PROGRAM IN NEUROSCIENCE & COGNITIVE SCIENCE

NACS Newsletter

Volume 10 **December 2025**

Fall 2025 Incoming Class

NACS welcomed six new students in fall 2025. The students were asked to provide a few fun facts that most people don't know about them. Please read on to learn more.

Andisheh Balouchi

Advisors: Ricardo Araneda & Elisabeth Smela

Andisheh can speak 3 languages: Farsi (his native language), English, and a little Turkish (Azerbaijani). Andisheh loves cooking—especially traditional Iranian dishes—and the last time he baked Turkish-style baklava, his lab mates ate every piece of it.

Isa Dallasta

Advisors: Jonathan Simon & Liz Marsh

Isa enjoys arts and crafts and has recently gotten into crocheting, so all of her friends have either a hat, purse, or scarf that she's made for them. She went to Iceland last year to see the Northern lights, except it was too cloudy to see them.

Hunter Frisk

Advisor: Rodolphe Gentili

Hunter loves baseball and enjoys everything from going to games, to looking at baseball statistics. He also loves to be outdoors and tries to camp and hike as much as he can in the summer, and snowboard in the winter months.

Harry Green

Advisor: Zane Xie

Harry used to collect board games and was a wrestling coach. In his off-time, he enjoys cooking and learning new recipes.

Nate Ross

Advisor: Ricardo Araneda

Nate was born on his Mom's 21st birthday. He's gone to over 20 concerts so far this year. When he started his graduate studies, he thought he was going to be a pharmacist.

Kihoon Yuk

Advisor: Carson Smith

Kihoon lived in the US from age 1 to 6, but doesn't remember anything because of being too young at the time.

Pam Komarek Retires

After nineteen years of service, our Assistant Director, Pam Komarek, will be retiring. Pam has been an indispensable part of our program's success—supporting our students, faculty, and staff with unwavering professionalism, warmth, and integrity. Pam plans to spend her new free time catching up on projects, going for long walks, volunteering, spending time with family, traveling to visit friends, and lots of other things.

Josiland Chambers, New NACS Assistant Director

Josiland started at NACS as its new Assistant Director on December 1st. Josiland joins NACS with a strong background in graduate program management. Not only has she been at UMD for over ten years, but she was also the Graduate Coordinator for the Physics Department since 2018. In her free time, Josiland enjoys spending time with her husband, kids, and dog. She also likes to watch movies, do crafts, and read books when she has time.

Welcome New NACS Faculty!

UMD Faculty:

Nick Pandža, Assistant Research Professor, ARLIS
Elisabeth Smela, Professor, Mechanical Engineering
Daniel Stolzberg, Assistant Research Scientist, Biology
Nan Xu, Assistant Professor, Bioengineering

Adjunct Faculty:

Yingshi Ouyang, Principal Investigator, Children's National Hospital
Liz Marsh, Associate Professor, Neurology, Johns Hopkins University

Events

NACS Faculty Meeting
December 12, 2025
May 8, 2026

NACS Student Meeting
December 12, 2025
May 8, 2026

NACS-Fest
February 12 & 13, 2026

NACS Alumni Panel
April 10, 2026

BBI/NACS Research Day
April 24, 2026

NACS Retreat
August, 2026

Congratulations to Jason and Marissa!

NACS students Jason Putnam and Marissa Renee were awarded CEBH T32 Fellowships.

Jason Putnam

Marissa Renee

NACS Retreat

NACS held its first retreat since 2019 on August 27, 2025, at the Phillip Merrill Environmental Center at Chesapeake Bay Foundation in Annapolis, MD. The activities included bingo, blitzes by students and faculty, Kahoot trivia, a workshop about AI, and crafting. We had a great turnout of 70 students and faculty attending!

Dr. Catherine Carr is a Professor in the Department of Biology.

I began my research career in high school, wandering the rocky shores of the Cape Peninsula and worked as an undergraduate in Zoology department at the University of Cape Town. I remember reading Rachel Carson's books on the suburban train line to my field site where I tracked territorial behavior in limpets. I'd always wanted to be a zoologist but I was very torn between ecology and neurobiology. After a lot of thought I decided neurobiology was more tractable. I also thought I'd go to Oxford, but the women's colleges couldn't give me a full graduate scholarship – in the 1970s they were so much poorer than the men's colleges – so I came to US for master's degree while I applied for more scholarships. Good move, because I discovered at SUNY Buffalo that I didn't know as much neuroscience as I thought.

