Zheng SHI

Date of Birth: Feb. 15th, 1990

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Employment

2019 – Assistant Professor
Department of Chemistry and Chemical Biology, Rutgers–New Brunswick

2021 – Member, Cancer Pharmacology Research Program, Cancer Institute of New Jersey

2023 – Associate Member, Graduate Faculty at the Department of Biomedical Engineering, Rutgers–New Brunswick

2024 – Member, Center for Lipid Research, Rutgers University–New Brunswick

2025 – Member, Brain Health Institute, Rutgers University–New Brunswick

2015 – 2019 Postdoctoral Fellow Advisor: Adam E. Cohen
Department of Chemistry and Chemical Biology, Harvard University,
Howard Hughes Medical Institute

Education

2010 – 2015 Chemistry Department, University of Pennsylvania
Ph.D. in Physical Chemistry Diploma: Aug.7th, 2015
Thesis: "*Mechanisms of Membrane Remodeling by Peripheral Proteins and Divalent Cations*" Advisor: Tobias Baumgart

2006 – 2010 Physics Department, University of Science and Technology of China
B.S. in Applied Physics (condensed matter) Diploma: July 10th, 2010
Thesis on *DFT Simulation of Graphenes* Advisor: Jinlong Yang

Publications Google Scholar

**indicates corresponding authors; #indicates equal contributions;*

[30] Jiang J, Keniya MV, Puri A, Zhan X, Cheng J, Wang H, Lin G, Lee YK, Jaber N, **Shi Z**, Lee S-H, Xu M, Perlin DS*, Dai W*. Molecular Landscape of the Fungal Plasma Membrane and Implications for Antifungal Action. ***Nature Communications***. *16, 9125*. 2025. *bioRxiv*.

[29] Li Z, Burgos-Bravo F, Xu K, Li C, Zelin S, Wang H, Takaku M, Li J, **Shi Z**, Lyumkis D, Bustamante C*, Fei J*. Phase-Separated NDF-FACT Condensates Facilitate Transcription Elongation on Chromatin. ***Nature Cell Biology***. 2025.

[28] Favetta B#, Wang H#, **Shi Z***, Schuster BS*. Amphiphilic protein surfactants reduce the interfacial tension of biomolecular condensates. ***Langmuir.*** *41 (35), 23827-23836*. 2025. *bioRxiv*

[27] Favetta B, Wang H, Cubuk J, Singh A, Barai M, Ramirez C, Gormley AJ, Murthy S, Dignon G, Soranno A, **Shi Z**, Schuster BS*. Phosphorylation Toggles the SARS-CoV-2

Nucleocapsid Protein Between Two Membrane-Associated Condensate States. ***Nature Communications***. *16, 7970*. 2025. *bioRxiv*.

[26] Wang H, **Shi Z***. The rheology and interfacial properties of biomolecular condensates. ***Biophysical Reviews***. *17 (3), 867–891*. 2025.

[25] Zhu Y#, Xiao F#, Wang YL#, Wang YF#, Li J#, Zhong D#, Huang Z, Yu M, Wang ZR, Barbara J, Plunkett C, Zeng M, Song Y, Tan T, Zhang R, Xu K, Wang ZX, Cai C, Guan X, Hammack S, Zhang L, **Shi Z***, Xiang FL*, Shao F, Xu J*. NINJ1 regulates plasma membrane fragility under mechanical strain. ***Nature.*** *644, 1088–1096*. 2025. *preprint*.

News annd Views

[24] Cheng HH, Roggeveen JV, Wang H, Stone HA*, **Shi Z***, Brangwynne CP*. Micropipette aspiration reveals differential RNA-dependent viscoelasticity of nucleolar subcompartments. ***Proceedings of the National Academy of Sciences.*** *122 (22), e2407423122*. 2025.

