

# Katherine Furman

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## Education

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- August 2019 – Present **Ph.D. - University of Michigan** | Burgess Lab, Michigan Neuroscience Institute  
Neuroscience Graduate Program, Ann Arbor, MI
- Thesis Mentor: Christian R. Burgess, Ph.D.
  - Currently developing high-throughput mouse behavioral tracking setups to observe the effects of Melanin-Concentrating Hormone neurons of the Lateral Hypothalamus on consummatory behaviors
- August 2015 – May 2019 **B.S. - New York University** | College of Arts and Sciences, New York, NY | *Cum Laude*  
Bachelor of Science Degree in Neural Science with High Honors, May 2019
- Honors Thesis: “Assessing behavioral relevance of pup ultrasonic vocalizations as a function of maternal experience” Advisor: Robert C. Froemke, PhD
  - Neural Science Honors Scholar
  - University Honors Scholar
  - Chemistry Minor
- September 2011 – May 2015 **A.S. - Raritan Valley Community College** | Branchburg, NJ | *Magna Cum Laude*  
Associate of Science Degree in General Science, May 2015
- Dually enrolled throughout all four years of high school
  - Member of Phi Theta Kappa Honor Society

## Research Experience

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- January 2020 – present **PhD Candidate** | Michigan Neuroscience Institute
- **Laboratory of Dr. Christian R. Burgess, PhD**
  - Dissertation project examines the role of Melanin-Concentrating Hormone (MCH) neurons in the mouse Lateral Hypothalamus in motivational aspects of consummatory behavior
  - Utilizes high-throughput behavioral tracking setups in combination with optogenetics and data science techniques
  - Funded by NIDA T-32 Training Grant in Addiction (PI: Shelly Flagel)
  - Funded by Ruth L. Kirschstein Predoctoral F31 Individual National Research Service Award #1F31DK135283-01 (PI: Katherine L. Furman)
- September 2019– December 2019 **PhD Rotation Student** | Michigan Neuroscience Institute
- **Laboratory of Dr. Joanna Spencer-Segal, MD PhD**
  - Rotation project examined the effects of diazepam on mouse anxiety-like behaviors
  - Funded by NIH T-32 Early-Stage Training in the Neurosciences Fellowship
- January 2018 – May 2019 **BP-ENDURE Research Fellow** | NYU Skirball Institute for Biomolecular Medicine
- **Laboratory of Dr. Robert C. Froemke, PhD**
  - Senior thesis project used Conditioned Place-Preference and Operant Conditioning paradigms to assess the preference of female mice for infant-related auditory cues, including pup ultrasonic vocalizations, dependent on maternal experience
  - Funded by NIH Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Experiences & NYU Dean’s Undergraduate Research Fund
- June 2018 – August 2018 **BP-ENDURE Summer Research Fellow** | Yale University Department of Psychiatry
- **Laboratory of Dr. Marina R. Picciotto, PhD**
  - Used fiber photometry to measure effects of cholinergic systems on inhibitory neuron activity in subtypes of interneurons in the basolateral amygdala of mice during stress-related behaviors
  - Funded by NIH Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Experiences (BP-ENDURE)

June 2017 –  
August 2017

**BP-ENDURE Summer Research Fellow** | University of Michigan Molecular & Behavioral Neuroscience Institute

- **Laboratory of Dr. Jill B. Becker, PhD**
- Used Fast-Scan Cyclic Voltammetry in anaesthetized rats to investigate sex-differences in selective estrogen receptor subtype involvement in cocaine-induced dopamine release in the nucleus accumbens
- Funded by NIH Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Experiences (BP-ENDURE)

January 2016 –  
December 2017

**Student Research Assistant** | NYU Center for Neural Science

- **Laboratory of Dr. Cristina Alberini, PhD**
- Main project involved characterizing expression of insulin-like growth factor II mRNA through in-situ hybridization, with the goal of understanding mechanisms by which it promotes memory consolidation
- Subprojects include extensive use of NeuroLucida360 to analyze dendritic spine density of hippocampal cell cultures

## Teaching Experience

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Winter 2023

**PSYCH336: Neuropsychopharmacology of Drugs of Abuse** | UM Psychology Department

- Lead instructor for PSYCH336: Neuropsychopharmacology of Drugs of Abuse, an upper-level undergraduate course in the University of Michigan Psychology Dept.
- Independently responsible for course development, lecture sessions, grading, office hours, and all other course responsibilities
- 34 students enrolled

