Approved by the Regents
May 20, 2021

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF HUMAN GENETICS

Kenneth Kwan, Ph.D., assistant professor of human genetics, Department of Human Genetics, Medical School, is recommended for promotion to associate professor of human genetics, with tenure, Department of Human Genetics, Medical School [also being promoted to research associate professor, Michigan Neuroscience Institute, Medical School].

Academic Record:

Ph.D.	2008	Yale University
B.S.	2002	University of Waterloo, Ontario, Canada

Professional Record:

2013-Present	Research Assistant Professor of the Michigan Neuroscience Institute, University of Michigan
2013-Present	Assistant Professor of Human Genetics, University of Michigan

Summary of Evaluation:

Teaching: Dr. Kwan is an effective teacher and mentor in both the classroom and the laboratory. He is currently training six individuals in his group, including an associate research scientist, a post-doctoral fellow, two Ph.D. students, and two undergraduate students. He has already completed the training of two post-doctoral fellows and one M.D., Ph.D. student. One former post-doctoral fellow accepted a position as an assistant professor at Kunming Institute of Zoology in the Chinese Academy of Sciences. Dr. Kwan's M.D., Ph.D. student was funded by the National Institutes of Health and by the Autism Science Foundation, and has published two first-author papers. He also co-directs and teaches a significant portion of an undergraduate course on Neurobiology of Developmental Disorders (HG480/580) and lectures annually in four other courses. He made a major scholarly contribution to the neuroscience community in serving as the editor-in-chief of a five-volume textbook, Comprehensive Developmental Neuroscience Series, which was published in June 2020. This endeavor underscores his broad expertise in neuroscience, his stature in the field of neuroscience, and his dedication to scholarly activities. This work is a significant and remarkable achievement that further enhances Dr. Kwan's stature. In recognition of his success as an educator, Dr. Kwan was awarded the 2017 Endowment for the Basic Sciences Teaching Award.

Research: Dr. Kwan is an expert on the genetic mechanisms that underlie cerebral cortex development. He has made significant advances in his field, by defining the mechanisms by which neural progenitor cells divide and give rise to diverse cortical cell types, defining the mechanisms by which cortical neurons are wired into functional neural circuits, and determining how dysregulation of the above mechanisms contribute to disorders of brain development. As a result, he has published six senior-author manuscripts during his appointment at Michigan in top journals, for a total of 26 peer-reviewed articles. Dr. Kwan has secured a significant amount of funding, including, serving as the principal investigator on an NIH/NIMH R00, as the principal investigator on NIH/NINDS R01, and as a co-investigator on four additional NIH grants. Dr. Kwan is a remarkable thinker and a visionary scientist who is deploying powerful and creative strategies to address major questions in neuroscience.

Recent and Significant Publications:

Keil JM, Doyle DJ, Qalieh A, Lam MM, Funk OH, Qalieh Y, Shi L, Mohan N, Sorel A, Kwan KY: Symmetric neural progenitor divisions require chromatin-mediated homologous recombination DNA repair by *Ino80*. *Nature Communications*, 11, 3839, 2020.

Bott C, *McMahon L, *Keil JM, Yap CC, Kwan KY, Winckler B: Nestin selectively facilitates the phosphorylation of the Lissencephaly-linked protein doublecortin (DCX) by cdk5/p35 to regulate growth cone morphology and Sema3a sensitivity in developing neurons. *Journal of Neuroscience*, 40, 3720, 2020.

Shi L, Qalieh A, Mandy MMS, Keil JM, Kwan KY**:** Robust elimination of genome-damaged cells safeguards against brain somatic aneuploidy following *Knl1* deletion. *Nature Communications*, 10, 2588, 2019.

Keil JM, Qalieh A, Kwan KY: Brain transcriptome databases: a user's guide. *Journal of Neuroscience*, 38, 2399, 2018.

Iwase S, Brookes E, Agarwal S, Badeaux AI, Ito H, Vallianatos CN, Tomassy GS, Kasza T, Lin G, Thompson, A, Gu L, Kwan KY, Chen C, Sartor MA, Egan B, Xu J, Shi Y: A Mouse Model of X-linked Intellectual Disability Associated with Impaired Removal of Histone Methylation. *Cell Reports*, 14, 1000, 2016.

