Akanksha Thawani

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Current Position

2026–Present **Assistant Professor, Columbia University Irving Medical Center**
Department of Biochemistry and Molecular Biophysics

Education and Research Positions

2021–2025 **Damon Runyon Postdoctoral Fellow, University of California, Berkeley**
Advisors: Eva Nogales, Ph.D. & Kathleen Collins, Ph.D.
Topic: Mechanism of LINE-1 retrotransposon mobility in the human genome and development of programmable gene therapy platforms

2014–2020 **Ph.D., Princeton University, Chemical and Biological Engineering**
American Heart Association & Charlotte Elizabeth Procter Graduate Fellow
Advisors: Sabine Petry, Ph.D. & Howard A. Stone, Ph.D.
Thesis: Design principles of microtubule nucleation and mitotic spindle assembly

2019 **Visiting Research Scholar**
Department of Bioengineering, UC Berkeley
Mentor: Daniel A. Fletcher, Ph.D., D.Phil

2014–2016 **M.A., Princeton University**
Chemical and Biological Engineering, GPA 4.0/4.0

2010–2014 **B. Tech., Indian Institute of Technology Bombay, India**
Chemical Engineering and Computer Science, GPA 9.96/10
Institute Silver Medalist

Funding and Awards

Faculty

2025–2030 Burroughs Wellcome Fund Career Award at the Scientific Interface [560,000$]
2025–2027 Damon Runyon Dale F. Frey Award for Breakthrough Scientists [100,000$]

Post-doctoral

2025 NIH K99/R00 Pathway to Independence Award (*declined*)
2021–2025 Damon Runyon Cancer Research Postdoctoral Fellowship [272,000$] [press]
2024 STAT Wunderkind [press]
2024 MIT Technology Review 35 Under 35 Innovators *Asia Pacific* [press]
2024 Rockefeller Exceptional Scholar, The Rockefeller University
2024 Eddie Méndez Award, Fred Hutchinson Cancer Center
2024 Emerging Leader, Memorial Sloan Kettering Cancer Center
2024 Rising Star Award, Salk Institute for Biological Sciences
2024 MCB Outstanding Postdoc Award, UC Berkeley
2023 Leading Edge Fellow
2023 UC President's Fellow, Lindau Nobel Laureate Meeting in Physiology & Medicine [press]
2023 Best Talk Award, Bay Area RNA Club, UCSF
2021 Life Sciences Research Foundation Postdoctoral Fellowship (*withdrawn*)

Graduate

2020 Harold M Weintraub Graduate Student Award, Fred Hutch Center [press] [news]
2019–2020 Charlotte E Procter Honorific Fellowship, Princeton University [42,000$] [press]
2017–2019 American Heart Association Predoctoral Fellowship [54,000$] [press]
2014–2019 Francis Upton Graduate Fellowship, Princeton University [20,000$ supplement]
2017, 2019 William Schowalter Travel Award, Princeton University
2018 Physiology Post-course Research Grant, Marine Biological Laboratory
2017 Kristine M Layn Award, Princeton University
2017 Art of Science Exhibition Awardee, Princeton University [video]
2017 EMBO Travel Grant
2016 SABIC Graduate Student Award, Princeton University [press]
2016 Teaching Award, Princeton University

Undergraduate

2014 Institute Silver Medal, Indian Institute of Technology Bombay, India
2014 Chandrashekhar Women Engineer Award, IIT Bombay
2014 Industry-Academia Interface Scholarship, Oil and Natural Gas Corporation
2013 Shri Rakesh Mathur Excellence Award, IIT Bombay
2011 Undergraduate Research Award, IIT Bombay

Publications

Total # citations = 705. Published Work = 14 (8 first-author papers)

Thawani A#, Florez-Ariza AJ, Nogales E, Collins K. Template and target site recognition by human LINE-1 in retrotransposition. Nature, 2024. [link] (#corresponding author)
News and Views in Nature
Spotlight in Trends in Cancer
Press Release by UC Berkeley