Sept 19, 2022

**NEUROSCI613: Developmental Neuroscience** | UM Neuroscience Graduate Program

- Invited guest lecture for first year PhD students
- Lecture discussion covered critical reading tactics, helping teach students how to read and analyze scientific literature effectively

Winter 2022

**PSYCH230: Introduction to Behavioral Neuroscience** | UM Psychology Department

- Graduate Student Instructor (GSI) for PSYCH230: Introduction to Behavioral Neuroscience, an undergraduate course in the Psychology department at the University of Michigan, taught under primary instructor Dr. Martin Sarter
- Held three weekly discussion sessions in a hybrid (Zoom & in-person) format, held weekly office hours, graded assignments, and helped in course planning with a team of 8 GSIs.
- Personally responsible for 60 students total

Fall 2019 – Winter  
2023

**Python for Data Science** | Girls Who Code @ UM Dept. of Comp. Medicine & Bioinformatics

- Worked with a team of PhD students to develop a curriculum and instructional format using Jupyter notebooks to effectively teach introductory Python for data science
- Taught this curriculum to a class of high school women for three academic years
- Experience teaching both in-person and virtually due to the COVID-19 pandemic

August 2020, August  
2021, August 2022,  
August 2023

**Introduction to MATLAB** | U of M Neuroscience Graduate Program Bootcamp

- Developed a week-long curriculum to teach introductory MATLAB programming to incoming PhD Students
- Taught these lessons to students in a virtual format as well as in-person

## Awards, Scholarships & Grants

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2023-2026

**Ruth L. Kirschstein Predoctoral F31 Individual National Research Service Award**

- Grant # 1F31DK135283-01, PI: Katherine L. Furman
- National Institute of Diabetes and Digestive and Kidney Diseases
- Awarded \$40,184 yearly for a duration of three years
- Title: *Elucidating MCH neural circuitry underlying consummatory behavior*

- October 2022      **COVID-19 Pandemic Research Recovery Award | University of Michigan Medical School**
- Awarded in the amount of \$5,000 for research costs aimed to offset the setbacks to research posed by the early stages of the COVID-19 pandemic
  - Proposal Title: “*Functional heterogeneity of MCH neurons’ role in feeding*”
- June 2022      **Rackham Conference Travel Award | U of M Rackham School of Graduate Studies**
- Awarded in the amount of \$1,500 for travel to present at the International Behavioral Neuroscience Society 31<sup>st</sup> Annual Meeting in Glasgow, Scotland, UK.
  - Poster title: “*Melanin-concentrating hormone neurons differentially regulate feeding and arousal as a function of downstream projection area*”
- July 2021      **Champion Award in Diversity, Equity & Inclusion | U of M Neuroscience Graduate Program**
- Awarded for “going above and beyond in giving of time and creativity” for work with the NGP Recruitment and Admissions Task Force
- September 2020-  
August 2022      **NIDA T-32 Training Program in the Neurosciences | U of M Neuroscience Graduate Program**
- Awarded this competitive fellowship to fully fund two years of my PhD research involving the motivational aspects of feeding circuitry under Dr. Christian Burgess
- September 2019-August  
2020      **NIH T-32 Early Stage Training in the Neurosciences Fellowship | U of M Neuroscience Graduate Program**
- Awarded trainee fellowship by Neuroscience Graduate Program Directors for financial support in the first year of graduate school
- May 2019      **Best Research Talk Award | NYU Undergraduate Research Conference**
- Awarded by members of NYU Faculty of Arts and Sciences
  - Title: “*Nature Versus Nurture: Maternal Responses to Infant Distress Cues*” Authors: **Katherine L. Furman, Robert C. Froemke**
- April 2019      **NSF Graduate Research Fellowship Program – Honorable Mention**
- As a senior undergraduate, received an Honorable Mention as recognition for an excellent NSF GRFP application
- April 2019      **NYU University Honors Scholar**
- Recognized as a University-wide Honors Scholar, recognition given to those students within the top 40% of their graduating class
- April 2019      **Sherrington Award for Neural Science Research | NYU Center for Neural Science**
- First place thesis prize for undergraduate research in Neural Science
  - Thesis title: “Assessing behavioral relevance of pup ultrasonic vocalizations as a function of maternal experience” Advisor: Robert Froemke
  - Selected by faculty members within the Center for Neural Science as the sole recipient of this prestigious award among all undergraduate honors theses submitted
- June 2017 –  
May 2019      **NIH Blueprint Program for Enhancing Neuroscience Diversity through Undergraduate Research Experiences (BP-ENDURE) | NYU/Hunter College - New York, NY**
- Extremely competitive program, through which trainees receive 2 years of research funding from an NIH initiative to promote training and success in neuroscience among undergraduates from diverse backgrounds
  - Received two years of funded travel to present at the Society for Neuroscience, as well as other conferences and professional opportunities
  - Attended weekly professional development seminars
- February 2019      **Dean’s Opportunity Fund for Graduate School | NYU College of Arts & Science**
- Selected from a competitive applicant pool to receive funding for graduate school application-related fees