News Feature Podcast BPoD

[23] Eubanks E#, VanderSleen K#, Mody J#, Patel N#, Sacks B#, Farahani MD, Wang J, Elliott J, Jaber N, Akçimen F, Bandres-Ciga S, Helweh F, Liu J, Archakam S, Kimelman R, Sharma B, Socha P, Guntur A, Huang Y, Ramalingam N, Guadagno E, Bartels T, Dettmer U, Mouradian MM, Bahrami AH, Dai W, Baum J, **Shi Z**, Hardy J, Kara E*. Increased burden of rare risk variants across gene expression networks predisposes to sporadic Parkinson's disease. ***Cell Reports.*** *44(5), 115636.* 2025. *bioRxiv*

[22] Wang H, Hoffmann C, Tromm JV, Su X, Elliott J, Wang H, Deng M, McClenaghan C, Baum J, Pang ZP, Milovanovic D*, **Shi Z***. Live-Cell Quantification Reveals Viscoelastic Regulation of Synapsin Condensates by α-Synuclein. ***Science Advances.*** *11(16), eads7627.* 2025. *bioRxiv* News Feature

[21] Moazzeni S, Kyker-Snowman K, Cohen RI, Wang H, Li R, Shreiber DI, Zahn JD, **Shi Z***, Lin H*. Cadherin-based adhesion regulates mechanical polarization in the actin cortex through Rac1. ***Scientific Reports.*** *15(1), 4296*. 2025.

[20] Yang S, **Shi Z***. Quantification of membrane geometry and protein sorting on cell membrane protrusions using fluorescence microscopy. ***Methods in Enzymology.*** *700, 385-411*. 2024.

[19] Roggeveen JV, Wang H, **Shi Z***, Stone HA*. A calibration-free hydrodynamic model of micropipette aspiration for measuring properties of protein condensates. ***Biophysical Journal.*** *123 (11). 1393-1403.* 2024.

[18] Yang S, Miao X#, Arnold S#, Li B#, Ly AT, Wang H, Wang M, Guo X, Pathak MM, Zhao W, Cox CD, **Shi Z***. Membrane curvature governs the distribution of Piezo1 in live cells. ***Nature Communications.*** *13(1), 7467*. 2022. *bioRxiv* Colab endorsed

Faculty Opinions Recommended

[17] Gao J#, Mewborne QT#, Girdhar A, Sheth U, Coyne AN, Punathil R, Kang BG, Dasovich M, Veire A, Hernandez MD, Liu S, **Shi Z**, Dafinca R, Fouquerel E, Talbot K, Kam TI, Zhang YJ, Dickson D, Petrucelli L, van Blitterswijk M, Guo L, Dawson TM, Dawson VL, Leung AKL, Lloyd TE, Gendron TF, Rothstein JD, Zhang K*. Poly(ADP-ribose) Promotes Toxicity of *C9ORF72* Arginine-rich Dipeptide Repeat Proteins. ***Science Translational Medicine***. *14(662), eabq3215*. 2022.

[16] **Shi Z**, Innes-Gold S, Cohen AE*. Membrane tension propagation couples axon growth and collateral branching. ***Science Advances.*** *8(35), eabo1297.* 2022. Qeios review

[15] Biswas R, Yang S, Adly-Gendi P, Chen T, Crichton RC, Kopcha WP, **Shi Z***, Zhang J*. C60-β-cyclodextrin conjugates for enhanced nucleus delivery of doxorubicin. ***Nanoscale.*** *14(12), 4456-4462.* 2022.

[14] Wang H, Kelley FM, Milovanovic D, Schuster BS, **Shi Z***. Surface tension and viscosity of protein condensates quantified by micropipette aspiration. ***Biophysical Reports.*** *1(1), 100011. 2021. bioRxiv* Most Read Paper News Feature

[13] Schuster B, Regy RM, Dolan EM, Ranganath AK, Jovic N, Khare SD, **Shi Z**, Mittal J*. Biomolecular condensates: sequence determinants of phase separation, microstructural organization, enzymatic activity, and material properties. ***J. Phys. Chem. B****. 125(14), 3441–3451.* 2021.

[12] Cohen AE*, **Shi Z***. Do cell membranes flow like honey or jiggle like Jello? ***BioEssays****. 42 (1), 1900142*. 2020.

----------Before Independent Career----------

[11] **Shi Z,** Graber ZT, Baumgart T, Stone HA, Cohen AE*. Cell membranes resist flow. ***Cell.*** *175(7), 1769-1779.* 2018. *bioRxiv* Faculty Opinions Recommended Perspective News Feature

[10] Graber ZT, **Shi Z**, Baumgart T*. Cations induce shape remodeling of negatively charged phospholipid membranes. ***Phys. Chem. Chem. Phys.*** *19(23), 15285-15295.* 2017.