Thawani A#*, Rodrigues-Vargas AJ*, Treeck BV, Hassan NT, Aledson D, Nogales E, Collins K. Structures of vertebrate R2 retrotransposon complexes during target-primed reverse transcription and after second strand nicking. Science Advances, 2025. [link] (#corresponding author, *co-first authors)

Thawani A#, Collins K, Nogales E. Structural and biochemical studies of mobile retrotransposon proteins in action. Current Opinion in Structural Biology, 2025. *[Invited Review]* [link] (#corresponding author)

Perez-Beroldi JM, Zhao Y, **Thawani A**, Yildiz A, Nogales E. HURP regulates Kif18A recruitment and activity to synergistically control microtubule dynamics. Nature Communications, 2024. [link]

Cammarata G, Erdogan B, ... **Thawani A**, ... Lowery LA. The TOG5 domain of CKAP5 is required to interact with F-actin and promote microtubule advancement in neurons. Molecular Biology of the Cell, 2024. [link]

Thawani A, Petry S. Molecular insight into how the γ-Tubulin Ring Complex makes microtubules.
Journal of Cell Science, 2021 [Invited Review, link]

Thawani A, Rale MJ, Coudray N, Bhabha G, Shaevitz JW, Stone HA, Petry S. The transition state and regulation of γ-TuRC-mediated microtubule nucleation revealed by single molecule microscopy.
eLife, 2020 [link]

Alfaro-Aco R, **Thawani A**, Petry S. Biochemical reconstitution of branching microtubule nucleation.
eLife, 2020 [link]

Thawani A, Stone HA, Shaevitz JW, Petry S. Spatiotemporal organization of branched microtubule networks.

eLife, 2019 [link]
Press Release by Princeton University
Press article in Scientific American
NSF news

Thawani A*, Kadzik RS*, Petry S. XMAP215 is a microtubule nucleation factor that functions synergistically with the gamma-tubulin ring complex. Nature Cell Biology, 2018 [link] (*co-first authors)
Cover in Nature Cell Biology
News and Views in Nature Cell Biology
Faculty 1000 recommendation
Press Release by Princeton University

Song JG, King MR, Zhang R, Kadzik RS, **Thawani A**, Petry S. Mechanism of how Augmin directly targets the γ-tubulin ring complex to microtubules. Journal of Cell Biology, 2018 [link]

Alfaro-Aco R, **Thawani A**, Petry S. Structural analysis of the role of TPX2 in branching microtubule nucleation. Journal of Cell Biology, 2017 [link]
Cover in Journal of Cell Biology

Thawani A, Tirumkudulu MS. Trajectory of a Model Bacterium. Journal of Fluid Mechanics, 2018 [link]

Thawani A, Rajeev R, Sunoj RB. On the Mechanism of the Dehydroaromatization of Hexane to Benzene by an Iridium Pincer Catalyst. Chemistry, 2013 [link]

Intellectual Property

Manipulation of LINE-1 ORF2p and template RNA for addition of DNA to a genome. Inventors: Collins K, **Thawani A**, Florez-Ariza AJ, McIntyre JM, Nogales E. *Provisional application filed*

Advanced Research Training

Summer 2018 **Physiology course**
Marine Biological Laboratory, Woods Hole, MA

Fall 2015 **Optical Microscopy and Computational Image Analysis courses**
Marine Biological Laboratory, Woods Hole, MA

