March 2, 2024

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APPOINTMENTS

2024- Associate Professor, Section of Genetic Medicine, Department of Medicine, University of Chicago, Chicago, IL
2016-2024 Assistant Professor, Section of Genetic Medicine, Department of Medicine, University of Chicago, Chicago, IL
2016-2020 Assistant Scientist (Joint Appointment), Center for Nanoscale Materials, Argonne National Laboratory, IL

Ph.D.-Granting Committee, Program, Institute, and Center Appointments

2017- Graduate Program in Biophysical Sciences
2017- Committee on Genetics, Genomics and Systems Biology
2018- Medical Scientist Training Program
2019- Associate Member, Comprehensive Cancer Center
2019- Committee on Cancer Biology
2023- Track Director, Computational Biology, College

ACADEMIC TRAINING

2000-2004 B.S., Physics; B.S., Computer Engineering, University of Arkansas, Fayetteville, AR
2003 Summer Research Internship, IBM T.J. Watson Research Center, Yorktown Heights, NY
2003 US Particle Accelerator School, University of California at Santa Barbara, CA
2004 Summer Research Internship, IBM T.J. Watson Research Center, Yorktown Heights, NY
2004-2012 Ph.D., Physics (Advisor: Dr. Arjun G. Yodh), University of Pennsylvania, Philadelphia, PA
2005 US Particle Accelerator School, Cornell University, NY
2012-2016 Postdoctoral Fellow, Applied Physics (Supervisor: Dr. David A. Weitz), Harvard University, Cambridge, MA; Klarman Cell Observatory (Supervisor: Dr. Aviv Regev), Broad Institute, Cambridge, MA

PROFESSIONAL MEMBERSHIP

2001-2004 Society of Physics Students, University of Arkansas, Fayetteville chapter
2009- American Physical Society
2017- American Association for the Advancement of Science
2018- *Human Cell Atlas* consortium

HONORS, PRIZES, AND AWARDS

2000 – 2004 Chancellor's Scholarship, University of Arkansas
2000 – 2004 Dean's list, College of Engineering, University of Arkansas
2003, 2005 Financial award to attend US Particle Accelerator School
2003 American Physical Society/IBM grant
2003 – 2004 Richardson Scholarship, University of Arkansas
2004 Lingelbach Award, University of Arkansas
2005 Financial award to attend US Particle Accelerator School
2018 Kavli Fellow, National Academy of Sciences
2018, 2019 Scialog Fellow of Research Corporation for Scientific Advancement & Gordon and Betty Moore Foundation
2020 NIH Director's New Innovator Award

SCHOLARSHIP

1. Q. Wen, **A. Basu**, J. Winer, A. Yodh and P. Janmey, *Local and global deformations in a strain-stiffening fibrin gel*, New Journal of Physics, 9 428 (2007), https://doi.org/10.1088/1367-2630/9/11/428

2. K. N. Nordstrom, E. Verneuil, P. E. Arratia, **A. Basu**, Z. Zhang, A. G. Yodh, J. P. Gollub and D. J. Durian, *Microfluidic rheology of soft colloids above and below jamming*, Physical Review Letters, 105, 175701 (2010), https://doi.org/10.1103/PhysRevLett.105.175701

3. **A. Basu**, Q. Wen, X. Mao, T. C. Lubensky, P.A. Janmey and A. G. Yodh, *Non-affine displacements in flexible polymer networks*, Macromolecules, 44, 1671 (2011), https://doi.org/10.1021/ma1026803

4. Q. Wen, **A. Basu**, P. A. Janmey and A. G. Yodh, *Non-affine deformations in polymer hydrogels*, Soft Matter, 8, 8039 (2012), https://doi.org/10.1039/C2SM25364J

5. A. Guha and **A. Basu**, *Role of rare earth oxide nanoparticles (CeO2 and La2O3) in suppressing the photobleaching of fluorescent organic dyes*, Journal of Fluorescence, 24(3), 683 (2014), https://doi.org/10.1007/s10895-014-1375-2

6. **A. Basu***, Y. Xu*, T. Still, P. E. Arratia, Z. Zhang, K. N. Nordstrom, J. M. Rieser, J. P. Gollub, D.J. Durian and A. G. Yodh, *Rheology of Soft Colloids Across the Onset of Rigidity: Scaling Behavior, Thermal, and Non-thermal Responses*, Soft Matter, 10(17), 3027 (2014), https://doi.org/10.1039/C3SM52454J

7. A. Rotem, O. Ram, N. Shoresh, R. A. Sperling, M. Schnall-Levin, H. Zhang, **A. Basu**, B. E. Bernstein and D. A. Weitz, *High-Throughput Single-Cell Labeling (Hi-Scl) for Rna-Seq Using Drop-Based Microfluidics*, PLoS ONE, 10, e0116328 (2015), https://doi.org/10.1371/journal.pone.0116328