- February 2019      **First Place Prize – ERN Video Competition** | Emerging Researchers National Conference
- Animated, filmed, and produced a 3-minute video detailing senior thesis work.
  - Selected for a first place prize from hundreds of applicants across the country.
  - Awarded travel funding to the Emerging Researchers National Conference, as well as AAAS Membership.
  - Video Title: *How do mothers learn to respond to their child's cry?* (Can be viewed here: <https://vimeo.com/289799744>)
- Fall 2018      **Student Travel Award Program** | ABRCMS 2018
- Selected from a competitive application pool to receive travel funding for the 2018 Annual Biomedical Research Conference for Minority Students in Indianapolis, IN
  - Awarded by ABRCMS internal selection committee
  - Oral Presentation Title: *“Behavioral preference for pup ultrasonic vocalizations in female mice”*  
Authors: Katherine L. Furman, Ioana Carcea, Robert C. Froemke
- Fall 2018      **Dean’s Undergraduate Research Conference Grant** | NYU College of Arts & Science
- Awards travel funding for undergraduate researchers to present at conferences
  - Applied and was awarded funding for airfare and registration for ABRCMS 2018
- May 2018      **Best Poster Presentation Award** | NYU Undergraduate Research Conference
- Awarded by members of NYU Faculty of Arts and Sciences
  - Poster Title: *“Behavioral preference for pup ultrasonic vocalizations in female mice”* Authors: **Katherine L. Furman**, Ioana Carcea, Robert C. Froemke
- Spring 2018      **Dean’s Undergraduate Research Fund** | NYU College of Arts & Sciences
- Awards research grants to students with outstanding research proposals, displaying the skills necessary to pursue their own research
  - 2018 Robert Selander Research Scholar, an honor awarded to young researchers with excellent research proposals
  - Project Title: *“Oxytocin-Dependent Behavioral Preference for Pup Calls in Female Mice”* (mentored by Robert C. Froemke)
- September 2016 – May 2019      **Irving H. Jurow Scholarship** | New York University
- Awarded to students at the College of Arts and Sciences who display outstanding academic achievement
- Fall 2017      **Barry M. Goldwater Scholarship** | Departmental Nominee
- Nominated by the NYU Center for Neural Science as one of two outstanding candidates for the Barry M. Goldwater Scholarship

## Publications

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- December 17, 2021      Journal of Open Source Education (JOSE), *Teaching Python for Data Science: Collaborative development of a modular & interactive curriculum*. Marlena Duda, Kelly L. Sovacool, Negar Farzaneh, Vy Nguyen, Sarah Haynes, Hayley Falk, **Katherine L. Furman**, Logan Walker, Rucheng Diao, Morgan Oneka, Audrey Drotos, Alana Woloshin, Gabrielle Dotson, April Kriebel, Lucy Meng, Stephanie Thiede, Shweta Ramdas, Zena Lapp, Brooke N. Wolford. doi: <https://doi.org/10.21105/jose.00138>

## Presentations

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- May 3<sup>rd</sup>, 2023      **Neural Control of Metabolism Mtg, Michigan Diabetes Research Center | Ann Arbor, MI**  
“There’s always room for dessert: MCH neuron regulation of feeding behavior” Katherine L. Furman
- January 9<sup>th</sup>, 2023      **Candidate Talk – Michigan Neuroscience Graduate Program | Ann Arbor, MI**

“There’s always room for dessert: MCH neuron regulation of feeding behavior” Katherine L. Furman