[9] Luo Q, **Shi Z**, Zhang Y, Chen XJ, Han SY, Baumgart T, Chenoweth DM, Park SJ*. DNA Island Formation on Binary Block Copolymer Vesicles. ***J. Am. Chem. Soc.*** *138(32), 10157–10162.* 2016.

[8] Chen Z, **Shi Z**, Baumgart T*. Regulation of Membrane-Shape Transitions Induced by I-BAR Domains. ***Biophysical Journal.*** *109(2), 298-307.* 2015.

[7] **Shi Z,** Sachs JN, Rhoades E, Baumgart T*. Biophysics of α-synuclein induced membrane remodelling. ***Phys. Chem. Chem. Phys.*** *17(24), 15561-15568.* 2015. Faculty Opinions Recommended

[6] **Shi Z**, Baumgart T*. Membrane tension and peripheral protein density mediate membrane shape transitions. ***Nature Communications****. 6, 5974.* 2015. News Feature

[5] Wu T, **Shi Z**, Baumgart T*. Mutations in BIN1 associated with Central Nuclear Myopathy disrupt membrane remodeling by affecting protein density and oligomerization. ***PLoS ONE.*** *9(4), e93060*. 2014.

[4] **Shi Z**, Baumgart T*. Dynamics and instabilities of lipid bilayer membrane shapes. ***Adv. Colloid Interface Sci.*** *208,76-88*. 2014.

[3] Cavallaro M, Gharbi MA, Beller DA, Copar S, **Shi Z**, Baumgart T, Yang S, Kamien RD, Stebe KJ*. Exploiting imperfections in the bulk to direct assembly of surface colloids. ***Proceedings of the National Academy of Sciences.*** *110(47), 18804-18808.* 2013.

[2] Cavallaro M, Gharbi MA, Beller DA, Copar S, **Shi Z**, Kamien RD, Yang S, Baumgart T, Stebe KJ*. Ring around the colloid. ***Soft Matter****. 9(38), 9099-9102*. 2013.

[1] Capraro BR[#], **Shi Z**[#], Wu T, Chen Z, Dunn JM, Rhoades E, Baumgart T*. Kinetics of endophilin N-BAR domain dimerization and membrane interactions. ***Journal of Biological Chemistry****. 288(18), 12533-12543*. 2013.

Teaching

Spring 2026	**Instructor for Phys. Chem.: Biochemical Systems (CHEM341)**
Oct. 24th, 2025	Lecturer for *Introduction to Research* (CHEM 603)
Spring 2025	**Instructor for Phys. Chem.: Biochemical Systems (CHEM341)**
	effectiveness: 4.8/5; quality: 4.6/5
Sept. 18th, 2024	Lecturer for *Introduction to Research* (CHEM 603)
Spring 2024	**Instructor for Phys. Chem.: Biochemical Systems (CHEM341)**
	effectiveness: 4/5; quality: 4.13/5
Sept. 22nd, 2023	Lecturer for *Introduction to Research* (CHEM 603)
Summer 2023	**Participant in the Teaching Excellence Networks (TEN)**
May 18th, 2023	Participant in the Rutgers Active Learning Symposium
Spring 2023	**Instructor for Honors General Chemistry II (CHEM 164)**
	effectiveness: 3.78/5; quality: 3.78/5
Mar. 31st, 2022	Lecturer for *Concepts in Nano Chemistry* (CHEM 461)
Fall 2021	**Instructor for Special Topics in Physical Chemistry (CHEM 541)**
	effectiveness: 4.25/5; quality: 4.25/5
Feb. 9th, 2021	Lecturer for *Advanced Topics in Physical Chemistry* (CHEM 542)
Spring 2021	**Instructor for Honors General Chemistry II (CHEM 164)**
	effectiveness: 3.29/5; quality: 3.21/5
Mar. 23rd, 25th, 2020	Lecturer for *Concepts in Nano Chemistry* (CHEM 461)
Sept. 25th, 2019	Lecturer for *Introduction to Research* (CHEM 603)
Fall 2019	**Instructor for Biophysical Chemistry I (CHEM 437/537)**
	effectiveness: 4.58/5; quality: 4.47/5
Spring 2014	Teaching Assistant in physical chemistry lab
Spring 2011	Teaching Assistant in general chemistry lab
Fall 2010	Teaching Assistant in general chemistry lab

