Noorsher Ahmed

Postdoctoral Researcher

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EDUCATION

University of California San Diego, La Jolla - *PhD in Biomedical Sciences*
SEP 2017 - JAN 2024

Occidental College, Los Angeles - *BA in Biophysics*
AUG 2013 - MAY 2017

GRANTS AND AWARDS

NUCLEATE ACTIVATOR FINALIST (SAN DIEGO) & GENENTECH AWARD
2022

LINDAU NOBEL LAUREATE MEETING FELLOW
2021

UC SAN DIEGO GENETICS TRAINING GRANT
2018 for years G3-G4; Supported by NIGMS T-32 training grant

HARRY & GRACE STEELE FOUNDATION SCHOLARSHIP
2016

THEODORE S. & EDITH NEWELL BROWN SCHOLARSHIP
2014

W.M. KECK FOUNDATION SCHOLARSHIP
2014

PROFESSIONAL EXPERIENCE

Emma Lundberg Lab, Stanford University, Stanford, CA - *Postdoctoral Researcher*
AUG 2024 - Present

- Generative computer vision models for spatial proteomics
- Large scale pooled optical perturbation screening

AnyG Labs, Inc., La Jolla, CA - *Co-founder, Scientific Advisor*
FEB 2023 - Present

- Commercialization of optofluidic robotics for molecular biology for zero gravity environment genomics research in Low Earth Orbit (LEO) destinations including the ISS
- Co-authored successful NSF SBIR Phase I and NSF IGNITE non-dilutive grants

Gene Yeo Lab, UC San Diego, La Jolla, CA - *Postdoctoral Researcher*
APR 2024 - JUL 2024

- Established the Innovation Center in the new Sanford Stem Cell Research Institute, building the entire center from scratch
- Optofluidic robotic automation for scaling up of novel spatial method developed during PhD work (*Manuscript in preparation*)
- Novel adversarial computer vision models for cell segmentation for spatial transcriptomics in tissue

Gene Yeo Lab, UC San Diego, La Jolla, CA - *Graduate Researcher*
JAN 2018 - MAR 2024

- Developing novel *in situ* sequencing technology to interrogate mRNA localization at transcriptome scale with single-molecule resolution and sequence architecture information

- Co-developed Bento, a software toolkit for subcellular analysis of RNA distribution (https://github.com/YeoLab/bento-tools 28k downloads; 840 downloads/month; 73 stars)
- Independently supervised and mentored 3 Master's students, 2 full-time Research Technicians, & 10 undergraduates. 7 mentees have successfully gone on to PhD or MD programs.

AbbVie, inc., Redwood City, CA - *Research Intern*

MAY 2017 - AUG 2017

- Experimented with fluorescent barcoding for multiplexed PK/PD flow studies
- Prototyped the use of unsupervised clustering for automated analysis of multiplexed flow cytometry data
- Full Description pending legal approval

MioKun Biotechnologies, Berkeley, CA - *Consultant*

DEC 2016 - JAN 2017

- Commercialization of pump-free droplet microfluidics I developed in the Abate lab

Tierra Biosciences (previously Synvitrobio, Inc.)**, San Francisco, CA** - *Research Intern*

MAY 2016 - AUG 2016

- Early prototyping of rapid protein synthetic engineering in cell-free systems
- Optimized cell-free TX/TL system production
- Aided in completion of NSF STTR Phase I and DARPA SBIR Phase II grant-funded projects

Abate Lab, UCSF, San Francisco, CA - *Research Intern*

JUNE 2014 - JANUARY 2016

- Developed a novel centrifuge-based microfluidic platform for microfluidic commercialization applications
- Developed a novel method of double emulsion formation that eliminated the need for complex hydrophobic patterning in microfluidic devices
- Aided in the development of a novel single-cell genome sequencing technology (SiC-seq) for use in antibiotic drug discovery from diverse unculturable microbial communities
- Mentored a high school student during the summer

Baran Lab, Occidental College, Los Angeles, CA - *Student Research Assistant*

AUG 2014 - MAY 2017

- Studied *zer-1(rb2)*, a suppressor of *tba-1(ju89)*, a neurodegenerative disease causing mutation that modifies microtubule dynamics in *C. elegans*
- CRISPR screening of regulators of Katanin in *C. elegans*

PUBLICATIONS & PATENTS

- Mah C.K.*, **Ahmed, N***, Lopez N., Lam, D., Monell, A., Kern, C., Han, Y., Prasad., G., Cesnik, A.J., Lundberg, E., Zhu, Q., Carter, H., Yeo, G.W. *Bento: A toolkit for subcellular analysis of spatial transcriptomics data*. **Genome Biology** (2024).

