Ran-Der Hwang, Ph.D.

Phone: (860) 786-8256 / e-mail: ran-der.hwang@uconn.edu

Education

University of Connecticut, Storrs, CT
Doctor of Philosophy in Genetics and Genomics December 2014
Advisor: Dr. Yih-Woei Fridell

- Research project: The neuroprotective effect of human uncoupling protein 2 (hUCP2) in a *Drosophila* toxin model of Parkinson's disease.

University of Connecticut, Storrs, CT
Master of Science in Cell and Developmental Biology August 2008
Advisor: Dr. David Knecht

- Research project: Regulation of actin cytoskeletal architecture by actin binding protein Fimbrin A.

National Taiwan University, Taipei, Taiwan
Master of Science in Fisheries Science August 2000
Advisor: Dr. Pung-Pung Hwang

- Research project: Chloride regulation in developing Tilapia (*Oreochromis mossambicus*) larvae during seawater acclimation.

National Chung-Hsing University, Taichung, Taiwan
Bachelor of Science in Zoology August 1998
Advisor: Dr. Tsung-Han Lee

- Research projects: 1. Life cycle of the water flea, *Moina macrocopa* (Branchiopoda: Cladocera).
  2. Effects of swine wastewater on mortality of Cladocera *Moina macrocopa*.

Research Experiences

Graduate Research Assistant, 2008-2014
University of Connecticut, Department of Molecular and Cell Biology, Dr. Yih-Woei Fridell's Lab, Connecticut, USA

- Investigated the importance of mitochondrial dynamics in dopaminergic neuron health and survival in a rotenone model of Parkinson's disease. *Drosophila* primary dopaminergic neuronal culture system and time-lapse confocal imaging were employed to record mitochondrial fusion events and motility in primary neurons. Additionally, *Drosophila* genetics and other cell and molecular biology techniques such as immunofluorescent staining, Western blotting, real-time PCR were also employed.

Graduate Research Assistant, 2004-2008
University of Connecticut, Department of Molecular and Cell Biology, Dr. David A. Knecht's Lab, Connecticut, USA

- Explored the complex coordination of actin-binding protein activity and cytoskeletal dynamics in driving cell shape change and motility in *Dictyostelium amoebae* by using high resolution live cell microscopy, gene disruption and a variety of other molecular biology and biochemistry techniques. Additionally, bacterially-expressed actin cross-linking protein was purified to further investigate the functional activities of the different actin-binding domains of fimbrin *in vitro* by F-actin binding and co-sedimentation assays.

Lab Research Assistant, 2003-2004
National Taiwan University Hospital, Department of Ophthalmology, Dr. I-Jong Wang's Lab, Taipei, Taiwan

- Evaluated the temporal and spatial patterns of wild-type and mutant rhodopsin in zebrafish following microinjection of wild-type or mutant rhodopsin-eGFP fusion constructs into zebrafish embryos and collecting the transgenic zebrafish for epifluorescence imaging, immunohistochemistry, molecular biology and biochemistry examination.

Lab Research Assistant, 2002-2003
National Taiwan University College of Medicine, Anatomy and Cell Biology, Dr. Seu-Mei Wang's Lab, Taipei, Taiwan

- Studied the assembly sequence of lipids and the lipid surface proteins, adipose differentiation related protein (ADRP), perilipin, and p200 kDa protein (p200) during lipid droplet formation in 3T3-L1 preadipocytes using Western blot and immunocytochemistry analysis.

- Characterized the time- and dose-dependent effects of gap junction inhibitor on gap junction protein distribution and steroidogenesis in adrenal tissue. Primary rat adrenal cortical cells were treated with 18b-Glycyrrhetinic Acid, and connexin43 gap junction proteins and corticosterone were measured. Western blot and immunocytochemistry analysis were used to detect and characterize the phosphorylation status of connexin43 and its distribution. Radioimmunoassay were also used for the quantitative determination of corticosterone in primary rat adrenal cortical cell cultures.

Graduate Research Assistant, 1998-2000
National Taiwan University, Fisheries science, Dr. Pung-Pung Hwang's Lab, Taipei, Taiwan

- Examined the developmental changes in chloride content, sodium-potassium ATPase activity in Mozambique tilapia (*Oreochromis mossambicus*) embryos and larvae reared and/or acclimated to freshwater or seawater.

