

Ashley M. Lakoduk, Ph.D.

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ACADEMIC BACKGROUND

Education

2019 **Ph.D.**, Biomedical Sciences (Cell and Molecular Biology) and Mechanisms of Disease and Translational Sciences, UT Southwestern Medical Center
2012 **MS**, Biology, University of California, San Diego
2008 **BS**, Molecular Biology, University of California, San Diego
Minors: Spanish Literature and Health Care

Appointments

2025-Present **Associate Director**, Pre-Health Professions Institute, Texas Christian University
2023-Present **Instructor**, Department of Biology, Texas Christian University
2022-2023 **Visiting Lecturer**, Department of Biology, Texas Christian University
2020-2022 **Assistant Professor of Instruction**, Department of Biology, University of Texas at Dallas
2019-2020 **Postdoctoral Fellow**, Department of Cell Biology, UT Southwestern Medical Center
2013-2019 **Graduate Research Assistant**, Department of Cell Biology, UT Southwestern Medical Center
2009-2010 **Teaching Assistant**, Department of Biology, University of California, San Diego
2008-2010 **Graduate Research Assistant**, Section of Cell and Developmental Biology, University of California, San Diego

TEACHING

Courses Taught

Instructor, Department of Biology, Texas Christian University, Fall 2023-Present

- Cellular, Molecular, and Developmental Biology. BIOL 30603. An upper-level course on the molecular genetics of cells and organisms, basic structure and function of plant and animal cells, and the mechanisms governing cell reproduction and differentiation.
- Unity of Life: Molecules to Cells. BIOL 10503. A lower-level course for science majors on the inner workings of cells, with the theme of examining the common biomolecular foundation of all living things.
- Molecular Biotechnology Laboratory Techniques. BIOL 40131. An upper-level course for science majors to develop an understanding of concepts and techniques currently in use in molecular biology and biotech research laboratories with an emphasis on learning how to use basic bioinformatics tools to analyze DNA sequences.

- Pre-Health Professional Development. SCIE 30613. An upper-level course intended to introduce students to the concept of professionalism within a healthcare context and the core competencies that future healthcare providers should possess. Students reflect on how their work, activities and life experiences have prepared them for a career in healthcare while developing written and verbal communication skills applicable to health professions and the professional school application process.

Visiting Lecturer, Department of Biology, Texas Christian University, Fall 2022-Spring 2023.

- Cellular, Molecular, and Developmental Biology. BIOL 30603. An upper-level course on the molecular genetics of cells and organisms, basic structure and function of plant and animal cells, and the mechanisms governing cell reproduction and differentiation.
- Contemporary Issues in Biology. BIOL 10003. A lower-level course for non-science majors survey course spanning the cellular and molecular to the ecosystem and biosphere levels of biological organization. Includes laboratory experiences conducted in the biology computer lab.

Assistant Professor of Instruction, Department of Biology, University of Texas at Dallas, Fall 2020-Summer 2022.

- Introduction to Modern Biology I. BIOL 2311. Fall 2020, Fall 2021. A lower-division course for science majors covering the fundamental concepts of modern biology, with an emphasis on the molecular and cellular basis of biological phenomena.
- Introductory Biology Laboratory. BIOL 2281. Spring 2021. Spring 2022. Lower-level majors course. Introductory lectures discuss the theoretical and historical aspects of the experiments carried out in the laboratory. Laboratory experiments introduce the student to bioinformatics, basic cellular biology, and structure and function of proteins and nucleic acids.
- Biochemistry I. BIOL 3361. Summer 2022. Upper-level majors course covering structures and chemical properties of amino acids; protein purification and characterization; protein structure and thermodynamics of polypeptide chain folding; catalytic mechanisms, kinetics and regulation of enzymes; energetics of biochemical reactions; generation and storage of metabolic energy associated with carbohydrates; oxidative phosphorylation and electron transport mechanisms; photosynthesis.
- Biochemistry II. BIOL 3362. Summer 2022. Upper-level majors course covering breakdown and synthesis of lipids; membrane structure and function; nitrogen metabolism and fixation; nucleotide metabolism; structure and properties of nucleic acids; sequencing and genetic engineering; replication, transcription, and translation; chromosome structure; hormone action; biochemical basis of certain pathological processes.
- Biochemistry Laboratory. BIOL 3380. Spring 2021, Fall 2021, Spring 2022. Upper-level majors course covering current techniques in the purification and characterization of enzymes to demonstrate fundamental principles that are utilized in modern biochemistry and molecular biology research laboratories.

