

SHIUAN WANG

300 Cedar Street TAC S355, New Haven, CT 06511 • shiuanwang@gmail.com • (832) 638-8076

PROFILE STATEMENT

Geneticist with a strong background in neuroscience, oncology, molecular and cellular biology. Skilled at translating and integrating scientific technology methods and designing assays in cultured cells and animal models. Successfully led a research project on neurodegeneration from conception to completion

EDUCATION

Ph.D., Baylor College of Medicine, October 2014, Houston, TX

- Developmental Biology
- Thesis Title: Investigate Retromer Complex-Mediated Protein Transport and Its Role in Neurodegeneration
- Advisor: Hugo J. Bellen, D.V.M., Ph.D., Professor in Molecular and Human Genetics, Neuroscience, and Developmental Biology, Baylor College of Medicine and Investigator of Howard Hughes Medical Institute

B.S., National Taiwan University, June 2004, Taipei, Taiwan

- Pharmacy
- Certified and Licensed Pharmacist in Taiwan

PROFESSIONAL SKILLS

Biochemistry: Protein expression and purification, Antibody purification, SDS-PAGE, In vitro translation, Immunoblotting, Immunoprecipitation, ELISA, Enzymatic assay, Yeast two hybrid

Molecular Biology: Molecular cloning, DNA transfection of cultured cells, PCR-mediated DNA mutagenesis, Genomic DNA extraction, RNA extraction, Real time-PCR, RNA interference, Recombineering, CRISPR/Cas9-mediated genome editing

Cell Biology: Immunofluorescence for cultured cells and animal tissue samples, Confocal microscopy, Nomarski light microscopy, Transmission electron microscopy, Primary tissue culture, In vitro blood vessel formation assay, In vitro cell invasion assay, In vitro luciferase reporter assay, In vitro cell proliferation assay, In vivo tissue regeneration assay, Flow cytometry

Drug Discovery: Cell-based therapeutic assays using small peptidal inhibitors and chemical compounds

Genomic Analysis and Biostatistics: MuTect, Indelocator, VarScan, MutSig, Delly, BreakDancer, SVDetect, SPSS

Programming Language: Linux, Python

Neuroscience: Electretinogram recordings

RESEARCH EXPERIENCE

Post-Doctoral Fellow, December 2014 — Present

Yale University / Howard Hughes Medical Institute, New Haven, CT

Investigates the landscape of somatic mutations in cancers using whole exome sequencing data

- Develops bioinformatic pipelines to analyze somatic nucleotide and copy number mutations in ovarian cancer
- Accomplishes the analysis of somatic chromosomal structural variations in uterine cancer

Pre-Doctoral Fellow, July 2011 — October 2014

Baylor College of Medicine, Houston, TX

Investigated the impact of retromer deficiency on neurodegeneration

- Identified and clones key subunits (Vps26 and Vps35) of Drosophila retromer complex

- Purified fusion proteins and generate the first antibody specifically recognizing the fly retromer complex
- Generated humanized vps26 transgenic flies and demonstrates human retromer complex functions in the retina
- Generated a fly model for Parkinson's disease to address the relationship between defective lysosomal function and neurodegeneration

Graduate Research Assistant, August 2008 — June 2011

MD Anderson Cancer Center, Houston, TX

Investigated cell death-induced cell proliferation and its role in tissue regeneration and overgrowth

- Developed in vivo regeneration assays to uncover the mechanisms of epithelial tissue recovery upon mechanical injury
- Accomplished systematic RNAi knockdown and characterized the function of cytoskeleton and JNK signaling in promoting tissue overgrowth upon exposure to cytotoxic agents

Pre-Doctoral Fellow, August 2007 — May 2008

Baylor College of Medicine, Houston, TX

Investigated developmental timing and aging using *Caenorhabditis elegans* as a model

- Developed in vitro luciferase reporter assays to study gene silencing by microRNAs
- Accomplished in vivo RNAi knockdown and identified new components in gonad development

Oncology Research Assistant, March 2006 — June 2007

National Taiwan University Hospital, Taipei, Taiwan

Investigated interleukin-6 (IL-6) trans-signaling in the formation and progression of ovarian cancer

- Established in vitro cell death assays to optimize combinatorial therapy against ovarian cancer cells
- Developed tissue co-cultured assays and uncovered the mechanisms of cancer cell invasion into blood vessels
- Performed ovarian cancer xenograft experiments in severe combined immunodeficiency (SCID) mice

MANAGEMENT EXPERIENCE

Pharmaceutical Officer, July 2004 — December 2005

Navy, Kaohsiung, Taiwan

- Oversaw budget for the maintenance and repair for more than 40 medical devices. Lowered the repair expense by more than 10% for the pharmacy
- Led a 3-man team to provide error free pharmacy care to patients

