Stanford

Xinnan Wang

Associate Professor of Neurosurgery

CONTACT INFORMATION

- **Alternate Contact**

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Bio

ACADEMIC APPOINTMENTS

- Associate Professor, Neurosurgery
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Associate Professor, Stanford University School of Medicine, (2019- present)
- Assistant Professor, Stanford University School of Medicine, (2012-2019)

HONORS AND AWARDS

- McCormick and Gabilan Faculty Award, Stanford University (2018-2020)
- Parkinson's seed grant, Stanford (2018-2019)
- The Archer Award, The Archer Foundation (2016-2018)
- Biology V, California Institute of Regenerative Medicine (2014-2017)
- Mechanisms of Illness, Chronic Fatigue Initiative (2014-2015)
- Klingenstein Fellowship in Neuroscience, Klingenstein Foundation (2013-2018)
- Michael J. Fox Foundation Grant Target Validation Spring 2013, Michael J. Fox Foundation (2013-2014)
- Gabilan Junior Faculty Fellow, Stanford University (2012-now)
- Alfred P. Sloan Research Fellow 2012, Alfred P. Sloan Foundation (2012-2016)
- William and Bernice E Bumpus Foundation Innovation Award, William and Bernice E Bumpus Foundation (2011-2014)
- NIH Pathway to Independence (K99/R00), NINDS (2009-2014)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- SAB Chair, CuraX Therapeutic Corporation (2019 - present)
- SAB, Mitokinin LLC. (2018 - present)

PROFESSIONAL EDUCATION

- Ph.D, University of Cambridge , Genetics, Neurobiology (2007)
- M.D/MSc., China Medical University , Clinical Medicine and Genetics (2003)

LINKS

- http://xinnanwanglab.stanford.edu: http://xinnanwanglab.stanford.edu

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Mitochondria move and undergo fission and fusion in all eukaryotic cells. The accurate allocation of mitochondria in neurons is particularly critical due to the significance of mitochondria for ATP supply, Ca++ homeostasis and apoptosis and the importance of these functions to the distal extremities of neurons. In addition, defective mitochondria, which can be highly deleterious to a cell because of their output of reactive oxygen species, need to be repaired by fusing with healthy mitochondria or cleared from the cell. Thus mitochondrial cell biology poses critical questions for all cells, but especially for neurons: how the cell sets up an adequate distribution of the organelle; how it sustains mitochondria in the periphery; and how mitochondria are removed after damage. The goal of my research is to understand the regulatory mechanisms controlling mitochondrial dynamics and function and the mechanisms by which even subtle perturbations of these processes may contribute to neurodegenerative disorders.

Teaching

COURSES

2019-20

- Mitochondrial Transport and Function in Neuronal Health and Death: NSUR 81N (Aut)
- Molecular Mechanisms of Neurodegenerative Disease: BIO 267 (Win)

2017-18

- Molecular Mechanisms of Neurodegenerative Disease: BIO 267, GENE 267, NENS 267 (Win)

2016-17

- Learning to Fly: Drosophila Research Methods: BIOS 262 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Sharon Lu, Paras Minhas

Postdoctoral Faculty Sponsor

Vinita Bharat, Li Li

Doctoral Dissertation Advisor (AC)

Ashley Gonzalez, Amanda Papakyrikos

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Neurosciences (Phd Program)

Publications

PUBLICATIONS

- **Miro1 Marks Parkinson's Disease Subset and Miro1 Reducer Rescues Neuron Loss in Parkinson's Models.** *Cell metabolism*
  Hsieh, C. H., Li, L., Vanhauwaert, R., Nguyen, K. T., Davis, M. D., Bu, G., Wszolek, Z. K., Wang, X.
  2019

- **Alpha-synuclein delays mitophagy and targeting Miro rescues neuron loss in Parkinson's models.** *Acta neuropathologica*
  Shaltouki, A., Hsieh, C., Kim, M. J., Wang, X.
  2018

- **PINK1 Phosphorylates MIC60/Mitofilin to Control Structural Plasticity of Mitochondrial Crista Junctions.** *Molecular cell*
  Tsai, P. I., Lin, C. H., Hsieh, C. H., Papakyrikos, A. M., Kim, M. J., Napolioni, V., Schoor, C., Couthouis, J., Wu, R. M., Wszolek, Z. K., Winter, D., Greicius, M. D., Ross, et al
  2018

- **Phosphorylation of MCAD selectively rescuesPINK1deficiencies in behavior and metabolism.** *Molecular biology of the cell*
  Course, M. M., Scott, A. I., Schoor, C., Hsieh, C. H., Papakyrikos, A. M., Winter, D., Cowan, T. M., Wang, X.
  2018

- **Drosophila MIC60/Mitofilin Conducts Dual Roles in Mitochondrial Motility and Crista Structure.** *Molecular biology of the cell*
  Tsai, P. I., Papakyrikos, A. M., Hsieh, C. H., Wang, X.
  2017

- **Functional Impairment in Miro Degradation and Mitophagy Is a Shared Feature in Familial and Sporadic Parkinson's Disease.** *Cell stem cell*
  Hsieh, C., Shaltouki, A., Gonzalez, A. E., Bettencourt Da Cruz, A., Burbulla, L. F., St Lawrence, E., Schüle, B., Krainc, D., Palmer, T. D., Wang, X.
  2016

- **Elevated Energy Production in Chronic Fatigue Syndrome Patients.** *Journal of nature and science*
  Lawson, N., Hsieh, C., March, D., Wang, X.
  2016; 2 (10)

- **PINK1-mediated phosphorylation of Miro inhibits synaptic growth and protects dopaminergic neurons in Drosophila.** *Scientific reports*
  Tsai, P., Course, M. M., Lovas, J. R., Hsieh, C., Babic, M., Zinsmaier, K. E., Wang, X.
  2014; 4: 6962-?

- **The meaning of mitochondrial movement to a neuron's life** *BIOCHIMICA ET BIOPHYSICA ACTA-MOLECULAR CELL RESEARCH*
  Lovas, J. R., Wang, X.
  2013; 1833 (1): 184-194

- **PINK1 and Parkin Target Miro for Phosphorylation and Degradation to Arrest Mitochondrial Motility** *CELL*
  Wang, X., Winter, D., Ashrafi, G., Schlehe, J., Wong, Y. L., Selkoe, D., Rice, S., Steen, J., LaVoie, M. J., Schwarz, T. L.
  2011; 147 (4): 893-906

- **The Mechanism of Ca2+-Dependent Regulation of Kinesin-Mediated Mitochondrial Motility** *CELL*
  Wang, X., Schwarz, T. L.
  2009; 136 (1): 163-174

- **IMAGING AXONAL TRANSPORT OF MITOCHONDRIA** *METHODS IN ENZYMOLOGY, VOL 457: MITOCHONDRIAL FUNCTION, PARTB MITOCHONDRIAL PROTEIN KINASES, PROTEIN PHOSPHATASES AND MITOCHONDRIAL DISEASES*
  Wang, X., Schwarz, T. L.
  2009; 457: 319-333

- **Drosophila spichthyin inhibits BMP signaling and regulates synaptic growth and axonal microtubules** *NATURE NEUROSCIENCE*
  Wang, X., Shaw, R., Tsang, H. T., Reid, E., O'Kane, C. J.
  2007; 10 (2): 177-185