PERSONAL DETAILS

Name: Wei-Li Wu (吳偉立)

Gender: Male

Birth date: Sep. 2, 1979 Position: Assistant Professor

Institute: Department of Physiology, College of Medicine, National Cheng Kung University

Address: 1 University Rd., Tainan 70101, Taiwan

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Lab website: https://sites.google.com/view/wlwu/home

Field of specialty: Neuropsychiatric disorder; Gut-Brain axis; Host and gut microbes interaction; Behavioral

physiology; Neuroimmunology

EDUCATION

2005.09-2011.01 Ph.D., Graduate Institute of Life Sciences, National Defense Medical Center, Taipei, Taiwan

(A graduate program co-sponsored by Academia Sinica, National Defense Medical Center, and National

Health Research Institutes)

Advisor: Chih-Cheng Chen, Ph.D.

Thesis title: The Effect of ASIC3 Knockout on Social and Anxiety Behavior in Mice.

2001.09-2003.06 M.S., Institute of Marine Biology, National Sun Yat-sen University, Kaohsiung, Taiwan.

Advisor: Hin-Kiu Mok, Ph.D. & Chi-Ying Lee, Ph.D.

Thesis title: Metabolism of Brain Serotonin During Agonistic Interaction in Wild Type and Albino Paradise

Fish (Macropodus opercularis).

1997.09-2001.06 B.S., Department of Marine Resources, National Sun Yat-sen University, Kaohsiung, Taiwan

PROFESSIONAL EMPLOYMENT

2018.08- Assistant Professor

Department of Physiology, College of Medicine, National Cheng Kung University, Taiwan

2018.08- Visiting Associate

Division of Biology and Biological Engineering, California Institute of Technology, USA

2014.07-2018.07 Postdoctoral Scholar

Division of Biology and Biological Engineering, California Institute of Technology, USA

Mentor: Sarkis K. Mazmanian, Ph.D.

2012.02-2014.06 Postdoctoral Scholar

Division of Biology and Biological Engineering, California Institute of Technology, USA

Mentor: Paul H. Patterson, Ph.D.

2011.02-2012.01 Postdoctoral Fellow

Institute of Biomedical Sciences, Academia Sinica, Taiwan

Mentor: Chih-Cheng Chen, Ph.D.

2003.08-2004.07 Research Assistant

Division of Metabolism, Department of Internal Medicine, Chang-Gung Memorial Hospital, Taiwan Supervisor: Rue-Tsuan Liu, MD and Jiin-Tsuey Cheng, Ph.D.

FELLOWSHIPS, HONORS & AWARDS

2019.07	MOST Research Grants (Rewarding Outstanding Talent and Recruiting of Outstanding Talent) and Research Merit
	Pay for School Faculty and Researchers
2018.07	MOST Research Grants (Rewarding Outstanding Talent and Recruiting of Outstanding Talent) and Research Merit
	Pay for School Faculty and Researchers
2012.07	Best Poster Presentation Award, National Institutes of Health (NIH) Silvio O. Conte Centers for Basic and
	Translational Mental Health Retreat, Denver, CO, USA
2011.12	Postdoctoral Scholar Fellowship. Postdoctoral Research Abroad Program sponsored by National Science Council,
	Taiwan
2010.10	Conference Travel Fellowship. The Robert K.S. Lim and Shih-Chun Wang Memorial Scholarships and Awards,
	Taiwan
2010.01	Best Presentation Award. Tohoku University-Taiwan Neuroscience Workshop for Young Scientists 2010, Taiwan
2009.10	Outstanding Students Conference Travel Grant. Foundation for the Advancement of Outstanding Scholarship
	(FAOS), Taiwan
2008.11	Outstanding Students Conference Travel Grant. Foundation for the Advancement of Outstanding Scholarship
	(FAOS), Taiwan
2003.02	The First Prize in the Competition for the annual Institute Research Poster Award, Institute of Marine Biology,
	National Sun Yat-sen University, Taiwan

PUBLICATIONS

Wu, W.L. (Corresponding author), Adame, M.D., Liou, C.W., Barlow, J., Lai, T.T., Sharon G., Schretter, C.E., Wang, M., Tang, W., Abdel-Haq, R., Beadle, K., Deverman, B.E., Gradinaru, V., Ismagilov, R.F., Mazmanian, S.K.*, Gut microbiota regulate social behavior via stress response pathways in the brain. (Under Revise)

<u>Wu, W.L. (Corresponding author)</u>, Cheng, S.J., Lin, S.H., Chuang, Y.C., Huang, E.Y., Chen, C.C.*, 2019. The effect of ASIC3 knockout on corticostriatal circuit and mouse self-grooming behavior. **Frontiers in Cellular Neuroscience**. 13:86. doi: 10.3389/fncel.2019.00086.eCollection 2019.

