

Lyndsay M. Murrow, Ph.D.

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Education

- 2008-2014 University of California, San Francisco, CA
Ph.D. in Biomedical Sciences
- 2002-2006 Stanford University, Stanford, CA
B.S. in Chemical Engineering with Distinction

Research Positions & Training

- 2014-present Postdoctoral Fellow, University of California, San Francisco
Advisor: Dr. Zev Gartner
Collaborators: Dr. Thea Tlsty (UCSF) and Dr. Matthew Thomson (Caltech)
Research: Quantitative single-cell analysis of person-to-person variability in breast tissue composition and cell communication networks
- 2008-2014 Graduate Student, University of California, San Francisco
Advisor: Dr. Jay Debnath
Thesis: Molecular and cellular mechanisms of homeostatic autophagy and endolysosomal trafficking
- 2006-2008 Postbaccalaureate Fellow, National Cancer Institute
Advisor: Dr. Stanley Lipkowitz
Research: Identification of therapeutic targets in basal-type breast cancer
- 2005 Summer Intern, Genentech Department of Molecular Oncology
Advisor: Dr. Elizabeth Blackwood
Research: Correlation of *in vivo* target modulation with tumor growth inhibition by a lead drug candidate
- 2003-2006 Undergraduate Research Assistant, Stanford University
Advisor: Dr. Theo Palmer
Research: Mechanisms of inflammation-mediated impairment of adult neurogenesis

Grants and Fellowships

- 2016-2019 Damon Runyon Postdoctoral Fellowship
2010-2013 National Science Foundation Graduate Research Fellowship
2009-2010 Roche Molecular Systems Scholar, Achievement Award for College Scientists
2006-2008 National Cancer Institute Postbaccalaureate Cancer Research Training Award
2004 Howard Hughes Medical Institute Summer Research Fellowship

Publications

1. **Murrow LM**, Weber RJ, Caruso J, McGinnis CS, Gascard P, Borowsky AD, Desai TA, Thomson M, Tlsty T, and Gartner ZJ. Changes in epithelial proportions and transcriptional state underlie major premenopausal breast cancer risks. *bioRxiv*, 430611. doi:10.1101/430611.
2. **Murrow LM** and Gartner ZG (2019). Balancing Act: Cell Polarity and Shape Compete to Ensure Robust Development. *Development (Preview)*, 51(5), 545-547.
3. McGinnis CS, Patterson DM, Winkler J, Conrad DN, Hein MY, Srivastava V, Hu JL, **Murrow LM**, Weissman JS, Werb Z, Chow ED, Gartner ZJ (2019) MULTI-seq: sample multiplexing for single-cell RNA sequencing using lipid-tagged indices. *Nature Methods*, 16, 619-626. doi:10.1038/s41592-019-0433-8.
4. McGinnis CS, **Murrow LM**, and Gartner ZJ (2019). DoubletFinder: Doublet detection in single-cell RNA sequencing data using artificial nearest neighbors. *Cell Systems*, 8(4), 329-337.
5. **Murrow L** and Debnath J (2018). Atg12–Atg3 Coordinates Basal Autophagy, Endolysosomal Trafficking, and Exosome Release. *Molecular and Cellular Oncology (Author's Views Research Highlight)*. 5(5), e1039191. doi:10.1080/23723556.2015.1039191.
6. **Murrow LM**, Weber RJ, and Gartner ZJ (2017). Dissecting the stem cell niche with organoid models: an engineering-based approach. *Development (Review)*. 144, 998-1007.
7. **Murrow L** and Debnath J (2015). ATG12–ATG3 connects basal autophagy and late endosome function. *Autophagy (Autophagic Punctum Research Highlight)*. 11, 961-962.
8. **Murrow L**, Malhotra R, and Debnath J (2015). ATG12–ATG3 interacts with Alix to control basal autophagy and late endosome function. *Nature Cell Biology*. 17, 300-310.
9. **Murrow L** and Debnath J (2015). A nuclear option that initiates autophagy. *Molecular Cell (Preview)*. 57, 456-466.
10. **Murrow L** and Debnath J (2013). Autophagy as a stress-response and quality-control mechanism: implications for cell injury and human disease. *Annual Review of Pathology (Review)*. 8, 105-137.
11. Stehbens S, Pemble H, **Murrow L**, and Wittmann T (2012). Imaging intracellular protein dynamics by spinning disk confocal microscopy. *Methods in Enzymology (Book chapter)*. 504, 293-313.
12. Radoshevich L, **Murrow L**, Chen N, Fernandez E, Roy S, Fung C, and Debnath J (2010). ATG12 conjugation to ATG3 regulates mitochondrial homeostasis and cell death. *Cell*. 142, 590-600.
13. **Murrow LM***, Garimella SV*, Jones TL, Caplen NJ, and Lipkowitz S (2010). Identification of WEE1 as a potential molecular target in cancer cells by RNAi screening of the human tyrosine kinome. *Breast Cancer Research and Treatment*. 122, 347-357.