- Poster Presentation,  
Sept. 30<sup>th</sup>, 2022      **Michigan Neuroscience Graduate Program Retreat** | Maumee Bay, OH  
“*Melanin-concentrating hormone neurons differentially regulate feeding and arousal as a function of downstream projection area*” **Katherine L. Furman**, Lucia Kim, Jack R. Evans, Christian R. Burgess
- Poster Presentation,  
June 9<sup>th</sup>, 2022      **International Behavioral Neuroscience Society 31<sup>st</sup> Annual Meeting** | Glasgow, UK  
“*Melanin-concentrating hormone neurons differentially regulate feeding and arousal as a function of downstream projection area*” **Katherine L. Furman**, Lucia Kim, Christian R. Burgess
- Poster Presentation,  
May 5<sup>th</sup>, 2022      **Michigan Neuroscience Conference** | University of Michigan, Ann Arbor, MI  
“*Elucidating MCH neural circuitry underlying consummatory behavior*” **Katherine L. Furman**, Lucia Kim, Christian R. Burgess
- Research Talk;  
February 15, 2021      **University of Michigan Neuroscience Seminar Series** | Talk delivered virtually  
“*Life gives you lemons, you pass them down: Paternally transmitted intergenerational stress through reproductive tract extracellular vesicles*” **Katherine L. Furman**
- Invited Talk;  
July 23, 2020      **Florida Atlantic University – Summer REU** | Talk delivered virtually  
“*My life as a Neuroscientist*” **Katherine L. Furman**
- Research Talk;  
May 3<sup>rd</sup>, 2019      **NYU College of Arts & Sciences Undergraduate Research Conference** | New York, NY  
“*Nature versus Nurture: Maternal Responses to Infant Distress Cues*” **Katherine L. Furman**, Robert C. Froemke
- Research Talk;  
April 26<sup>th</sup>, 2019      **NYU Center for Neural Science Undergraduate Research Festival** | New York, NY  
“*Nature versus Nurture: Maternal Responses to Infant Distress Cues*” **Katherine L. Furman**, Robert C. Froemke
- Research Talk;  
February 21<sup>st</sup>, 2019      **Emerging Researchers National (ERN) Conference** | Washington, DC  
“*Behavioral preference for pup ultrasonic vocalizations in female mice*” **Katherine L. Furman**, Adam Mar, Ioana Carcea, Robert C. Froemke (invited to present, but unable to attend)
- Research Talk;  
November 15<sup>th</sup>, 2018      **Annual Biomedical Research Conference for Minority Students** | Indianapolis, IN  
“*Behavioral preference for pup ultrasonic vocalizations in female mice*” **Katherine L. Furman**, Adam Mar, Ioana Carcea, Robert C. Froemke
- Poster Presentation;  
November 6<sup>th</sup>, 2018      **Society for Neuroscience 48<sup>th</sup> Annual Meeting** | San Diego, CA  
“*Assessing behavioral preference for mouse pup calls as a function of maternal experience and oxytocin signaling*” **Katherine L. Furman**, Adam Mar, Ioana Carcea, Robert C. Froemke
- Poster Presentation;  
November 3<sup>rd</sup>, 2018      **8<sup>th</sup> Annual ENDURE Meeting @ Society for Neuroscience** | San Diego, CA  
“*in-vivo optical recording of BLA inhibitory interneuron activity during stress-related behaviors*” **Katherine L. Furman**, Steven Pittenger, Richard Crouse, Marina R. Picciotto
- Research Talk;  
August 2<sup>nd</sup>, 2018      **Summer Research Symposium** | Yale University – New Haven, CT  
“*Which types of inhibitory neurons influence depressive behaviors?*” Oral presentation by Katherine L. Furman
- Poster Presentation;  
August 2<sup>nd</sup>, 2018      **Summer Research Symposium** | Yale University – New Haven, CT  
“*in-vivo optical recording of BLA inhibitory interneuron activity during stress-related behaviors*” **Katherine L. Furman**, Steven Pittenger, Richard Crouse, Marina R. Picciotto

