

# TINGWEI MU

## CURRICULUM VITAE

### PERSONAL INFORMATION

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Name: Mu, Tingwei

#### Education

School: University of Science and Technology of China  
Degree: BS, Chemistry (00 class). Advisor: Qing-Xiang Guo  
Dates: 1995-2000

School: California Institute of Technology  
Degree: PhD, Chemistry. Advisors: Dennis A Dougherty, Henry A Lester  
Dates: 2000-2005

#### Post-Graduate Training

Institution: The Scripps Research Institute, La Jolla, CA  
Position: Postdoctoral Research Associate. Advisor: Jeffery W Kelly  
Dates: 2005-2010

#### Ph.D. Thesis

Title: A Chemical-Scale Study on the Ligand-Binding Site of a Serotonin-Gated Ion Channel  
Ph.D. Thesis Committee: Dennis A Dougherty  
Henry A. Lester  
Linda Hsieh-Wilson  
William Goddard  
Douglas Rees

#### Contact Information

Department: Department of Physiology and Biophysics  
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Facsimile: 216-368-5586

### ACADEMIC APPOINTMENTS (list recent to oldest)

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Position/Rank: Assistant Professor  
Institution/Department: Department of Physiology and Biophysics  
Case Western Reserve University School of Medicine  
Dates: January 2011 to present

Position/Rank: Visiting Assistant Professor  
Institution/Department: Department of Physiology and Biophysics  
Case Western Reserve University School of Medicine  
Dates: November 2010-December 2010

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## HONORS AND AWARDS

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### Invited Talks:

- Department of Chemistry, University of Kentucky, October 2019  
Title: Adapting the proteostasis network to ameliorate ion channel folding diseases
- Department of Neuroscience and Experimental Therapeutics, Albany Medical College, March 2019  
Title: Adapting the Proteostasis Network to Ameliorate GABA<sub>A</sub> Receptor Folding/Assembly Diseases
- Department of Neuroscience, Case Western Reserve University, January 2019  
Title: Proteostasis maintenance of neuroreceptors
- Federation of American Societies for Experimental Biology (FASEB) meeting, Protein Folding in the Cell, Olean, NJ, July 2018  
Title: Assembly chaperones for multi-subunit neuroreceptors in the endoplasmic reticulum
- Department of Physiology, University of Pennsylvania, December 2017  
Title: Adapting the Protein Homeostasis Network to Ameliorate GABA<sub>A</sub> Receptor Folding/Assembly Diseases
- Protein folding disease initiative, University of Michigan, Ann Arbor, MI, November 2017  
Title: Adapting the Protein Homeostasis Network to Ameliorate GABA<sub>A</sub> Receptor Folding/Assembly Diseases
- Department of Pharmacology, Case Western Reserve University, October 2017  
Title: Adapting the Protein Homeostasis Network to Ameliorate GABA<sub>A</sub> Receptor Folding/Assembly Diseases
- American Society for Biochemistry and Molecular Biology (ASBMB) Annual Meeting at Experimental Biology, San Diego, CA, Apr 2016  
Title: Elucidating Endoplasmic Reticulum-Associated Degradation Pathway for GABA<sub>A</sub> Receptors
- Department of Pathology, Case Western Reserve University, Oct 2015  
Title: Adapting GABA<sub>A</sub> Receptor Protein Homeostasis to Ameliorate Idiopathic Epilepsy
- Federation of American Societies for Experimental Biology (FASEB) meeting, From Unfolded Proteins in the ER to Disease, Saxtons River, VT, Jun 2015  
Title: Using small molecules to restore GABA<sub>A</sub> receptor proteostasis
- Epilepsy Grand Rounds, Epilepsy Center, University Hospitals, Cleveland, OH, Nov 2012  
Title: Adapting GABA<sub>A</sub> Receptor Protein Homeostasis to Ameliorate Idiopathic Epilepsy
- American Society for Investigative Pathology (ASIP) Annual Meeting at Experimental Biology, San Diego, CA, Apr 2012  
Title: Manipulating the ER-associated degradation pathway to regulate GABA<sub>A</sub> receptor protein homeostasis
- Rammelkamp Research Conference, the MetroHealth System, Case Western Reserve University, Apr 2012  
Title: Adapting GABA<sub>A</sub> Receptor Protein Homeostasis to Ameliorate Idiopathic Epilepsy
- Cystic fibrosis Seminar, School of Medicine, Case Western Reserve University, Nov 2010  
Title: Adapting the Protein Homeostasis Network to Ameliorate Protein Folding Diseases
- Department of Chemistry, University of Nebraska Lincoln, Lincoln, NE, Feb 2010  
Title: Adapting the Protein Homeostasis Network to Ameliorate Protein Folding Diseases
- Department of Biochemistry, University of Utah, Salt Lake City, UT, Jan 2010  
Title: Adapting the Protein Homeostasis Network to Ameliorate Protein Folding Diseases
- Department of Chemistry, Boston College, Chestnut Hill, MA, Dec 2009  
Title: Adapting the Protein Homeostasis Network to Ameliorate Protein Folding Diseases
- Department of Chemistry, Emory University, Atlanta, GA, Dec 2009  
Title: Adapting the Protein Homeostasis Network to Ameliorate Protein Folding Diseases
- Department of Physiology and Biophysics, Case Western Reserve University, Cleveland, OH, Nov 2009  
Title: Adapting the Protein Homeostasis Network to Ameliorate Protein Folding Diseases
- Department of Biomedical Sciences, Florida State University, Tallahassee, FL, Nov 2009  
Title: Adapting the Protein Homeostasis Network to Ameliorate Protein Folding Diseases
- Department of Pharmacology, Baylor College of Medicine, Houston, TX, Mar 2009  
Title: Using Chemistry to Study Ion Channels and Protein Misfolding Diseases
- Department of Chemistry, University of Florida, Gainesville, FL, Jan 2009  
Title: Using Chemistry to Study Ion Channels and Protein Misfolding Diseases
- Department of Chemistry, University of Pittsburgh, Pittsburgh, PA, Nov 2008  
Title: Using Chemistry to Study Ion Channels and Protein Misfolding Diseases
- Metachromatic Leukodystrophy Disease (MLD) Symposium, DeKalb, IL, Sep 2008  
Title: Restoring Protein Homeostasis to Ameliorate Lysosomal Storage Diseases
- The American Chemical Society 234th National Meeting, Boston, MA, Aug 2007

