PROGRAM IN NEUROSCIENCE & COGNITIVE SCIENCE

Neuroscience and Cognitive Science Program

NACS Newsletter

Volume 5

November 2020

NACS Fall 2020 Incoming Class

NACS welcomed twelve new students in fall 2020. The students were asked to provide a few fun facts that most people don't know about them. Please read on to learn more.

Reid trophied in chess nationally in high school. He helped run a student sci-fi and fantasy library at UCSD.

Nina loves pasta. She has driven through most states, but has a pre-graduation goal to make it to the deep south.

Record producer, Pi'erre Bourne, told Yash good luck with Neuroscience, and now Yash is superstitious that arguably the best producer in the world played a role in him ending up exactly where he wanted to go (UMD NACS).

Leslie has a dog she refers to as her sister and her parents confuse their names. Her main research interests include computational modeling, and she's taking her first computer science course this semester!

Jiachen improvises on piano and vocals. He is trilingual: Chinese, English, and Japanese, and has one dialect.

Kelly loves to cook. Her favorite is cauliflower soup (don't knock it until you try it!). She is fascinated with the distributed nervous system of the octopus, her favorite animal.

Anna went bungee jumping in Australia, and when she was little, she built a Lego neighborhood.

Norma is a scuba diver and once wanted to open a dive shop in her home country, Honduras. She would love to reincarnate as a sperm whale to explore the deep ocean with her long-range biosonar and wrestle giant squids.

Katherine is ambidextrous and she plays the ukulele!

Tarlan speaks four languages: Azerbaijani, Persian, Turkish, and English, and she loves to paint.

Rose plays lacrosse, has a rescue dog named Laurel, and once travelled 500 feet deep in the ocean.

Xinchi is from a region in China where a traditional food is sauerkraut (which tastes almost the same as German sauerkraut). He used to collect film tickets and supermarket receipts until he found out that the ink fades quickly.

What's New in NACS?

Visiting Graduate Fellows in Neuroscience Program

The Visiting Graduate Fellows in Neuroscience Program (VFIN) enables cross-campus training by neuroscience graduate students to promote enhanced collaboration between research groups in Baltimore and College Park. The program provides funding for research rotations of UMB PIN students in College Park and UMCP NACS students in Baltimore. The program is funded by the University of Maryland Center for Economic and Entrepreneurship Development (UMCEED), a center created by the University of Maryland Strategic Partnership Act.

Congratulations!

Chelsea Haakenson and Shakeera Walker are the first UMD students chosen for the Visiting Fellows In Neuroscience Program!

For NACS students, the fellowship provides a research assistantship for one academic semester plus one summer, a $5000 research budget, and $2,000 in funds to help defray travel costs. Eligible students must be currently enrolled and in good standing in the NACS or PIN program. Selection for the fellowships is made by a committee composed of faculty at UMCP and UMB.

A call for proposals was sent out earlier this fall. Chelsea Haakenson and Shakeera Walker were selected as the first NACS students to receive the fellowships. A second call for proposals is planned to take place in spring 2021. For questions about the program, please contact Dr. Elizabeth Quinlan at equinlan@umd.edu.

Research Education Grant

NACS is preparing to submit a proposal for a research education grant (NIH R25) that proposes to provide underrepresented (URM) graduate trainees with 5 years of pre-doctoral mentoring with intensive summer and winter experiences during mid-graduate-career years. The aim of the program is to increase diversity in the pool of individuals who ultimately choose careers in neuroscience focused on brain and behavioral changes that occur across the lifespan, and/or are disrupted by age and psychiatric illness. Research by URM populations can provide unique insights and motivation to understand the underlying mechanisms and health disparities that emerge across ethnicities and sex, from the bench to the clinic, to treat some of the most devastating problems in mental health research.

Diversity and Inclusion Committee

A new committee in NACS, led by Melissa Caras, Assistant Professor in Biology, and comprised of NACS faculty, students and postdoc affiliates, seeks to build relationships with persons historically excluded from scientific or academic opportunities because of their ethnicity, race, gender, sexual orientation, and/or disability status. The committee plans to hold targeted outreach events and launch fundraising efforts to improve research opportunities.

Virtual Events in Zoom

NACS Seminars Series
Fall 2020 and Spring 2021

NACS Faculty Meeting
December 11, 2020

NACS Student Meeting
December 11, 2020

NACS Town Hall
January 29, 2021

NACS-Fest
February 11—12, 2021

NACS Research Day
April 30, 2021

NACS External Review

The external review has been moved to fall 2021. More information will be shared in the spring.

Dr. Erica Glasper received her BA in Psychology from Randolph-Macon College in Ashland, VA. After earning both a MA and PhD in Psychobiology and Behavioral Neuroscience from The Ohio State University, she completed a postdoctoral fellowship at Princeton University. Erica is an Associate Professor of Psychology at UMD and serves as the Associate and Admissions Director of NACS.

Dr. Erica Glasper Named NACS Program Associate Director and Director of Admissions

Becoming a member of the NACS faculty was a no-brainer (pun intended) for me. After joining the Department of Psychology as an Assistant Professor in Fall 2011, I soon realized that NACS would be another “intellectual home” for me. Since that time, I have been an active member of the NACS community. Not only have I proudly served as a research advisor for three NACS students, two of whom are currently in the program, but I have also been active within numerous committees. Having been a member of both the Admissions Committee and the Executive Committee, I have a keen sense of what it takes to participate in the growth of our program as well as its governance.

For many years, I served as the instructor of record for NACS640 (Foundational Readings). Not only did this course serve as a way to expose incoming NACS students to the breadth of research being conducted on our campus, but it also served as a way to form a sense of community for these students. Community is so important and I looked forward to each new cohort.