I went to UCSD, intending to work on simple circuits with Al Selverston, but was entranced by the electric fish work of a new investigator, Walter Heiligenberg. Electric fish circuits were so much more accessible than the invertebrate circuits, and I loved the work which let one combine sophisticated behavior with single cell physiology. In electric fish I did come up against a problem I couldn't solve, called coincidence detection. The electric fish coincidence detectors were too small to record from. This led me to work with Masakazu (Mark) Konishi at CalTech where I worked on bird coincidence detectors and their delay line inputs. Mark and Walter were the best mentors I could have had, and I am grateful to this day for their brilliance and inspiration.

I got a job I liked at the Univ Rochester's Neurobiology department, to work on the development of sound localization circuits, but left for Maryland after 3 years because my husband had an offer from NIH that he didn't want to refuse. Also, Maryland had a Zoology department, and an array of collaborators at the NIH. Here, I was finally able to lick the coincidence detector problem with the aid of my dear colleague at the NIH Math Research Branch, John Rinzel. My group has had collaborations with colleagues in Germany from the beginning, tied together by sabbatical support from the Humboldt foundation and by a joint NSF award. We were able to show that sound localization circuits are assembled slowly during development, following the growth of the head, and that these circuits are also plastic. I learned more than I can say from the Neural Systems and Behavior course and the Grass Foundation lab at the MBL in Woods Hole.

Since I am a zoologist, we also expanded our research to look at the evolution of sound localization circuits in an array of birds and reptiles. There have been an array of splendid undergraduates, graduate students and postdocs who have contributed to this research, working on alligators, bird's closest relatives, and on salamanders, turtles and lizards. The lizard work in particular was inspired by a collaboration with Jakob Christensen-Dalsgaard from the University of Southern Denmark, who spent a sabbatical here working on geckos. We're now working hard to show gecko localization in the field.

What advice would you give to students who are starting out in the NACS program?

I always give the same advice to students who are starting out, which is to find a mentor with your best interests at heart, and a problem with some depth to it.

Dr. Daniel Callow (NACS PhD 2023) is an Assistant Professor at Johns Hopkins School of Medicine.

Tell us about your current position and how you think the training experience in the NACS program helped you prepare for it.

I am currently an Assistant Professor in the Department of Psychiatry and Behavioral Sciences at Johns Hopkins School of Medicine, where I serve as faculty in the Psychiatric Neuroimaging Core. My research focuses on understanding cognitive resilience to aging and Alzheimer's disease pathology through advanced neuroimaging approaches, with particular emphasis on how lifestyle factors like physical activity and sleep patterns influence brain health across the lifespan.

In my current role, I lead longitudinal and clinical trial studies examining the neural mechanisms underlying cognitive reserve and compensation in older adults. My work integrates multimodal neuroimaging techniques—including structural MRI, diffusion tensor imaging, functional connectivity analysis, and amyloid, tau, and FDG PET imaging—with biomarker assessments and behavioral interventions. The goal is to understand how individuals maintain cognitive function despite age-related and neurodegenerative brain changes, particularly focusing on identifying modifiable factors that promote cognitive resilience and have important implications for preventing cognitive decline and dementia.

Beyond my research, I collaborate extensively across departments at Johns Hopkins, working with colleagues in Neurology, Radiology, and Public Health, as well as maintaining collaborations with University of Maryland faculty including my former mentors Dr. J. Carson Smith and Dr. Tracy Riggins. As an assistant professor supported by an NIH career development award (K01), I spend the majority of my time conducting independent research, learning new methods and techniques, building collaborations, and mentoring students and fellows at all levels.

