

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF PSYCHIATRY

Shelly B. Flagel, Ph.D., assistant professor of psychiatry, Department of Psychiatry, Medical School, is recommended for promotion to associate professor of psychiatry, with tenure, Department of Psychiatry, Medical School [also being promoted to research associate professor, Molecular and Behavioral Neuroscience Institute].

Academic Degrees:

Ph.D.	2003	University of Michigan
B.S.	1998	University of Michigan

Professional Record:

2015-present	Assistant Professor of Psychiatry, University of Michigan
2015-present	Adjunct Assistant Professor of Psychology, University of Michigan
2013-present	Research Assistant Professor, Molecular and Behavioral Neuroscience Institute, University of Michigan
2012-2015	Research Assistant Professor, Department of Psychiatry, University of Michigan
2011-2015	Assistant Research Scientist/Lecturer, Department of Psychology, University of Michigan
2007-2013	Research Investigator, Molecular and Behavioral Neuroscience Institute, University of Michigan

Summary of Evaluation:

Teaching: While the majority of effort has focused on research, Dr. Flagel teaches for the Department of Psychology and, more recently, for the Neuroscience Graduate Program. Since 2012, she designed and taught two different upper level undergraduate psychology seminars on topics related to her research. This past semester she designed and taught the first ever Behavioral Neuroscience (Neuroscience 602) module to students in the Neuroscience Graduate Program and Program in Biomedical Sciences (PIBS). Dr. Flagel also devotes a great amount of time mentoring her research group. She currently has three students from the Neuroscience Graduate Program pursuing their dissertation work in her laboratory. Her first graduate student, who started in her lab in 2012, has been very successful. He obtained a pre-doctoral NRSA from NIDA and had four publications prior to his dissertation defense in August 2016, after which he started a postdoctoral position at Yale. She also has two post-doctoral fellows in her lab and mentors two to four undergraduates each semester, many of whom end up completing their honors thesis in her lab.

Research: Dr. Flagel's research has focused on the way genes and environment interact to determine individual differences in addiction liability. She uses rodent models to parse the psychological and neurobiological mechanisms that drive motivated behavior and contribute to

pathological behavior. During her postdoctoral training she established the “sign-tracker/goal-tracker” rat model which captures individual differences in response to environmental stimuli and allows the examination of the neural mechanisms that contribute to addiction. This animal model has been the center of her most fruitful investigations. Using this model, she was able to elucidate the role of dopamine in reward learning. This work was published in *Nature* in 2011 and ranked as the second most influential paper in the field of neuroscience shortly after publication. It has since been cited over 380 times in the scientific literature and continues to receive media attention, including the *Wall Street Journal*. The sign-tracker/goal-tracker animal model that she established has gained recognition with increasing momentum in recent years, and is now the center of investigations across disciplines, ranging from clinical studies to computational modeling. In the last eight years, six of her first- or last-author papers surrounding the sign-tracker/goal-tracker model have been cited over 100 times. In total, she has 36 published papers, and she is primary or senior author on 17. Dr. Fligel’s work has been cited over 2200 times, with an h-index of 19. In addition, she has been cited in the popular press for her expertise, most recently by CNN. Her most recent publication in *PNAS* which describes findings from a rat model identifying inherited traits, genetic and epigenetic factors that contribute to individual differences in addiction liability, has also received substantial media attention.

Dr. Fligel is currently funded by the National Institute of Drug Abuse (NIDA) and she is the principal investigator of an R01, a co-principal investigator of a P50 Center of Excellence Award and a co-investigator on a P01 Program Project Grant. Dr. Fligel has been invited to speak at national and international conferences. In December 2014, she was named a Kavli Fellow of the National Academy of Sciences and invited to participate in the 14th Japanese-American Frontiers in Science Symposium in Tokyo. In June 2015, she was invited to attend the Ernst Strüngmann Forum on Computational Psychiatry in Frankfurt, Germany. Less than 50 of the world’s experts were invited to this forum, and the new insights gleaned over the course of the meeting will culminate in a book to be published soon. She presented at the “Addiction, In Theory” meeting at the Gatsby Unit at University College in London in 2016, a meeting organized, in part, by NIDA that includes only 20 invited speakers.

Recent and Significant Publications:

Haight JL, Fraser K, Akil H, Fligel SB: Lesions of the paraventricular nucleus of the thalamus differentially affect sign- and goal-tracking conditioned responses. *European Journal of Neuroscience* 42:2478-2488, 2015.