8. E. Z. Macosko, **A. Basu**, R. Satija, J. Nemesh, K. Shekhar, M. Goldman, I. Tirosh, A. R. Bialas, N. Kamitaki, E. M. Martersteck, J. J. Trombetta, D. A. Weitz, J. R. Sanes, A. K. Shalek, A. Regev and S. A. McCarroll, *Highly Parallel Genome-Wide Expression Profiling of Individual Cells Using Nanoliter Droplets*, Cell, 161, 1202 (2015), https://doi.org/10.1016/j.cell.2015.05.002

9. Y. Tao, A. Rotem, H. Zhang, C. B. Chang, **A. Basu**, A. O. Kolawole, S. A. Koehler, Y. Ren, J. S. Lin, J. M. Pipas, A. B. Feldman, C. E. Wobus and D. A. Weitz, *Rapid, targeted and culture-free viral infectivity assay in drop-based microfluidics*, Lab on a Chip, 15(19), 3934 (2015), https://doi.org/10.1039/C5LC00556F

10. N. Habib*, I. Avraham-Davidi*, A. **Basu***, T. Burks, K. Shekhar, M. Hofree, S. R. Choudhury, F. Aguet, E. Gelfand, K. Ardlie, D. A. Weitz, O. Rozenblatt-Rosen, F. Zhang and A. Regev, *Massively parallel single nucleus RNA-seq with DroNc-seq*, Nature Methods, 14, 955 (2017), https://doi.org/10.1038/nmeth.4407

11. E. D. Cubuk*, R. J. S. Ivancic*, S. S. Schoenholz*, D. J. Strickland, **A. Basu**, Z. S. Davidson, J. Fontaine, J. L. Hor, Y.-R. Huang, Y. Jiang, N. C. Keim, K. D. Koshigan, J. A. Lefever, T. Liu, X.-G. Ma, D. J. Magagnosc, E. Morrow, C. P. Ortiz, J. M. Rieser, A. Shavit, T. Still, Y. Xu, Y. Zhang, K. N. Nordstrom, P. E. Arratia, R. W. Carpick, D. J. Durian, Z. Fakhraai, D. J. Jerolmack, D. Lee, J. Li, R. Riggleman, K. T. Turner, A. G. Yodh, D. S. Gianola, A. J. Liu, *Structure-property relationships from universal signatures of plasticity in disordered solids*, Science 358(6366) 1033 (2017), https://doi.org/10.1126/science.aai8830

12. M. Hammes, R. L. McGill, **A. Basu**, T. Blicharski, K. Delaney, *Hemodynamic effects of hemodialyzer pump speed on arteriovenous fistulas*, Clinical Nephrology 91(3):138 (2019), https://doi.org/10.5414/CN109456

13. A. Selewa, R. Dohn, H. Eckart, S. Lozano, B. Xie, E. Gauchat, R. Elorbany, K. Rhodes, J. Burnett, Y. Gilad, S. Pott, **A. Basu**, *Systematic Comparison of High-throughput Single-Cell and Single-Nucleus*

Transcriptomes during Cardiomyocyte Differentiation, Scientific reports, 10, 1535 (2020), https://doi.org/10.1038/s41598-020-58327-6

14. A. Guzzetta, M. Koska, M. Rowton, J. Kweon, H. Hidalgo, H. Eckhart, A. Moon, **A. Basu***, M. Bressan*, S. Pott*, I. Moskowitz*, *Hedgehog-FGF signaling axis patterns anterior mesoderm during gastrulation*, Proceedings of the National Academy of Sciences, 117 (27) 15712 (2020), https://doi.org/10.1073/pnas.1914167117

15. S. Olalekan, B. Xie, R. Back, H. Eckart, **A. Basu**, *Characterizing the tumor microenvironment of metastatic ovarian cancer by single cell transcriptomics*, Cell Reports, 35, 109165 (2021), https://doi.org/10.1016/j.celrep.2021.109165

16. M. Hammes, A. Moya-Rodriguez, C. Bernstein, S. Nathan, R. Navuluri, **A. Basu**, *A novel computational model of the cephalic arch predicts hemodynamic profiles in patients with brachiocephalic fistula access receiving hemodialysis*, PLoS One 16(7), e0254016 (2021), https://doi.org/10.1371/journal.pone.0254016

17. H. V. Phan, M. van Gent, N. Drayman, **A. Basu**, M. U. Gack, S. Tay, *High-throughput RNA sequencing of paraformaldehyde-fixed single cells*, Nature Communications, 12, 5636 (2021), https://doi.org/10.1038/s41467-021-25871-2

