

Teresa Monkkonen, PhD

Assistant Professor
Department of Biology
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EDUCATION

2016- 2022 | Postdoctoral Scholar, Dept. of Pathology, University of California, San Francisco

2016 | PhD, Cellular and Molecular Biology, Baylor College of Medicine, Houston, TX
Thesis Title: *Epithelial, Stromal, and Systemic Functions of Patched 1 in Mammary Gland Development*

2007 | B.S., Biochemistry and Cell Biology, Rice University, Houston, TX

RESEARCH EXPERIENCE

2016- 2022: Postdoctoral fellow
Advisor: Jay Debnath, MD
Dept. of Pathology
University of California, San Francisco

I investigated the functions of autophagy, a cellular stress response, in the tumor microenvironment and how this impacts tumor progression using breast and pancreatic tumor models. I used genetic autophagy ablation in fibroblasts and endothelial cells of mice, together with cell lines and primary cells, to further dissect the effects of autophagy inhibition as a targeted therapy strategy to treat cancer. I also secured two sources of funding, co-taught Genetics at San Francisco State University, collaborated with scientists in my lab and elsewhere, and mentored various trainees during my postdoctoral fellowship that have gone onto be successful in biotech industry and graduate studies.

2010- 2016: PhD candidate
Advisor: Michael T. Lewis, PhD
Dept. of Molecular and Cellular Biology
Baylor College of Medicine, Houston, TX

I investigated tissue-compartment specific functions of hedgehog network genes in mammary gland organogenesis using animal models, with implications for premalignant breast lesions. This work led to a productive collaboration with Yi Ren, PhD and JoAnne Richards, PhD identifying physiological consequences of hedgehog network activation in the hypothalamus- pituitary-gonadal signaling axis.

6/2007- 6/2008: Junior Scientist
Advisor: Gary Nelsestuen, PhD
Dept. of Biochemistry and Molecular
Biology, and Biophysics
University of Minnesota, St. Paul, MN

I evaluated changes in the plasma and urine proteome resulting from metabolic diseases, and metabolic disease-associated surgical interventions by mass spectrometry (MALDI-TOF). I analyzed data and acted as lab manager.

6/2006- 6/2007: Undergraduate
research assistant
Advisor: James McNew, PhD

Dept. of Biochemistry and Cell Biology
Rice University, Houston, TX

I tested sufficiency for SNARE proteins to mediate vesicle fusion using a reconstituted liposome system and FRET in the *C. elegans* nervous system as part of a senior honors thesis.

FUNDING AND AWARDS

- 1/2024-1/2025: PI, SDSU Seed Funding grant \$7,500
- 1/2023-7/2024: PI, UCSD/ Moore's Cancer Center Recruitment Award, \$50,000
- 1/2023-8/2026: First Candidate, SDSU FUERTE/ NIH FIRST start-up funding
- 1/2019- 2/2022: PI, American Cancer Society- Jean Perkins Foundation Postdoctoral Fellowship PF-18-227-01-CSM Budget: \$163,500
- 8/2018-12/2018: UCSF IRACDA Scholar, NIH/NIGMS Budget: \$162,024
- 8/2017: T32 NCI Molecular Pathology in Cancer grant, declined
- 4/2013: Poster Finalist, MCB Department Symposium
- 4/2012: Travel Award, IABCR/ Breakthrough Breast Cancer Conference, Manchester, UK

PUBLICATIONS

In Review:

Lujano-Olazaba O, Farrow J, and **Monkkonen, T**. *Fibroblast Heterogeneity: Insights from Single Cell RNA Sequencing in Normal Wound Healing, Ovarian, and Breast Cancer*. *Frontiers in Genetics*.

1. Bachinger-Kawecka J, Correa S, Hu J, Li G, Lindebloom R, Misale S, **Monkkonen T**, Nirmal A, Prekovic S, Sinha S, Trigos A, Watson C. *The 2023 generation*. *Nature Cancer* 2023; 4:1630-35. PMID: 38102362.
2. Rudnick JA*, **Monkkonen T***, Mar FA, Barnes JM, Starobinets H, Goldsmith J, Roy S, Bustamente Eguiguren S, Weaver VM, and Debnath J. *Autophagy in stromal fibroblasts promotes tumor desmoplasia and mammary tumorigenesis*. *Genes and Development* 2021; 35: 963-975. PMID: 34168038 *denotes co-first authorship

