

# Stanford

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## Yanmin Yang

Associate Professor of Neurology and Neurological Sciences (Neurology Research Faculty)

### Bio

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#### ACADEMIC APPOINTMENTS

- Associate Professor, Neurology and Neurological Sciences
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

The cytoskeleton in neurons is made up of three interacting structural complexes: microfilaments (MFs), neurofilaments (NFs), and microtubules (MTs). They serve multiple roles in neurons. First, they provide structural organization for the cell interior, helping to establish metabolic compartments. Second, they serve as tracks for intracellular transport, especially axonal transport, which is critical for neuronal survival. Finally, the cytoskeleton comprises the core framework of neuronal morphologies. Disorganization of the cytoskeleton network is a prominent cytopathological feature of several neurodegenerative disorders, including amyotrophic lateral sclerosis (ALS), infantile spinal muscular atrophy (SMA), and Alzheimer diseases. Our major focus is to elucidate biological functions of cytoskeletal associated proteins in neurons and to define the cellular and molecular basis for how these proteins contribute to the structure and function of neurons. Cellular and molecular approaches are being employed both in vitro and in vivo. Our experimental models include:

- 1) transfection assays,
- 2) primary neuron cultures,
- 3) in vitro protein-protein interaction assays,
- 4) yeast two-hybrid screening,
- 5) specific gene targeting in mice. Defining the biological functions of cytoskeletal organizing proteins would significantly advance our understanding of pathogenesis of neurodegenerative disorders.

### Teaching

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#### COURSES

##### 2025-26

- Intracellular Trafficking and Neurodegeneration: NENS 67N (Win)

##### 2024-25

- Intracellular Trafficking and Neurodegeneration: NENS 67N (Win)

#### 2023-24

- Intracellular Trafficking and Neurodegeneration: NENS 67N (Win)

#### 2022-23

- Intracellular Trafficking and Neurodegeneration: NENS 67N (Win)

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Neurosciences (Phd Program)

## Publications

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### PUBLICATIONS

- **Giant axonal neuropathy** *CELLULAR AND MOLECULAR LIFE SCIENCES*  
Yang, Y., Allen, E., Ding, J., Wang, W.  
2007; 64 (5): 601-609
- **Retrolinkin, a membrane protein, plays an important role in retrograde axonal transport** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Liu, J., Ding, J., Wu, C., Bhagavatula, P., Cui, B., Chu, S., Mobley, W. C., Yang, Y.  
2007; 104 (7): 2223-2228
- **Gene targeting of GAN in mouse causes a toxic accumulation of microtubule-associated protein 8 and impaired retrograde axonal transport** *HUMAN MOLECULAR GENETICS*  
Ding, J. Q., Allen, E., Wang, W., Valle, A., Wu, C. B., Nardine, T., Cui, B. X., Yi, J., Taylor, A., Jeon, N. L., Chu, S., So, Y., Vogel, et al  
2006; 15 (9): 1451-1463
- **Microtubule-associated protein 8 contains two microtubule binding sites** *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*  
Ding, J. Q., Valle, A., Allen, E., Wang, W., Nardine, T., Zhang, Y. J., Peng, L. L., Yang, Y. M.  
2006; 339 (1): 172-179
- **Gigaxonin interacts with tubulin folding cofactor B and controls its degradation through the ubiquitin-proteasome pathway** *CURRENT BIOLOGY*  
Wang, W., Ding, J. Q., Allen, E., Zhu, P., Zhang, L., Vogel, H., Yang, Y. M.  
2005; 15 (22): 2050-2055
- **Gigaxonin-controlled degradation of MAP1B light chain is critical to neuronal survival** *NATURE*  
Allen, E., Ding, J. Q., Wang, W., Pramanik, S., Chou, J., Yau, V., Yang, Y. M.  
2005; 438 (7065): 224-228
- **BPAG1 n4 is essential for retrograde axonal transport in sensory neurons** *JOURNAL OF CELL BIOLOGY*  
Liu, J. J., Ding, J. Q., Kowal, A. S., Nardine, T., Allen, E., Delcroix, J. D., Wu, C. B., Mobley, W., Fuchs, E., Yang, Y. M.  
2003; 163 (2): 223-229
- **Microtubule-associated protein 1B: a neuronal binding partner for gigaxonin** *JOURNAL OF CELL BIOLOGY*  
Ding, J. Q., Liu, J. J., Kowal, A. S., Nardine, T., Bhattacharya, P., Lee, A., Yang, Y. M.  
2002; 158 (3): 427-433
- **An epidermal plakin that integrates actin and microtubule networks at cellular junctions** *JOURNAL OF CELL BIOLOGY*  
Karakesisoglou, I., Yang, Y. M., Fuchs, E.  
2000; 149 (1): 195-208
- **Crossroads can cytoskeletal highways** *CELL*  
Fuchs, E., Yang, Y. M.  
1999; 98 (5): 547-550

- **Integrators of the cytoskeleton that stabilize microtubules** *CELL*  
Yang, Y. M., Bauer, C., Strasser, G., Wollman, R., Julien, J. P., Fuchs, E.  
1999; 98 (2): 229-238
- **A dysfunctional desmin mutation in a patient with severe generalized myopathy** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Munoz-Marmol, A. M., Strasser, G., Isamat, M., Coulombe, P. A., Yang, Y. M., Roca, X., Vela, E., Mate, J. L., Coll, J., Fernandez-Figueras, M. T., Navas-Palacios, J. J., Ariza, A., Fuchs, et al  
1998; 95 (19): 11312-11317
- **Developmental expression of BPAG1-n: Insights into the spastic ataxia and gross neurologic degeneration in dystonia musculorum mice** *DEVELOPMENTAL BIOLOGY*  
Dowling, J., Yang, Y. M., Wollmann, R., Reichardt, L. F., Fuchs, E.  
1997; 187 (2): 131-142
- **Intermediate filament linker proteins** *50th Annual Symposium of the Society-of-General-Physiologists - Cytoskeletal Regulation of Membrane Function*  
Fuchs, E., Yang, Y. M., Dowling, J., Kouklis, P., Smith, E., Guo, L. F., Yu, Q. C.  
ROCKEFELLER UNIV PRESS.1997: 141-148
- **An essential cytoskeletal linker protein connecting actin microfilaments to intermediate filaments** *CELL*  
Yang, Y. M., Dowling, J., Yu, Q. C., Kouklis, P., Cleveland, D. W., Fuchs, E.  
1996; 86 (4): 655-665
- **SEQUENTIAL REQUIREMENT OF HEPATOCYTE GROWTH-FACTOR AND NEUREGULIN IN THE MORPHOGENESIS AND DIFFERENTIATION OF THE MAMMARY-GLAND** *JOURNAL OF CELL BIOLOGY*  
Yang, Y. M., Spitzer, E., Meyer, D., Sachs, M., Niemann, C., Hartmann, G., Weidner, K. M., Birchmeier, C., BIRCHMEIER, W.  
1995; 131 (1): 215-226
- **MEMBERS OF THE FATTY-ACID-BINDING PROTEIN FAMILY ARE DIFFERENTIATION FACTORS FOR THE MAMMARY-GLAND** *JOURNAL OF CELL BIOLOGY*  
Yang, Y. M., Spitzer, E., Kenney, N., Zschiesche, W., Li, M. L., Kromminga, A., Muller, T., Spener, F., LEZIUS, A., Veerkamp, J. H., Smith, G. H., SALOMON, D. S., Grosse, et al  
1994; 127 (4): 1097-1109