Lee, Y.K., Mehrabian, P., Boyajian, S., <u>Wu, W.L.</u>, Selicha, J., Vonderfecht, S., Mazmanian, S.K.*, 2018. The Protective Role of Bacteroides fragilis in a Murine Model of Colitis-Associated Colorectal Cancer. **mSphere**, 3(6). pii: e00587-18. doi: 10.1128/mSphere.00587-18..

Ko, J., Isas, J.M., Sabbaugh, A., Yoo, J.H., Pandey, N.K., Chongtham, A., Ladinsky, M., <u>Wu, W.L.</u>, Rohweder, H., Weiss, A., Macdonald, D., Munoz-Sanjuan, I., Langen, R., Patterson, P.H., Khoshnan, A., 2018. Identification of distinct conformations associated with monomers and fibril assemblies of mutant huntingtin. **Human molecular genetics**, 27, 2330-2343.

Needham, B.D., Tang, W., <u>Wu, W.L. (Corresponding author)</u>, 2017. Searching for the gut microbial contributing factors to social behavior in rodent models of autism spectrum disorder. **Developmental Neurobiology**, 78, 474-499.

Wu, W.L. (Corresponding author), 2017. Association among gut microbes, intestinal physiology, and autism. **EBioMedicine**, 25. 11-12.

Chan, K.Y., Jang, M.J., Yoo, B.B., Greenbaum, A., Ravi, N., <u>Wu, W.L.</u>, Óscar Sánchez-Guardado, L., Lois, C., Mazmanian, S.K., Deverman, B.E.*, Gradinaru, V.*, 2017. Engineered adeno-associated viruses for efficient and noninvasive gene delivery throughout the central and peripheral nervous systems. **Nature Neuroscience**, 20, 1172-1179.

Wu, W.L. (Corresponding author), Hsiao, E.Y., Yan, Z., Mazmanian, S.K., Patterson, P.H., 2017. The placental interleukin-6

signaling controls fetal brain development and behavior. **Brain, Behavior, and Immunity**. 62, 11-23 *Highlighted in: Brain, Behavior, and Immunity*. 62: 9-10.

Chu, H.*, Khosravi, A., Kusumawardhani, I.P., Kwon, A.H., Vasconcelos, A.C., Cunha, L.D., Mayer, A.E., Shen, Y., <u>Wu, W.L.</u>, Kambal, A., Targan, S.R., Xavier, R.J., Ernst, P.B., Green, D.R., McGovern, D.P., Virgin, H.W., Mazmanian, S.K.*, 2016. Gene-microbiota interactions contribute to the pathogenesis of inflammatory bowel disease. **Science**, 352, 1116-1120.

Chow, K.H., Yan, Z., <u>Wu, W.L.</u> (<u>Corresponding author</u>), 2016. Induction of maternal immune activation in mice at mid-gestation stage with viral mimic poly(I:C). **Journal of Visualized Experiments : JoVE**, e53643.

Deverman, B.E.*, Pravdo, P.L., Simpson, B.P., Kumar, S.R., Chan, K.Y., Banerjee, A., <u>Wu, W.L.</u>, Yang, B., Huber, N., Pasca, S.P., Gradinaru, V.*, 2016. Cre-dependent selection yields AAV variants for widespread gene transfer to the adult brain. **Nature Biotechnology**, 34, 204-209.

<u>Wu, W.L.</u> (Corresponding author), Adams, C.E., Stevens, K.E., Chow, K.H., Freedman, R., Patterson, P.H., 2015. The interaction between maternal immune activation and alpha 7 nicotinic acetylcholine receptor in regulating behaviors in the offspring. **Brain**, **Behavior**, and **Immunity**, 46, 192-202.

