Shuai Wang

swang9@stanford.edu, +1 (626) 417-1790

Education

2020 Ph.D. in Biochemistry and Molecular Biophysics, California Institute of Technology, Pasadena, CA
2011 B.S. in Biology, Wuhan University, Wuhan, China

Research Experience

2019-present Postdoctoral research with Prof. Thomas C. Südhof. Department of Molecular and Cellular Physiology, Stanford University, Stanford, CA

- Bioinformatic analyses of the alternative splicing pattern of adhesion molecules.
- Used genetic manipulation to investigate the function of adhesion molecules in establishing the Schaffer-collateral synapse in the mouse brain.
- Investigated the G-protein coupling preference of alternatively spliced isoforms.
- Biochemical reconstitution of the trans-synaptic protein complexes with scaffold proteins.

2013-2019 Graduate research with Prof. Shu-ou Shan. Department of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA

- Used biochemical reconstitution to show SecA co-translationally targets a nascent membrane protein to the bacterial membrane.
- Combined crosslinking and cryo-EM analyses to reveal how nascent membrane protein is recognized by SecA.
- Used selective-ribosome profiling and bioinformatic analyses to capture and identify nascent proteins *en route* to SecA pathway at the proteome scale with codon resolution.

2011-2013 Research associate with Prof. Zhucheng Chen. School of Life Sciences, Tsinghua University, Beijing, China

- Used biochemical reconstitution to find PI(3)P binds CapZ to induce actin polymerization.
- Purification of actin in complex with binding partners for crystallographic studies.

2009-2011 Undergraduate research with Prof. Xiangdong Chen. Department of Microbiology, Wuhan University, Wuhan, China

- Investigated the lysogenic and lytic life cycle of a haloarchaea virus.
- Molecular cloning for genetic manipulation in halophilic archaea.

Publications

2026 **Wang, S**.[#]; Südhof, T. C., FLRT3 drives axon outgrowth and synapse assembly in the Schaffer-collateral synapse. (in preparation)

2024 **Wang, S.[#];** DeLeon, C.; Sun W.; Quake, S. R.; Roth, B.; Südhof, T. C.[#], Alternative Splicing of Latrophilin-3 Controls Synapse Formation. ***Nature*.** 2024 Feb;626(7997):128-135. doi: 10.1038/s41586-023-06913-9. PubMed PMID: 38233523; PubMed Central PMCID: PMC10830413.

2022 Zhu, Z.*; **Wang, S.*;** Shan, S.[#], Ribosome profiling reveals multiple roles of SecA in cotranslational protein export. ***Nat Commun***. 2022 Jun 13;13(1):3393. doi: 10.1038/s41467-022-31061-5. PubMed PMID: 35697696; PubMed Central PMCID: PMC9192764.

2019 **Wang, S**.*; Jomaa, A.*; Jaskolowski, M.; Yang, C.; Ban, N.; Shan, S.[#], Molecular mechanism of co-translational membrane protein recognition and targeting by SecA. ***Nat Struct Mol Biol***. 2019 Oct;26(10):919-929. doi: 10.1038/s41594-019-0297-8. PubMed PMID: 31570874; PubMed Central PMCID: PMC6858539.

2017 **Wang, S**.; Yang, C., Shan, S.[#], SecA mediates cotranslational targeting and translocation of an inner membrane protein. ***J Cell Biol***. 2017 Nov 6;216(11):3639-3653. doi: 10.1083/jcb.201704036. PubMed PMID: 28928132; PubMed Central PMCID: PMC5674894.

2015 Mi, N.*; Chen, Y.*; **Wang, S**.; Chen, M.; Zhao, M.; Yang, G.; Ma, M.; Su, Q.; Luo, S.; Shi, J.; Xu, J.; Guo, Q.; Gao, N.; Sun, Y.; Chen, Z.[#]; Yu, L.[#], CapZ regulates autophagosomal membrane shaping by promoting actin assembly inside the isolation membrane. ***Nat Cell Biol*.** 2015 Sep;17(9):1112-23. doi: 10.1038/ncb3215. PubMed PMID: 26237647.

2015 Ariosa, A.; Lee, J.; **Wang, S**.; Saraogi, I.; Shan, S.[#], Regulation by a chaperone improves substrate selectivity during cotranslational protein targeting. ***Proc Natl Acad Sci USA*.** 2015 Jun 23;112(25):E3169-78. doi: 10.1073/pnas.1422594112. PubMed PMID: 26056263; PubMed Central PMCID: PMC4485088.

2015 Lv, J.; **Wang, S**.; Wang, Y.; Huang, Y.; Chen, X.[#], Isolation and Molecular Identification of Auxotrophic Mutants to Develop a Genetic Manipulation System for the Haloarchaeon *Natrinema* sp. J7-2. ***Archaea***, 2015;2015:483194. doi: 10.1155/2015/483194. PubMed PMID: 26089742; PubMed Central PMCID: PMC4454726.