18. R. Dohn, R. Back, B. Xie, A. Selewa, H. Eckart, R. P. Rao, **A. Basu**, mDrop-seq: Massively parallel single-cell RNA-seq of *Saccharomyces Cerevisiae* and *Candida Albicans,* Vaccines, 10, 30 (2022), https://doi.org/10.3390/vaccines10010030

19. M. Rowton, C. Perez-Cervantes, A. Rydeen, S. Hur, J. Jacobs-Li, N. Deng, E. Lu, A. Guzzetta, J. Steimle, A. Hoffmann, S. Lazaravic, X. H. Yang, C. Kim, S. Yu, H. Eckart, S. Iddir, M. Koska, E. Hanson, S. S. S. Chan, D. J. Garry, M. Kyba, **A. Basu**, K. Ikegami, S. Pott, I. P. Moskowitz, *Hedgehog signaling controls a heterochronic gene regulatory network to modulate differentiation timing across lineages,* Developmental Cell, 57, 2181 (2022), https://doi.org/10.1016/j.devcel.2022.08.009

20. A. Moya-Rodríguez, B. Xie, D. Cook, M. Klineberg, S. Nathan, M. Hammes, **A. Basu**, *Creating Patient-Specific Vein Models to Characterize Wall Shear Stress in Hemodialysis Population*, Computational and Structural Biotechnology Journal, 20, 5729 (2022), https://doi.org/10.1016/j.csbj.2022.10.010

21. A. R. Haltom, W. E. Hassen, J. Hensel, J. Kim, H. Sugimoto, B. Li, K. M. McAndrews, M. R. Conner, M. L. Kirtley, X. Luo, B. Xie, O. V. Volpert, S. Olalekan, N. Maltsev, **A. Basu**, V. S. LeBleu, R. Kalluri, *Engineered exosomes targeting MYC reverse the proneural-mesenchymal transition and extend survival of glioblastoma*, Extracellular Vesicle 1, 100014 (2022), https://doi.org/10.1016/j.vesic.2022.100014

22. E. Lengyel*, Y. Li*, M. Weigert, L. Zhu, H. Eckart, M. Javellana, S. Ackroyd, J. Xiao, S. Olalekan, D. Glass, S. Iyer, A. J. Bilecz, R. Lastra, M. Chen*, **A. Basu***, *A molecular atlas of the human postmenopausal fallopian tube and ovary from single-cell RNA and ATAC sequencing*, Cell Reports 41(12), 111838 (2022), https://doi.org/10.1016/j.celrep.2022.111838

23. P. V. K. Nittala*, A. Hohreiter*, E. R. Linhard, R. Dohn, S. Mishra, A. Konda, R. Divan, S. Guha, **A. Basu**, *Integration of silicon chip microstructures for in-line microbial cell lysis in soft microfluidics*, Lab on a Chip, 23, 2327 (2023), https://doi.org/10.1039/D2LC00896C

24. S. Baisiwala, S. Budhiraja, E. Perrault, A. Zolp, K. Nandoliya, J. Miska, L. Chen, C. Park, M. Saathoff, C. Dmello, J. Shireman, P. Lin, J. Duffy, I. Balyasnikova, J. David, C. Horbinski, S. Pott, **A. Basu**, A. Sonabend, A. Ahmed, *Ribonucleotide Reductase Regulatory Subunit M2 Drives Glioblastoma TMZ-Resistance through Modulation of dNTP Production,* Science Advances, 9, eade7236 (2023), https://doi.org/10.1126/sciadv.ade7236

25. A. Selewa, K. Luo, M. Masney, L. Smith, C. Tang, H. Eckart, I. Moskowitz, **A. Basu***, X. He*, S. Pott*, *Single-cell genomics improves the discovery of risk variants and genes of cardiac traits*, Nature Communications, 14, 4999 (2023), https://doi.org/10.1038/s41467-023-40505-5

26. B. Xie, S. Olalekan, R. Back, N. Ashitey, H. Eckart, **A. Basu**, "*Comparing the tumor microenvironment of solid tumors of different primary and metastatic ovarian cancer histotypes at single cell resolution*" accepted, Frontiers in Cell and Developmental Biology, https://doi.org/10.1101/2023.10.07.561344

27. Y. Zhao, R. Zhou, B. Xie, C. Y. Liu, M. Kalski, C. M. Cham, J. Koval, C. R. Weber, D. T. Rubin, M. Sogin, S. Crosson, J. Huang, A. Fiebig, S. Dalal, E. B. Chang, **A. Basu***, **S. Pott***, *Multiomic analysis reveals cellular and epigenetic plasticity in intestinal pouches of ulcerative colitis patients* (submitted), https://doi.org/10.1101/2023.11.11.23298309