* equal contribution

Talks and Seminars

Invited Talks

Single-cell dissection of breast cancer risk: Changes in epithelial proportions and transcriptional state underlie major premenopausal breast cancer risks. EMBL Barcelona Research Seminar, 2020 November 17; virtual presentation.

Mapping heterogeneity in epithelial composition and hormone signaling in the human breast. MCL Genomics and Genotyping Working Group Meeting, 2020 October 9; virtual presentation.

Single-cell dissection of breast cancer risk: How reproductive history and body mass influence epithelial cell proportions and hormone signaling. UCSC Stem Cell Seminar, 2019 December 11; Santa Cruz, CA.

Single-cell RNA sequencing maps the cellular response to cycling estrogen and progesterone in the human breast. UCSF Breast Oncology Program Seminar, 2018 October 31; San Francisco, CA.

Talks

Changes in epithelial proportions and transcriptional state underlie major premenopausal breast cancer risks. Intersections Science Fellows Symposium, 2021 January 6-8; virtual presentation.

Mapping the complex paracrine response to hormones in the human breast at single-cell resolution. American Society for Cell Biology 2020 Annual Meeting, 2020 December 8; virtual presentation.

Mapping Breast Cancer Risk. UCSF Postdoc Slam Competition, 2018 September 26; San Francisco, CA. (*Awarded 3rd place*)

Single-cell RNA sequencing maps the cellular response to cycling estrogen and progesterone in the human breast. Center for Cellular Construction Annual Retreat. 2018 July 17-18; Tiburon, CA.

Single-cell analysis of the healthy human breast reveals insights into the cellular basis of breast cancer risk. UCSF Research in Progress Seminar. 2017 Sep 22; San Francisco, CA.

Interrogating how tissue self-organization coordinates stem cell fate decisions. Stem Cells and Cancer Gordon Research Seminar. 2017 Feb 11; Barga, Italy.

Reconstituting the mammary stem cell niche. UCSF Stem Cell Workshop. 2016 Nov 15; San Francisco, CA.

Degradation and rebuilding: from “self-eating” to synthetic biology. Pharmaceutical Chemistry Postdoc Seminar Series. 2016 March 2; San Francisco, CA.

Atg12-Atg3 conjugation in mitochondrial homeostasis. UCSF Biomedical Sciences Student Research Talks. 2011 December 5; San Francisco, CA.

Identification of Wee1 as a molecular target in basal-type breast cancer by an siRNA screen of the human kinome. National Cancer Institute Center for Cancer Research Fellows and Young Investigators Colloquium. 2008 March 3-5; Ocean City, MD.

Poster Presentations

1. **Murrow LM**, Weber RJ, Caruso J, McGinnis CS, Gascard P, Tlsty T, and Gartner ZJ. Pregnancy and obesity modify the epithelial composition and hormone signaling state of the human breast. Breast Oncology Program Retreat, 2020 Feb 20; San Francisco, CA.
2. **Murrow LM**, Weber RJ, Caruso J, McGinnis CS, Borowsky AD, Desai TA, Thomson M, Tlsty T, and Gartner ZJ. Single-cell RNA sequencing maps the cellular response to cycling estrogen and progesterone in the human breast. ASCB Annual Meeting, 2018 Dec 8-12; San Diego, CA.
3. **Murrow LM**, Weber RJ, Caruso J, McGinnis CS, Borowsky AD, Desai TA, Thomson M, Tlsty T, and Gartner ZJ. Single-cell RNA sequencing maps the cellular response to cycling estrogen and progesterone in the human breast. Santa Cruz Developmental Biology Conference, 2018 Aug 11-15; Santa Cruz, CA. (*Awarded best poster*)
4. **Murrow LM**, Srivastava V, Weber RJ, and Gartner ZJ. Interrogating how tissue self-organization coordinates stem cell fate decisions. Stem Cells and Cancer Gordon Research Conference. 2017 Feb 12-17; Barga, Italy.