- **Ahmed, N.** & Yeo, G.W. WRKR-B: A GRAVITATIONALLY RESILIENT AUTOMATED MOLECULAR BIOLOGY PLATFORM. Patent Disclosure SD2024-136-1. (2024)

- Le, P., **Ahmed N.**, Yeo, G.W. *Illuminating RNA biology through imaging*. **Nature Cell Biology** (2022)

- Boyle E.A., Goldberg, G., ... , **Ahmed N**., ..., Yeo, G.W. *Junior scientists spotlight social bonds in seminars for diversity, equity, and inclusion in STEM*. **Plos one** (2023)

- Morgan SC, Aigner S, Anderson C, [and 107 others, including **Ahmed N**]. *Automated, miniaturized, and scalable screening of healthcare workers, first responders, and students for SARS-CoV-2 in San Diego County*. **Cell Reports Medicine** [In Review]. 2021

- Wheeler EC, Vu AQ, Einstein JM, DiSalvo M, **Ahmed N**, Van Nostrand EL, Shishkin AA, Jin W, Allbritton NL, Yeo GW. *Pooled CRISPR screens with imaging on microraft arrays reveals stress granule-regulatory factors.* **Nat Methods**. 2020 PMID: 32393832

- Lan F, Demaree B, **Ahmed N**, Abate AR. *Single-cell genome sequencing at ultra-high-throughput with microfluidic droplet barcoding*. **Nat Biotechnol**. 2017. PMID: 28553940

- Sukovich DJ, Kim SC, **Ahmed N**, Abate AR. *Bulk double emulsification for flow cytometric analysis of microfluidic droplets*. **Analyst**. 2017. PMID: 29131209

- **Ahmed N**, Sukovich D, Abate AR. *Operation of droplet-microfluidic devices with a lab centrifuge*. **Micromachines** 2016. PMID: 30404331

*indicates co-authorship

PRESENTATIONS, POSTERS & SERVICE

- **Ahmed N,** & Lundberg E. Connecting Spatial Proteomics with Optical Pooled Screening. *Nobel Symposium*. Invited Talk. 2025

- **Ahmed N,** & Lundberg E. Talk title confidential. *Element Biosciences Global Commercial Meeting*. Invited talk. 2025

- Invited Peer Reviewer, Nat Communications. 2024

- **Ahmed N,** Pong A, Yeo GW. *RNA-Masala: A High-Performance Multi-task Generative Model for Cell Segmentation of Spatial Transcriptomic Data*. Poster presented at the Gordon Single Cell Conference, Les Diablaretes, Switzerland, 2024

- **Advisory Panel:** International Space Station National Laboratory Biomanufacturing Phase 2 Committee. Advised ISSNL leadership in a two day symposium with NASA and private sector advisors to determine the feasibility and best paths to establishing a biomanufacturing in low earth orbit. JFK Space Center, Florida, 2022

- **Ahmed N,** Mah C, Lopez N, Yeo GW. *Exploring Cardiotoxicity at the Subcellular Scale*. Invited Talk presented at the Resolve Biosciences *Spatial Day*, San Diego, CA, 2022

- **Ahmed N,** Mah C, Yeo GW. *Bento: A toolkit for subcellular RNA localization analysis*. Poster presented at the Gordon Single Cell Conference, Les Diablaretes, Switzerland, 2022

- **Ahmed N**, Graham M, Poster title confidential. Poster presented at AbbVie, Inc. Redwood City, CA, 2017.