28. M. Weigert, Y. Li, L. Zhu, H. Eckart, P. Bajwa, R. Krishnan, S. Ackroyd, R. Lastra, A. Bilecz, **A. Basu***, E. Lengyel*, M. Chen*, *A Cellular atlas of the human fallopian tube reveals the metamorphosis of secretory epithelial cells during the menstrual cycle and menopause* (under revision)

In preparation:

29. R. Zhou, B. Xie, E. Zhong, D. Cook, T. Wood, Candace Cham, E. Chang, S. Pott*, A. Basu*, "*Cell atlas of the terminal ileum and ascending colon mucosa in healthy and Crohn's Disease*"

30. D. Cook, M. Klineberg, B. Xie, M. Hammes, A. Basu, "*Vessel geometry and pathologic flowrates create complex hemodynamics in* in vitro *models of the cephalic arch*"

31. K. Mika, A. Pal, J. Tabin, C. Molina, N. Shubin, A. Basu, "*Charting development in fish fins across species*"

32. A. Hohreiter*, R. Dohn*, T. Wood, B.-J. Jung, B. Xie, A. Basu, "*Comparing anti-fungal response across different fungal pathogens at single cell resolution*"

33. P. Bajwa, Y. Li, L. Zhu, M. Chen*, A. Basu*, E. Lengyel*, "*Uterine cell atlas across menopause*"

* = Equal contribution

Patents

35. A droplet-based method and apparatus for composite single-cell nucleic acid analysis, WO2016040476

36. Methods for determining spatial and temporal gene expression dynamics in single cells, WO 2017164936

37. High-throughput dynamic reagent delivery system, WO2017075549

38. A millifluidic system for thrombosis analysis under patient-specific physiological conditions, US 20210056867

39. Microfluidic and MEMS cell lysis system and method UCHI: 21-T-034 (Pending)

FUNDING
Pending Research Support

R01AI182517-01 (Basu) 4/2024-3/2029 1.8 CM
NIH/NIAID
Deciphering the role of transcriptional heterogeneity in drug resistance and virulence across different species and strains of fungal pathogens

Understand how transcriptomic variations between individual cells in different multi-drug resistant strains of *Candida auris* respond differently to antifungal drugs, using a recently developed droplet microfluidics based high-throughput single-cell RNA sequencing technique for different species of yeasts.
Role: PI Direct cost: $1,270,495.

GRANT13894911 (Pincus) 4/2024 – 03/2029 3 CM
NIH/NIGMS
The Center for Cellular Adaptation: Connecting Physics to Physiology and Fitness
This proposal addresses a grand challenge in basic cell biology essential to human health: to develop a theoretical understanding of adaptation that spans physiology and evolution. Such an understanding will enable next generation therapeutic interventions to treat maladaptive cellular states, i.e., pathologies.
Role: Co-Investigator

Focused Research Award (Basu) 6/2024-5/2025 1.2 CM
Sony Research Award Program
Microbial single-cell 'omics using next generation microfluidics: single-cell manipulation, in-line lysis, and spectral correlation with genomic data
This proposal aims to develop a microfluidic device and platform to perform Raman spectroscopy on live cells that will be correlated with downstream epigenetic/ transcriptomic analysis.
Role: PI

Ongoing Research Support
C-IID and DFI Pilot & Feasibility Award 12/1/23-11/30/24 0 CM
Coherent Multi-Omics of Host and Microbiome in Crohn's Disease
Pilot study to profile the mucosal microbiome, paired with host cell types and their function, via high-resolution 'omics techniques on paired intestinal biopsies, with the overall aim to correlate microbial and host cell composition and functions in CD mucosa.
Role: PI

FP100048 GCA (Basu) 8/15/19 – 5/14/24 1.8 CM
Helmsley Charitable Trust
A Cell Atlas of the Ileal colonic Crohn's Disease
Identify and characterize cell types in the human gut by establishing a comprehensive cellular atlas of the ileum in healthy individuals and patients with ileal-colonic and ileal Crohn's disease.
Role: PI Direct cost: $ $2,618,259

RC2 DK122394 (Chang) 9/1/19 – 5/31/24 0.8 CM
NIH/NIDDK
Host and microbial basis of human ulcerative colitis and pouchitis: Identification, role, mechanisms, and resource development of host susceptibility and pathobiont factors
Investigate genetic and microbial factors that contribute to the development of pouchitis following ileoanal pouch surgery in patients with ulcerative colitis, using longitudinal evaluation of patients from prior to pouch surgery to pouchitis development, microfluidics, single cell RNA seq and enteroid models.
Role: Co-Investigator

DP2 OD029129 (Basu) 8/20/20 – 3/31/25 3 CM
NIH/Common Fund
Profiling Transcriptional Heterogeneity in Microbial Cells at Single Cell resolution and High-throughput using Droplet Microfluidics
Combine single cell genomics with new lysis and sequencing schemes to develop a generalized single-cell microbial RNA-seq pipeline at reduced reagent and sequencing costs.