3. **Monkkonen T**, Traustadottir G, and Koledova, Z. *Unraveling the Breast: Advances in Mammary Biology and Cancer Methods*. J. Mammary Gland Biology and Neoplasia 2021. PMID: 33479879
4. Leidal AM, Huang HH, Marsh T, Solvik T, Zhang D, Ye J, Kai F, Goldsmith J, Liu JY, Huang YS, **Monkkonen T**, Vlahakis A, Huang EA, Goodarzi H, Yu L, Wiita AP, and Debnath J. *The LC3-Conjugation Machinery Specifies the Loading of RNA-binding Proteins into Extracellular Vesicles*. Nature Cell Biology 2020; 22: 187-199. PMID: 31932738
5. Ren YA, **Monkkonen T**, Lewis MT, Bernard DJ, Christian HC, Jorgez CJ, Moore JA, Landua JD, Chin HM, Chen W, Singh S, Kim IS, Zhang XH, MacKay H, Waterland RA, Ljungberg MC, Saha PK, Hartig SM, Fiordeliso Coll T, Richards JS. *S100A4-Cre-mediated deletion of Patched1 causes hypogonadotropic hypogonadism: role of pituitary hematopoietic cells in endocrine regulation*. JCI Insight 2019; 4(14). PMID: 31265437
6. **Monkkonen T** and Debnath J. *Inflammatory Signaling Cascades and Autophagy in Cancer*. Autophagy 2017; 14:2. PMID: 28813180
7. **Monkkonen T** and Lewis MT. *New Paradigms for the Hedgehog Signaling Network in Mammary Gland Development and Breast Cancer*. Biochimica et Biophysica Acta Reviews on Cancer 2017; 1868: 315-322. PMID: 28624497
8. **Monkkonen T**, Landua JD, Visbal AP, and Lewis MT. *Epithelial and Non-Epithelial Patched-1 Play Opposing Roles to Regulate Proliferation and Morphogenesis of the Mouse Mammary Gland*. Development 2017; 144:1317-1327. PMID: 28275010
9. Zhang, Y, Oetting WS, Harvey SB, Stone MD, **Monkkonen T**, Matas AJ, Cosio FG, Nelsestuen GL. *Urinary Peptide Patterns in Native Kidneys and Kidney Allografts*. Transplantation 2009; 87: 1807-183. PMID: 19543057
10. Harvey SB, Zhang Y, Wilson-Grady J, **Monkkonen T**, Nelsestuen GL, Kasthuri RS, Verneris MR, Lund TC, Ely EW, Bernard GR, Zeisler H, Homoncik M, Jilma B, Swan T, and Kellogg TA. *O-Glycoside Biomarker of Apolipoprotein C3: Responsiveness to Obesity, Bariatric Surgery, and Therapy with Metformin, to Chronic or Severe Liver Disease and to Mortality in Severe Sepsis and Graft vs Host Disease*. J Proteome Res 2009; 8 (2):603–612. PMID: 19055479

TEACHING EXPERIENCE

8/2023-12/2023: Instructor, M BIO 601 Colloquium in Molecular Biology Research

1/2023-5/2023: Instructor, M BIO 600 Advanced Topics in Cell Biology

7/15/2019- 7/19/2019: HHMI Summer Institute on Scientific Teaching, participant

8/2018- 12/2018: I co-instructed 2 sections of Genetics for majors, BIOL 355, at San Francisco State University with the mentorship of Dr. Sally Pasion.

11/2016-5/2017: Volunteer Instructor, UCSF Science and Health Education Partnership.

1/15/2016: Attendee, Symposium from Center for Teaching Excellence at Rice University Symposium entitled “How Do We Learn and Why Does it Matter?”

10/14-10/15/2014: Attendee, DeLange Conference IX: Teaching in the University of Tomorrow, Rice University

This conference addressed the efficacy and implementation of new teaching techniques and discussed the future of higher education (role of MOOCs, online formats, etc).

1/2011-10/2011: Participant, weekly teaching seminar at Rice University for TA’s and graduate students.

10/2010-5/2011: Teacher, Citizen Schools program collaboration with Baylor College of Medicine graduate students.

MENTORING EXPERIENCE

Dates	Student/Program	Current Status
8/2023- current	Jeffrey Farrow, SDSU CMB M.S. program	SDSU student
8/2020-4/2021	2 students in Biology Undergrad and Masters Mentoring Program, UCSD (Virtual)	Undergraduate studies
9/2020-current	Sofia Bustamante Eguiguren (research tech)	PhD student, University of Oxford, U.K.
9/2019-11/2020	Ashley Quintana, UC Berkeley student	Research associate II at Biotech start up
12/2017-2018	Veronica Escalante, UCSF student	Postdoctoral Fellow, UC Berkeley
Summer 2018	Anthony Gacasan, UT Austin student	MD/ PhD student, Emory
5/2013-1/2014	Andrew Ta, Rice University student	Anesthesia Resident, U. Illinois Chicago
10/2012-1/2014	Sydnee Spruiell, University of Houston student	Imaging Field Applications Specialist

Student Thesis Committees

1. 12/2023- current: Franny Stein, Lab of Elana Elkin, M.S. Environmental Health Science
2. Hannah Budd, Lab of Ricardo Zayas, M.S. Cell and Molecular Biology