Invited Talks

2025

Structural and Computational Biology Symposium, St. Jude Children's Research Hospital
FASEB Mobile DNA Conference, Porto, Portugal
Blake Weidenheft Lab Seminar, Montana State University MT
Genome Biology Unit Seminar, EMBL Heidelberg
Center of Virology and Vaccine Research, Beth Israel Deaconnes Medical Center
Biophysics and Biophysical Chemistry, Johns Hopkins School of Medicine
Department of Genetics, University of Pennsylvania Perelman School of Medicine
Whitehead Institute and MIT Biology
Lewis Sigler Institute of Genomics, Princeton University
Department of Chemical and Systems Biology, Stanford School of Medicine
Department of Biochemistry and Cellular Molecular Pharmacology, UCSF
Molecular Biology Program, Memorial Sloan Kettering Cancer Center
Department of Molecular Biology, UT Southwestern Medical Center
Department of Pharmacology, UT Southwestern Medical Center

2024

Molecular Biology and Genetics, Johns Hopkins School of Medicine
Department of Biochemistry and Molecular Biophysics, Columbia University
Institute of Molecular Pathology (IMP), Vienna, Austria
Bay Area Chemical Biology Symposium, Stanford University CA
Damon Runyon Annual Fellows Retreat, Southbridge MA
Eddie Méndez Award Symposium, Fred Hutch, Seattle WA
MERIT Workshop, Memorial Sloan Kettering Cancer Center, New York
Gordon Research Seminar on 3D Electron Microscopy, Barcelona, Spain
Rockefeller University Exceptional Scholars Workshop, New York NY
International Congress of Transposable Elements, Saint-Malo, France
RNA Microsymposium, IMP Vienna, Austria
Rising Star Postdoc Symposium, Salk Institute for Biological Sciences, San Diego
MCB Postdoc Research Showcase, UC Berkeley
Biophysics Graduate Seminar, UC Davis
Bay Area Chromatin Club meeting, Berkeley

2023

Bay Area RNA Club Annual meeting, UCSF, San Francisco, CA
Department of Molecular Genetics, Ohio State University, Columbus OH
National Center for Biological Sciences, Bangalore, India
Molecular Biophysics Unit, Indian Institute of Sciences Bangalore, India
Biosciences Department, Indian Institute of Technology Bombay, Mumbai, India
Biophysics and Structural Biology Division Retreat, UC Berkeley, Asilomar CA
Leading Edge Fellow Symposium, Ashburn VA

2017-2020

ICAhN Think and Drink series, Princeton University, Princeton NJ 2017, 2020
Bioengineering Colloquium, Princeton University, Princeton NJ 2019
HHMI Janelia Research Campus, Ashburn VA 2019
Department of Systems Biology, Harvard Medical School, Boston MA 2019
Molecular and Cell Biology, UC Berkeley, Berkeley CA 2019
North Atlantic Microscopy Society Inaugural Symposium, Princeton NJ 2018
Annual Meeting of American Society of Cell Biology. Philadelphia PA 2017
EMBO Workshop - Frontiers in cytoskeleton research. Pune, India 2017
BioEngineering Colloquium, Princeton University, Princeton NJ 2017
Molecular Biology Annual Retreat talk, Princeton University, Princeton NJ 2017

Poster Presentations (selected)

The Vallee Foundation Scholars Symposium, Stresa, Italy 2024
Genetics Society of America Annual Meeting, Washington D.C. 2024
Annual Meeting of American Society of Cell Biology, Washington D.C. 2019
Gordon Research Conference on Motile and Contractile Systems, New London NH 2019
Biophysical Society Annual Meeting, Baltimore MD 2019
Annual Meeting of American Society of Cell Biology, Philadelphia PA 2017

Teaching & Mentoring Experience

Guest Lecturer, MCB110 Molecular Biology Laboratory Course 2023
Instructed junior and senior undergraduates at UC Berkeley on crystallography, cryo-electron microscopy and cryo-electron tomography techniques for protein structure determination as a guest lecturer.

Laboratory Mentor, UC Berkeley, Berkeley CA 2021 - Present

I have mentored a molecular biology undergraduate researcher, Letian (Jane) Li and biophysics graduate student, Juan Perez-Bertoldi, both from underrepresented backgrounds with their research to develop new projects from ground-up. Juan's PhD project in the Nogales lab related to structural biology of microtubule nucleation proteins is in review for publication.

