Y. Alvin Huang, MD PhD (Brown University, USA)

Brief Biography

Dr. Yu-Wen Alvin Huang is a physician neurobiologist focusing on molecular and cellular fundamentals of Alzheimer's disease and aging-related disorders. He currently holds the position of the GLF Translational Assistant Professor of Molecular Biology, Cell Biology and Biochemistry at the Brown University. Dr. Huang acquired his M.D. and Neurology residency from National Taiwan University, Taipei, Taiwan, and received his Ph.D. in Neuroscience from Johns Hopkins University School of Medicine. For his postdoctoral fellowship at Stanford University School of Medicine (mentored by Dr. Thomas Südhof), he innovated stem cell technologies and uncovered cellular mechanisms important for brain functions in health and in disease. Combining iPSC-based neural models and transgenic rodent tools to study neuron-glial interactions, the overarching goal for the Huang laboratory is to understand the molecular and cellular fundamentals surrounding neurodegeneration and brain aging process, with the aim of future translation into much-needed therapeutics for Alzheimer's disease.

(Curriculum Vitae attached)

CURRICULUM VITAE

1. NAME, POSITION, ACADEMIC DEPARTMENT

Yu-Wen Alvin Huang, MD PhD
GLF Translational Assistant Professor

Brown University Division of Biology and Medicine
Department of Molecular Biology, Cell Biology & Biochemistry (MCB) and Neurology
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2. EDUCATION

1995-2002	MD	Medicine; National Taiwan University, College of Medicine, Taipei, Taiwan
2006-2012	PhD	Neuroscience; Johns Hopkins University School of Medicine, Baltimore, Maryland

3. POSITIONS

2002-2006	Neurology Resident	National Taiwan University Hospital, Taipei, Taiwan
2003-2005	Research Fellow	Center for Movement Disorders, National Taiwan University Hospital
2005-2006	Research Fellow	Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan
2012-2019	Postdoctoral Scholar	Stanford University School of Medicine
2019-present	Assistant Professor	Department of Molecular Biology, Cell Biology & Biochemistry, Brown

4. ACADEMIC HONORS and AWARDS (selected)

2006-2010	Taiwan Merit Scholarship (doctoral study), Taiwan National Science Council
2012	Graduate Poster Award (1st Place), Johns Hopkins University
2014-2015	Dean's Postdoctoral Fellowship, Stanford University School of Medicine
2016	Excellence Award in Research on Alzheimer's and related disorders, Alzheimer's Association
2017	Stanford Drug Discovery Award, Stanford University
2017-2022	K99/R00 Pathway to Independence Award, National Institute on Aging of NIH
2019	Junior Researcher Award, Japanese Neuroscience Society
2021	OVPR Seed Awards, Brown University
2021	Stem Cells and Aging Pilot Awards, NIH COBRE Institutions in Rhode Island
2022	Zimmerman Innovation Awards in Brain Science, Carney Institute of Brown University

5. PUBLICATIONS AND PRESENTATIONS

a. Publications (selected)