Awards and Grants

- 2025 – 2030 NSF CAREER award ($660,648 direct, $1,021,363 total):
  Towards understanding mechanical signaling at the cell membrane
- April 2023 Rutgers Core Facility Utilization Grants ($5,000)
- 2022 – 2027 NIH NIGMS Maximizing Investigators' Research Award (MIRA) ($1,050,000 direct, $1,595,503 total):
  Understanding the viscoelasticity, surface tension, and membrane interactions of biomolecular condensates in live cells
- 2022 – 2025 NIH NIDA R21 grant ($275,000 direct, $392,266 total):
  Micropipette-based quantification of neuronal protein condensates in live cells
- Aug. 2021 Provost's COVID Funds
- April 2019 Harvard Chinese Life Sciences Distinguished Research Award
- April 2019 "The Company of Biologists" Excellent Poster Award at the EMBO workshop
- Mar. 2019 EMBO travel grants for MSRP 2019 workshop
- June 2018 JGP Exceptional Poster Award at the FASEB conference
- Nov. 2017 Biophysical Society 2018 Education Committee Travel Award

- Sept. 2013 Award for Excellence in Chemistry Graduate Research
- Oct. 2009 Outstanding Undergraduate Research Project Scholarship
  Application of tunable diode laser absorption spectroscopy in detecting H_2O isotope and flame properties (advisor: Shuiming Hu)
- Sept. 2009 Outstanding Student Scholarship (grade 1)

Invited Scientific Talks

02/21/2026 Biophysical Society 70th Annual Meeting, San Francisco, California
Membrane Structure and Function Subgroup
01/22/2026 Physics Colloquium at Lehigh University, Bethlehem, Pennsylvania
01/08/2026 Complex Systems and Biophysics Seminar at Northwestern University, Evanston, Illinois
12/18/2025 Chemistry for Life Science and Health Care Symposium at the International Chemical Congress of Pacific Basin Societies, Honolulu, Hawaii
Lipids on the move: from membrane biophysics to synthetic lipid nanoparticles and artificial organelles
12/06/2025 The American Society for Cell Biology Meeting, Philadelphia, Pennsylvania
Subgroup session "Physical Biology of the Cytoplasm" (unable to attend)
12/01/2025 Materials Research Society Fall Meeting, Boston, Massachusetts
Symposium SB01 - Liquid–Liquid Interfaces for Emerging Biotechnologies
11/18/2025 Center for Computational and Integrative Biology (CCIB) Seminar at Rutgers University, Camden, New Jersey
11/13/2025 Biochemistry Seminar at the University of California, San Diego, California
10/02/2025 MemPhaseClinic Seminsar at Charité – Berlin University Medicine, German Center for Neurodegenerative Diseases (DZNE), Berlin, Germany
09/29/2025 Biomembrane Days, Berlin, Germany
09/02/2025 Frontiers in Chemistry and Chemical Biology, Rutgers University, Piscataway, New Jersey
08/20/2025 Biochemistry Seminar at the University of Tennessee, Knoxville, Tennessee
06/11/2025 The 5th Complexity in the Chemistry and Physics of Lipid Membranes workshop in Telluride, Colorado
04/30/2025 Physical Properties of the Cytoplasm Online Seminar Series (virtual)
03/13/2025 Biophysics Seminar at Carnegie Mellon University, Pittsburgh, Pennsylvania
02/19/2025 Biological Chemistry Seminar at the University of Pennsylvania, Philadelphia, Pennsylvania
12/09/2024 Nanoscale Mechanobiology Symposium at ICBME 2024, the 18th International Conference on Biomedical Engineering, Singapore (declined)
10/25/2024 Biological Physics/Physical Biology (BPPB) seminar (virtual)
10/15/2024 Single Molecule Technology Center Seminar at Harvard Medical School (virtual)
10/09/2024 Physics Colloquium at the University of Illinois, Chicago, Illinois
09/17/2024 Cancer Pharmacology Research Seminar at the Rutgers Cancer Institute (virtual)
09/09/2024 Keystone Symposium on Biomolecular Condensates: Mechanisms and Therapeutic Opportunities, Breckenridge, Colorado