- General Microbiology with Lab. BIOL 3520. Fall 2020, Summer 2021. Upper-level majors course covering microbial structure, diversity, growth and growth control, metabolism, genetics, and gene regulation. Additional topics covered are virology, immunology, and microbial diseases (plant and animal) including epidemiology, transmission, and host-microbe interactions. The laboratory focuses on developing laboratory skills in classical microbiology by the individual student.

Graduate Research Assistant, Graduate School Division of Basic Sciences, UT Southwestern Medical Center, Fall 2016-Spring 2018.

- CoNNECT (Cultivating Narrative for Effective Communication) Program. Developed curriculum for, project-managed and led a 10-week science communication program to improve PhD trainee verbal and writing skills. Facilitated training workshops that focus on translating basic biomedical concepts for a general audience by using narrative, or storytelling.
- KnowPath Program. Delivered workshops to help biomedical PhDs prepare for the job market through self-assessment and interview preparation techniques.

RESEARCH AND CREATIVE ACTIVITY

Peer-Reviewed Publications

Lakoduk AM, Lee CF, Chen PH. Gain-of-'endocytic'-function in mutant p53 cancer cells. *Int J Biochem Cell Biol.* 202. doi: 10.1016/j.biocel.2020.105905

Bhave M, Mino R, Wang X, Lee J, Grossman HM, **Lakoduk AM**, Danuser G, Schmid SL, Mettlen M. Functional characterization of 67 endocytic accessory proteins using multi-parametric quantitative analysis of CCP dynamics. *Proc Natl Acad Sci USA.* 2020. doi: 10.1073/pnas.2020346117

Lakoduk AM, Kadlecova Z, Schmid SL. A functionally neutral single chain antibody to measure beta-1 integrin uptake and recycling. *Traffic.* 2020. doi: 10.1111/tra.12754

Lakoduk AM, Roudot P, Mettlen M, Grossman H, Schmid SL, Chen PH. Mutant p53 amplifies a dynamin-1/APPL1 endosome feedback loop that regulates recycling and migration. *J Cell Biol.* 2019. doi: 10.1083/jcb.201810183 (Selected as cover image. Highlighted in JCB Cancer Cell Biology 2020 collection).

Ditlev JA, Vega JR, Köster DV, Su X, **Lakoduk AM**, Vale RD, Mayor S, Jaqaman K, Rosen MK. A composition-dependent molecular clutch between T cell signaling condensates and actin. *eLife.* 2019. doi: 10.7554/eLife.42695

Elkin SR, **Lakoduk AM**, Schmid SL. Endocytic pathways and endosomal trafficking: a primer. *Wien Med Wochenschr.* 2016. doi: 10.1007/s10354-016-0432-7

Gerber DE, **Lakoduk AM**, Priddy LL, Yan J, Xie XJ. Temporal trends and predictors for cancer clinical trial availability for medically underserved populations. *The Oncologist*. 2015. doi: 10.1634/theoncologist.2015-0083

Charest PG, Shen Z, **Lakoduk AM**, Sasaki AT, Briggs SP, Firtel RA. A Ras signaling complex controls the RasC-TORC2 pathway and directed cell migration. *Dev Cell*. 2010. doi: 10.1016/j.devcel.2010.03.017 (Selected as cover image)

Non-Refereed Publications

Saenen B, Hatch A, Curry S, Proudman V, **Lakoduk AM**. Reimagining Academic Career Assessment: Stories of innovation and change. European University Association. 2021.

Presentations

Lakoduk AM, Roudot P, Mettlen M, Grossman HM, Schmid SL, Chen P. Mutant p53 activates a Dynamin-1/APPL1 endosome nexus downstream of EGFR/Akt to regulate beta-1 integrin recycling and migration. ASCB|EMBO. San Diego, CA. 2018.

Jackson KA, **Lakoduk AM**, Lundsteen NC. Pro Path: A comprehensive and experiential career development training program for postdoctoral fellows. National Postdoctoral Association. Cleveland, OH. 2018.

Lakoduk AM, Jackson KA, Lundsteen NC. CoCONNECT: A new program leveraging storytelling for biomedical PhDs to connect with their audiences. Graduate Career Consortium regional meeting. New Orleans, LA. 2018.