Service: Dr. Kwan routinely performs service for academic units, the university, and the broader scientific community. He has served on multiple departmental and Michigan Neuroscience Institute committees, including those for faculty recruitment, communication, neuroscience graduate program activities, and undergraduate education. Dr. Kwan has served on 12 Ph.D. preliminary exam committees, two K award committees, and 11 thesis committees. He has reviewed manuscripts for 22 journals including *Neuron*, *Nature Neuroscience*, and *eLife*, and has also performed ad hoc grant review service for multiple national/international study sections.

External Reviewers:

Reviewer A: "Dr. Kwan is a careful and thoughtful scientist and I believe he has done some great work. His recent studies looking at genome stability during cortical development is quite impressive. He has uncovered some novel new insights into the relative roles of Ino80 and its connections to DNA repair pathways during brain development. In particular, his use of an in utero CRISPR assay to reveal a dependence on homologous recombination after disruption of Ino80 was quite novel and interesting…I would estimate that Dr. Kwan is among the top ten percentage of investigators doing similar lines of investigation."

Reviewer B: "…I believe that Dr. Kwan is contributing innovative and valuable findings and is highly likely to have even greater impact in the near future. Dr. Kwan's research is certainly excellent by both qualitative and funding-related measures, his teaching seems creative and substantial, and his service activities are at the high end of what might be expected from an investigator at this career stage. In addition to his exceptional collaborative efforts, his performance seems to easily meet, if not surpass, the expected milestones for tenure at an excellent research institution. I am strongly in support of his promotion to Associate Professor with tenure and am absolutely confident he would receive such at [my institution]."

Reviewer C: "Ken is well respected in the cortical development field and has achieved a national reputation. Indeed, he has received many prestigious prizes at every level of his training…Ken's research studies illustrate high-impact, rigorous, and elegant research which is addressing important questions in cortical development…I strongly support the promotion of Dr. Ken Kwan to Associate Professor. The research questions he is asking are technically challenging, yet Dr. Kwan has shown a steadfast persistence and ability to address key gaps in the field with cutting-edge techniques and creative approaches."

Reviewer D: " Ken is an exemplarily scientist of the highest caliber, and I unequivocally offer my strongest recommendation for his successful promotion…Ken has quickly become a leading authority on the genetic regulation of circuit assembly in the cerebral cortex…This work is timely, insightful, and impactful, because these investigations will help to uncover the genetic bases of neurodevelopmental disorders, including autism, intellectual disorder, and schizophrenia…In my opinion, Ken is a true scholar of brain development and its relevance to the human condition. The elegance of his work combined with the impact of his publications has already made a significant contribution to the field of cortical development. I firmly believe that with his insight, ambition, and record of successfully training young scientists, Ken will lead his lab to unprecedented discovers that will influence how the field thinks about disorders of the nervous system. Accordingly, I would place Ken in the top 1% of his peers."

Reviewer E: "When considered for promotion and tenure, an ideal candidate will have demonstrated key contributions in the area of research contributions, teaching/training ability, and intuitional and scientific community service. Dr. Kwan has excelled in all of these areas…Dr. Kwan is top-of-his class. He is an exceptional scientist that does not shy away from asking the hard questions just to produce a quick and easy publication. His work has and will continue to provide foundation discoveries that shape our understanding of how the mammalian brain is developed and how mutations in these key pathways lead to neurodevelopmental disorders…I feel that Dr. Kwan's contribution to the scientific community both in terms of his research, teaching and service have all more than sufficiently met the mark for promotion and tenure. If Dr. Kwan was within my own research institute, I would highly recommend his promotion."

Summary of Recommendations:
Dr. Kwan has a growing international reputation as a rising star in neuroscience, studying development of the neocortex and related inherited diseases. He has solid service activities, and is an exceptional educator. I am pleased to recommend Kenneth Kwan, Ph.D. for promotion to associate professor of human genetics, with tenure, Department of Human Genetics, Medical School.

Marschall S. Runge, M.D., Ph.D.
Executive Vice President of Academic Affairs
Dean, Medical School

May 2021