<u>Wu, W.L.</u>, Cheng, C.F., Sun, W.H., Wong, C.W., Chen, C.C.*, 2012. Targeting ASIC3 for pain, anxiety, and insulin resistance. **Pharmacology & Therapeutics**, 134, 127-138.

Wu, W.L., Lin, Y.W., Min, M.Y., Chen, C.C.*, 2010. Mice lacking Asic3 show reduced anxiety-like behavior on the elevated plus maze and reduced aggression. Genes, Brain and Behavior, 9, 603-614.

Wu, W.L., Wang, C.H., Huang, E.Y., Chen, C.C.*, 2009. Asic3(-/-) female mice with hearing deficit affects social development of pups. **PLoS One**, 4, e6508.

Lin, Y.W., Min, M.Y., Lin, C.C., Chen, W.N., <u>Wu, W.L.</u>, Yu, H.M., Chen, C.C.*, 2008. Identification and characterization of a subset of mouse sensory neurons that express acid-sensing ion channel 3. **Neuroscience**, 151, 544-557.

Liu, R.T., Chen, Y.J., Chou, F.F., Li, C.L., <u>Wu, W.L.</u>, Tsai, P.C., Huang, C.C., Cheng, J.T.*, 2005. No correlation between BRAFV600E mutation and clinicopathological features of papillary thyroid carcinomas in Taiwan. **Clinical Endocrinology**, 63, 461-466.

BOOK CHAPTER

Malkova N., <u>Wu, W.L.</u> (Co-first author), Hsiao, E. Y., 2015. Modeling the Maternal Immune Activation Risk Factor for Schizophrenia. *Modeling the Psychopathological Dimensions of Schizophrenia*, eds Pletnikov, M., Waddington, J. (Elsevier).

PATENT

Hsiao, E.Y., <u>Wu, W.L.</u>, Mazmanian, S.K., Patterson, P.H. 2015. Composition and Methods Comprising Bacteria for Improving Behavior in Neurodevelopmental Disorders. **US Patent App. 14/925,240**

CONFERENCE PAPERS

Deverman, B.E. and Pravdo, P.L. and Simpson, B.P. and Kumar, S.R. and Luo, Y. and Chan, K.Y. and Banerjee, A. and <u>Wu, W.L.</u> and Yang, B. and Huber, N. and Pasca, S.P. and Gradinaru, V. (2016) Using Cre-Dependent In Vivo Selection to Identify AAV Variants That Enable Efficient and Widespread Gene Transfer to the Adult Central Nervous System. **Molecular Therapy**, 24 (S1). S99. ISSN 1525-0016.

<u>Wu, W.L.</u> and Hsiao, E.Y. and Yan, Z. and Mazmanian, S.K. and Patterson, P.H. (2015) Maternal Immune Activation Perturbs Fetal Brain Development and Adult Behaviors Through Placental Trophoblast IL-6 Activation. **Schizophrenia Bulletin**, 41 (S1). Art. No. S216. ISSN 0586-7614.

<u>Wu, W.L.</u> and Adams, C. E. and Stevens, K.E. and Freedman, R. and Patterson, P.H. (2015) Nicotinic Cholinergic Modulation of the Fetal Brain Response to Maternal Immune Activation. **Schizophrenia Bulletin**, 41 (S1). S216. ISSN 0586-7614.

INVITED TALKS

Targeting gut microbiota-mediated neural circuits in social behavior., The Immunology and Infection Disease Journal Club, National Cheng Kung University, Tainan, Taiwan.