## **MEMBERSHIP IN PROFESSIONAL SOCIETIES**

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- American Chemical Society (2001-)
- Biophysical Society (2005-)
- American Society for Cell Biology (2010-)
- American Society for Biochemistry and Molecular Biology (2013-)
- Society of Neuroscience (2018-)

## **PROFESSIONAL SERVICES**

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### **Ad hoc Reviewer for Grants**

- NIH SYN (Synapses, Cytoskeleton and Trafficking) Study Section, October 2018
- NIH BPNS (Biophysics of Neural Systems) Study Section, July 2018
- Clinical and Translational Science Collaborative, Case Western Reserve University, 2016
- Telethon (Italy), 2015
- Center for Clinical and Translational Science, Ohio State University, 2014 and 2015
- Medical Research Council (MRC) Clinical Research Grant (UK), 2013

### **Editorial Board Member for Journals:**

Frontiers in Cellular Neuroscience

### **Ad hoc Reviewer for Journals:**

Science Signaling  
Molecular Cell  
Cell Chemical Biology  
Journal of Biological Chemistry  
Molecular Neurobiology  
Molecular Biology of the Cell  
Biochemistry  
ACS Chemical Biology  
ACS Chemical Neuroscience  
Scientific Reports  
PLoS One  
Pharmacological Research  
Frontiers in Cellular Neuroscience  
Frontiers in Pharmacology  
International Journal of Molecular Sciences  
Orphanet Journal of Rare Diseases  
Journal of Cellular Biochemistry  
BMC Pediatrics  
AIMS Biophysics  
Emerging Topics in Life Sciences  
Cancer Letters  
OncoTargets and Therapy  
Molecular Biotechnology,  
JSM Enzymology and Protein Science