LEADERSHIP

Stanford HAI Hoffman-Yee Virtual Cell Technical Deep Dive Meetings - *Chair & Host*

NOV 2024 - *PRESENT*

- Organized and hosted bi-weekly technical deep dives coordinating research projects between groups funded by Stanford HAI working on the Virtual Cell initiative

Stanford Bioengineering Postdoc Chalk Talk Series - *Chair & Host*

OCT 2024 - *PRESENT*

- Co-hosted and organised a chalk talk series for senior postdocs to practice their chalk talks in preparation for faculty job season
- In 2025, I am leading the expansion of the series to include talks by junior faculty and industry figures

Stanford Bioengineering Justice, Equity, and Diversity Task Force - *Postdoc representative*

NOV 2024 - *PRESENT*

- Help coordinate and organize DEI initiatives funded and supported by the Stanford Bioengineering Department.

UCSD/Chan Zuckerberg Initiative Diversity and Science Lecture Series - *Co-host*

OCT 2020 - JAN 2021

- Co-hosted and organised the CZI-supported virtual lecture series that highlighted two graduate or postdoctoral researchers from diverse backgrounds on their journey to scientific research and an overview of their work
- Built and managed the DASL series website

UCSD Biomedical Sciences Diversity Committee - *Committee member*

NOV 2019 - JAN 2024

- Council of students working with faculty, advocating for programs to improve diversity in our graduate program as well as support current URM students with mentorship and resources for academic and research success

UCSD Biomedical Sciences Admissions Committee - *Committee member*

OCT 2019 - JAN 2020

- Read and scored student applications
- Was on the student diversity sub-committee and read and advocated for URM applicants
- Helped organize and run the programs two recruitment weekends

People of Color in STEM, Occidental College - *Co-President*

NOVEMBER 2015 - MAY 2017

- Founded a student organisation to create new opportunities and provide resources such as mentorship programs and an exclusive textbook share program to help underrepresented minorities excel in the sciences.

TEACHING EXPERIENCE

Cold Spring Harbor Laboratory -Single Cell Analysis - *Invited Lecturer & Instructor*

JUL 2019, JUL 2022, JUL 2023, JUL 2024

- Taught advanced concepts in single-cell and spatial transcriptomics computational analysis to graduate students, postdocs, and junior faculty from across the country on spatial transcriptomic methods as well as the analysis of spatial data.

UC San Diego - BIOM200C - *Guest Lecturer*

FEB 2021

- Introduced concepts in computational techniques for studying RNA localization, including basic computer vision methods (*opencv, scikit-image*) and more recent advances for analyzing data generated by highly-multiplexed fluorescent *in-situ* hybridization methods (*starfish, scanpy*)

UC San Diego - BIPN-BMS Bioinformatics Bootcamp - *Guest Lecturer*

AUG 2020

- Introduced incoming first-year graduate students in BIPN and BMS programs to high-throughput microscopy image analysis methods ranging from basic GUI programs such as ImageJ and CellProfiler, to more advanced tools leveraging the Keras deep learning framework in Jupyter notebooks.

UC San Diego - BIOM200C - *Guest Lecturer*

MAR 2020

- Introduced concepts in computational techniques for studying RNA localization, including basic computer vision methods (*opencv, scikit-image*) and more recent advances for analyzing data generated by highly-multiplexed fluorescent *in-situ* hybridization methods (*starfish, scanpy*)

UC San Diego - BIPN150 - *Teaching Assistant*

JAN 2020 - MAR 2020

- Assisted in teaching an upper division undergraduate course on the diseases of the nervous system (ALS/SMA, Autism, Retts Syndrome, Prion disease, Alzheimer's and Parkinson's, etc.)
- Taught undergraduate students how to critically read and analyze recent published literature on novel therapeutics for neurological diseases
- Held weekly office hours

UC San Diego - BIOM200 - *Guest Lecturer*

OCT 2018

- Helped teach a class to first-year graduate students introducing concepts in bioinformatics
- Focused specifically on the usage of Python, R and bioinformatics pipelines such as STAR and bowtie2 to analyze sequencing data

University of Saint-Katherine - *Guest Lecturer*

APR 2018

- Taught an introduction to genomics
- Introduced methods for studying genomic expression such as single-cell sequencing and mutagenesis screens
- Taught students about CRISPR/Cas9 and its applicability to whole genome knockout screens

Critical Making Studio, Occidental College, Los Angeles - *Student Teacher*

JAN 2016 - MAY 2017

- Taught students AutoCAD as well as helped teach Python coding workshops
- Aided students in projects that involved the usage of Arduino, 3D printing, and CAD modelling