Role: PI

Completed Research Support

2019 CZI (Lengyel) 6/1/19 – 5/30/23 1.2 CM
Chan Zuckerberg Initiative DAF
A Female Reproductive Cell Atlas
Generate a cellular map of all the cells in the female reproductive system and establish reproducible markers that will be a starting point for the study of female health and disease before and after menopause.
Role: Co-Investigator Direct cost: $1,600,000.

R01 HL147571-01 (Moskowitz) 6/1/19 – 5/31/23 1.2 CM
NIH/NHLBI
The molecular basis of cardiac differentiation control
The goal is to investigate the novel hypothesis that loss of Hedgehog signaling causes premature cardiac progenitor differentiation as an underlying cause of CHD. If correct, this work will highlight molecular control of differentiation timing as a cornerstone of cardiac development.
Role: Co-Investigator

2017-174052 (Basu) 10/1/17 – 9/30/18
Chan Zuckerberg Initiative DAF
Comparison, calibration, and benchmarking of high-throughput single cell RNA-seq techniques for unbiased cell-type classification
Evaluate and compare single cell and single nucleus RNA-seq technologies to map the human heart for the Human Cell Atlas consortium.
Role: PI

Aronson-Funsky (Basu) 11/1/17 – 10/31/18
Aronson-Funsky Research Award
Novel millifluidic device to study venous thrombosis in arteriovenous fistula
Develop a fluidic device that models patient-specific geometry and hemodynamics of the cephalic arch where thrombosis is likely to occur under dialysis.
Role: PI

5J-30161-0029A; Rev 0029B (Basu) 2/19/18 – 1/08/19
Argonne National Laboratory
High Dimensional Single Cell Transcriptomic and Proteomic Analysis and Comparison at High Throughput
Investigate if and when gene expression correlates with protein content at a single cell level.
Role: Co-PI

DFI Pilot Funding (Basu) 7/1/18 – 6/30/20
Duchossois Family Institute
Aberrant genetic programming of mesenteric "creeping fat" in patients with small intestinal Crohn's Disease: Gaining conceptual insights into pathogenesis and novel clinical biomarkers of disease
Profile genetics in "creeping fat" tissue from patients with Crohn's Disease at different disease stages using single cell and single nuclei RNA-seq, with aim to discover clinical biomarkers for early disease detection.
Role: PI

BSF Research Award (Basu) 8/1/18 – 7/31/20
U.S. – Israel Binational Science Foundation
Single Cell Gene Expression Analysis of Matrix-Directed Mesenchymal Stem Cell Differentiation
Profile genetic expression patterns of Stem Cell differentiation under mechanical cues using Drop-seq.

Role: Co-PI

FP071803-01-PR (Basu) 11/26/18 – 11/30/19
Bristol-Myers Squibb
Unbiased expression profiling of cellular sub-populations using high-throughput droplet mRNA-seq for immunotherapy biomarker discovery in archival solid tumor samples
Develop a high-throughput droplet mRNA-seq protocol to map the solid tumor micro-environment, with emphasis on immune-infiltrate cells formalin-fixed, using paraffin embedded tumor samples.
Role: PI

R21 AI144417 (Basu) 01/10/19 – 12/31/20
NIH/NIAID
Novel microfluidic platform to profile host-pathogen interaction under controlled infection and single cell resolution
Develop a droplet microfluidics platform for high-throughput imaging and transcriptomics of single host-pathogen interacting pair at controlled multiplicity of infection and infection outcome.
Role: PI

2019 ITM (Hammes) 07/01/19-06/30/20
Institute for Translational Medicine Pilot Award
A Novel Millifluidic Model to Study Venous Thrombosis
Build patient-specific millifluidic device that combine venogram, IVUS and Doppler data to study venous thrombosis of AVF in ESRD patients.
Role: Co-PI

INVITED SPEAKING

Intramural:

2015	Workshop	BroadE Workshop, Broad Institute
2016	Workshop	Neuro Stem Club Seminar, Harvard Stem Cell Institute
2017	Research Seminar	Biosciences Division, Argonne National Lab
2017	Grand Rounds	University of Chicago Department of Medicine
2017	Research Seminar	Pulmonary and Critical Care Medicine, U Chicago
2017	Invited Talk	Chicago Microbiome Conference
2017	Invited Talk	University of Chicago Molecular Biosciences Retreat
2018	Research Seminar	Renal Research Conference, University of Chicago
2018	Research Seminar	Biochemistry and Molecular Biology, University of Chicago
2018	Computations in Science Seminar	Materials Research Science and Engineering Center (MRSEC), University of Chicago
2018	Invited Talk	Sci-ROI Showcase Day
2019	Invited Talk	Science Advancement Committee, Medical Center Board, University of Chicago
2019	Invited Talk	Faculty Showcase presentations, University of Chicago Medicine Comprehensive Cancer Center
2019	Invited Talk	Biophysical Sciences Retreat, Turkey Run, IN
2020	Invited Talk and Panelist	Renal Research Retreat, University of Chicago
2021	Project Pitch	Collaboratorium, Polsky Center

Extramural:

2009	Research Seminar	St. Joseph's University, PA
2011	Research Seminar	National Institute of Standards and Technology, MD
2012	Research Seminar	Brandeis University, MA

2012	Research Seminar	Indian Institutes of Science Education and Research, Calcutta, India
2014	Research Seminar	University of Arkansas, AR
2016	Research Seminar	Center for Nanoscale Materials, Argonne National Lab, IL
2017	Research Seminar	AbbVie, North Chicago, IL
2018	John Lawrence Seminar	Lawrence Berkeley National Laboratory, CA
2018	Biochemistry and Molecular Genetics Seminar	University of Illinois at Chicago, IL
2018	Lecture	Max Delbrück Center for Molecular Medicine, Berlin (Germany)
2018	Invited Talk	American Society for Virology Annual Meeting, University of Maryland, College Park, MD
2018	Invited Talk	NSF Microbiome Soil Sensors workshop, La Jolla, CA
2018	Invited Talk	qBio Conference, NSF-Simons Center for Quantitative Biology Northwestern University, IL
2019	Invited Talk	Society for Investigative Dermatology Annual Meeting, Chicago, IL
2019	Invited Talk	*Gene Circuits: From Understanding to Engineering*, Cell Press LabLinks Meeting, Chicago, IL
2019	Invited Talk	*From Single-Cell to Human Whole Genome Sequencing,* Illumina Symposium, Chicago, IL
2019	Invited Talk	*Finding and Characterizing HIV Reservoirs* Workshop, co-sponsored by Gates Foundation and the NIH, Bethesda, MD
2019	Keynote Talk	Midwest Digestive Diseases Research Core Centers Alliance Meeting, Chicago, IL
2019	Invited Talk	Human Gut Cell Atlas Investigators Kick-off Meeting, Helmsley Foundation, New York City, NY
2020	Featured Talk	Laboratory Automation & Informatics, LabRoots, 2020, Online
2020	Workshop	Bio/ 3D Printing, Conference on Miniaturized Systems for Chemistry and Life Sciences (μTAS) 2020, Online
2021	Invited Talk	Novartis Institutes for BioMedical Research, Inc., Online
2022	Invited Talk	4th International Webinar on Nucleic Acids and CRISPR, Online
2022	Research Seminar	Oncology R&D, AstraZeneca, Online.
2022	Invited Talk	European Molecular Biology Laboratory (EMBL) Conference: Microfluidics 2022, Heidelberg (Germany)
2022	Invited Talk	Microbiome Meeting, Cold Spring Harbor Laboratories, NY
2022	Invited Talk	CZI Single-Cell Biology 2022 Annual Meeting, San Jose, CA
2023	Research Seminar	Biochemistry, University of Buffalo, NY
2023	Invited Talk	10x Genomics Chicago User Group Meeting, IL
2023	Invited Talk	Infectious Diseases: Fighting the Global Challenges, Cell Press and Shanghai Tech University, Online
2023	Research Seminar	Biophysics, University of Luxembourg, Belval (Luxembourg)
2023	Research Seminar	Chemical & Biological Engineering, Northwestern University, IL
2023	Invited Talk	Human Cell Atlas Asia 2023 Meeting, Kolkata (India)
2024	TBD	NSF-Simons Research Centers for Mathematics of Complex Biological Systems Annual Meeting, NY
2024	Research Seminar	Chemistry, Syracuse University, NY

PROFESSIONAL ACTIVITIES

2003 – 2004	President, Society of Physics Students, U. of Arkansas chapter, American Physical Society
2015	Discussion leader, Gordon Research Seminar: Soft Condensed Matter Physics
2016	Research proposal reviewer for American Chemical Society Petroleum Research Fund
2018	Session chair, 3rd Microfluidics Congress, 4Bio Summit: USA

2018 – Research proposal reviewer, NIH '*Cell and Molecular Technologies*' study section
2021 Research proposal reviewer, US-Israel Binational Science Foundation
2021 Research proposal reviewer, Novo Nordisk Foundation Denmark, Interdisciplinary Synergy Programme
2021-2022 Academic Consultant, Novartis Institutes for Biomed. Research, Inc.
2022 Research proposal reviewer, NIH '*Instrumentation and Systems Development*' study section
2023 Dissertation defense jury, University of Luxembourg, Belval, Luxembourg
2023- Member, National Institute for Theory and Mathematics in Biology, IL
2023, 2024 Research proposal reviewer, NIH '*Small Business: Cell and Molecular Biology*' study section
Various Reviewer for Journals: Soft Matter, J. Fluorescence, J. Nanoparticle Research, Langmuir, Frontiers in Materials, Cell, Genome Biology, Nat. Comm., Nat. Methods, Review Commons, Journal of Clinical Investigation, etc.

