2023

- **Persistent cell contacts enable E-cadherin/HMR-1- and PAR-3-based symmetry breaking within a developing C. elegans epithelium.** *Developmental cell*
  Naturale, V. F., Pickett, M. A., Feldman, J. L.
  2023

- **Context matters: Lessons in epithelial polarity from the Caenorhabditis elegans intestine and other tissues.** *Current topics in developmental biology*
  Naturale, V. F., Pickett, M. A., Feldman, J. L.
  2023; 154: 37-71

- **Separable mechanisms drive local and global polarity establishment in the C. elegans intestinal epithelium.** *Development (Cambridge, England)*
  Pickett, M. A., Sallee, M. D., Cote, L., Naturale, V. F., Akpinaroglu, D., Lee, J., Shen, K., Feldman, J. L.
  2022

- **Won't You be My Neighbor: How Epithelial Cells Connect Together to Build Global Tissue Polarity.** *Frontiers in cell and developmental biology*
  Cote, L. E., Feldman, J. L.
  2022; 10: 887107

- **A proximity labeling protocol to probe proximity interactions in C.elegans.** *STAR protocols*
  Sanchez, A. D., Feldman, J. L.
  1800; 2 (4): 100986

- **Proximity labeling reveals non-centrosomal microtubule-organizing center components required for microtubule growth and localization.** *Current biology : CB*
  Sanchez, A. D., Branon, T. C., Cote, L. E., Papagiannakis, A., Liang, X., Pickett, M. A., Shen, K., Jacobs-Wagner, C., Ting, A. Y., Feldman, J. L.
  2021
- **Apical PAR complex proteins protect against programmed epithelial assaults to create a continuous and functional intestinal lumen.** *eLife*
  Sallee, M. D., Pickett, M. A., Feldman, J. L.
  2021; 10
- **Microtubule organization across cell types and states** *CURRENT BIOLOGY*
  Sallee, M. D., Feldman, J. L.
  2021; 31 (10): R506-R511
- **Microtubule organization across cell types and states.** *Current biology : CB*
  Sallee, M. D., Feldman, J. L.
  2021; 31 (10): R506-R511
- **Centriole-less pericentriolar material serves as a microtubule organizing center at the base of C.elegans sensory cilia.** *Current biology : CB*
  Magescas, J., Eskinazi, S., Tran, M. V., Feldman, J. L.
  2021
- **Inherited apicobasal polarity defines the key features of axon-dendrite polarity in a sensory neuron.** *Current biology : CB*
  Lee, J., Magescas, J., Fetter, R. D., Feldman, J. L., Shen, K.
  2021
- **Visualizing the metazoan proliferation-quiescence decision in vivo.** *eLife*
  Adikes, R. C., Kohrman, A. Q., Martinez, M. A., Palmisano, N. J., Smith, J. J., Medwig-Kinney, T. N., Min, M., Sallee, M. D., Ahmed, O. B., Kim, N., Liu, S., Morabito, R. D., Weeks, et al
  2020; 9
- **Visualizing the metazoan proliferation-quiescence decision in vivo** *ELIFE*
  Adikes, R. C., Kohrman, A. Q., Martinez, M. A. Q., Palmisano, N. J., Smith, J. J., Medwig-Kinney, T. N., Min, M., Sallee, M. D., Ahmed, O. B., Kim, N., Liu, S., Morabito, R. D., Weeks, et al
  2020; 9
- **Growth cone-localized microtubule organizing center establishes microtubule orientation in dendrites.** *eLife*
  Liang, X., Kokes, M., Fetter, R. D., Sallee, M. D., Moore, A. W., Feldman, J. L., Shen, K.
  2020; 9
- **Higher order cytoskeletal structures.** *Molecular biology of the cell*
  Avasthi, P. n., Feldman, J. L.
  2020; 31 (6): 398
- **A two-step mechanism for the inactivation of microtubule organizing center function at the centrosome.** *eLife*
  Magescas, J., Zonka, J. C., Feldman, J. L.
  2019; 8
- **Author Correction: Efficient proximity labeling in living cells and organisms with TurboID.** *Nature biotechnology*
  Branon, T. C., Bosch, J. A., Sanchez, A. D., Udeshi, N. D., Svinkina, T. n., Carr, S. A., Feldman, J. L., Perrimon, N. n., Ting, A. Y.
  2019
- **A Polarizing Issue: Diversity in the Mechanisms Underlying Apico-Basolateral Polarization In Vivo.** *Annual review of cell and developmental biology*
  Pickett, M. A., Naturale, V. F., Feldman, J. L.
  2019
- **Efficient proximity labeling in living cells and organisms with TurboID** *NATURE BIOTECHNOLOGY*
  Branon, T. C., Bosch, J. A., Sanchez, A. D., Udeshi, N. D., Svinkina, T., Carr, S. A., Feldman, J. L., Perrimon, N., Ting, A. Y.
  2018; 36 (9): 880-+