## **BIBLIOGRAPHY** (*published or in press only*) (*should be numbered and in chronological order*)

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### **Complete List of Published Work in My Bibliography:**

<http://www.ncbi.nlm.nih.gov/myncbi/tingwei.mu.1/bibliography/45121953/public/?sort=date&direction=descending>

<https://scholar.google.com/citations?user=1eEkO9MAAAAJ&hl=en>

### **Peer Reviewed Articles**

#### **At Case Western Reserve University**

1. Yan-Lin Fu, Bin Zhang, and **Ting-Wei Mu** (2019) LMAN1 (ERGIC-53) promotes the trafficking of neuroreceptors. *Biochemical and Biophysical Research Communications*.  
<https://doi.org/10.1016/j.bbrc.2019.02.053>

2. Yan-Lin Fu, Dong-Yun Han, Ya-Juan Wang, Xiao-Jing Di, Hai-Bo Yu, and **Ting-Wei Mu** (2018) Remodeling the Endoplasmic Reticulum Proteostasis Network Restores Proteostasis of Pathogenic GABA<sub>A</sub> Receptors. *PLoS ONE*, 13(11):e0207948.
3. Dawid Krokowski, Bo-Jih Guan, Jing Wu, Yuke Zheng, Padmanabhan Pattabiraman, Raul Jobava, Xiao-Jing Di, Martin Snider, **Ting-Wei Mu**, Eric Pearlman, Anna Blumental-Perry, and Maria Hatzoglou (2017) GADD34 promotes Golgi apparatus integrity and osmoadaptation of human corneal cells. *Cell Reports*, 21(10):2895-2910. PMID: PMC5720379.
4. Di, XJ, Wang, YJ, Han, DY, Fu, YL, Duerfeldt, AS, Blagg, BSJ, **Mu, TW** (2016) Grp94 protein delivers  $\gamma$ -aminobutyric acid (GABA<sub>A</sub>) Receptors to Hrd1 protein-mediated Endoplasmic Reticulum-Associated Degradation. *Journal of Biological Chemistry*, 291:9526-9539. PMID: 26945068.
5. Han DY, Guan BJ, Wang YJ, Hatzoglou M, **Mu TW** (2015) L-type calcium channel blockers enhance trafficking and function of epilepsy-associated  $\alpha$ 1(D219N) subunits of GABA<sub>A</sub> receptors. *ACS Chemical Biology*, 10:2135-2148. PMID: 2616828.
6. Han DY, Di XJ, Fu YL, **Mu TW** (2015) Combining valosin-containing protein (VCP) inhibition and suberanilohydroxamic Acid (SAHA) treatment additively enhances the folding, trafficking, and function of epilepsy-associated  $\gamma$ -aminobutyric acid, type A (GABAA) receptors. *Journal of Biological Chemistry*, 290:325-337. PMID: PMC4281735.
7. Wang YJ, Tayo BO, Bandyopadhyay A, Wang H, Feng T, Franceschini N, Tang H, Gao J, COGENT consortium, Williams SM, Elston RC, Cooper RS, **Mu TW**, Zhu X (2014) The association of the vanin-1 N131S variant with blood pressure is mediated by endoplasmic-reticulum-associated degradation and loss of function. *PLoS Genetics*, 10(9):e1004641. PMID: PMC4169380
8. Di XJ, Han DY, Wang YJ, Chance MR, **Mu TW** (2013) SAHA enhances proteostasis of epilepsy-associated  $\alpha$ 1(A322D) $\beta$ 2 $\gamma$ 2 GABA<sub>A</sub> receptors. *Chemistry & Biology*, 20: 1456-1468. doi: 10.1016/j.chembiol.2013.09.020. PubMed PMID: 24211135; PubMed Central PMID: PMC3872227.
9. Wang YJ, Han DY, Tabib T, Yates JR, **Mu TW** (2013) Identification of GABA<sub>C</sub> receptor protein homeostasis network components from three tandem mass spectrometry proteomics approaches. *Journal of Proteome Research*, 12: 5570-5586. doi: 10.1021/pr400535z. PubMed PMID: 24079818; PubMed Central PMID: PMC3864119.

