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EDUCATION

Ph.D. in Lab of Dr. King-Wai Yau, Johns Hopkins University, School of Medicine 2008-2016
Biochemistry, Cellular and Molecular Biology (BCMB) Program
Dissertation: Visual pigments and light detection in the eye

Bachelor of Science (B.Sc.), University of Hong Kong 2005-2008
Major: Biochemistry, Minor: Mathematics

PROFESSIONAL & RESEARCH EXPERIENCE

Assistant Professor and Hanna Gray Faculty Fellow, University of California, San Francisco 2024-present
Department of Physiology

- Leading a research program on cellular signaling between the nervous system and bodily fluids, with a focus on neuroendocrine function
- Affiliated with the Cardiovascular Research Institute, leading research on vascular organization at specialized brain-ventricle regions
- Mentor in the Neuroscience Graduate Program, providing student training and leading discussion classes

Hanna Gray Postdoctoral Fellow, University of California, San Francisco 2016-2024
PI: David Julius

- Uncovered an endogenous kappa opioid signaling pathway in the spinal cord that regulates scar formation following injury
- Elucidated the cellular mechanism by which TRPV1 drugs alter core body temperature
- These studies resulted in a first-author publication in *eLife*. Another first-author manuscript is currently in press in *Nature*. During this time, I was supported by a Hanna Gray Fellowship from the Howard Hughes Medical Institute and a Fellowship for Postdoctoral Research from the Croucher Foundation.

Graduate Student, Johns Hopkins University, School of Medicine 2008-2016
PI: King-Wai Yau

- Devised a method to measure the electrical response generated by a single active transducin molecule in intact mouse rods and clarified that rod phototransduction has a much smaller receptor-to-G protein amplification factor than previously estimated
- Examined biophysical factors that contribute to the spontaneous activation of visual pigments as a source of biological noise in the visual system
- Studied the phototransduction pathways downstream of visual pigments and their physiological roles in regulating non-image forming visual behaviors such as circadian rhythm and pupillary light reflex
- These studies resulted in 2 first-author publications in *eLife* and *PNAS*, and 5 other publications in *Science*, *Cell*, *PNAS* and *Curr. Biol.* During this time, I was supported by an International Predoctoral Fellowship from Howard Hughes Medical Institute.

PUBLICATIONS

Yue W.W.S.[*], Touhara K.T., Toma K., Duan X., and Julius D[*]. Endogenous opioid signalling regulates spinal ependymal cell proliferation. *Nature.* PMID: 39294372. ([*]co-corresponding authors)
DOI: https://doi.org/10.1038/s41586-024-07889-w

Yue W.W.S., Yuan L., Braz J., Basbaum A.I., and Julius D. (2022) TRPV1 drugs alter core body temperature via central projections of primary afferent sensory neurons. *eLife* 11:e80139. PMID: 35968676.
DOI: https://doi.org/10.7554/elife.80139

Yue W.W.Y., Kiyofumi M, & **Yue W.W.S.** (2021) Side- and similarity-biases during confidence conformity. *PLoS One* 16(7):e0253577. PMID: 34270563.
DOI: https://doi.org/10.1371/journal.pone.0253577

Silverman D., Chai Z., **Yue W.W.S.**, Ramisetty S.K., Bekshe Lokappa S., Sakai K., Frederiksen R., Bina P., Tsang S. H., Yamashita T., Chen J., and Yau K. -W. (2020) Dark noise and retinal degeneration from D190N-rhodopsin. *PNAS* 117(37): 23033–23043. PMID: 32873651.
DOI: https://doi.org/10.1073/pnas.2010417117

Yue W.W.S.[*], Silverman D[*]., Ren X., Frederiksen R., Sakai K., Yamashita T., Shichida Y., Cornwall M.C., Chen J. and Yau K.-W. (2019) Elementary response triggered by transducin in retinal rods. *PNAS* 116(11):5144-5153. PMID: 30796193. ([*]co-first authors)
DOI: https://doi.org/10.1073/pnas.1817781116

Jiang Z., **Yue W.W.S.**[*], L. Chen.[*], Sheng Y. and Yau K.-W. (2018) HCN-channel-mediated phototransduction in intrinsically-photosensitive retinal ganglion cells. *Cell* 175(3):652-664.e12. PMID: 30270038. ([*]co-second author)
DOI: https://doi.org/10.1016/j.cell.2018.08.055