Publications

- **Ran-Der Hwang**, Lyle Wiemerslage, Christopher J. LaBreck, Munzareen Khan, Kavitha Kannan, Xinglong Wang, Xiongwei Zhu, Daewoo Lee, Yih-Woei C. Fridell (2014): The neuroprotective effect of human uncoupling protein 2 (hUCP2) requires cAMP-dependent protein kinase in a toxin model of Parkinson's disease. ***Neurobiol Dis****. 69:180-191.*

- Michael G. Lemieux, Dani Janzen, **Ran-Der Hwang**, Jeannette Roldan, Irene Jarchum, David A. Knecht (2014): Visualization of the actin cytoskeleton: Different F-actin-binding probes tell different stories. ***Cytoskeleton (Hoboken)****. 71(3)157-169.*

- **Ran-Der Hwang**, Chin-Chi Chen, David A. Knecht (2009): ReAsH: another viable option *in vivo* protein labelling in *Dictyostelium*. ***J Microsc****. 234(1):9-15.*

- Seu-Mei Wang, **Ran-Der Hwang**, Andrew S. Greenberg, Hui-Ling Yeo. (2003): Temporal and spatial assembly of lipid droplet associated proteins in 3T3-L1 preadipocytes. ***Histochem Cell Biol****. 120(4):285-292.*

- Shih-Horng Huang, Jiahn-Chun Wu, **Ran-Der Hwang**, Hui-Lin Yeo, Seu-Mei Wang (2003): Effect of 18beta-glycyrrhetinic acid on the junctional complex and steroidogenesis in rat adrenocortical cells. ***J Cell Biochem.*** *90(1):33-41.*

- **Ran-Der Hwang**, Tsung-Han Lee, Shao-Pin Yo. (1999): Life cycle of the water flea, *Moina macrocopa* (Branchiopoda: Cladocera). ***Chinese Bioscience****. 42(1):17-28.*

Conference Presentations

- **Ran-Der Hwang**, Daewoo Lee, Yih-Woei Fridell (2013). hUCP2 neuroprotective effect in a rotenone-induced Parkinson's disease (PD) model involves modulation of mitochondrial dynamics. Poster presented at **Cell Symposia: Mitochondria: from Signaling to Disease.** Lisbon, Portugal.

- **Ran-Der Hwang**, Chin-Chi Chen, Raymond Washington, Andrew G. Maselli and David A. Knecht (2006). Regulation of actin cytoskeletal architecture by Fimbrin A. Poster presented at the **International *Dictyostelium* Conference**, Santa Fe, NM, USA.

- **Ran-Der Hwang**, Tsung-Han Lee, and Pung-Pung Hwang (2000). Ion regulation in developing Tilapia (*Oreocchromis mossambicus*) larvae during seawater acclimation. Poster presented at the **Society for Integrative and Comparative Biology Annual Meeting**, Atlanta, GA, USA.

Additional Experiences

Teaching Assistant, *University of Connecticut*, 2008-2014

- Instructed undergraduate intermediate biology laboratory sections (3 sections with a total of about 72 students each week). Responsibilities included planning lectures, leading discussions, demonstrating experimental procedures, fielding questions, and holding office hours to ensure that students fully understood laboratory concepts.

Military Service, TAIWAN, 2000-2002

- Administration corporal of lieutenant general, Army Artillery and Missile School.

Honors

- Northeast Alliance at the University of Connecticut Summer Research Program Mentor Award. (2008)
- Loyalty and Integrity Medal, R. O. C. Army. (2002)
- Outstanding Students Conference Travel Grant , Foundation of Dr. Yuan-Tseh Lee, Nobel Laureate. (2000)
- Excellent Graduate Poster Award, NTU, Taiwan. (2000)
- Taiwan Who's Who in School, NCHU, Taiwan. (1998)
- Outstanding Graduate Student Award, NCHU, Taiwan. (1998)
- Undergraduate Research Projects Fellowship, NSC, Taiwan (NSC 87-2815-C-005-063-B). (1997)

Laboratory Skills

(a) Cell biology

- Live-cell confocal microscopy
- Mitochondrial dynamics and motility measurements
- Immunofluorescent staining
- Primary neuronal and cell cultures
- Embryo microinjections
- Cryostat and paraffin sections

(b) Biochemistry/Molecular biology

- Protein expression and purification
- Western blot analysis
- Molecular cloning

(c) Image analysis tool

- ImageJ

References

1. **Yih-Woei Fridell**, PhD, Adjunct Professor, Department of Biological Sciences, St. John's University
e-mail: fridelly@stjohns.edu
Phone: 203-843-7502

2. **Thomas Chen**, PhD, Professor, Department of Molecular and Cell Biology, University of Connecticut
e-mail: Thomas.chen@uconn.edu
Phone: 860-486-5418

3. **Ping Zhang**, PhD, Associate Professor, Department of Molecular and Cell Biology, University of Connecticut
e-mail: ping.zhang@uconn.edu
Phone: 860-486-5421