Young Investigator Forum

09/05/2024 The 2nd Rutgers – Princeton Condensates Day, Piscataway, New Jersey
Joint talk with Howard Stone

02/05/2024 Biophysics Seminar at Johns Hopkins University, Baltimore, Maryland

12/06/2023 The American Society for Cell Biology Meeting, Boston, Massachusetts
Subgroup session "Physical Biology of the Cytoplasm"

11/29/2023 Materials Science Seminar at Johns Hopkins University, Baltimore, Maryland

11/10/2023 EMBO Workshop: Membrane shaping and remodeling by proteins, Kunming, China

11/04/2023 The 3rd Huairou Forum on Biomedical Imaging, Beijing, China

11/02/2023 Biomedical Seminar at Peking University, Beijing, China

09/14/2023 The 1st Rutgers – Princeton Condensates Day, Princeton, New Jersey

07/04/2023 Biomedical Seminar at the Southern University of Science and Technology

06/23/2023 The 4th Complexity in the Chemistry and Physics of Lipid Membranes workshop in Telluride, Colorado

03/30/2023 The RADAR Workshop on *Biomolecular Condensates in health, disease and across scales* at NIH, Bethesda, Maryland

12/07/2022 The American Society for Cell Biology Meeting, Washington DC
Subgroup session "Remodeling and Reshaping Membranes"

10/20/2022 Tri-Institutional Cell Biology Seminar at Memorial Sloan Kettering Cancer Center, Rockefeller University, and Weill Cornell Medicine, New York City, New York

10/06/2022 Cell Biology Seminar at Johns Hopkins Medical Institute, Baltimore, Maryland

09/08/2022 Biomedical Seminar at the University of Leeds, Leeds, England

06/06/2022 Molecular Biophysics of Membranes Conference, Tahoe, California
Session on Mechanotransduction in the Membrane

06/01/2022 Middle Atlantic Regional Meeting of the American Chemical Society, Trenton, New Jersey
Symposium on Membrane Biophysics (Chair): Heterogeneity and Asymmetry of Cell Membranes

02/21/2022 Biophysical Society 66th Annual Meeting, San Francisco, California
Symposium on Membrane Tension

02/17/2022 Phase Group Seminar at Princeton University, Princeton, New Jersey

11/09/2021 Cell Biology Seminar at Yale University, School of Medicine (virtual)

07/01/2021 Interdisciplinary Science Seminar at Harvard University, Center for Mathematical Sciences and Applications (virtual)

03/16/2021 Cancer Pharmacology Seminar at the Cancer Institute of New Jersey (virtual)

01/14/2021 Biophysics and Systems Biology Seminar at UC Irvine (virtual)

06/23/2020 The 3rd Complexity in the Chemistry and Physics of Lipid Membranes workshop in Telluride (Canceled due to COVID-19)

05/21/2020 Biomedical Seminar at Tongji University (virtual)

04/17/2020 Chemistry Seminar at Ursinus College (canceled due to COVID-19)

02/27/2020 Tri-departmental Research Seminar at Rutgers Medical School, Piscataway, New Jersey

02/16/2020 Biophysical Society 64th Annual Meeting in San Diego, California
Platform: Mechanosensation (Co-Chair)
12/19/2019 Biophysics Journal Club at Princeton University, Princeton, New Jersey
12/14/2019 The 1st Rutgers Chinese Faculty Research Symposium, Piscataway, New Jersey
Frontiers in Neuroscience
10/15/2019 Chemistry & Chemical Biology Colloquium at Rutgers University, Piscataway, New Jersey
02/06/2019 Physics Seminar at the University of Florida, Gainesville, Florida
01/31/2019 Physics Seminar at the University of Miami, Miami, Florida
01/24/2019 Physics Colloquium at Carnegie Mellon University, Pittsburgh, Pennsylvania
01/21/2019 Physics Seminar at the University of Alberta, Edmonton, Canada
01/17/2019 Physiology Special Seminar at UT Southwestern Medical Center, Dallas, Texas
01/10/2019 Chemistry Seminar at Purdue University, West Lafayette, Indiana
01/07/2019 Cell and Developmental Biology Seminar at National Heart, Lung, and Blood Institute, Bethesda, Maryland
11/28/2018 Chemistry & Chemical Biology Seminar at Rutgers University – New Brunswick Piscataway, New Jersey
10/10/2018 PostDoc Science Café at Harvard, Cambridge, Massachusetts
09/24/2018 Cellular Dynamics Research Talk at Harvard Molecular Cellular Biology, Cambridge, Massachusetts
09/06/2018 Biophysics Workshop at Carnegie Mellon University, Pittsburgh, Pennsylvania
The Physics and Biology of Subcellular Structure & Remodeling
09/06/2018 Society of General Physiologists 72nd Annual Symposium, Woods Hole Massachusetts (declined)
Molecular Physiology of the Cell Membrane: An Integrative Perspective from Experiment and Computation
06/17/2018 15th FASEB Research Conference on "Molecular Biophysics of Membranes", Olean, New York
Scientific Session: Membrane Complexity: Domains and Shapes
02/10/2015 Biophysical Society 59th Annual Meeting, Baltimore, Maryland
Platform: Exocytosis, Endocytosis, and Membrane Fusion (Representing T. Baumgart)
06/24/2014 The 88th ACS Colloids and Surface Symposium, Philadelphia, Pennsylvania
Biointerfaces 5: Mechanics II