1. **Huang, Y.A.**, Jeng, J.S., Tsai, C.F., Chen, L.L., and Wu, R.M. (2007) Transcranial imaging of substantia nigra hyperechogenicity in a Taiwanese cohort of Parkinson's disease. ***Mov Disord.*** 22(4):550-5.
2. **Huang, Y.A.**, Ruiz, C.R., Eyler, E.H., Lin, K., and Meffert, M.K. (2012) Dual Regulation of miRNA biogenesis generates target specificity in neurotrophin-induced protein synthesis. ***Cell.*** 148(5):933-946.
3. **Huang, Y.A.**, Zhou, B., Wernig, M., and Südhof, T.C. (2017) ApoE2, ApoE3, and ApoE4 differentially stimulate APP transcription and Aβ secretion. ***Cell.*** 168(3): 427-41.
4. Essayan-Perez, S., Zhou, B., Nabet, A.M., Wernig, M. and **Huang, Y.A.** (2019) Modeling Alzheimer's disease with induced human brain cells: advancements, lessons, and applications. ***Neurobio Dis.*** doi: 10.1016/j.nbd.2019.104503 (invited review)
5. **Huang, Y.A.,*** Zhou, B., Nabet, A. M., Wernig, M. & S**ü**dhof, T. C.* (2019) Differential Signaling Mediated by ApoE2, ApoE3, and ApoE4 in Human Neurons Parallels Alzheimer's Disease Risk. ***J Neurosci.*** doi:10.1523/jneurosci.2994-18.2019 (*, correspondence)
6. Assetta, B., Tang, C., Bian J. Brikler, T., Chetty, S., **Huang Y. A.** (2020) Generation of Human Neurons and Oligodendrocytes from Pluripotent Stem Cells for Modeling Neuron-oligodendrocyte Interactions. ***J Vis Exp.*** doi: 10.3791/61778
7. Connolly, K., Lehoux, M., O'Rourke, R., Assetta, B., Erdemir, G.A., Elias, J.A., Lee, C.G., **Huang Y.A.** (2022) Potential role of chitinase-3-like protein 1 (CHI3L1/YKL-40) in neurodegeneration and Alzheimer's disease. ***Alzheimers Dement.*** doi: 10.1002/alz.12612
8. Walek, K.W., Stefan, S., Lee, J.H., Puttigampala, P., Kim, A.H., Park, S.W., Marchand, P.J., Lesage, F., Liu, T., **Huang, Y.A.**, Boas, D.A., Moore, C., Lee, J. (2023) Near-lifespan longitudinal tracking of brain microvascular morphology, topology, and flow in male mice. ***Nat Commun***. 14(1):2982. doi: 10.1038/s41467-023-38609-z
9. Lehoux, M., Roady, T., Connolly, K., Assetta, B., Yang, X., **Huang, Y.A.** (2023) The generation and functional characterization of human microglia-like cells derived from iPS and embryonic stem cells. ***Methods Mol. Biol.*** Vol. 2683; doi: 10.1007/978-1-0716-3287-1_6
10. Connolly, K., Chi, J., Yang, X., Assetta, B., **Huang, Y.A.** (2023) Modeling cellular cross-talk of neuroinflammation axis by tri-cultures of iPSC-derived human microglia, astrocytes and neurons. ***Methods Mol. Biol.*** Vol. 2683; doi: 10.1007/978-1-0716-3287-1_8
11. O'Rourke R., Erdemir G.A., Huang Y.A. (2023) Assays of monitoring and measuring autophagic flux for iPSC-derived human neurons and other brain cell types. ***Methods Mol. Biol.*** Vol. 2683; doi: 10.1007/978-1-0716-3287-1_18
12. Xu, L., Xu, H., Chen, S., Jiang, W., Afridi, S.K., Wang, Y., Ren, X., Zhao, Y., Lai, S., Qiu, X., **Huang, Y.A.**, Cui, Y., Yang, H., Qiu, W., Tang, C. (2023) "Inhibition of complement C3 signaling ameliorates locomotor and visual dysfunction in autoimmune inflammatory diseases. ***Mol Ther.*** 2023 Jul 22;S1525-0016(23)00397-0. doi: 10.1016/j.ymthe.2023.07.017.
13. Lau, K.A., Yang, X., Rioult-Pedotti, M.S., Tang, S., Appleman, M., Zhang, J., Tian, Y., Marino, C., Yao, M., Jiang, Q., Tsuda, A.C., **Huang, Y.A.**, Cao, C.*, Marshall, J.* (2023) ***Prog Neurobiol***. 2023 Aug 1;230:102513. doi: 10.1016/j.pneurobio.2023.102513.

14. Jiang, W., Zhu, F., Xu, H., Xu, L., Li, H., Yang, X., Afridi, S.K., Lai, S. Qiu, X., Liu, C., Li, H., Long, Y., Wang, Y., Connolly, K., Elias, J.A., Lee, C.G., Cui, Y.*, **Huang, Y.A.***, Qiu, W.*, Tang, C.* (2023) CHI3L1 signaling impairs hippocampal neurogenesis and cognitive function in autoimmune-mediated neuroinflammation. (***correspondence**, in press, ***Sci Adv.***)

15. Xu, H., Jiang, W., Li, X., Jiang, J., Afridi, S.K., Deng, L., Li, R., Luo, E., Zhang, A., **Huang, Y.A.**, Cui, Y., So, K.F., Chen, H., Qiu, W., Tang, C. (2023) hUC-MSCs-derived MFGE8 signaling ameliorates locomotor dysfunction by inhibiting NF-κB-targeted pro-inflammatory factor released in immune-mediate inflammatory diseases. (in press, ***NPJ Regen Med.***)

b. Invited Talks and Lectures (after Brown appointment July, 2019)

2019 Physiology Seminars of Keio University; Title: AoE2, E3 and E4 differentially activate MAP-kinase signaling to regulate amyloid-beta secretion and synapse formation paralleling their role in Alzheimer's disease; Tokyo, Japan; July 21, 2019.