5. **Murrow LM**, Srivastava V, Weber RJ, and Gartner ZJ. Interrogating how tissue self-organization coordinates stem cell fate decisions. Stem Cells and Cancer Gordon Research Seminar. 2017 Feb 11-12; Barga, Italy.
6. **Murrow LM**, and Gartner ZJ. Reconstituting the mammary stem cell niche. American Society for Cell Biology 2016 Annual Meeting. 2016 Dec 3-7; San Francisco, CA. Abstract P733 in MBoC, 27.
7. **Murrow L** and Debnath J. A novel role for ATG12–ATG3 conjugation in the control of late endosome function. American Society for Cell Biology 2013 Annual Meeting. 2013 Dec 13-18; New Orleans, LA. Abstract 2246 in MBoC, 24.
8. Garimella S, **Murrow L**, Caplen N, and Lipkowitz S. Identification of Wee1 as a molecular target in basal-type breast cancer by an siRNA screen of the human kinome. 100th Annual Meeting of the American Association for Cancer Research. 2009 April 18-22; Denver, CO. Abstract 2842.

Mentorship

2020	Gabby Rabadam, UCSF/Berkeley Bioengineering rotation and graduate student <i>Current status:</i> Graduate student, Gartner Lab, UCSF
2018	Kirby Leo, Johns Hopkins University summer undergraduate student <i>Current status:</i> IRTA fellow, National Institutes of Health
2018-present	Kiet Phong, UCSF/Berkeley Bioengineering graduate student <i>Current status:</i> Graduate student, Gartner Lab, UCSF
2018	Training Researchers and Interns for Upcoming Professors (TRAIN-UP) inclusive research mentoring workshop series
2017-present	Chris McGinnis, UCSF Tetrad rotation and graduate student <i>Current status:</i> Graduate student, Gartner Lab, UCSF
2017	Discussion Leader - Stem Cells and Cancer Gordon Research Seminar Mentorship Component: Exploring Diverse Career Options Post-Training
2016	Daniel Wong, UCSF Biomedical Sciences rotation student <i>Current status:</i> L.E.K. Consulting
2015-2016	Efren Reyes, UCSF Tetrad graduate student <i>Current status:</i> Graduate student, Gartner Lab/Klein Lab, UCSF

Teaching

2016	Science Teaching Effectiveness Program for Upcoming Professors (STEP-UP) workshop series
2010-2013	Biomedical Sciences Cell Biology course - tutor
2009	Biomedical Sciences Cell Biology course - teaching assistant
2006	Introduction to Biotechnology course - teaching assistant
2005-2006	Introduction to Chemical Engineering course - teaching assistant
2003-2005	Health Education for Life Partnership - regular K-8 classroom teaching

Professional Activities and Service

2020 Volunteer coordinator - Chan Zuckerberg Biohub COVID-19 CLIA testing facility
2010-2016 Ad hoc reviewer - PLOS ONE, Cell Metabolism, Journal of Cell Science, Autophagy
2013 Volunteer - American Society for Cell Biology Annual Meeting Graduate School Fair
2011 Volunteer - UCSF Biomedical Sciences NSF workshop
2009 Volunteer - Science and Health Education Partnership MAP to College event
2009 Student Admissions Committee member - UCSF Biomedical Sciences graduate program
2004-2006 Chair - Stanford Student Biodesign Speaker Series Committee

Awards

2021 Intersections Science Fellow
2018 3rd Place Finalist: UCSF Postdoc Slam Competition
2018 Best Poster: Santa Cruz Developmental Biology Conference
2006 Phi Beta Kappa Academic Honor Society
2006 Tau Beta Pi Engineering Honor Society

Society Memberships

2012-present American Society for Cell Biology
2003-2006 American Institute of Chemical Engineers

References

Zev Gartner (postdoctoral advisor)

Professor, Department of Pharmaceutical Chemistry, University of California San Francisco;
Investigator, Chan Zuckerberg Biohub; Co-Director and Research Coordinator, Center for
Cellular Construction

Jay Debnath (graduate advisor)

Distinguished Professor and Chair, Department of Pathology, University of California San
Francisco

Thea Tlsty (collaborator)

Professor, Department of Pathology, University of California San Francisco; Director, Center for
Translational Research in the Molecular Genetics of Cancer and the Program in Cell Cycling
and Signaling, Helen Diller Comprehensive Cancer Center, University of California San
Francisco

Matt Thomson (collaborator)

Assistant Professor, Division of Biology and Biological Engineering, Caltech; Investigator,
Heritage Medical Research Institute