2019	Gut microbiota regulate social behavior via stress response pathways in the brain., The 34th Joint Annual Conference of
	Biomedical Science, Taipei, Taiwan.
2019	Gut microbiota regulate social behavior via stress response pathways in the brain., The 5th Microbiome R&D and
	Business Collaboration Congress Asia and the 4th Probiotics Congress Asia, Taipei, Taiwan.
2019	Gut microbiota regulate social behavior via stress response pathways in the brain., Taiwan International Graduate
	Program-Interdisciplinary Neuroscience Retreat, Tainan, Taiwan.
2018	Gut microbiota regulate social behavior via stress response pathways in the brain., Department of Biological Sciences,
	National Sun Yat-sen University, Kaohsiung, Taiwan.
2018	Gut microbiota regulate social behavior via stress response pathways in the brain., Department of Biological Sciences
	and Technology, National University of Tainan, Tainan, Taiwan.
2018	Gut microbiota regulate social behavior via stress response pathways in the brain., Neuroscience Society of Taiwan,
	Tainan, Taiwan.
2018	Gut commensal microbiota controls social behavior through stress hormone. Yong Loo Lin School of Medicine,
	National University of Singapore & National University Health System, Singapore.
2017	Gene-environment interactions contribute to the etiology of autism spectrum disorders. Department of Physiology,
	College of Medicine, National Cheng Kung University, Tainan, Taiwan.
2016	Maternal immune activation and autism: prophylactic and therapeutic strategies. Institute of Biochemistry and
	Molecular Biology, National Yang-Ming University, Taipei, Taiwan.
2014	The interaction between maternal immune activation and nicotinic acetylcholine receptor alpha 7 subunit in regulating
	behaviors in the offspring. Department of Psychiatry, University of Colorado Anschutz Medical Campus, CO, USA.
2014	Maternal infection perturbs fetal brain development and adult behaviors through IL-6 signaling. Brain Research
	Center, National Yang-Ming University, Taipei, Taiwan.
2010	Asic3-/- female mice with hearing deficit affects social development of pups. Graduate Institute of Acupuncture Science,
	China Medial University, Taichung, Taiwan.
2009	Animal behavior and underlying mechanism: from fish to mice. Institute of Marine Biology, National Sun Yat-sen
	University, Kaohsiung, Taiwan.

PROFESSIONAL ACTIVITIES

2009

2018

2018-	Chinese Physiological Society
2018-	Neuroscience Society of Taiwan
2008-	Society for Neuroscience (USA)
2008-2012	Neuroscience Program at Academia Sinica (Taiwan)
2008-2012	Society for Biomedical Science (Taiwan)
2003	American society of Ichthyologists and Herpetologists (USA)
2001-2004	Society of Ethology & Ecology (Taiwan)
2001-2004	Society of Ichthyology (Taiwan)

TEACHING & MENTORING EXPERIENCES

Lecturer of "How to identify the gut microbial contributing factors to social behavior in rodent models?" Yong

Interoception phenotype of Asic3-/- mice. Neuroscience program at Academia Sinica, Academia Sinica, Taipei, Taiwan.

	Loo Lin School of Medicine, National University of Singapore & National University Health System, Singapore
2017	Instructor of Bi23 "From symbiosis to dysbiosis: Topics in host-microbe interactions", California Institute of
	Technology, Pasadena, CA, USA
2013-2014	Mentor of California Institute for Regenerative Medicine (CIRM), California Institute of Technology, Pasadena,
	CA, USA
2012-2013	Mentor of Summer Undergraduate Research Fellowships (SURF), California Institute of Technology, Pasadena,
	CA, USA
2009	Lecturer of "Behavior phenotyping in mice", Graduate Institute of Acupuncture Science, China Medial University,
	Taichung, Taiwan
2004-2012	Teacher of science class, Mother Nature Science Education Center, Taipei, Taiwan
2001-2004	Lecturer of Introduction of shark biology, National Museum of Marine Biology and Aquarium, Pingtung, Taiwan
2001-2004	Lecturer of Introduction of shark biology, Biology Club, Private Dao-Ming senior high school, Kaohsiung, Taiwan
2002-2004	Lecturer of Introduction of shark biology, Biology Club, Public Sun Yat-sen senior high school, Kaohsiung,
	Taiwan
2002-2005	Lecturer of Introduction of shark biology, Marine Resources Camp, National Sun Yat-sen University, Kaohsiung,
	Taiwan