PRESENTATIONS AND INVITED TALKS

Oral Presentations and Guest Lectures

- Panelist, “Academic Track Faculty Positions: Finding the Right Institutional Fit”, Sanford Burnham Prebys, San Diego, CA (11/2023)
- Panelist, Sanford Burnham Prebys Rising Stars Symposium, San Diego, CA (5/2023)
- Guest Lecturer, MBO 610 San Diego State University (3/2023)
- Molecular Biology Institute Seminar, 1/2023
- Bioethics, Bioinformatics, and Molecular Bio Seminar, SDSU (11/2022)
- Gordon Research Seminar on Autophagy, Ventura, CA (planned: 3/2020)
- Invited Speaker, San Francisco State University, Molecular Cell and Microbiology Colloquium BIOL 871 (3/5/2020)
- Guest Lecture, City College of San Francisco BTEC 5 (11/2018)
- Gordon Research Seminar on Mammary Gland Biology, Mt. Snow, VT (6/2015)
- Molecular and Cellular Biology Department Symposium, BCM, Houston, TX (9/2014)
- Lester and Sue Smith Breast Center Educational Retreat, La Toretta, TX (9/2012)

Poster Presentations

- Autophagy, Inflammation, and Metabolism Center Early Career Investigator E-Symposium, Virtual, (11/2020)
- Gordon Research Conference on Autophagy, Ventura, CA (planned: 3/2020)
- National IRACDA Conference, Atlanta, GA (7/2018)
- North American Vascular Biology Organization (NAVBO), Monterey, CA (10/2017)
- Gordon Research Seminar on Mammary Gland Biology, Mt. Snow, VT (6/2015)
- Gordon Conference and Seminar on Mammary Gland Biology, Barga, Italy (6/2014)
- Gordon Conference on Mammary Gland Biology, Stowe, VT (6/2013)
- IABCR Breakthrough Breast Cancer Conference on epithelial-stromal interactions, Manchester, U.K. (4/2012)
- Gordon Research Seminar on Mammary Gland Biology, Stowe, VT (6/2013)
- Molecular and Cellular Biology Department Symposium, BCM, Houston, TX (Yearly, 2010-2015)
- Lester and Sue Smith Breast Center Educational Retreat, La Toretta, TX (Yearly, 2013-2015)

Abstracts

- Yi Athena Ren, **Teresa Monkkonen**, Daniel Bernard, Helen Christian, Carolina Jorgez, Joshua Moore, Mike Lewis, and JoAnne Richards. *A novel mouse model with Patched1 deletion in pituitary folliculo-stellate cells exhibits hypogonadotropic hypogonadism*. Society for the Study of Reproduction (July 2018).

- **T Monkkonen**, MT Lewis, JS Richards, and YA Ren. *Conditional depletion of the hedgehog pathway regulator Patched1 by S100a4 promoter-driven Cre recombinase impairs ovarian and pituitary functions and fertility in female mice.*
Selected for Oral Presentation
Society for the Study of Reproduction (July 2016)
- **T Monkkonen**, MT Lewis, JS Richards, and YA Ren. *Conditional depletion of the hedgehog pathway regulator Patched1 by S100a4 promoter-driven Cre recombinase impairs ovarian and pituitary functions and fertility in female mice.* Selected for Oral Presentation.
Texas Forum for Reproductive Sciences Conference (April 2016)

SERVICE AND LEADERSHIP

3/2023: San Diego State University S3 Symposium oral presentation judge

2/2023: Mentor, UCSD Moore's Cancer Partnership Speed Mentoring Workshop

2012-current: Reviewed papers for *Autophagy*, *Cell*, *Developmental Biology*, *J. Mammary Gland Biology and Neoplasia*, *Cancer Research*, and *Cell STAR Protocols*.

3/2020-12/2020: Guest Co-Editor, *Journal of Mammary Gland Biology* Special Methods Issue. I solicited and reviewed articles, gave feedback, and contributed to an overview article.

12/2017-6/2020: UCSF IMSD Mentoring Partnership (Initiative for Maximizing Student Diversity), mentor.

8/2017- 12/2018: UCSF IRACDA Scholar training program. This included PI-mentored grant writing workshops, career-related monthly meetings, IDP mentoring, teaching at SFSU, discussions of diversity and achievement in the classroom, and successfully navigating research relationships.

2018: Mentor participant with the UCSF/SFSU BUILD/ Bridges program. I participated in one-night events providing feedback, editing, and career exploration help to life science undergraduates from SFSU considering their next steps.

5/2018: UCSF TRAIN-UP (Training Researchers and Interns for Upcoming Professors program. This program covered effective practices for hiring, mentoring, delivering feedback, and integrating work styles for supervising in the university lab environment.

5/2017: UCSF STEP-UP (Evidence Based Teaching Training Program for Upcoming Professors). This course addressed current, evidence based teaching practices suitable for undergraduate and graduate courses, as well as how to cultivate an equitable classroom, develop appropriate assessment, and many other relevant topics.

3/17/2017-3/19/2017: National Postdoctoral Association Meeting, San Francisco, CA. Volunteer and Attendee at this meeting addressing career planning and outcomes of postdocs.

1/2011-5/2011: MCB Department Symposium Planning Committee, Baylor College of Medicine. I organized this symposium of 70 graduate students and a keynote speaker.