My NACS training was instrumental in preparing me for this role in several key ways. First, the program's emphasis on grant writing provided invaluable early-career experience. Through coursework and the grant writing assistance program, I successfully competed for multiple fellowships and awards, including NSF and NIH training grants. More importantly, this experience taught me to communicate complex research ideas to diverse scientific audiences—a skill that proved instrumental in securing independent funding as both a postdoc and new faculty member. The program's interdisciplinary approach to developing competitive research proposals gave me confidence in reaching out to and collaborating with scientists from different backgrounds, providing a significant advantage in navigating the funding landscape as an early-career investigator.

Continued on page 6...

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Continued from page 5...

The computational and statistical training I received through NACS was equally crucial to my current success. Advanced statistics courses, programming training in R and MATLAB, and neuroimaging analysis workshops provided me with the analytical skills I use daily for complex longitudinal datasets and advanced techniques like linear mixed-effects modeling, machine learning approaches, and multimodal neuroimaging analysis. Additionally, developing and teaching a high-performance computing workshop during my time in NACS not only reinforced my own computational skills but also prepared me for the mentoring and teaching responsibilities I now have as faculty.

Perhaps NACS's greatest strength was its interdisciplinary nature, which perfectly prepared me for academic medicine. The program taught me to think across traditional disciplinary boundaries, allowing me to approach cognitive aging research from neuroscience, clinical, and public health perspectives simultaneously. This broad perspective has been essential at Johns Hopkins, where successful research requires integration across multiple departments and clinical populations. The weekly NACS seminars, where I observed faculty presentations and eventually presented myself to audiences spanning molecular neuroscience to cognitive psychology, directly prepared me for the diverse scientific communities I now engage with regularly.

NACS also provided invaluable leadership and service experience through my involvement in the grant review committee, recruitment events, and workshop development. These experiences taught me the importance of scientific service and community building, skills that have translated directly to my current roles on institutional committees and as a reviewer for journals and grant panels.

The collaborative research environment fostered by NACS, combined with strong mentorship, gave me the confidence to pursue ambitious, interdisciplinary research questions. The program's commitment to student development and emphasis on rigorous, translational science created an ideal foundation for transitioning to a research-intensive position at a top-tier medical institution. Most importantly, NACS provided me with a network of mentors, collaborators, and peers who continue to support and enhance my research endeavors.

Looking back, I can trace many aspects of my current success, from research methodology and analytical approaches to grant writing skills and collaborative networks, back to the comprehensive training I received in the NACS program. For students considering similar career goals, NACS provides ideal preparation for a career in academic neuroscience and cognitive aging research.

Dr. Christopher Heffner (NACS PhD 2017) is a medical science liaison (MSL) for Teva Pharmaceuticals.

Tell us about your current position and how you think the training experience in the NACS program helped you prepare for it.

Throughout my time in NACS, I was convinced that a tenure-track position was the only goal for me. I did get a postdoc at the University of Connecticut that I loved, but when I made my way into a tenure-track position, I realized that it wasn't a good fit. After some searching, I'm now a medical science liaison (MSL) on the psychiatry team for Teva Pharmaceuticals.

As an MSL, my job is to explain the science behind the disease states that my company helps to treat and the medicines that my company makes to healthcare providers. In return, I ask a lot of questions. I like to say my role is a little bit like tech support: I'm not there to sell the drugs, but to help learn how they're used and provide the technical background behind them. As an unrelenting extrovert, I'm so happy that I get to use skills that I love every day: building relationships, networking, and communicating science.

My experience with NACS was directly relevant to this path. Being an MSL requires a lot of independence, and, as a student, I was given a variety of opportunities to manage, to coordinate, and to forge my own path. This was strongly encouraged by my advisors, Rochelle Newman (HESP) and Bill Idsardi (LING). Being mentored by two department chairs taught me a lot about leadership, and I owe so much to their generosity!

Probably the most relevant opportunity I had to my current path was my time on (including as chair of) the outreach committees in NACS and the Language Science Center. Some of my fondest memories of my time as a NACS student were at events like Maryland Day or high school STEM career fairs, speaking to the public about neuroscience, cognitive science, and language science. NACS even gave me the opportunity to spend a summer in Columbus, Ohio gathering data at the local science museum, which I adored. I always believed that "if you can explain science to a 6th grader, you can explain it to anyone", and I now get to put that into practice every day.