Outreach and Professional Services

Outreach

June 2025 Co-organizer for the Telluride Science Research Center (TSRC) Workshop: Complexity in the Chemistry and Physics of Lipid Membranes
June 2025 Rutgers–New Brunswick and Dublin City University Life Sciences Speed Networking Event
Sept 2024 Co-organizer for the 2nd Rutgers – Princeton Condensates Day
Sept 2023 Volunteer for Historically Black Colleges and Universities (HBCU) NY Classic x EltaMD

June 2022 Organizer for the Membrane Biophysics Symposium at 2022 Middle Atlantic Regional Meeting of ACS
April 2022 Speaker for *Introduction to Undergraduate Research* for Rutgers CCB
Jan. 2021 Panelist for the University of Science and Technology of China Alumni Career Development Forum
April 2020 Host for Rutgers Chinese American Faculty webinars during the COVID-19 pandemic
Feb. 2020 Co-Chair for the Mechanosensation Platform at the 64th BPS meeting
Oct. 2019 Speaker for the Rutgers CCB Industrial Advisory Board Meeting
June 2019 "Tales from the Battlefront" Panel Discussion with Harvard Postdocs
Discussion Panel with Postdocs Back from the Academic Job Market (Panelist)

Served as *ad hoc* Reviewer for Grants:

Aug. 2025 German Research Foundation (JSPS-DFG)
Feb 2024 NIH Special Emphasis Panel (SEP)
July 2023 NIH-NIDA Cutting-Edge Basic Research Awards (CEBRA) Review Panel
April 2023 The French National Research Agency (ANR) AAPG
Feb. 2023 The Rutgers Global Grants Program
June 2022 NIH Cell Structure and Function 1 Study Section (CSF1)
Nov. 2021 The UK Medical Research Council MCMB grant

Served as Peer Reviewer for Research Articles at:

*Nature Communications, Science Advances, PNAS, Biophysical Journal, Nature Physics, Nature Chemical Biology, Journal of Cell Biology, Journal of the American Chemical Society, Advanced Science, eLife, Signal Transduction and Targeted Therapy, Biophysics Colab, Current Opinion in Cell Biology, BMC Biology, Cell Reports Physical Science, Communications Biology, Communications Physics, ACS Chemical Biology, Soft Matter, Scientific Reports, PLoS ONE, Small Methods, Journal of Chemical Theory and Computation, Journal of Physical Chemistry Letters, Journal of Membrane Biology, Frontiers in Biophysics**, Frontiers in Molecular Biosciences**, Frontiers in Cell and Developmental Biology, Frontiers in Chemistry, Membranes**, Proteins, Life Sciences, JoVE, Biomedicine and Pharmacotherapy, BioMed Research International.*

**: also serves on the editorial board

Professional Societies

Biophysical Society: 2013 –
American Chemical Society: 2014 –
American Society for Cell Biology: 2022 –
Material Research Society: 2025 –

Served on Rutgers CCB committees:

Colloquia and Seminars (2020-); Graduate Admission (2019-); Graduate Recruitment (2019-2021, 2023-); Safety (2019-2021); AFM (2022-); Physical (2019-); Biological (2019-); Materials/Nanoscience (2022-).

