

Guoming Gao

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Education

University of Michigan, Ann Arbor, MI 9/2018-3/2020, 6/2021-present
Ph.D. Candidate, Biophysics (GPA: 4.00/4.00)
Wuhan University, Wuhan, China 9/2014-6/2018
B.S., Life Sciences (GPA: 3.85/4.00, Rank 6/152)

Honors & Awards

Biophysical Society Student Research Achievement Award 2024
Rackham Conference Travel Grant (4 times) 2018, 2019, 2022, 2023
Best Poster Award (top 2 in 45), 6th Midwest Single-Molecule Workshop, Omaha, NE 2022
RNA Society Research Presentation Fellowship 2022
Nomination for Rackham Predoctoral Fellowship 2022
Rackham Graduate Student Research Grant 2021
Nomination for OPGS Annual Graduate Student Teaching Award 2021
Nomination for Rackham Outstanding GSI Awards 2021
Biophysical Society Travel Award 2020
Nomination for Rackham International Student Fellowship 2019
China Scholarship Council (CSC) Scholarship for Exchange Study 2017
Outstanding Student Scholarship (top 20 in 152, 3 times), Wuhan University 2015-2017
International Genetically Engineered Machine (iGEM) Silver Award, Boston, MA 2015

Selected Publications

1. **Gao, G.** & Walter, N.G. Critical Assessment of Condensate Boundaries in Dual-Color Single Particle Tracking. *J. Phys. Chem. B* (2023). doi: [10.1021/acs.jpcc.3c03776](https://doi.org/10.1021/acs.jpcc.3c03776)
2. **Gao, G.**, Sumrall, E.S., Pitchiaya, S. et al. Biomolecular condensates in kidney physiology and disease. *Nat. Rev. Nephrol.* (2023). doi: [10.1038/s41581-023-00767-0](https://doi.org/10.1038/s41581-023-00767-0)
3. Jalihaal, A. P., Schmidt, A., **Gao, G.** et al. Hyperosmotic Phase Separation: Condensates beyond Inclusions, Granules and Organelles. *J. Biol. Chem.* (2021). doi: [10.1074/jbc.REV120.010899](https://doi.org/10.1074/jbc.REV120.010899)
4. Schmidt, A., **Gao, G.**, Little, S. R. et al. Following the Messenger: Recent Innovations in Live Cell Single Molecule Fluorescence Imaging. *Wiley Interdisciplinary Reviews: RNA* (2020). doi: [10.1002/wrna.1587](https://doi.org/10.1002/wrna.1587)
5. Chen, H., Lu, D., Shang, G., **Gao, G.** et al. Structural and Functional Analyses of the FAM46C/Plk4 Complex. *Structure* (2020). doi: [10.1016/J.STR.2020.04.023](https://doi.org/10.1016/J.STR.2020.04.023)

Selected Presentation

1. **Selected Platform Session Talk:** Heterogeneity in condensates regulates intra-condensate diffusion of RNA single molecules. *68th Biophysical Society Annual Meeting (BPS), Philadelphia, PA*. February 2024.
2. **Invited Talk:** Biomolecular Condensates in kidney physiology and disease. *George M. O'Brien Kidney Center Basic Science Seminar, Ann Arbor, MI*. December 2023.
3. Poster: Differential Dynamic Recruitment of Single RNAs to Hyperosmotic Phase Separation (HOPS). *6th Midwest Single-Molecule Workshop, Omaha, NE*. August 2022.
4. **Selected Plenary Talk:** Differential Sorting Kinetics of Single Molecule RNAs in Hyperosmotic Phase Separation. *27th RNA Society Meeting, Boulder, CO*. June 2022.
5. Poster: RNA Trafficking between Membraneless Organelles at Single-Molecule Resolution in Live Cells. *64th Biophysical Society Annual Meeting (BPS), San Diego, CA*. February 2020.

Selected Research Experience

Graduate Student Research Assistant 4/2019-present

University of Michigan, Ann Arbor, MI

PhD Thesis Project: *Single Molecule Study of RNAs in biomolecular condensates*

Advisor: **Nils G. Walter**, Ph.D.

- Profiled the partitioning kinetics and diffusion of different RNAs in hyperosmotic phase separation (HOPS) condensates with dual-color live-cell single particle tracking (SPT)
- Studied how the heterogeneity in condensates regulates intra-condensate RNA diffusion by dual-color SPT in reconstituted tag-free full-length FUS condensates
- Benchmarked and compared different computer vision algorithms for a guideline on determining the condensate boundaries in fluorescence microscopy images

CSC-Sponsored Visiting Scholar

9/2017-4/2018

University of Texas Southwestern Medical Center, Dallas, TX

Undergraduate Thesis Project: *Effects of Plk4 on Poly(A) Polymerase Activity of FAM46: A Crystallography and Biochemistry Study*

Advisor: **Xuewu Zhang**, Ph.D.

Undergraduate Researcher

12/2015-7/2017

Wuhan University, Wuhan, China

Undergraduate Research project: *Probing the impact of RNA chaperones on R-loop formation with Magnetic Tweezers*

Advisor: **Xinghua Zhang**, Ph.D.

Selected Teaching Experience

Introduction to Scientific Programming (BIOPHYS 117) 2021

Course director: **Sarah Veatch**, Ph.D. (University of Michigan-Ann Arbor, MI, USA)

Biophysics Modeling (BIOPHYS 535) 2020

Course director: **Aaron Frank**, Ph.D. (University of Michigan-Ann Arbor, MI, USA)

Advanced Biochemistry (CHEM/BIOLCHEM 451) 2019

Course director: **Sarah Keane**, Ph.D. (University of Michigan-Ann Arbor, MI, USA)

- Nominated for two teaching awards

Biochemistry (Undergraduate level, taught in English) 2016

Course director: **Lin Guo**, Ph.D. (Wuhan University, Wuhan, China)

- Organized a biochemistry symposium and the end-of-semester biochemistry debate

Community Services

RNA Society Spotlight Series writer 2024

Member of Biophysics Seminar Committee 2022

Poster Judge on the 2022 Karle Symposium, Ann Arbor, MI 2022

U of M Student Representative at the Biophysical Society Meeting 2019, 2020, 2022

Recruiter for the Biophysics Graduate Program 2019, 2022

Research Journals Peer-review: RNA, JBC, 2019-2022

Volunteer Secondary School Teacher (Group Leader) at Clover Youth, China 2014