CONFERENCE PRESENTATIONS

- Wu, W.L., Hsiao, E.Y., Yan, Z., Mazmanian, S.K., Patterson, P.H., 2016. The placental immune environment controls fetal brain development and behavior. Society for Neuroscience, San Diego, USA. (Oral) <u>Selected as oral presentation for SfN 2016</u>
 - Press release: https://spectrumnews.org/news/immune-molecule-may-mediate-effects-maternal-infection/
- 2. <u>Wu, W.L.</u>, Hsiao, E.Y., Yan, Z., Mazmanian, S.K., Patterson, P.H., 2014. The maternal immune environment controls fetal brain development and behavior. International Congress on Schizophrenia Research, CO, USA. (Poster)
- 3. <u>Wu, W.L.</u>, Adams, C.E., Stevens, K.E., Chow, K.H., Patterson, P.H., 2014. The interaction between maternal immune activation and nicotinic acetylcholine receptor alpha 7 subunit in regulating behaviors in the offspring. International Congress on Schizophrenia Research (ICOSR), CO, USA. (Oral) *Selected as oral presentation for ICOSR 2014*
- 4. <u>Wu, W.L.</u>, Adams, C.E., Stevens, K.E., Chow, K.H., Patterson, P.H., 2014. The interaction between maternal immune activation and nicotinic acetylcholine receptor alpha 7 subunit in regulating behaviors in the offspring. NIH Conte Retreat, Denver, CO, USA. (Poster)
- 5. Yan, Z., <u>Wu, W.L.</u>, Hsiao, E.Y. & Patterson, P.H. (2013) Maternal infection perturbs fetal brain development through IL-6 signaling. Neuroscience 2013, Society for Neuroscience, San Diego, USA. (Poster).
- Wu, W.L. & Patterson, P.H. (2013) The interaction between α7nAChR and maternal infection in regulating schizophreniaand autism-like behaviors. Neuroscience 2013, Society for Neuroscience, San Diego, USA. (Poster). Selected as Hot Topic for SfN 2013
 - http://sfn2013.conferencespot.org/55321-sn6-1.225941/t-010-1.227112/718-24-1.227115/718-24-1.227116

 Press release:
 - https://spectrumnews.org/news/chemical-messenger-may-drive-maternal-infections-effects/
- 7. Wu, W.L., Cheng, S.J., Lin, S.H., Lee, C.H., Chuang, Y.C., Tao, M.H., Huang, E.Y., Chen, C.C., 2012. The role of ASIC3 in parvalbumin-expressing neurons in mediating grooming behaviors through cortico-striatal circuits. Neuroscience 2012, Society for Neuroscience, New Orleans, USA.

 Selected as oral presentation for SfN 2012
- 8. Wu, W.L. & Patterson, P.H. (2012) The Effect of Maternal Choline Supplementation on the Maternal Immune Activation Model of Schizophrenia/Autism-like Behaviors. NIH Conte Retreat, Denver, CO, USA.
- 9. <u>Wu, W.L.</u>, Lin, S.H. & Chen, C.C. (2011) Mesencephalic Trigeminal Nucleus ASIC3 Play a Role in Anxiety Behavior on Elevated Plus Maze. FAOPS 2011. Taipei, Taiwan (Poster).
- 10. <u>Wu, W.L.,</u> Chuang, W. J., Chen, C.C., Inhibition of ASIC3 show reduced anxiety-like behavior on the elevated plus maze. Neuroscience 2010, Society for Neuroscience, San Diego, USA (Poster), 2010.
- 11. Wu, W.L., Lin, Y.W., Min, M.Y., Chen, C.C., Mice lacking Asic3 show anxiety and low aggression phenotypes. Society for Biomedical Science, Taipei, Taiwan. (Oral), 2010.
- 12. Wu, W.L., Wang, C.H., Huang, E.Y.K., Chen, C.C., Asic3-/- female mice with hearing deficit affects social development of pups. Tohoku University-Taiwan Neuroscience Workshop for Young Scientists, Yilan, Taiwan. (Oral), 2010.

13. Wu, W.L., Wang, C.H., Huang, E.Y.K., Chen, C.C., Asic3-/- female mice with hearing deficit affects social development of pups. The 4th Conference on Bioacoustics-related Research, Kaohsiung, Taiwan. (Oral), 2009.