EDUCATION (CLASSES TAUGHT)

Tutoring and Teaching Assistantship:

2001 – 2003 Tutor, Student Support Services, University of Arkansas, AR
2004 – 2005 Department of Physics and Astronomy, University of Pennsylvania, PA
2005 – 2011 Laboratory Instructor, Penn Summer Science Initiative, University of Pennsylvania, PA

Undergraduate:

2019 – Instructor, Winter Quarter, Introduction to Transcriptomics, BIOS 26121 (10 lectures)
2019 – Guest Lecturer, Fall Quarter, Introduction to Bioinformatics, BIOS 26120 (4 lectures)
2022 – Instructor, Spring Quarter, Introduction to Quantitative Modeling in Biology (Basic), BIOS 20151 (8 lectures)

Graduate programs:

2017 – Molecular Biosciences Fall Quarter "Allstars"
2020 – Instructor, Fall Quarter, Hypothesis Design & Grant Writing Skills, CABI 31600 (20 lectures)

EDUCATION (RESEARCH SUPERVISION)

(a) High school students

2005 – 2006 Barbara Donnini and Arthur Krieger, Science project, University of Pennsylvania, PA
2011 – 2012 Anubhav Guha, Science project, University of Pennsylvania, PA
Intel Science Talent Search finalist, Siemens Competition semi-finalist
2013 Jason Cui, Research Science Institute, MIT, MA
Siemens Competition semi-finalist
2014 Lasya Sreepada, Broad Summer Scholars Program, Broad Institute, MA
2015 Robert Kao, Research Science Institute, MIT, MA

(b) Undergraduate students (B.S.)

2011 Tal Bar-Or and Ritwik Lodhiya, Senior Design Project, University of Pennsylvania, PA
2012 Sarah Mburu, Research Experience for Undergrads, University of Pennsylvania, PA
2012 – 2013 Jorge Pozo, Research Project, Harvard University, MA
2014 Carlos Brambila, NNIN- Research Experience for Undergrads, Harvard University, MA
Selected for oral presentation at SACNAS, ABRCMS
2015 Alejandro Sanchez, NNIN- Research Experience for Undergrads, Harvard University, MA
Selected for oral presentation at SACNAS
2017 Maya Ramamurthy, Summer Research Program, Argonne National Laboratory, IL
2018 – 2020 Cameron Bernstein, Metcalf Internship, University of Chicago, IL
Selected for Quantitative Biology Fellowship, 2019
2018 – 2020 Atreyo Pal, Senior thesis, University of Chicago, IL
Selected for BSCD Summer Fellowship, 2019
Selected for oral presentation in Midstates Consortium for Biology and Psychology 2019
2018 – 2022 Bethany Regnerus, Summer Internship, University of Chicago, IL

Jeff Metcalf Fellowship
Honors Scholar

2019 – 2022 Julius Tabin, Research Project, University of Chicago, IL
Goldwater Scholar, 2021

2020 – 2021 Naa Ashitey, Research Project, University of Chicago, IL

2020 Angel Ocasio Gracia, Leadership Alliance Program, University of Puerto Rico-Ponce, PR

2021 – Maren Klineberg, Research Project, University of Chicago, IL
Quad Scholarship
Honors Scholar

2021 Cristian Molina, Research Project, University of Chicago, IL

2021 – 2023 Emilio Rosas Linhard, Research Project, University of Chicago, IL
Quad Scholarship
DAAD RISE Program, 2022

2023 – Sunny Taylor, Research Project, University of Chicago, IL

2023 Arkadeep Ghosh, Khorana Scholars Program, National Institute of Technology, Durgapur, India

(c) Medical students:

2023 – Shawn Kumpuckal, University of Illinois College of Medicine, IL

2023 – Sara Saheb Kashaf, University of Chicago, IL

(d) Graduate (PhD) students:

