Approved by the Regents
May 19, 2022

PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

Omar J. Ahmed, assistant professor of psychology, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of psychology, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2010	Brown University
B.Sc.	1999	Brown University

Professional Record:

2016-current	Assistant Professor, Department of Psychology, University of Michigan
2015-2016	Investigator, Department of Neuroscience, Brown University
2013-2015	Lecturer, Harvard University
2011-2015	Research Fellow, Department of Neurology, Massachusetts General Hospital & Harvard Medical School
2010-2011	Post-doctoral Fellow, Department of Neuroscience, Brown University

Summary of Evaluation:

Teaching: Professor Ahmed is an impressive teacher and mentor of undergraduates and graduate students. From the outset, he was asked to teach upper-level, bioscience undergraduate seminars to meet high demand in a popular major. In response, he developed and taught three undergraduate courses: Introduction to Neural Circuits (Psych 330), Brain Rhythms in Cognition, Memory, Health, and Epilepsy (Psych 433-001), and Navigation, Fear, Dissociated States & Alzheimer's Disease: The Neuroscience of the Mysterious Retrosplenial Cortex (Psych 433-002). He has taught Psych 330 three times and the two versions of Psych 433 three times. His ratings are outstanding especially for demanding, technical content matter, with Q1s and Q2s ranging between 4.74 and 4.94. For graduate-level teaching, Professor Ahmed has taught Advanced Neural Circuits (Psych 733) three times as well as a journal club (Psych 730) once. He also taught a Neuroscience Bootcamp section (Neuro 623). As in the undergraduate courses, he receives stellar ratings with Q1s and Q2s ranging between 4.5 and 5.0. Since arriving at Michigan, he has mentored 16 undergraduates, often over multiple years, and he has mentored seven graduate students. Of note, two of his graduate students have received NSF fellowships. Finally, Professor Ahmed developed a cloud-based platform for modeling neural function called Neuropia, which has been supported by LSA funding. He has used Neuropia successfully in his own classes and it is now being used by other instructors within and outside Michigan.

Research: Through a unique and impressive combination of research skills, Professor Ahmed's work seeks to answer fundamental questions concerning the functioning of the human brain as well as questions that have profound implications for clinical medicine. Professor Ahmed has conducted ground-breaking work on how information is coded in the brain. For example, he discovered two types of neurons in the superficial retrosplenial cortex. Further, through neurophysiological experiments and biophysical modeling, Professor Ahmed showed that these

classes of neurons precisely code information about head orientation and head movement speeds. In another line of research, Professor Ahmed showed that the generation and spread of seizures occur because a class of inhibitory cortical neurons stops working. This discovery points to future pharmacological strategies that may be effective in reducing and eliminating seizures.

Recent and Significant Publications:

Brennan, E.W., Jedrasiak-Cape, I., Kalaisa, S., Rice, S.P., Sudhakar, S.K., Ahmed, O.J. (2021). "Thalamus and claustrum control parallel layer 1 circuits in retrosplenial cortex." *eLife*, *10*, https://doi.org/10.7554/eLife.62207.

Brennan, E.W., Sudhakar, S.K., Jedrasiak-Cape, I., John, T., Ahmed, O.J. (2020). "Hyperexcitable neurons enable precise and persistent encoding in the superficial retrosplenial cortex." *Cell Reports*, *30*(5), 1598-1612.

Ghosh, M., Shanahan, B.E., Furtak, S.C., Mashour, G.A., Burwell, R.D., Ahmed, O.J. (2020). "Instantaneous amplitude and shape of postrhinal theta oscillations differentially encode running speed." *Behavioral Neuroscience*, *134*(6), 516–528.

Sudhakar, S.K., Choi, T.J., Ahmed, O.J. (2019). "Biophysical modeling suggests optimal drug combinations for improving the efficacy of GABA agonists after traumatic brain injuries." *Journal of Neurotrauma*, *36*(10), 1632–1645.

Service: Professor Ahmed has demonstrated a high level of service to the national research community as well as the university. At the national level, he is a contributing editor for the journal *Epilepsy Currents*. In addition, he has served on NIH study sections as well as a grant review for the American Epilepsy Society. He has also served on the DEI and Basic Science Task Forces for the American Epilepsy Society. Impressively, he chaired a Gordon Research Seminar, a role typically bestowed on more senior scholars. Within the university, he has served on the Executive Committees for both the Department of Psychology and the Sensory Science Symposium. He was also a member of the Steering Committee for the Undergraduate Program in Neuroscience and has served on the following additional committees: Computational Neuroscience Certificate program, MICDE Education, Biopsychology admissions, faculty search, and Biopsychology self-study committees. Finally, he has been highly engaged in outward-facing service. Specifically, he was interviewed on the Scientific Sense podcast, was involved with the UM Museum of Natural History "Science Café" outreach program, and also worked with the museum to develop additional exhibits and activities aimed at K-12 students.

External Reviewers:

Reviewer (A): "In short, Dr. Omar Ahmed is an outstanding scholar and a rising star in our field."

Reviewer (B): "There is additional published work that I will not discuss here, because I think the fundamental RSC papers are in my view evidence enough of Omar's first-rate and impactful scholarship. One of these cellular physiology or systems neuroscience lines would qualify an investigator as productive and make an investigator proud; Omar has two and more, including a program in human neurophysiology that is rare and difficult to reach the level of accomplishment that he has demonstrated."

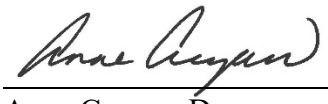
Reviewer (C): "He has been productive and influential in his research, based on his publication of important scientific papers in peer-reviewed journals from his work at the University of Michigan, and his excellent funding from NIH and the Whitehall foundation."

Reviewer (D): "The University of Michigan should do everything in their power to retain such a highly qualified investigator and educator like Dr. Ahmed."

Reviewer (E): "Since his work on structure and function of retrosplenial cortex circuitry would, on its own, merit promotion at [my institution], I am excited and impressed to see the natural growth into related problems in neuroscience, and a further development of computational, molecular, and behavioral methodologies."

Reviewer (F): "Putting Dr. Ahmed's work in a broader context, what particularly stands out is the breadth of his lab's expertise, spanning computational modelling, in vivo and ex-vivo electrophysiology, and his success in investigating important questions with human subjects and rodent models. Very few other labs in the world have managed this and I think it puts him in a strong position to continue making novel advances."

Summary of Recommendation:
Professor Ahmed has made highly impressive and important contributions in research, in teaching, and in service, and his work reflects very well on the Department of Psychology, the College of LSA, and the University of Michigan. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Omar J. Ahmed be promoted to the rank of associate professor of psychology, with tenure, College of Literature, Science, and the Arts.



Anne Curzan, Dean
Geneva Smitherman Collegiate Professor of
English Language and Literature, Linguistics,
and Education
Arthur F. Thurnau Professor
College of Literature, Science, and the Arts

May 2022