Lakoduk AM, Kadlecova Z, Han SJ, Schmid SL. The interaction of PIPKI gamma with AP2 regulates spatial and temporal focal adhesion dynamics in cells. ASCB. San Francisco, CA. 2016.

Gerber DE, **Lakoduk AM**, Priddy LL, Yan J, Xie XJ. Temporal trends and predictors for cancer clinical trial availability for medically underserved populations Translational Science. Washington, DC. 2016.

Lakoduk AM, Gerber DE, Priddy LL, Yan J, Xie XJ. Availability of oncology clinical trials for underserved populations. Texas Regional CTSA Consortium. Dallas, TX. 2015.

Lakoduk AM, Gerber DE, Priddy LL, Yan J, Xie XJ. Availability of oncology clinical trials for underserved populations. IASLC 15th Annual Targeted Therapies for the Treatment of Lung Cancer. Santa Monica, CA. 2015.

Research Experience

2019-2020 Postdoctoral Researcher, Schmid Lab, Department of Cell Biology, UT Southwestern Medical Center (Dallas, TX)

- Project: Conduct a genome-wide CRISPR-mediated knockout screen and epistasis analysis for the molecular regulators of early endosomal trafficking.
- 2013-2019 Graduate Research Assistant, Schmid Lab, Department of Cell Biology, UT Southwestern Medical Center (Dallas, TX)
Project 1: Quantitative analysis of integrin and focal adhesion turnover to study integration of early endocytic trafficking, signaling and migration.
Project 2: Development of new techniques and methods to detect rapid integrin and RTK uptake and recycling and new quantitative image analysis software.
- 2012-2013 Research Assistant II, Schmid Lab, Department of Cell Biology, UT Southwestern Medical Center (Dallas, TX)
Project: Regulation of clathrin-mediated endocytosis by hierarchical allosteric activation of AP2.
- 2011-2012 Research Assistant, Schmid Lab, Department of Cell Biology, The Scripps Research Institute (La Jolla, CA)
Project: Identifying the molecular regulators involved in the fidelity checkpoint of clathrin-mediated endocytosis.
- 2008-2010 Graduate Researcher, Firtel Lab, Section of Cell and Developmental Biology, University of California, San Diego (La Jolla, CA)
Project: Characterization of a novel protein, PHR, in regulating *Dictyostelium discoideum* chemotaxis.
- 2008 Undergraduate Senior Project, Cleveland Lab, Department of Cellular and Molecular Medicine, Ludwig Institute for Cancer Research (La Jolla, CA)
Project: Investigation of 10 post-translational modifications in the auto-inhibition of a cellular kinesin, CENP-E, and effects on cell cycle arrest.
- 2005-2007 Undergraduate Research Assistant, Mercola Lab, Sanford Burnham Prebys Medical Discovery Institute (La Jolla, CA)
Project: Roles of Nodal and Wnt antagonists in heart induction and cardiogenesis.

Clinical Experience

- 2016 Bedside to Bench Internship, Harold C. Simmons Cancer Center, UT Southwestern Medical Center. Mentor: Barbara Haley, MD. Built and maintained relationships with oncology Key Opinion Leaders. Gained further insight into cancer diagnosis, and personalized medicine.
- 2014 Clinical Research Immersion, Harold C. Simmons Cancer Center, UT Southwestern Medical Center. Mentor: David E. Gerber, MD. Became knowledgeable of all stages of cancer clinical trials, including IRB protocol development, patient enrollment and treatment modalities.

Awards and Grants

- 2019 ASCB Travel Award, Washington, DC.
- 2018 ASCB Travel Award, Regulation of Membrane Trafficking. San Diego, CA
- 2016 Burroughs Wellcome Fund Travel Award, Translational Science. Washington, DC
- 2016 ASCB Travel Award, Membrane Trafficking. San Francisco, CA

2015 NIH TL1 Pre-Doctoral Clinical Scholar Training Grant (1-year support)
2015 Best Poster Award, Texas Regional CTSA Consortium. Dallas, TX
2015 Travel Award, IASLC 15th Annual Targeted Therapies for the Treatment of Lung Cancer. Santa Monica, CA
2014 NIH T32 Mechanisms of Disease Training Grant (1-year support)
2013 HHMI Med into Grad Grant