- **Tissue-specific degradation of essential centrosome components reveals distinct microtubule populations at microtubule organizing centers.** *PLoS biology*
  Sallee, M. D., Zonka, J. C., Skokan, T. D., Raftrey, B. C., Feldman, J. L.
  2018; 16 (8): e2005189
- **Cytoskeletal variations in an asymmetric cell division support diversity in nematode sperm size and sex ratios** *DEVELOPMENT*
  Winter, E. S., Schwarz, A., Fabig, G., Feldman, J. L., Pires-daSilva, A., Mueller-Reichert, T., Sadler, P. L., Shakes, D. C.
  2017; 144 (18): 3253–63
- **Microtubule-organizing centers: from the centrosome to non-centrosomal sites** *CURRENT OPINION IN CELL BIOLOGY*
  Sanchez, A. D., Feldman, J. L.
  2017; 44: 93-101
- **Microtubule-organizing centers: from the centrosome to non-centrosomal sites.** *Current opinion in cell biology*
  Sanchez, A. D., Feldman, J. L.
  2016
- **Flipping the switch: regulating MTOC location.** *Cell cycle (Georgetown, Tex.)*
  Sallee, M. D., Feldman, J. L.
  2015; 14 (22): 3519-20
- **SPD-2/CEP192 and CDK Are Limiting for Microtubule-Organizing Center Function at the Centrosome** *CURRENT BIOLOGY*
  Yang, R., Feldman, J. L.
  2015; 25 (14): 1924-1931
- **SPD-2/CEP192 and CDK Are Limiting for Microtubule-Organizing Center Function at the Centrosome.** *Current biology : CB*
  Yang, R., Feldman, J. L.
  2015; 25 (14): 1924-31
- **Quantitative analysis and modeling of katanin function in flagellar length control** *MOLECULAR BIOLOGY OF THE CELL*
  Kannegaard, E., Rego, E. H., Schuck, S., Feldman, J. L., Marshall, W. F.
  2014; 25 (22): 3686-3698
- **The Kinase Regulator Mob1 Acts as a Patterning Protein for Stentor Morphogenesis** *PLOS BIOLOGY*
  Slabodnick, M. M., Ruby, J. G., Dunn, J. G., Feldman, J. L., DeRisi, J. L., Marshall, W. F.
  2014; 12 (5)
- **Cell Interactions and Patterned Intercalations Shape and Link Epithelial Tubes in C. elegans** *PLOS GENETICS*
  Rasmussen, J. P., Feldman, J. L., Reddy, S. S., Priess, J. R.
  2013; 9 (9)
- **A Role for the Centrosome and PAR-3 in the Hand-Off of MTOC Function during Epithelial Polarization** *CURRENT BIOLOGY*
  Feldman, J. L., Priess, J. R.
  2012; 22 (7): 575-582
- **C. elegans Germ Cells Show Temperature and Age-Dependent Expression of Cer1, a Gypsy/Ty3-Related Retrotransposon** *PLOS PATHOGENS*
  Dennis, S., Sheth, U., Feldman, J. L., English, K. A., Priess, J. R.
  2012; 8 (3)
- **A Cell-Based Screen for Inhibitors of Flagella-Driven Motility in Chlamydomonas Reveals a Novel Modulator of Ciliary Length and Retrograde Actin Flow** *CYTOSKELETON*
  Engel, B. D., Ishikawa, H., Feldman, J. L., Wilson, C. W., Chuang, P., Snedecor, J., Williams, J., Sun, Z., Marshall, W. F.
  2011; 68 (3): 188-203
- **ASQ2 Encodes a TBCC-like Protein Required for Mother-Daughter Centriole Linkage and Mitotic Spindle Orientation** *CURRENT BIOLOGY*
  Feldman, J. L., Marshall, W. F.
  2009; 19 (14): 1238-1243
- **Katanin Knockdown Supports a Role for Microtubule Severing in Release of Basal Bodies before Mitosis in Chlamydomonas** *MOLECULAR BIOLOGY OF THE CELL*

Rasi, M. Q., Parker, J. D., Feldman, J. L., Marshall, W. F., Quarmby, L. M.
2009; 20 (1): 379-388

- **The mother centriole plays an instructive role in defining cell geometry** *PLOS BIOLOGY*
  Feldman, J. L., Geimer, S., Marshall, W. F.
  2007; 5 (6): 1284-1297
- **Retinoic acid signaling restricts the cardiac progenitor pool** *SCIENCE*
  Keegan, B. R., Feldman, J. L., Begemann, G., Ingham, P. W., Yelon, D.
  2005; 307 (5707): 247-249
- **PCR-based assay for mating type and diploidy in Chlamydomonas** *BIOTECHNIQUES*
  Zamora, I., Feldman, J. L., Marshall, W. F.
  2004; 37 (4): 534-536
- **Centrioles: Bad to be bald?** *CURRENT BIOLOGY*
  Feldman, J. L., Marshall, W. F.
  2004; 14 (16): R659-R660
- **The elongation factors Pandora/Spt6 and Foggy/Spt5 promote transcription in the zebrafish embryo** *DEVELOPMENT*
  Keegan, B. R., Feldman, J. L., Lee, D. H., Koos, D. S., Ho, R. K., Stainier, D. Y., Yelon, D.
  2002; 129 (7): 1623-1632
- **Genetic regulation of cardiac patterning in zebrafish** *Cold Spring Harbor Symposium on Quantitative Biology*
  Yelon, D., Feldman, J. L., Keegan, B. R.
  COLD SPRING HARBOR LAB PRESS, PUBLICATIONS DEPT.2002: 19–25