Wang Q., **Yue W.W.S.**, Jiang Z., Xue T., Kang S.H., Bergles D.E., Mikoshiba K., Offermanns S. and Yau K.-W. (2017) Synergistic signaling by light and acetylcholine in mouse iris sphincter muscle. *Curr Biol.* 27(12):1791-1800.e5. PMID: 28578927.
DOI: https://doi.org/10.1016/j.cub.2017.05.022

Yue W.W.S.[*], Frederiksen R.[*], Ren X., Luo D.-G., Yamashita T., Shichida Y., Cornwall M.C. and Yau K.-W. (2017) Spontaneous activation of visual pigments in relation to openness/closedness of chromophore-binding pocket. *eLife* pii: e18492. PMID: 28186874. ([*]co-first authors)
DOI: https://doi.org/10.7554/elife.18492

Buhr E.D., **Yue W.W.S.**, Ren X., Jiang Z., Liao H.W., Mei X., Vemaraju S., Nguyen M.T., Reed R.R., Lang R.A., Yau K.-W., and Van Gelder R.N. (2015) Neuropsin (OPN5)-mediated photoentrainment of local circadian oscillators in mammalian retina and cornea. *PNAS* 112(42):13093-13098. PMID: 26392540.
DOI: https://doi.org/10.1073/pnas.1516259112

Luo D.-G., **Yue W.W.S.**, Ala-Laurila P. and Yau K.-W. (2011) Activation of visual pigments by light and heat. *Science* 332(6035):1307-1312. PMID: 21659602.
DOI: https://doi.org/10.1126/science.1200172

FELLOWSHIPS & SCHOLARSHIPS

Sloan Research Fellowship, 2025-2027
Alfred P. Sloan Foundation

Hanna H. Gray Fellows Program (Postdoctoral and Faculty Phases), 2017-present
Howard Hughes Medical Institute (HHMI)

Croucher Fellowship for Postdoctoral Research, 2017-2019
Croucher Foundation

International Student Research Fellowship, 2011-2013
Howard Hughes Medical Institute (HHMI)

Summer Research Fellowship, 2007
University of Hong Kong

Entrance Scholarship, 2006
University of Hong Kong Foundation

HONORS & AWARDS

Keystone Symposia Scholarship 2019

Summer Research Conference Travel Award, 2017
Federation of American Societies for Experimental Biology (FASEB)

Phi Beta Kappa Society Membership 2016

Michael A. Shanoff Young Investigator Award, 2016
Johns Hopkins University

Summer Research Conference Travel Award, 2011
Federation of American Societies for Experimental Biology (FASEB)

Best Fellowship Proposal, 2009
Johns Hopkins University BCMB Program

Dr. Patrick Chow Lum Wong Memorial Prize in Biochemistry, 2008
University of Hong Kong

Summer Research Fellowship Best Poster Presenter (Biological Sector), 2007
University of Hong Kong

Dean's Honors List, 2006-2008
University of Hong Kong

INVITED TALKS & ORAL PRESENTATION

Forum on Frontiers of Neuroscience and Brain Diseases, Fudan University, China (virtual) Jan 6, 2025
Title: Endogenous opioid signaling regulates scar formation in spinal cord injury

Neuroimmunology and Glial Biology Seminar, University of California San Francisco Nov 15, 2024
Title: Endogenous opioid signaling regulates scar formation in spinal cord injury

School of Biomedical Sciences, The Chinese University of Hong Kong, Hong Kong Aug 23, 2024
Title: Endogenous opioid signaling regulates scar formation in spinal cord injury

Division of Life Science Seminar, The Hong Kong University of Science and Technology, Hong Kong Jul 21, 2024
Title: Endogenous opioid signaling regulates scar formation in spinal cord injury

Society of Neuroscience Annual Meeting Nanosymposium on Spinal Cord Injury, Neural Regeneration, and Repair, Society of Neuroscience, Washington D.C. Nov 11-15, 2023
Title: Endogenous opioid signaling regulates proliferation of spinal cord ependymal cells

Hanna Gray Fellowship Program Retreat, Howard Hughes Medical Institute (HHMI), Janelia Farm, Ashburn, VA — Apr 10-13, 2023
Title: Endogenous opioid signaling regulates proliferation of spinal cord ependymal cells

Mammalian Sensory Systems, Keystone Symposia, Seattle, WA — Mar 15-19, 2019
Title: Toward in vivo optical imaging of trigeminal ganglion neurons and afferents.