NACS training also gave me the understanding of the neural mechanics that I now must know to understand the science behind Teva's products. Having friends and colleagues in departments anywhere from aerospace engineering to human development to biology has also prepared me perfectly for a job where I work not just with other PhDs but also PharmDs, MDs, nurse practitioners, and even MBAs. Finally, Pam Komarek taught me that the real power in any group is the support staff who help make everything run smoothly. I can't imagine NACS without her, and I know how much she'll be missed!

Recent Student Publications

(NACS students and alumni in **bold** & *italics*; NACS faculty in **bold**)

Atak, Z., Srivastava, A., Gandhi, S., Park, E., Williams, J., **Torii, M.**, & **Haydar, T. F.** (2025). Disrupted Neurogenesis from Basal Intermediate Precursor Cells Alters the Postnatal Neocortex in the TcMAC21 Mouse model of Down Syndrome. *Journal of Neuroscience*, e0040252025.

Cornwell, B. R., Didier, P. R., Grogans, S. E., Anderson, A. S., Islam, S., ***Kim, H. C.***, Kuhn, M., Tillman, R. M., Hur, J., Scott, Z. S., Fox, A. S., DeYoung, K. A., Smith, J. F., & **Shackman, A. J.** (2025). A Shared Threat-Anticipation Circuit Is Dynamically Engaged at Different Moments by Certain and Uncertain Threat. *Journal of Neuroscience*, 45(16), e2113242025.

Hur, J., Tillman, R. M., ***Kim, H. C.***, Didier, P., Anderson, A. S., Islam, S., Stockbridge, M. D., De Los Reyes, A., DeYoung, K. A., Smith, J. F., & **Shackman, A. J.** (2025). Adolescent social anxiety is associated with diminished discrimination of anticipated threat and safety in the bed nucleus of the stria terminalis. *Journal of Psychopathology and Clinical Science*, *134*(1), 41–56.

LaFosse, P. K., Zhou, Z., O'Rawe, J. F., ***Friedman, N. G.***, Scott, V. M., Deng, Y., & **Histed, M. H.** (2024). Cellular-resolution optogenetics reveals attenuation-by-suppression in visual cortical neurons. *Proceedings of the National Academy of Sciences*, *121*(45), e2318837121.

Packy, A. L., ***Shuggi, I. M.***, ***Oh, H.***, & **Gentili, R. J.** (2025). Brain Biomarkers for Assessing Practice of Robotic Arm Reaching Movements Using a Head-Controlled Interface. *IEEE International Consortium for Rehabilitation Robotics*, *2025*, 1431–1436.

Pathak, S., ***Peña-Flores, N***., Alvarez, P., Feeley, J., Ghodssi, R., Losert, W., & **Herberholz, J.** (2025). Interactions between CNS regulation and serotonergic modulation of crayfish hindgut motility. *Royal Society Open Science, 12(6),* 250094.

Perry, S., Sharalla, P. S., Sarubin, D. R., **Li, X.**, **Roesch, M. R.**, & Brockett, A. T. (2025). Epigenetic manipulation of anterior insular cortex alters neural signals and cognitive control. *Neuropsychopharmacology*, 10.

Roche, E. C., **Redcay, E.**, & **Romeo, R. R.** (2025). Caregiver-child neural synchrony: Magic, mirage, or developmental mechanism? *Developmental Cognitive Neuroscience*, *71*, 101482.

Rodriguez, J., Sreepada, K., ***Famularo, R. L.***, Goldwater, S., & **Feldman, N.** (2024). Self-supervised speech representations display some human-like cross-linguistic perceptual abilities. *Proceedings of the 28th Conference on Computational Natural Language Learning*, 458–463.

Thyagaraj, Y., Topel, S., & **Charpentier, C. J.** (2025). Biased information-seeking and information-integration in social anxiety. *Current Opinion in Psychology*, *62*, 102002.

Ying, R., **Stolzberg, D. J.**, & **Caras, M. L.** (2025). Neural correlates of perceptual plasticity in the auditory midbrain and thalamus. *Journal of Neuroscience,* e0691242024.

Congratulations PhD Graduates!