- 14. <u>Wu, W.L.</u>, Lin, Y.W., Chen, C.C., Long-term potentiation and fear conditioning behavior in Asic3-/- mice. Neuroscience 2009, Society for Neuroscience, Chicago, USA. (Poster), 2009.
- 15. <u>Wu, W.L.</u>, Wang, C.H., Huang, E.Y.K., Chen, C.C., Asic3-/- female mice with hearing deficit affects social development of pups. The 10th Annual Meeting of the Institute of Neuroscience, Chinese Academy of Sciences, Shanghai, China. (Poster), 2009.
- 16. <u>Wu, W.L.</u>, Wang, C.H., Huang, E.Y.K., Chen, C.C., Hearing deficit of nursing Asic3-/- females impairs social development in young mice. Society for Biomedical Science 2009, Taipei, Taiwan. (Oral), 2009.
- 17. Wu, W.L., Wang, C.H., Huang, E.Y.K., Chen, C.C., Hearing deficit of nursing Asic3-/- females impairs social development in young mice. Neuroscience 2008, Society for Neuroscience, Washington DC, USA. (Poster), 2008.
- 18. <u>Wu, W.L.</u>, Chang, C., Chen, C.C., Roles of ASIC3 in Mesencephalic Trigeminal Nucleus and in Regulation of Stress Response. Poster Competition Award for Attending International Conference' in 2008, IBMS, Academia Sinica, Taipei, Taiwan. (Poster), 2008.
- 19. <u>Wu, W.L.</u>, Wang, C.H., Chen, C.C., Hearing deficit of ASIC3-/- foster females impair social development in young mice. Poster Competition Award for Attending International Conference in 2007, IBMS, Academia Sinica, Taipei, Taiwan. (Poster), 2007.
- 20. Wu, W.L., Huang, Y. K., Chang, C., Chen, C.C., The role of acid sensing ion channel 3 in the regulation of autism-like behavior. Competition for the 1st Molecular and Cellular Neuroscience Symposium Taipei, Taiwan. (Poster), 2006.
- 21. <u>Wu, W.L.</u>, Huang, Y. K., Chang, C., Chen, C.C., The role of acid sensing ion channel 3 in the regulation of autism-like behavior. Competition for the annual Institute Research Poster Award, Institute of life sciences, NDMC, Taipei, Taiwan. (Poster), 2006.
- 22. Li, C.L., Liu, R. T., Wu, W. L., Tsai, P. C., Chen, Y. J., Huang, C. C., Chou, F. F., Cheng J. T., BRAF V599E mutation in papillary thyroid carcinomas. 19th Annual Conference of Biomedical Sciences of Taiwan, Taipei, Taiwan. (Poster), 2004.
- 23. <u>Wu, W.L.</u>, Lee, C. Y., Mok, H. K., Metabolism of brain serotonin during agonistic interaction in albino paradise fish (*Macropodus opercularis*). Annual Meeting of the ichthyology society of Taiwan, Taipei, Taiwan. (Oral), 2003.
- 24. <u>Wu, W.L.</u>, Lee, C. Y., Mok, H. K., Metabolism of brain serotonin during aggressive interaction in paradise fish *(Macropodus opercularis)*. Annual Meeting for American society of Ichthyologists and Herpetologists, Manaus, Amazonas, Brazil. (Oral), 2003.
- 25. <u>Wu, W.L.</u>, Lee, C. Y., Mok, H. K., Metabolism of brain serotonin during aggressive interaction in paradise fish *(Macropodus opercularis)*. Competition for the annual Institute Research Poster Award, Kaohsiung, Taiwan. (Poster), 2003.
- 26. <u>Wu, W.L.</u>, Lee, C. Y., Mok, H. K., Metabolism of brain serotonin during aggressive interaction in paradise fish *(Macropodus opercularis)*. Annual Meeting of Ethology & Ecology of Taiwan, Kaohsiung, Taiwan. (Oral), 2003.
- 27. Wu, W.L., Chiu, K. T., Lee, C. Y., Mok, H. K., Expression of body coloration on social status in paradise fish (*Macropodus opercularis*). Competition for the annual Institute Research Poster Award, Kaohsiung, Taiwan. (Poster), 2002.
- 28. <u>Wu, W.L.</u>, Chiu, K. T., Lee, C. Y., Mok, H. K., Expression of body coloration on social status in paradise fish *(Macropodus opercularis)*. Annual Meeting of Ethology & Ecology of Taiwan, Taichung, Taiwan. (Poster), 2002.

REFERENCES

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(Passed away)

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