Postdocs and students mentored (noted if not chemistry major at Rutgers):

Postdocs: Vinit Kumar Malik (2025-), Mengying Deng (2024-2025), Bineet Sharma (2022-2024; position afterwards: Research Associate at Technical University of Munich, Germany).

Ph.D. students: Divya Kumari (2024-), Jinying Wang (2024-), Yiling Wang (2022-), Boxuan Li (2022-), Shilong Yang (2020-), Huan Wang (2019- May 21, 2025; position afterwards: Postdoc at Stanford University).
Rotation students: Sophia Fanzini (2025), Qiming Wu (2024), Lishana Wimalarathne (2023), Zeynep Yaslan (2023), Abik Hameem (2023), Joselyn Dzieminski (2023), Sri Vidya Tallavajhula (2022), Yuchen Ma (2022), Joyce Lin (2022), Zainab Mustapha (2022), Xiao Ding (2021), Rui Zhang (2021).
Master students: Yuzhou Xia (2024-2025), Nisrine Tabnaoui (2024; BTAA-IREP scholar), Zeyu Lin (2019-2021).
Undergraduate students: Ali Abdi (Cell Biology & Neuroscience, 2025-), Dev Patel (Genetics, 2025-), Yarisleida Garcia (Chemistry, 2025-2026), Edona Nezaj (*Connecticut College*, 2025, RISE Program), Praagna Pydimarri (Data Science, 2025-), Elton Maloku (2024-, LSAMP program), Shengrui Shao (2023-), Daniel Hamdani (2023), Camille Grullon (Biochemistry, 2023, LSAMP program), Amber Nepravishta (Cell Biology & Neuroscience, 2023, SUPER program), Mariam Haroun (*Caldwell*, 2023, RISE Program), Sahar Saiyed (Biomathematics, 2023-2024), Juan C. Acosta (Molecular Biology and Biochemistry, 2023-2024), Navya Korala (Cell Biology & Neuroscience, 2023-2024), Megha Patel (2023), Jake Rothstein (Biochemistry, 2022-2024), Maxim Yurkov (Biochemistry, 2022-2023), Holly Cheng (*Princeton*, 2022), Jack Nothnagel (*Cornell*, 2022), Matthew Wang (Biophysics, 2020-2022), Steven Arnold (Cell Biology & Neuroscience, 2020-2022), Roberto Sul (Finance, 2020), Ismail Mur (Pharmacy, 2020).
High School students: Moaaz Mahfooz (Piscataway High School, 2022, ACS Project SEED), Grace Xia (Stuart Country Day School, 2022-2023), Srihitha Kariveda (South Brunswick High School, 2020).

Student Awards and Fellowships
Yiling Wang (*Reid Award, 2025*), Shilong Yang (*Reid Award, 2023*), Huan Wang (*Reid Award, 2022; Zhou family fellowship, 2022, $25,000*), Steven Arnold (*Graduated with Highest Honor*).

Served on Thesis Committee:
Ph.D. in Chemistry: Jonathan Santoro (Zhang), Joselyn Dzieminski (Nieuwkoop), Mahsa Darestani Farahani (Baum), Callan McLoughlin (KB Lee), Gertrude Asante Ampadu (Nieuwkoop), Ryan Bennick (Zhang), Hyunjun Jang (KB Lee), Priscilla Chinchilla Retana (Baum), Li Ling Goldman (KB Lee), Amanda Liyanaarachchi (Remsing), Seungwoo Lee (Baum), Lingjun Xie (Khare), Brandon Conklin (KB Lee, 2025), Nityananda Pal (Khare), Ashley Bernstein (Nieuwkoop, 2023), Jeffrey Luo (KB Lee, 2023).
Ph.D. outside Chemistry: Derrick Francis Michell (Rowan University, Cooper/Strich Lab, Cell & Molecular Biology), Victoria Brown (Soto, Cell and Developmental Biology), Vailankanni Rodrigues (Dignon, Chemical and Biochemical Engineering), Bruna Favetta (Schuster, Biomedical Engineering, 2025), Lei Zhuang (Zhang, Biochemical Engineering), Fleurie Kelley (Schuster, Biochemical Engineering), Seyedsajad Moazzeni (Lin, Mechanical Engineering, 2023).
Undergraduate: Patrick Adly-Gendi (Zhang), Mark Siringan (Zhang).