SERVICE

Departmental Service

Member, Biology Department Nominations Committee, 2023-Present
Member, Biology Instructor Hiring Committee, 2024

College of Science and Engineering (CSE) Service

Member, Health Professions Advisory Council (HPAC), 2023-Present
Member, HPAC Scholarship Committee, 2023-Present
Member, HPAC Advisory Committee, 2024-2026 (2-year term)

University Service

Member, Quality Enhancement Plan (QEP) Implementation Team, 2023-2028

Student Advising, Engagement and Related Activities

Campus Advisor, Alpha Epsilon Delta Texas Zeta Chapter, Pre-Health Academic/Honors Society, 2025-Present
Campus Advisor, Society for Advancement of Chicanos/Hispanics and Native Americans in Science, Multicultural, Academic/Honors Society, 2024-Present
Annual Judge, College of Science and Engineering (CSE) Honors Research Forum, 2024-Present

Community Service

Volunteer, Latina STEM Fellowship, Fort Worth, TX, 2023
Science Fair Category Judge, Dallas Regional Science & Engineering Fair, Dallas, TX, 2018-2019, 2022
LGBTQ+ Youth Mentor and Volunteer, Youth First Program, Resource Center, Dallas, TX, 2017-2020
Volunteer, The Perot Museum of Nature and Science, Dallas, TX, 2014-2018
Volunteer Video Content Editor and Publisher, "Ask a Scientist" YouTube Program, SPEaC, Dallas, TX, 2014-2017

Professional Affiliations and Service

American Society for Cell Biology (ASCB)

Leadership

Founding Member and Co-Chair, LGBTQ+ Task Force, 2015-2021
Co-Chair, Career Development Committee, Committee for Postdocs and Students (COMPASS), 2019

Co-Chair, Communications Committee, COMPASS, 2016-2019

Service

Organizer, ASCB Meeting LGBTQ+ Diversity and Ally Sessions, 2015-2021

Organizer, ASCB Meeting Microsymposia Sessions, 2015-2019

Organizer, ASCB Meeting COMPASS Sessions, 2015-2019

Organizer, "Building Bridges Between Academia and Industry" Meeting, Philadelphia, PA, 2019

Selection Committee, ASCB Porter Prizes for Research Excellence, 2018

Selection Committee, ASCB Merton Bernfield Memorial Award, 2018

Member, ASCB Education Committee, 2017-2019

Selection Committee, ASCB COMPASS Outreach Grants, 2015-2019

Editor, ASCB "Emerging Voices" Blog, 2016-2018

American Society for Biochemistry and Molecular Biology (ASBMB)

Member, 2014-2018, 2022-Present

Texas Association of Advisors for the Health Professions (TAAHP)

Member, 2024-Present

Other Professional Development and Service Activities

Chan Zuckerberg Biohub

Consultant, Intellectual Property, 2020-2023

Draft and publish market summary statements to garner licensing opportunities for international scientific and technical patents.

Scientific Writer, 2020-2021

Provide scientific and technical writing assistance in the development of peer-reviewed manuscripts.

Declaration on Research Assessment (DORA)

Coordinator, Reimagining academic assessment: stories of innovation and change, Case Study. 2020-2021.

Editor, Blog/Newsletter/Social Media Presence, 2020

UT Southwestern Medical Center

Career and Professional Development Intern, Graduate School of Biomedical Science, 2017

Student Leadership Council (SLC), 2016-2017

Represented graduate students to the Office of the Dean for Student Affairs.

University of Texas System Student Advisory Council (UTSSAC), 2016-2017

Drafted and presented official recommendations on DEI standards and graduate mentor compacts to the UT System Chancellor and UT Board of Regents.

Communications and Marketing Intern, Center for Translational Medicine, 2016

Admissions Committee, Graduate School of Biomedical Science, 2015-2017
Assisted with graduate school recruitment efforts and admissions decisions.

Students Emerging Academy of Leaders (SEALs), 2015-2017
Conducted workshops aimed at promoting effective leadership skills for graduate and medical students.

Committee of Postdocs and Students (COPS), Department of Cell Biology, 2014-2017
Founding member. Organized and managed journal clubs, seminars, and departmental retreats

Science Policy Education and Communication (SPEaC) Club, 2014-2017
Coordinated outreach and communication programming, including facilitating communication and improvisation workshops. Created and project managed the "Ask A Scientist" outreach program.