Spring 2025

Paul LaFosse
Advisors: Mark Histed & Behtash Babadi

Leslie Famularo
Advisors: Naomi Feldman & Ramani Duraiswami

Leslie Jordan
Advisor: Lea Dougherty

Yash Kommula
Advisor: Carson Smith

Summer 2025

Asha Pavuluri
Advisor: Ed Bernat

Hossein Ehsani
Advisor: Jae Shim

Xinchi Yu
Advisor: Ellen Lau

Fall 2025

Anna Packy
Advisor: Rodolphe Gentili

Tarlan Vatan
Advisor: Colenso Speer

Awards and Accomplishments

Dan Butts, Associate Professor of Biology, and **Bevil Conway,** Senior Investigator of the Sensation, Cognition, and Action Section at NEI, received a 5-year R01 from the NIH to study the neural processing of high-acuity vision called "Cortical processing at the center-of-gaze."

Melissa Caras, Assistant Professor of Biology, received the 2025 Geraldine Dietz Fox Young Investigator Award and the 2025 Advances and Perspectives in Auditory Neuroscience (APAN) Junior Faculty Award. Melissa was also awarded a BBI seed grant: *Depth-resolved optogenetics with MR-compatible novel optical fiber.*

Catherine Carr, Professor of Biology, was awarded the MOSAIC prize from the International Society for Neuroethology.

Caroline Charpentier, Assistant Professor of Psychology, was awarded the BSOS Dean's Research Initiative Seed Project award, for a project titled "Mechanisms of trust during naturalistic social interaction."

Evan Hart, Assistant Professor of Psychology, was awarded a 3-year R00 to study neural mechanisms and coding of olfactory learning in the orbitofrontal cortex and associated networks.

Yi Ting Huang was promoted to Professor of Hearing and Speech Sciences.

Anna Li was promoted to Associate Professor of Psychology.

Jared Novick was promoted to Professor of Hearing and Speech Sciences.

Nan Bernstein Ratner was named a Distinguished University Professor, the highest honor bestowed by UMD on a faculty member.

Elizabeth Redcay, Professor of Psychology, was awarded a awarded a BBI seed grant: *Computational Social Neuroscience in the Wild.* Colleagues working on the team include NACS faculty Caroline Charpentier, Rachel Romeo, and Phillip Resnik.

Tracy Riggins, Professor of Psychology, received the 2025 Philip Merrill Presidential Scholars Faculty Mentor Award.

Rachel Romeo, Assistant Professor of Human Development and Quantitative Methodology, received the UMD Graduate Faculty Mentor of the Year Award and the UMD College of Education Award Excellence in Pre-Tenure Scholarship.

Matt Roesch, Professor of Psychology, was appointed interim director of the Brain and Behavior Institute (BBI).

Kenneth Rubin, Professor Emeritus, received the Distinguished Contributions to Developmental Psychology award from the American Psychological Association (Division 7, Developmental Psychology).

Jonathan Simon, Professor of Electrical and Computer Engineering and Biology, was awarded a Global Seed Fund grant by KU Leaven for his project, "Electromagnetic Signatures of Human Oral Communication."

Zane Xie, Assistant Professor of Psychology, was named a recipient of the 2025 Searle Scholar Program.

Volunteer for Outreach!

The NACS Outreach Committee is a student-led program to bring neuroscience and cognitive science into the community. By taking science to schools and other community venues, they are fostering a potential interest in science for future generations and enhancing their abilities to communicate science to a diverse audience.

If you are interested in participating, please contact NACS students Marissa Renee (mrenee@umd.edu) or Deena Shariq (dshariq@umd.edu).

Support NACS!

We would like to take this opportunity to remind you that you can donate to the NACS Program Gift Fund. The NACS Gift Fund is a very important source of funding for our program. We use the funds to pay for expenses that we cannot pay for using our state funds, such as appreciation gifts or awards and our recruitment event. Donating is easy and simple. To donate go to our website and click on "Give to NACS."

Follow NACS on Twitter!

Follow NACS on Twitter to help stay connected. If you are on Twitter, give us a follow to keep up with the latest NACS news. Also, if you have had a paper recently accepted, received a grant, fellowship, or award, or just think something is really cool and want to share, tag us to let us know. We want to share as many of the achievements of our students and faculty as we can!

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