Approved by the Regents
May 19, 2022

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

Monica Dus, assistant professor of molecular, cellular, and developmental biology, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of molecular, cellular, and developmental biology, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:
Ph.D. 2008 Cold Spring Harbor School of Biological Sciences
B.S. 2003 University of Redlands, Johnston Center for Integrative Studies

Professional Record:
2015-Present Assistant Professor, Department of Molecular, Cellular and Developmental Biology, University of Michigan
2008-2014 Post-doctoral Fellow, Skirball Institute, NYU School of Medicine

Summary of Evaluation:
Teaching: Professor Dus is an innovative educator who has made many contributions to the teaching mission of molecular, cellular, and developmental biology (MCDB). Since joining the UM faculty, she has taught five courses, including the large enrollment course BIOLOGY 305: Introduction to Genetics. Professor Dus has also developed an upper-level course for senior undergraduates (MCDB 458: Neuroepigenetics: From Environment to Genes to Behavior), where her students created podcasts to summarize research advances. She created and taught a graduate seminar (MCDB 600: Resilience Skills in Academia), and she has participated in two team-taught graduate level courses (MCDB 614: Experimental Models in MCDB, and MCDB 800: Graduate Seminar: Neural Circuits and Behavior). In addition, Professor Dus has sponsored and co-sponsored numerous undergraduate researchers and served as a reader for many neuroscience honors theses. Professor Dus has been a leader in scientific outreach: her research has been featured by the UM Exhibit Museum and she was the host and co-producer of the "How to Science" podcast (https://lsa.umich.edu/lsa/how-to-science-podcast.html), which highlights several Michigan female scientists. She is also founder and mentor for FIRST: Future in Research, Science, and Teaching prescience club, which provides guidance to undergraduates interested in getting involved in research.

Research: Professor Dus is a neurobiologist studying the relationship between diet, metabolism, gene regulation, and feeding behavior. She has found that fruit flies (*Drosophila melanogaster*) fed a high sugar diet exhibit a long-lasting increase in food consumption, similar to what is found in mammals, including humans. Using a combination of genetics, physiology, genomics, and metabolomics, Professor Dus and her trainees have uncovered some of the key proteins that mediate this neural reprogramming in response to dietary sugar. These proteins are conserved throughout the animal kingdom, making it likely that they play a similar role in humans, and may eventually lead to treatments to combat obesity. Since establishing her research program at the University of Michigan, Professor Dus has gained international recognition as a leader in

nutritional genetics. She is a greatly sought-after speaker at scientific meetings, and her research is supported by multiple federal and private funding agencies. In addition to pursuing the cause of sugar-induced overeating in *Drosophila*, Professor Dus is extending her research to mammals by studying rodent feeding behavior, and is well positioned to be a leader in this field for years to come.

Recent and Significant Publications:

Vaziri, A., Morteza, K., Genaw, B., Freddolino, P.L., Dus, M. (2020). "Persistent epigenetic reprogramming of sweet taste by diet." *Science Advances 6*(46), doi: 10.1126/sciadv.abc8492.

May, C.E., Rosander, J., Dennis, E., Gottfried, J., Dus, M. (2020). "Dietary sugar inhibits satiation by decreasing the central processing of sweet taste." *eLife 9*, doi: 10.7554/eLife.54530.

Wilinski, D., Duren, B., Winzeler, J., Clem, J.L., Holme, K.J., Khabiri, M., Freddolino, P.J., Karnovsky, A., Dus, M. (2019). "Rapid metabolic shifts occur during the transition between hunger and satiety in *Drosophila melanogaster*." *Nature Communications 10*(405), doi: 10.1038/s41467-019-11933-z.

May, C., Vaziri, A., Li, Q., Khabiri, M., Freddolino, P.L., Neely, G., Dus, M. (2019). "High Dietary Sugar Reshapes Sweet Taste to Promote Feeding Behavior in *Drosophila melanogaster*." *Cell Reports 27*(6), 1675-1685. doi: 10.1016/j.celrep.2019.04.027.

Service: Professor Dus has performed valued service at multiple levels. Within MCDB, she has served on the curriculum committee, and has served as the Diversity, Equity, and Inclusion (DEI) officer for the department, where she secured a Rackham grant to support DEI activities for MCDB. She has also organized an Inclusive Teaching Workshop for MCDB faculty. She has supported the neuroscience graduate program by serving on its graduate admissions committee. Professor Dus has brought energy, deep thoughtfulness, and passion to all these duties. Professor Dus has also reviewed numerous manuscripts for top journals in her field and pursued extensive public outreach. Her service to the department, university, and wider scientific community has been commendable.

External Reviewers:

Reviewer (A): "Dr. Dus stands above most of her peers…I believe that her work will have a broad impact that reaches far beyond insect model systems."

Reviewer (B): "The overall model [in Professor Dus's research] has obvious societal implications and, as it involves epigenetic reprogramming, may be particularly relevant for our understanding of the impacts of high sugar consumption during childhood. If validated in mammals, the findings may lead to novel regulatory efforts towards curbing excess sugar intake."

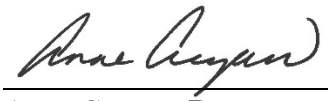
Reviewer (C): "Monica…uses molecular biology, genetics, quantitative behavioral analysis, calcium imaging, optogenetics, metabolomics, transcriptomics, and other techniques…(she) has built an innovative research program spanning the fields of sensory neurobiology, nutrition, and metabolism. In my opinion, this approach…places Monica ahead of her peers in the field."

Reviewer (D): "She is an excellent communicator of scientific principles and easily puts her research findings in the context of the 'big picture' and the research findings of others. I have been particularly impressed with her creative integration of science communication in the form of podcasts in her undergraduate curriculum on neuroepigenetics."

Reviewer (E): "Dr. Dus's style has been to publish very creative, comprehensive studies that are highly impactful, rather than push out larger numbers of smaller studies. Her manuscripts employ state-of-the art techniques, are beautifully presented and are convincing."

Reviewer (F): "There is no doubt that her laboratory is on an upward trajectory and is poised to make sustained and continued impact on the field."

Summary of Recommendation:
Professor Dus is a world leader in the study of the cellular, genetic, and epigenetic changes that occur in the animal nervous system in response to high dietary sugar. She has established a well-funded research program that is internationally recognized and is poised to make additional discoveries in the area of nutritional genetics/physiology. She is a passionate and innovative educator and has an impressive record of mentoring trainees from diverse backgrounds. She is a valued citizen of her home department, the university, and the research community. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor, Monica Dus be promoted to the rank of associate professor of molecular, cellular and developmental biology, 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

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