2019 Japanese Neuroscience Society Annual Meeting; Title: AoE2, E3 and E4 differentially activate MAP-kinase signaling to regulate amyloid-beta secretion and synapse formation paralleling their role in Alzheimer's disease; Session: Interpretation of human brain mechanisms and drug discovery using leading-edge stem cell technologies (**Chairperson: Huang, Y.A.** and Ishikawa, M.); Niigata, Japan; July 27, 2019.

2019 The 5th Suna Kıraç Workshop and Lectures on Neurodegenerative Diseases; Title: The Pluri-potential in Alzheimer's Disease: Modeling with iPS Cells I & II; Istanbul, Turkey; September 27, 2019.

2020 Ryan Institute for Neuroscience Seminar Series, University of Rhode Island; Title: The pluripotential in Alzheimer's disease: iPS cell modeling for risk and opportunity; Kingston, RI; January 21, 2020.

2020 Taiwanese Society of Developmental Biology Annual Meeting (**Keynote lecture**); Title: The pluripotential in Alzheimer's disease: iPS cell modeling for risk and opportunity; Taichung, Taiwan; August 07, 2020.

2022 Foundation for Angelman Syndrome Therapeutics (FAST) Translational Research Symposium; Title: Targeting oligodendroglial dysfunctions in Angelman Syndrome; Session: Angelman Syndrome Biomarker and Outcome Measure (ABOM) Consortium; Miami, FL; December 1, 2022.

2023 Alzheimer's Association AAIC Advancements: Immunity; Title: The signaling function of CHI3L1/YKL-40 in neuroinflammation and Alzheimer's disease; Session: From animal models to human biology; Boston, MA; March 24, 2023.

2023 Keystone Symposia Neuroimmune Interactions; Title: The signaling function of CHI3L1/YKL-40 in neuroinflammation and Alzheimer's disease; Session: Emerging targets and therapies in neuroimmunology; Whistler, British Columbia, Canada; May 17, 2023.

2023 Dup15q Alliance/Angelman Syndrome Foundation (ASF) Science Symposium; Title: Targeting oligodendroglial dysfunction in Angelman Syndrome; Session: Omics and human cells; Nashville, TN; July 26, 2023

c. Patents:

2022 **Huang, Y.A**., Tang, C., Qiu, W., Cui, Y., inventors. The Brown University, assignee. First in class use of the CRTH2 antagonist in treating Neuromyelitis Optica (NMO) and relevant autoimmune. (Provisional, Brown Tech ID: 3302)

2023 **Huang, Y.A.,** Yang, X., inventors. The Brown University, assignee. First in class use of the estrogen receptor-β agonist in treating Angelman syndrome and relevant autism spectrum disorders. (Provisional, Brown Tech ID: 3343)

6. CURRENT AND RECENTLY COMPLETED PROJECTS

R21 AG077697
Huang (PI; Co-PI: Borton)
05/30/2022–05/29/2024
Bioengineering a cortical microtissue model to study human microglia in Alzheimer's disease

R01 AG067228
Lee (PI) and **Huang** (co-I)
10/01/2020–06/30/2025
Long-Term Tracking of Cerebral Microvascular Structural and Functional Alterations between Normal and Alzheimer's Aging

AD Strategic Fund; Alzheimer's Association
Huang (PI; Co-PI: Borton)
07/01/2022–06/30/2024
Bioengineering a cortical microtissue model to study human microglia in Alzheimer's disease

Medical Research Grants; Rhode Island Foundation
Huang (PI)
04/01/2023 - 03/31/2024
The role of inflammatory CHI3L1/YKL-40 signaling in neurodegeneration of Alzheimer's Disease

Stem Cell and Aging Pilot Awards NIH COBRE in RI
Huang (PI)
07/01/2021-06/30/2023
The role of CHI3L1/YKL-40 in neuroinflammation and Alzheimer's disease

Zimmerman Innovation Awards in Brain Science; Carney Institute at Brown University
Huang (PI; Co-PI: Borton)
01/01/2022 - 12/31/2022
Bioengineering hybrid cortical microtissues to study morpho-functional and transcriptional dynamics of human microglia in Alzheimer's Disease

R00 AG054616
Huang (PI)
07/01/2019–06/30/2022
A molecular signaling pathway underlying differential predisposition of ApoE4 genotype to Alzheimer's disease

OVPR Seed Award Brown University
Huang (PI; Co-PI Webb)
07/01/2021-06/30-2022
Neuron-to-oligodendroglial synaptic signaling in health and Alzheimer's disease