2017 – 2021 Principal supervisor for Dr. Alan Selewa, Biophysical Sciences

2017 – 2022 Principal supervisor for Andres Moya-Rodriguez, Biophysical Sciences
Recipient of NSF GRFP fellowship
Oral presentation, 2019 Institute of Translational Medicine Industry Advisory Board Meeting, University of Chicago, IL
Selected for oral presentation, 2019 Cell Symposia: Engineering Organoids and Organs, San Diego, CA
Oral presentation, 2019 Facultad de Estudios Superiores Zaragoza, Universidad Nacional Autónoma de México Symposium, Mexico City, Mexico

2017 – 2023 Principal supervisor for Ryan Dohn, Genetics, Genomics and Systems Biology
Selected for 2018 Introduction to Microfluidics Technology MRSEC workshop, Brandies University, MA
Selected for oral presentation in CZI Retreat 2018, Marine Biological Laboratory, MA

2021 – Principal supervisor for Allison Hohreiter, Chemistry

2022 – Principal supervisor for Jianqiao Liu, Chemistry

2023 – Principal supervisor for Dylan Cook, Genetics, Genomics and Systems Biology

2017 – 2021 Ph.D. Committee member for Katie Rhodes, Human Genetics

2017 – 2020 Ph.D. Committee member for Reem Elorbany, Human Genetics

2017 – 2021 Ph.D. Committee member for Darshan Kasal, Immunology

2020 – Ph.D. Committee member for Ansel George, Genetics, Genomics and Systems Biology

2020 – Ph.D. Committee member for Ashish Thakur, Genetics, Genomics and Systems Biology

2021 – Ph.D. Committee member for Anqi Yu, Cancer Biology

2021 – Ph.D. Committee member for Annisa Dea, Cell and Molecular Biology

2022 – Ph.D. Committee member for Busayo Bolonduro, Genetics, Genomics and Systems Biology

2023 – Ph.D. Committee member for Hsin-Chiao, Development, Regeneration and Stem Cell Biology

2023 – Ph.D. Committee member for Katarzyna Zawieracz, Cancer Biology

2023 – Ph.D. Committee member for Kasia Kurylowicz, Cancer Biology

2017 Joshua Jones, Cell and Molecular Biology, Lab rotation

2018 Jessica Morgan, Biophysical Sciences, Lab rotation

2019 Ashish Thakur, Genetics, Genomics and Systems Biology, Lab rotation

2021 Hope Anderson, Biophysical Sciences, Lab rotation

2022 Jayda Duvernay, Chemistry, Lab rotation

2023 Liz Gibbons, Genetics, Genomics and Systems Biology, Lab rotation

(e) Postdoctoral scientists:

2017 – 2020 Dr. Susan Olalekan
- 2017 Beyond the Bench: The Business of Running a Lab Workshop, University of Chicago, IL
- Selected for poster presentation, 2018 UChicago-AbbVie Oncology Symposium, IL
- Selected for poster presentation 2019 American Association of Cancer Research and Japanese Cancer Joint Conference, Hawaii
- Selected for poster presentation, 2019 UChicago-AbbVie Oncology Symposium, IL
- Selected for 2019 Career award writing workshop (KWW), University of Chicago, IL
- Selected for 2019 Creating Lesson Plans Workshop, University of Chicago, IL

2017 – 2023 Dr. Bingqing Xie
- Selected for poster presentation, Second annual UChicago-AbbVie Oncology Symposium, IL
- Selected for poster presentation, 2018 Quantitative Biology Conference, Northwestern University, IL
- Selected for poster presentation, 2019 Biology of Genomes Meeting, Cold Spring Harbor Laboratory, NY
- Poster presentation, Third annual UChicago-AbbVie Oncology Symposium, IL

2018 – 2023 Dr. Katelyn Mika
- Selected for 2019 Single Cell Analysis Course, Cold Spring Harbor Laboratories, NY
- 2021 Trainee Diversity, Equity and Inclusion Award, University of Chicago, IL
- Selected 2nd annual Rising Star in Genetics and Genomics Symposium, University of Utah, UT

2018 – 2020 Dr. Abhiteja Konda
- Selected for oral presentation, 2019 Materials Research Society Fall Meeting, MA

2019 – 2021 Dr. Florian Wagner
- Selected for poster presentation, Mind Bytes 2019, University of Chicago, IL

2020 – Dr. Ran Zhou
- Poster of Distinction, Basic Science category, Digestive Diseases Week 2023, Chicago, IL

2022 – 2023 Dr. Preety Bajwa

2023 – Dr Bum-Joon Jung
- Duchossois Family Institute Fellow, 2023

Extramural (not indicated above)

2011, 2012 Volunteer, Philadelphia Science Festival, PA

2013 Volunteer, James W. Hennigan School, MA

2013, 2014 Volunteer, Cambridge Science Festival, MA

2017, 2018, 2019 Volunteer, Science Careers in Search of Women, IL