

Sikao Guo

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Education

Institute of Physics, Chinese Academy of Sciences

Beijing, China

Ph.D. in Condensed Matter Physics

Sep. 2014 - Dec. 2019

Research Advisor: Professor Ping Xie; Thesis: "Studying the movement mechanism of dimer kinesin through theoretical modeling and numerical simulation"

Nankai University

Tianjin, China

B.S. in Physics

Sep. 2010 - Jun. 2014

Experience

Johns Hopkins University

Baltimore, MD

Postdoctoral Research

Jan. 2020 - present

Research Advisor: Professor Margaret E. Johnson

Publications

- [1] **Sikao Guo**, Ipsita Saha, Saveez Saffarian, Margaret E Johnson (2023) "Structure of the HIV immature lattice allows for essential lattice remodeling within budded virions," *eLife*, 12:e84881. [\[Link\]](#)
- [2] Qi Xie, Sea On Lee, Nitya Vissamsetti, **Sikao Guo**, Margaret E. Johnson, Stephen D. Fried (2023) "Secretion-Catalyzed Assembly of Protein Biomaterials on a Bacterial Membrane Surface," *Angew. Chem. Int. Ed.*, e202305178. [\[Link\]](#)
- [3] Yian Qian, Daniel Evans, Bhavya Mishra, Yiben Fu, Zixiu Hugh Liu, **Sikao Guo**, Margaret E. Johnson (2023) "Temporal control by cofactors prevents kinetic trapping in retroviral Gag lattice assembly," *Biophysical Journal*. [\[Link\]](#)
- [4] **Sikao Guo**, Alexander J Sodt, Margaret E Johnson (2022) "Large self-assembled clathrin lattices spontaneously disassemble without sufficient adaptor proteins," *PLOS Computational Biology*, 18, e1009969. [\[Link\]](#)
- [5] **Sikao Guo**, Ping Xie (2020) "A common chemomechanical coupling model for orphan and conventional kinesin molecular motors," *Biophysical Chemistry*, 264, 106427. [\[Link\]](#)
- [6] Xiao-Xuan Shi, **Sikao Guo**, Peng-Ye Wang, Hong Chen, Ping Xie (2020) "All-atom molecular dynamics simulations reveal how kinesin transits from one-head-bound to two-heads-bound state," *Proteins: Structure, Function, and Bioinformatics*, 88 (4), 545-557. [\[Link\]](#)
- [7] **Sikao Guo**, Xiao-Xuan Shi, Peng-Ye Wang, Ping Xie (2019) "Run length distribution of dimerized kinesin-3 molecular motors: comparison with dimeric kinesin-1," *Scientific reports*, 9, 16973. [\[Link\]](#)
- [8] **Sikao Guo**, Xiao-Xuan Shi, Peng-Ye Wang, Ping Xie (2019) "Force dependence of unbinding rate of kinesin motor during its processive movement on microtubule," *Biophysical Chemistry*, 253, 106216. [\[Link\]](#)
- [9] **Sikao Guo**, Wei-Chi Wang, Peng-Ye Wang, Ping Xie (2019) "Force dependence of velocity and run length of kinesin-1, kinesin-2 and kinesin-5 family molecular motors," *Molecules*, 24 (2), 287. [\[Link\]](#)
- [10] Yi-Ben Fu, **Sikao Guo**, Peng-Ye Wang, Ping Xie (2019) "Dynamics of cooperative cargo transport by two elastically coupled kinesin motors," *The European Physical Journal E*, 42 (4), 1-13. [\[Link\]](#)
- [11] Ping Xie, **Sikao Guo**, Hong Chen (2019) "A generalized kinetic model for coupling between stepping and ATP hydrolysis of kinesin molecular motors," *International journal of molecular sciences*, 20 (19), 4911. [\[Link\]](#)
- [12] **Sikao Guo**, Xiao-Xuan Shi, Peng-Ye Wang, Ping Xie (2018) "Processivity of dimeric kinesin-1 molecular motors," *FEBS Open Bio*, 8 (8), 1332-1351. [\[Link\]](#)
- [13] Ping Xie, **Sikao Guo**, Hong Chen (2018) "ATP-concentration-and force-dependent chemomechanical coupling of kinesin molecular motors," *Journal of Chemical Information and Modeling*, 59 (1), 360-372. [\[Link\]](#)
- [14] Xiao-Xuan Shi, Yi-Ben Fu, **Sikao Guo**, Peng-Ye Wang, Hong Chen, Ping Xie (2018) "Investigating role of conformational changes of microtubule in regulating its binding affinity to kinesin by all-atom molecular dynamics simulation," *Proteins: Structure, Function, and Bioinformatics*, 86 (11), 1127-1139. [\[Link\]](#)
- [15] **Sikao Guo**, Peng-Ye Wang, Ping Xie (2017) "Dynamics of dimeric kinesins: Limping, effect of longitudinal force, effects of neck linker extension and mutation, and comparison between kinesin-1 and kinesin-2," *International journal of biological macromolecules*, 105, 1126-1137. [\[Link\]](#)
- [16] **Sikao Guo**, Peng-Ye Wang, Ping Xie (2017) "A model of processive movement of dimeric kinesin," *Journal of Theoretical Biology*, 414, 62-75. [\[Link\]](#)

Conference Presentations

Cell Bio 2022

Talk: Defects Within the HIV-1 Immature Lattice Support Dynamic Remodeling and Protease Dimerization,

[\[Link\]](#)

Washington, DC, USA

Dec. 2022

Biophysical Society 66th Annual Meeting

Poster: Large Self-assembled Clathrin Lattices Spontaneously Disassemble Without Sufficient Adaptor Proteins,

[\[Link\]](#)

San Francisco, CA, USA

Feb. 2022

Stochastic Physics in Biology (Gordon Research Conference)

Poster: Self-assembled clathrin lattices spontaneously disassemble without sufficient links to the plasma membrane,

Ventura, CA, USA

Oct. 2021

Biophysical Society 65th Annual Meeting

Poster: Modeling Nucleation and Kinetics of Clathrin Assembly by Membrane Localization,

Virtual

Feb. 2021

2020 Annual Meeting of the APS Mid-Atlantic Section

Talk: Modeling Nucleation and Kinetics of Clathrin Assembly by Membrane Localization,

Virtual

Dec. 2020

Academic Service

Peer Reviewer

The Journal of Physical Chemistry, PROTEINS: Structure, Function, and Bioinformatics, PLOS Computational Biology, International Journal of Molecular Sciences, Cells, Applied Sciences, Biophysica, Biochemistry and Biophysics Reports, Entropy, Molecules, Biophysica, Medicina

Jan. 2020 - Present

Guest Editor

Biomedicines, Biology

Jan. 2023 - Present

References

- Prof. Margaret E. Johnson
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- Prof. Ping Xie
Ph. D, Professor, at Institute of Physics, Chinese Academy of Sciences, Beijing, China
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