Additional Mentorship

2024 - Mentor for Masters Students in France via Big Ten Academic Alliance's International Research Experience Program (BTAA-IREP)
2023 - Mentor for Research Intensive Summer Experience (RISE) for Undergraduates
2023 - Project SUPER Faculty Mentor for Douglass WiSE programming
2023 - Louis Stokes Alliance for Minority Participation (LSAMP) Faculty Mentor for Undergraduate Research
2022 Mentor for ACS Project SEED: Summer Experiences for the Economically Disadvantaged High School Students

Posters and other Meeting Abstracts *(awarded posters in red)*

Feb 2025 Biophysical Society 69th Annual Meeting in Los Angeles

[1] Wang H, …, Shi Z. Reactive Oxygen Species Solidify Protein Condensates. [2] Yang S, …, Shi Z. Lipid Preference of Piezo1 Modulates its Curvature Sorting in the Plasma Membrane. [3] Favetta B, Wang H, … Shi Z, Schuster B. Amphiphilic Proteins Regulate the Interfacial Tension of Biomolecular Condensates.

Sept 2024 Keystone Symposium on Biomolecular Condensates: Mechanisms and Therapeutic Opportunities, Breckenridge, Colorado

*[1] Wang H, …, **Shi Z**. alpha-Synuclein regulates the material properties of synapsin condensates in live cells.*

Sept 2024 Rutgers – Princeton Condensates Day

[1] Wang H, …, Shi Z. Reactive oxygen species solidify protein condensate. [2] Kara E, et al. The formation, expansion and dissolution of alpha-synuclein inclusions is modulated by a genetic network acting through phase separation. [3] Fei J, et al. NDF-FACT condensates are required for RNA Polymerase II transcription elongation through chromatin. [4] Rothstein J, Wang H, Shi Z. The Effects of Oxidative Stress on the Physical Properties of Stress Granules. [5] Sharma B, Wang J,… Shi Z. alpha-Synuclein seeds induce higher viscosity in tau condensates as compared to its monomeric form. [6] Wang Y. Quantification of NINJ1-mediated Cell Membrane Rupture.

April 2024 American Thoracic Society International Conference

[1] D. Mak, V. Nagaraj, N.R. Dahiya, F. Syed, H. Son, J.M. Lee, D.Y. Jung, S. Yang, Z. Shi, G. Barbet, C. McClenaghan, and S.S. An. Activation of PIEZO1 Evokes Calcium Flux and Promotes Human Airway Smooth Muscle Cell Relaxation (abstract). Am J Respir Crit Care Med 2024;209:A7200.

Feb 2024 Biophysical Society 68th Annual Meeting in Philadelphia

[1] H Cheng, H Wang, Z Shi, CP Brangwynne. Probing the material properties of nucleoli using micropipette aspiration. [2] Wang H, …, Z Shi. Quantification and regulation of the material properties of synapsin condensates in vitro and in live cells. [3] B Sharma, J Baum, Z Shi. The material properties and crosstalk between tau and alpha-synuclein condensates. [4] B Favetta, H Wang, … Z Shi, B Schuster. Phosphorylation regulates the function of the SARS-COV-2 nucleocapsid protein. [5] Y Wang, A Nieuwkoop, J Xu, Z Shi. Quantification of NINJ1-mediated membrane rupture.

Dec 2023 The American Society for Cell Biology meeting in Boston

*[1] Wang H, Hoffmann C, Milovanovic D, **Shi Z**. Quantification and regulation of the material properties of synapsin condensates in vitro and in live cells.*

Sept 2023 Rutgers – Princeton Condensates Day

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*[1] **Shi Z** Mechanical signaling at the cell membrane*

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[1] Robustelli JA, Shi Z, Baumgart T. Synuclein Increases Membrane Binding with Rising Lateral Tension

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[1] Chen Z, Shi Z, Katarzyna JI, Baumgart T. BAR Domain Proteins can Differ Substantially in their Capacity to Generate Membrane Curvature

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*[1] **Shi Z**, Baumgart T. Protein-Induced Membrane Shape Instability: Dynamics and Membrane Tension Dependence.*

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