Research Instructor, Marine Biological Laboratory, Woods Hole MA 2019
Supervised a team of researchers with designing and executing a research project as a part of MBL's historical Physiology course. We isolated tubulin from marine organisms and measuring the microtubule dynamics from these uncharacterized tubulins.

Laboratory Mentor, Princeton University, Princeton NJ 2017 - 2020
Mentored two graduate students, Bernardo Gouveia and Katelyn Cook, during their lab rotations. Bernardo continued his outstanding research in the lab. I also mentored an undergraduate researcher, Sarah Jun, for her junior and senior theses. Sarah's work will be published in an upcoming research article, and she is now pursuing her next career step in the public health.

Instructor, Princeton Prison Teaching Initiative, Princeton NJ 2016 - 2017
As a member of the Prison Teaching Initiative at Princeton University, I co-led classroom instructions for Basic Algebra and Human Physiology courses towards tuition-free, community college degree for incarcerated youths in two of New Jersey's correctional facilities.

Programming Co-Instructor, Princeton Neuroscience Institute, Princeton NJ 2016
Assisted graduate students and postdoctoral fellows from Molecular Biology in learning Python programming language and applied mathematics.

Teaching Assistant, Princeton University, Princeton NJ 2016
Served as a assistant instructor for Thermodynamics course for sophomore and juniors in Chemical Engineering program. I selected for a Graduate Teaching Award for this course by the student body.

Service & Outreach

Reviewer 2018 - present
Served as a scientific reviewer for Science, Molecular Cell, PNAS, Journal of Cell Biology, and Journal of Visualized Experiments

Organizer, MCB Postdoc Research Showcase, UC Berkeley 2023
Co-organized the second annual symposium where postdoctoral fellows from Molecular and Cell Biology department come together to present their research. Social events include mixers with the department faculty and alumni postdocs.

Panelist, Damon Runyon Foundation Fundraiser 2022 - 2023
Served in scientific panels for fundraising events with the Damon Runyon Cancer Research Foundation.

College Application Reviewer, Princeton University, NJ 2021 - 2022
Reviewed college applications for biology and chemical engineering fields. Hosted discussions with the applicants to provide information on the courses and research on campus.

Panelist, Women in STEM series 2018 - 2019
Invited to serve on the annual Women in STEM panel hosted by the Montgomery High School in New Jersey to encourage women and minority high schoolers toward exciting STEM career opportunities.

Session Chair 2019
Gordon Research Seminar on Motile and Contractile Systems, NH

References

Dr. Eva Nogales (Postdoc mentor)
Distinguished Professor of Biochemistry, Biophysics and Structural Biology
Department of Molecular and Cell Biology, UC Berkeley and Lawrence Berkeley National Lab
Investigator, Howard Hughes Medical Institute

Email: enogales@lbl.gov

Dr. Kathleen Collins (Postdoc co-mentor)
Professor of Biochemistry, Biophysics and Structural Biology
Walter and Ruth Schubert Family Chair
Department of Molecular and Cell Biology, UC Berkeley
Email: kcollins@berkeley.edu

Dr. Sabine Petry &
Associate Professor
Department of Molecular Biology
Princeton University
Email: spetry@princeton.edu

Dr. Howard A. Stone (Graduate mentors)
Donald R. Dixon '69 and Elizabeth W. Dixon Professor
Department of Mechanical and Aerospace Engineering
Princeton University

Dr. Joanna Wysocka (Collaborator)
Lorry Lokey Professor and Professor of Developmental Biology
Department of Chemical and Systems Biology, Stanford University
Investigator, Howard Hughes Medical Institute
Email: wysocka@stanford.edu

Dr. Harmit S. Malik (Colleague)
Professor and Associate Director of Basic Sciences Division
Fred Hutchinson Cancer Center
Investigator, Howard Hughes Medical Institute
Email: hsmalik@fredhutch.org