#### **Before Case Western Reserve University**

10. Ong DS, Wang YJ, Tan YL, Yates JR,\* **Mu TW**,\* Kelly JW\* (2013) FKBP10 depletion enhances glucocerebrosidase proteostasis in Gaucher's disease fibroblasts. *Chemistry & Biology*, 20: 403-415. doi: 10.1016/j.chembiol.2012.11.014. PubMed PMID: 23434032; PubMed Central PMID: PMC3624024. \* corresponding author
11. Ong DS, **Mu TW**, Palmer AE, Kelly JW (2010) Endoplasmic reticulum Ca<sup>2+</sup> increases enhance glucocerebrosidase folding, trafficking and function. *Nature Chemical Biology*, 6:424-432.
12. **Mu TW**, Ong DS, Wang YJ, Balch WE, Yates JR, Segatori L, Kelly JW (2008) Chemical and biological approaches synergize to ameliorate protein-folding diseases. *Cell*, 134:769-791. Highlighted in Science.
13. **Mu TW**, Fowler DM, Kelly JW (2008) Partial restoration of mutant enzyme homeostasis in three distinct lysosomal storage disease cell lines by altering calcium homeostasis. *PLoS Biology*, 6: e26. Highlighted in ACS Chemical Biology.
14. **Mu TW**, Lester HA, Dougherty DA (2003) Different binding orientations for the same agonist at homologous receptors: A lock and key or a simple wedge? *J Am Chem Soc*, 125: 6850-6851.
15. Feng Y, Liu L, **Mu TW**, Guo QX (2002) Influence of a hydrophobic environment on the structure of arginine-carboxylate salt bridge. *Chin J Chem* 20: 958-962.
16. **Mu TW**, Liu L, Li XS, Guo QX (2001) A theoretical study on the inclusion complexation of cyclodextrins with radical cations and anions. *J Phys Org Chem* 14: 559-565.
17. Zhang KC, **Mu TW**, Liu L, Guo QX (2001) A theoretical study on cucurbit[7]uril and its inclusion complexation. *Chin J Chem* 19: 558-561.
18. **Mu TW**, Liu L, Zhang KC, Guo QX (2001) A theoretical study on the stereoisomerism in the complex of cucurbit[8]uril with 2,6-bis(4, 5-dihydro-1H-imidazol-2-yl)naphthalene. *Chin Chem Lett* 12: 783-786.
19. Zhang KC, Liu L, **Mu TW**, Guo QX (2001) Ab initio calculations on the inclusion complexation of cyclobis(paraquat-p-phenylene). *Chem Phys Lett* 333: 195-198.
20. Zhang KC, Liu L, **Mu TW**, Guo QX (2001) Molecular modeling on the complexation of cyclobis(paraquat-p-phenylene) with tetrathiafulvalenes. *J Incl Phenom Macrocycl Chem* 40: 189-191.
21. Yang C, Liu L, **Mu TW**, Guo QX (2001) Improved accuracy and efficiency in the determination of association constants with the spectrophotometric method. *J Incl Phenom Macrocycl Chem* 39: 97-101.
22. **Mu TW**, Feng Y, Liu L, Guo QX (2001) On the structure of the arginine-carboxylate salt bridge: A density functional theory study. *Chin Chem Lett* 12: 219-222.
23. Liu L, Yang C, **Mu TW**, Guo QX (2001) A statistical examination on the compensation between the enthalpies and entropies obtained from the calorimetric methods. *Chin Chem Lett* 12: 167-170.