- Poster Presentation; **Undergraduate Research Conference** | NYU College of Arts & Sciences  
May 5<sup>th</sup>, 2018  
“Behavioral preference for pup ultrasonic vocalizations in female mice” **Katherine L. Furman**, Ioana Carcea, Robert C. Froemke
- Poster Presentation; **Undergraduate Research Festival** | NYU Center for Neural Science  
April 27<sup>th</sup>, 2018  
“Sex-differences in the effect of estradiol on cocaine-induced dopamine release: Role of selective estrogen receptors” **Katherine L. Furman**, Katie E. Yoest, Jennifer A. Cummings, Brandon J. Aragona, Jill B. Becker
- Poster Presentation; **Under-Graduate Research Conference** | Hunter College - New York, NY  
April 25<sup>th</sup>, 2018  
“Sex-differences in the effect of estradiol on cocaine-induced dopamine release: Role of selective estrogen receptors” **Katherine L. Furman**, Katie E. Yoest, Jennifer A. Cummings, Brandon J. Aragona, Jill B. Becker
- Poster Presentation; **Society for Neuroscience 47<sup>th</sup> Annual Meeting** | Washington, D.C.  
November 11<sup>th</sup>, 2017  
“Sex-differences in the effect of estradiol on cocaine-induced dopamine release: Role of selective estrogen receptors” **Katherine L. Furman**, Katie E. Yoest, Jennifer A. Cummings, Brandon J. Aragona, Jill B. Becker
- Poster Presentation; **Summer Research Symposium** | University of Michigan - Ann Arbor, MI  
August 9<sup>th</sup>, 2017  
“Sex-differences in the effect of estradiol on cocaine-induced dopamine release: Role of selective estrogen receptors” **Katherine L. Furman**, Katie E. Yoest, Jennifer A. Cummings, Brandon J. Aragona, Jill B. Becker

## Service & Outreach

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- September 2019 – Winter 2023 **Girls Who Code** | Executive Committee Member, University of Michigan Chapter
- Girls Who Code is an organization which seeks to teach young girls how they can use programming in their lives and careers, while providing representation of women succeeding in STEM careers
  - Helped organize the club, and met weekly with a group of girls to coach them through a programming Capstone Project
- October 2021 – Present **Michigan NGP Curriculum & Academic Affairs Committee** | Graduate Student Member
- This committee consists of 6 faculty and 2 student members, and meets twice monthly to discuss curriculum, qualifying exams and other educational issues.
  - The graduate student member represents the entire body of students in the Michigan Neuroscience Graduate Program.
- December 2021- Present **Growing Up In Science – Cofounder** | UM Neuroscience Graduate Program
- Cofounded the UM NGP Chapter of Growing Up In Science (GUIS), along with another NGP student, A. Kane York.
  - GUIS invites speakers with STEM PhDs to discuss their career path, the obstacles they faced getting there, and the personal and other reasons why they chose to pursue a career in their field.
- August 2020 – August 2022 **Michigan NGP Recruitment & Admissions Task Force** | Graduate Student Member
- One of four Neuroscience Graduate Program students to serve on this Task Force with the goal of making the program’s recruitment and admissions process more equitable and inclusive
  - Organized virtual Open House events for students from various undergraduate institutions to learn about our admissions process

- September 2021      **NGP Director Student Interviewer** | UM Neuroscience Graduate Program
- Selected as one of four NGP student representatives to interview candidates for the position of Neuroscience Graduate Program Director
  - Responsible for devising interview questions representative of the concerns of the broader student body
- September 2020 – Present      **UM, Speaking of Science** | Organizing Committee
- Attended Improv classes at Pointless School of Improv in Ann Arbor, MI
  - Used Improvisational techniques to develop and teach a curriculum in science communication skills for fellow graduate students & faculty.
- October 2020–September 2021      **Neuroscience Graduate Student Organization – Social Chair** | University of Michigan
- Serve on the Executive Board of the Neuroscience Graduate Student Organization, which helps to plan events and activities for Neuroscience Graduate Students.
  - As Outreach Chair, I lead the planning of creative, virtually-delivered social activities during the COVID-19 pandemic
- October 2019–September 2020      **Neuroscience Graduate Student Organization – Outreach Chair** | University of Michigan
- Served on the Executive Board of the Neuroscience Graduate Student Organization, which helps to plan events and activities for Neuroscience Graduate Students.
  - As Outreach Chair, I led the planning of neuroscience-related outreach events for the University of Michigan and greater Ann Arbor communities.
- Winter 2020      **BrainsRule! – Volunteer Committee** | University of Michigan
- Helped recruit volunteers across various departments, organizations, and levels of expertise to volunteer at the 2020 UM BrainsRule! event
  - BrainsRule! is an annual outreach event where students, staff, and faculty at UM teach local middle schoolers about various aspects of neuroscience
  - *event cancelled due to COVID-19 pandemic*