Biology and Chemistry of Vision Meeting, Federation of American Societies for Experimental Biology (FASEB), Steamboat Springs, CO — Jun 25-30, 2017
Title: Effect of a single active transducin molecule in mouse rods.

Neuroscience Departmental Retreat, Johns Hopkins University School of Medicine, St. Michaels, MD — Sep 8-9, 2016
Title: Signal amplification by rhodopsin via G-protein.

Biology and Chemistry of Vision Meeting, Federation of American Societies for Experimental Biology (FASEB), Carefree, AZ — Jun 19-24, 2011
Title: Activation of visual pigments by light and heat.

POSTER PRESENTATION

Society of Neuroscience Annual Meeting, Society of Neuroscience, Washington D.C. — Oct 5-9, 2024
Title: Endogenous opioid signaling regulates scar formation in spinal cord injury

Howard Hughes Medical Institute Scientific meeting, Bethesda, MD — Mar 5-7, 2024
Title: Endogenous opioid signaling regulates proliferation of spinal cord ependymal cells

Neuropeptide Signaling, Howard Hughes Medical Institute (HHMI), Janelia Farm, Ashburn, VA — Apr 16-19, 2023
Title: Endogenous opioid signaling regulates proliferation of spinal cord ependymal cells

Howard Hughes Medical Institute Scientific meeting, Bethesda, MD — Dec 13-15, 2022
Title: Kappa opioid signaling regulates proliferation of ependymal cells in mouse spinal cord

Howard Hughes Medical Institute Scientific meeting, virtual — Apr 27-28, 2021
Title: Relative contribution of neuronal versus vascular TRPV1 to agonist/antagonist-induced hypo/hyperthermia

Howard Hughes Medical Institute Scientific meeting, Bethesda, MD — Sep 17-19, 2019
Title: Developing tools for studying migraine pain

Mammalian Sensory Systems, Keystone Symposia, Seattle, WA — Mar 15-19, 2019
Title: Toward in vivo optical imaging of trigeminal ganglion neurons and afferents

Howard Hughes Medical Institute Scientific meeting, Bethesda, MD — Sep 25-27, 2018
Title: Toward in vivo optical imaging of trigeminal ganglion neurons and afferents

Sensory Signaling in Model Organisms, Howard Hughes Medical Institute (HHMI), Janelia Farm, Ashburn, VA — Apr 21-24, 2013
Title: Activation of visual pigments by light and heat

Biology and Chemistry of Vision Meeting, Federation of American Societies for Experimental Biology (FASEB), Carefree, AZ — Jun 19-24, 2011
Title: Activation of visual pigments by light and heat

SERVICE & LEADERSHIP

Organizer, HHMI Fellowships: Experiences from Hanna Gray and Gilliam Fellows, Satellite Event, Society of Neuroscience	2024
Leader, "Mental Health in Academia" Forum, Hanna Gray Fellowship Program Retreat, HHMI	2024
Participant, Evidence-Based Teaching Certificate Course, UCSF	2023
Reviewer, Journal of General Physiology	2018-present
Reviewer, Proceedings of the National Academy of Sciences (PNAS)	2018-present
Mentor, San Francisco State University Mentoring Program	2021-2022
Panelist, F99/K00 Fellows' Pathway to Independence BrainTrust Meeting (virtual)	2021
Volunteer, Cultures of Excellence curriculum development, HHMI & University of Illinois	2020
Reviewer, Online Science Day, Lindau Nobel Laureate Meetings	2020
Panelist, Scientists 4 Diversity Forum, UCSF	2018
Volunteer, Exploratorium, San Francisco	2017-2019
Reviewer, Journal of Neuroscience	2015
Volunteer, "Ask a Scientist" Forum, HHMI	2012
Tutor, Biochemical and Biophysical Principles Graduate Course, Johns Hopkins University	2010