Morrow JD, Fligel SB: Neuroscience of resiliency and vulnerability for addiction medicine: from genes to behavior. *Progress in Brain Research, Neuroscience for Addiction Medicine* 223:3-18, 2016.

Fraser K, Haight J, Gardner E, Fligel SB: Examining the role of dopamine D2 and D3 receptors in Pavlovian conditioned approach behaviors. *Behavioral Brain Research* 305:87-99, 2016.

Fligel SB, Chaudhury S, Waselus M, Kelly R, Thompson RT, Watson SJ, Akil H: Genetic background and epigenetic modifications in the core of the nucleus accumbens predict addiction-

like behavior in a rat model. *Proceedings of the National Academy of Sciences (PNAS)*, 113:E2861-2870, 2016.

Flagel SB, Pine D, Ahmari S, First MB, Friston KJ, Mathys C, Redish D, Schmack K, Smoller JW and Thapar A: A novel framework for improving psychiatric diagnostic nosology. In: Gordon J and Redish D (Ed.) *Computational Psychiatry*. MIT Press, USA. In Press, 2016.

Service: Dr. Flagel was elected as an associate member of the American College of Neuropsychopharmacology, a highly select, international group of investigators. She has served as an expert grant reviewer for the National Science Foundation, and regularly reviews manuscripts for prestigious journals including the *Proceedings of the National Academy of Sciences (PNAS)* and the *Journal of Neuroscience*. Dr. Flagel was appointed to the Controlled Substances in Research Review Committee by the University of Michigan Office of Research in 2015 for a three-year term. She was recently elected to the Department of Psychiatry Research Council for a three-year term, and chosen to be the director for the University of Michigan Neuroscience Early Career Initiative funded by the Kavli foundation. She is an active member of the Neuroscience Graduate Program where she serves on multiple dissertation committees, sits on the admissions committee and participates in recruiting efforts. She recently travelled to the University of Texas, El Paso, for a Diversity Recruitment Event for the Neuroscience Graduate Program. She has also taken a lead role on a T32 Pre-doctoral Neuroscience Training Grant as the Director of Student Development. This grant is expected to be funded this year and will cover 10% effort. On a national level, she was chosen to serve on the American College of Neuropsychopharmacology (ACNP) Advisory Task Force. In addition, she was selected by the National Academy of Sciences to serve on the planning committee for the 15th Japanese-American Kavli Frontiers of Science Symposium, and was elected by international colleagues to serve as a “Full Committee Member” for the European Behavioural Pharmacology Society.

External Reviewers:

Reviewer A: “Dr. Flagel first established an international reputation in the early 2010s, by demonstrating, using a range of cutting-edge techniques, that dopamine transmission does not simply encode, as widely thought, reward prediction but rather selectively mediates a form of incentive reward learning. These results have forced the field to re-evaluate current views on how reward cues come to powerfully motivate and control behavior and how they might confer increased susceptibility to disorders of impulse control... She is already one of the most accomplished scientists in the field of drug addiction research and because of her ambition, drive, and hard work she will further progress to become an absolute leader in her discipline.”

Reviewer B: “She was awarded an R01 grant last year, and she is regularly invited to speak about her work both nationally and internationally... She is a creative and rigorous scientist who is dedicated to the missions of the academic environment.”


Reviewer C: “...Shelly has proven herself to be productive and scientifically impactful and an effective supporter of the educational mission of the university.”

Reviewer D: “She has been trained by world-renowned experts in the field and has wisely used the foundation that they helped her build to establish her independent laboratory... I have no doubt that she will continue to make an impact on the field and will achieve great success in the future.”

Reviewer E: “Dr. Flagel has made substantive scientific advances in her chosen field using difficult, time consuming, and world leading approaches. She has an outstanding scholarly understanding of her field and is already well respected nationally, and internationally, for her work. In my view she is among the very best of her peers.”

Summary of Recommendation:

Dr. Flagel is an outstanding scientist who has established a strong independent scientific program conducting world class research in behavioral neuroscience. Her funding, publication record, teaching and service, locally and internationally give evidence that she is on an outstanding trajectory. Her science has translatable implications for our understanding of human behavior in health and disease. Indeed, Dr. Flagel is destined to have great impact on the field. I enthusiastically recommend Shelly B. Flagel, Ph.D. for promotion to associate professor of psychiatry, with tenure, Department of Psychiatry, Medical School.



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

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