2013 Lv, J.; **Wang, S**.; Zeng, C.; Huang, Y.; Chen, X.[#], Construction of a shuttle expression vector with a promoter functioning in both halophilic Archaea and Bacteria. ***FEMS Microbiol Lett*.** 2013 Dec;349(1):9-15. doi: 10.1111/1574-6968.12278. PubMed PMID: 24106795.

2012 Zhang, Z.; Liu, Y.; **Wang, S.**; Yang, D.; Cheng, Y.; Hu, J.; Chen, J.; Mei, Y.; Shen, P.; Bamford, D.; Chen, X.[#], Temperate membrane-containing halophilc archaeal virus SNJ1 has a circular dsDNA genome identical to that of plasmid pHH205. ***Virology*.** 2012 Dec 20;434(2):233-41. doi: 10.1016/j.virol.2012.05.036. PubMed PMID: 22784791.

(*equal contribution**,** [#]correspondence**)**

My NCBI Bibliography: https://www.ncbi.nlm.nih.gov/myncbi/shuai.wang.23/bibliography/public/

Honors

2024	Sammy Kuo Awards for Neuroscience, Stanford University
2022-2024	Postdoctoral fellowship, Stanford Maternal and Child Health Research Institute
2019	Chinese Government Award for outstanding self-financed students abroad
2017	Travel Award, EMBO Conference Protein Translocation and Cellular Homeostasis
2017	Conference Travel Grant, California Institute of Technology
2008	First Grade Scholarship, Wuhan University

Service

Independent reviewer: *PNAS*, *Mol. Cell. Neurosci.*

Teaching

2015-2016	Teaching assistant, BMB178 “Macromolecular Function: kinetics, energetics, and mechanisms” (Graduate level), California Institute of Technology. Responsibility: designing problem sets, grading, host office hour. Instructor: Prof. Shu-ou Shan
2014	Teaching assistant, BMB170a “Biochemistry and Biophysics of Macromolecules and Molecular Assemblies” (Graduate level), California Institute of Technology. Responsibility: designing problem sets, grading, host office hour. Instructor: Prof. Bil Clemons
2014	Guest lecturer and teaching assistant, Bi8 “Foundational Principles of Molecular Biology” (Undergrad level), California Institute of Technology. Responsibility: lecturing, designing problem sets, grading, organize recitations. Instructor: Prof. Ellen Rothenberg

Mentoring

2024-2025	Mahamaya Biswal (Postdoc), Peer-mentoring program, Stanford University
2024	Tommy Mitchell (Undergrad), Community College Outreach Program, San José State University
2023-2025	Beatrice Blythe Broido (Undergrad), Stanford University (joined Ph.D. program at Rockefeller University)
2023	Sina Mollaei (Undergrad), Stanford University

2019	Zikun Zhu (Graduate student), California Institute of Technology (joined lab, now postdoc at Broad Institute)
2017	Nathan King Deng (High school student), San Marino Unified School District
2016	Chris Wan (Undergrad), Summer Undergraduate Research Program, University of Cambridge; (joined Ph.D. program at MRC Laboratory of Molecular Biology)
2015	Chien-I Yang (Graduate student), California Institute of Technology (joined lab, now postdoc at Johns Hopkins University)

Associations

Member, American Society for Biochemistry and Molecular Biology
Member, Society for Neuroscience

Presentations

2025	(On-site Interview for faculty search), National Institute of Biological Sciences, Beijing, China
2025	(Zoom Interview for faculty search), Peking University, Beijing, China
2025	(On-site Interview for faculty search), Cornell University, Ithaca, NY, USA
2025	(On-site Interview for faculty search), National Institute of Child Health and Human Development, Bethesda, MD, USA
2024	(Zoom Interview for faculty search), Caltech, Pasadena, CA, USA
2024	(Zoom Interview for faculty search), Northwestern University, Evanston, IL, USA
2024	(Poster presentation) ‘Alternative splicing of latrophilin-3 controls synapse formation’. Society for Neuroscience, Chicago, IL, USA
2023	(Poster presentation) ‘Activity dependent alternative splicing of latrophilin-3 regulates synapse formation’. UCI Center for Neural Circuit Mapping, Irvine, CA, USA
2019	(Talk) ‘Mechanism of co-translational membrane protein targeting by SecA’. Caltech Biochemistry Seminar, Pasadena, CA, USA
2018	(Talk) ‘SecA mediated co-translational targeting of membrane proteins’. Caltech Biochemistry Seminar, Pasadena, CA, USA
2017	(Poster presentation) ‘SecA mediates co-translational targeting and insertion of an inner membrane protein RodZ’, EMBO conference Protein Translocation and Cellular Homeostasis, Dubrovnik, Croatia
2017	(Talk) ‘SecA Mediates Co-translational Targeting and Insertion of an Inner Membrane Protein’. Caltech Center for Molecular and Cellular Medicine Seminar, Pasadena, CA, USA