PUBLICATIONS

- 1 **Wang S** and Bellen HJ. (2015) Retromer in development and disease. **Development** (in press)
- 2 **Wang S**, Tan KL, Agosto MA, Xiong B, Yamamoto S, Sandoval H, Jaiswal M, Bayat V, Zhang K, Charnig WL, David G, Duraine L, Venkatachalam K, Wensel TG and Bellen HJ. (2014) The retromer complex is required for rhodopsin recycling and its loss leads to photoreceptor degeneration. **PLoS Biology** 12:e1001847
- 3 Fan Y, **Wang S**, Hernandez J, Sahin V, Hertlein G, Fogarty CE, Lindbald JL and Bergmann A. (2014) Genetic models of apoptosis-induced proliferation decipher activation of JNK and identify a requirement of EGFR signaling for tissue regenerative responses in *Drosophila*. **PLoS Genetics** 10:e1004131
- 4 Lee TV, Fan Y, **Wang S**, Srivastava M, Bromer M, Meier P and Bergmann A. (2011) *Drosophila* IAP-1-mediated ubiquitylation controls activation of the initiator caspase Dronc independent of protein degradation. **PLoS Genetics** 7: e1002261
- 5 Lo CW, Chen MW, Hsiao M, **Wang S**, Chen CA, Hsiao SM, Chang JS, Lai TC, Rose-John S, Kuo ML and Wei LH. (2011) IL-6 trans-signaling in formation and progression of malignant ascites in ovarian cancer. **Cancer Research** 71:424-434

PODIUM PRESENTATIONS

- 1 **Wang S** and Bellen HJ. (2014) The retromer complex is required for rhodopsin recycling and its loss leads to photoreceptor degeneration. **Gordon Research Seminar on Endocytosis and Lysosomes**, Andover, NH

- 2 **Wang S**, Tang FL, Agosto MA, Wensel TG, Xiong WC and Bellen HJ. (2013) The retromer complex affects rhodopsin trafficking in fly photoreceptors and melanopsin abundance in mouse retinal ganglion cells. **Developmental Biology Program Retreat**, Baylor College of Medicine, Houston, TX
- 3 **Wang S** and Bergmann A. (2011) Characterization of regulators in apoptosis-induced compensatory proliferation in Drosophila. **Developmental Biology Program Retreat**, Baylor College of Medicine, Houston, TX

POSTER PRESENTATIONS

- 1 **Wang S**, Xiong B, Yamamoto S, Tang KL and Bellen HJ. (2014) Loss of the retromer leads to activity-dependent neurodegeneration. **The Keystone Symposium on Parkinson's Disease**, Keystone, CO
- 2 **Wang S**, Xiong B, Yamamoto S, Tang KL, Sandoval H, Jaiswal M, Zhang K and Bellen HJ. (2013) Loss of the retromer, a conserved protein complex associated with Parkinson's disease, leads to activity-dependent neurodegeneration. **The 23rd Neuroparmacology Conference**, San Diego, CA
- 3 **Wang S**, Tang FL, Xiong B, Yamamoto S, Tang KL, Sandoval H, Jaiswal M, Bayat V, Zhang K, Charng WL, David G, Xiong WC and Bellen HJ. (2013) Loss of the retromer, a protein complex associated with Parkinson's disease, leads to rhodopsin mistrafficking and retinal degeneration. **The Association of Chinese American Professional Student Poster Contest**, Sugar Land, TX
- 4 **Wang S**, Xiong B, Yamamoto S, Tan KL, Sandoval H, Jaiswal M, Bayat V, Zhang K, Charng WL, David G and Bellen HJ. (2013) The retromer complex is required for photoreceptor maintenance and rhodopsin recycling in Drosophila. **Annual Drosophila Conference**, Washington D.C.
- 5 **Wang S**, Xiong B, Yamamoto S, Tan KL, Sandoval H, Jaiswal M, Bayat V, Zhang K, Charng WL, David G and Bellen HJ. (2013) Loss of the retromer complex causes photoreceptor degeneration and impairs Rhodopsin recycling in Drosophila. **Baylor College of Medicine Graduate Student Symposium**, Houston, TX
- 6 **Wang S**, Fan Y and Bergmann A. (2011) Isolation of novel components that bridge different pathways in apoptosis-induced compensatory proliferation in Drosophila. **Annual Drosophila Conference**, San Diego, CA
- 7 **Wang S** and Bergmann A. (2011) Developing genetic assays to identify regulators of apoptosis-induced compensatory proliferation in proliferating Drosophila tissues. **MD Anderson Cancer Center Genes and Development Program Annual Retreat**, Houston, TX
- 8 Fan Y, **Wang S** and Bergmann A. (2011) Dissection of the apoptosis-induced compensatory proliferation in proliferating and differentiating Drosophila tissues. **Cold Spring Harbor Laboratory Cell Death Meeting**, Laurel Hollow, NY
- 9 Wei LH, **Wang S** and Chen CA. (2007) IL-6 trans-signaling enhances photodynamic therapy by modulating cell cycle. **The 12th Taiwan Joint Cancer Conference and 6th Cross-strait Academic Conference on Oncology**, Taipei, Taiwan

AWARDS AND HONORS

Finalist, Student Poster Contest, The Association of Chinese American Professionals, 2013
Travel Award to Annual Drosophila Conference, Burroughs Wellcome Fund, 2013
Pre-Doctoral Fellowship, Burroughs Wellcome Fund, 2012 — present
Second Place Graduate Student Poster Award, Baylor College of Medicine, 2012
Navy Award, Navy, Taiwan, 2005
Student Service Award, National Taiwan University School of Pharmacy, 2004
Presidential Award, National Taiwan University, 2002

PROFESSIONAL SOCIETIES

Genetics Society of America
Sigma Xi Scientific Research Society