24. Zhang KC, Liu L, **Mu TW**, Guo QX (2000) A molecular modeling for the complexation of cyclodextrin(paraquat-p-phenylene) with substituted benzenes and biphenyls. *Chin Chem Lett* 11: 985-988.
25. Yang C, Liu L, **Mu TW**, Guo QX (2000) The performance of the Benesi-Hildebrand method in measuring the binding constants of the cyclodextrin complexation. *Anal Sci* 16: 537-539.
26. Liu L, Li XS, **Mu TW**, Guo QX, Liu YC (2000) Interplay between molecular recognition and redox properties: A theoretical study of the inclusion complexation of beta-cyclodextrin with phenothiazine and its radical cation. *J Incl Phenom Macrocycl Chem* 38: 199-206.
27. Li XS, Liu L, **Mu TW**, Guo QX, Liu YC (2000) A theoretical study on the structure and properties of phenothiazine derivatives and their radical cations. *Res Chem Intermed* 26: 375-384.
28. Li XS, Liu L, **Mu TW**, Guo QX (2000) A systematic quantum chemistry study on cyclodextrins. *Mon Chem* 131: 849-855.

### **Reviews and Book Chapters**

#### **At Case Western Reserve University**

29. Fu YL, Wang YJ, **Mu TW** (2016) Proteostasis maintenance of Cys-loop receptors. *Advances in Protein Chemistry and Structural Biology*. 103:1-23. PMID: 26920686
30. Wang YJ, Di XJ, **Mu TW** (2014) Using pharmacological chaperones to restore proteostasis (Review). *Pharmacological Research*, 83: 3-9. PMID: PMC4070435.

### **Conferences, Poster presentations and Abstracts**

- Society for Neuroscience Annual meeting, San Diego, CA, November 2018  
Title: Adapting the proteostasis network to restore function of epilepsy-associated GABA<sub>A</sub> receptors
- Federation of American Societies for Experimental Biology (FASEB) meeting, Protein Folding in the Cell, Olean, NJ, July 2018  
Title: Assembly chaperones for multi-subunit neuroreceptors in the endoplasmic reticulum
- Gordon Conferences: Stress Proteins in Growth, Development & Disease, Newry, ME Jul 2017  
Title: Assembly chaperones for multi-subunit neuroreceptors in the endoplasmic reticulum
- American Society for Biochemistry and Molecular Biology (ASBMB) Annual Meeting at Experimental Biology, San Diego, CA, Apr 2016  
Title: Elucidating Endoplasmic Reticulum-Associated Degradation Pathway for GABA<sub>A</sub> Receptors
- Gordon Conferences: Stress Proteins in Growth, Development & Disease, Lucca, Italy, Jul 2015  
Title: Elucidating the Endoplasmic Reticulum-Associated Degradation Pathway of GABA<sub>A</sub> Receptors
- Federation of American Societies for Experimental Biology (FASEB) From Unfolded Proteins in the ER to Disease, Saxtons River, VT, Jun 2015  
Title: L-type Calcium Channel Blockers Enhance Function of Epilepsy-associated GABA<sub>A</sub> Receptors by Promoting Subunit Assembly and Calnexin-assisted Folding
- Translational Neuroscience Meeting, Cell Symposia, Arlington, VA, Nov 2014  
Title: Restoring GABA(A) receptors proteostasis to ameliorate idiopathic epilepsy
- Membrane Protein Folding Meeting, Biophysics Society, Seoul, South Korea, May 2013  
Title: Manipulating the Endoplasmic Reticulum-Associated Degradation Pathway to Restore Epilepsy-Associated GABA<sub>A</sub> Receptor Function
- American Society for Mass Spectrometry (ASMS) Annual Meeting, Vancouver, Canada, May 2012  
Title: Manipulating the Endoplasmic Reticulum-Associated Degradation Pathway to Restore Epilepsy-Associated GABA<sub>A</sub> Receptor Function
- Gordon Research Conferences on Stress Proteins, Andover, NH, Jul 2009  
Title: Proteomic profiling of protein homeostasis regulators
- The American Chemical Society 236th National Meeting, Philadelphia, Aug 2008  
Title: Restoring protein homeostasis to ameliorate lysosomal storage diseases
- The Biophysical Society 49th Annual Meeting, Long Beach, CA, Feb 2005  
Title: Using unnatural amino acids to study the Cys-loop receptors
- Gordon Conferences: Ligand Recognition and Molecular Gating, Venture, CA, Mar 2004  
Title: The ligand-binding sites of a novel serotonin-gated chloride channel