Naturally, given my dedication to the student body of NACS, it is fitting that I see myself transitioning into a new role as Director of Admissions. I look forward to this opportunity as we usher in the next cohort of NACS trainees. This is a difficult time for all of us. So many challenges (social, economic, health/safety) are making our everyday lives increasingly more difficult. If you are a student just starting out in NACS, I imagine this time in your research journey is more difficult than you initially imagined. Starting a grad program is hard. Starting a grad program during a pandemic that places many restrictions on research progress as well as social interaction may be indescribable (at least I know it's often difficult to find the words to describe this “new normal”). While we are physically distant and unable to gather as a NACS community like we have previously done, new NACS students should know that “we” are here for you. There are so many people in NACS that care about each and every one of you. Voice your concerns and allow us to help you meet whatever needs you may have.

In the Spotlight: NACS Alumni

Dr. Anna (Schlappal) Tschiffely (NACS PhD 2012) is a Science Officer for the Congressionally Directed Medical Research Programs.

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

In my current position, I am a Science Officer (SO) for the Congressionally Directed Medical Research Programs (CDMRP). I currently support the Multiple Sclerosis Research Program (MSRP) and Neurofibromatosis Research Program (NFRP). In my role I oversee grants that are awarded to principal investigators (PIs) at universities, medical schools, private businesses etc. I work with each PI from when the award is initiated all the way through the end of the award, which could be 2-5 years. I focus on ensuring they are progressing in a timely fashion, sticking to their approved statement of work (SOW), and tracking outcomes of the awesome research they are doing. It's been an interesting way for me to leave the bench but still be involved in research, just now from a different perspective.

Prior to my current position, I was a principal investigator (PI) at Naval Medical Research Center (NMRC) for 5 years. During the last 3 years I ran my own lab which focused on studying blast related traumatic brain injury (TBI) and post-traumatic stress (PTS) in animal models as well as a military cohort. This was a wonderful experience and I was truly able to grow as a scientist in this position. I learned a lot about making difficult decisions regarding people or resources, and I learned a lot about how to be resourceful with the information and tools you have. I also spent a lot of time writing grants, presenting to senior military leaders, and networking with funding agencies which was outside my comfort zone.

My experience with the Neuroscience and Cognitive Sciences (NACS) PhD program prepared me well for both of these positions after graduation. In my experience with NACS, and because of the interdisciplinary nature of the program, I got experience early on interacting with multiple departments, faculty, and other students who were studying different topics than myself. The ability to communicate effectively about my research became important quickly so I could work across disciplines. This also was a tremendous resource when I ran into roadblocks in my own work because I had a network of other scientists outside my home department to lean on for advice and resources. Beyond this, the NACS program also required a strong background in multiple areas, not just the disciplines related to my own work. In taking advanced cognitive and statistics courses, I gained a lot of education that helped me later on in both my dissertation and my positions after graduation. Overall, NACS provided a strong education foundation, exposed me to multiple disciplines during my PhD, and provided a lot of resources for time management, team work, and communicating my research in an effective way that people outside my group could easily understand.

Dr. Lewis A. Wheaton (NACS PhD 2005) is an Associate Professor in the School of Biological Sciences at Georgia Tech and adjunct in the Department of Rehabilitation Medicine at Emory University 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 presently an Associate Professor in the School of Biological Sciences at Georgia Tech and an adjunct in the Department of Rehabilitation Medicine at Emory University School of Medicine. Since my arrival at Georgia Tech in 2008, I have been the Director of the Cognitive Motor Control Lab, which has an overall focus on understanding the neurophysiological basis for upper limb motor control, focused on the relationship of neuroplasticity in motor learning. The specific goal of my research is to focus on rehabilitation in upper limb amputees and use new statistical approaches to understand the relationship of the neurophysiology of motor learning and motor control outcomes.

I have been actively involved in rehabilitation policy and management within the state of Georgia, recently concluding a 6-year term as a Governor-appointed member of the State Rehabilitation Council, a Congressionally mandated council that oversees the Georgia Vocational Rehabilitation Agency. I also serve as Co-Director of Georgia Tech Race and Racism in Contemporary Biomedicine Working Group and as an elected official for the Smyrna (GA) City Council.

Being in NACS was so important to my career. My experience in NACS has really framed how I think about research and academia. The interdisciplinary nature of NACS is something that has compelled me to develop really unique collaborations that have involved people ranging from anthropology through biomedical engineering. The breadth of the courses I took and the people I met fueled my service work to develop the same neuroscience community at Georgia Tech. NACS also help shaped my teaching as I developed the first Neuroanatomy course at Georgia Tech based on the courses taken under Dr. Bill Hodos. It also shaped my mentorship, being sure to follow the great example of care and concern demonstrated to me by my on-campus mentor, Dr. Avis Cohen, and NIH advisor, Dr. Mark Hallett. The NACS experience positively shaped so many of my perspectives on research, teaching, and service. I feel fortunate to be a part of the extended UMD NACS family!

Recent Student Publications

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

Won, J., Alfini, A.J., ***Weiss, L.R.,*** Casandra N, ***Callow, D.D.,*** Spira, A.P., **Smith, J.C.** (2019). Caudate Volume Mediates the Interaction between Total Sleep Time and Executive Function after Acute Exercise in Healthy Older Adults. *Brain Plasticity (Amsterdam, Netherlands)*, *5*(1), 69–82.

Won, J., Alfini, A.J., ***Weiss, L.R.***, Michelson, C.S., ***Callow, D.D.***, Ranadive, S.M., **Gentili, R.J.**, **Smith, J.C.** (2019). Semantic Memory Activation After Acute Exercise in Healthy Older Adults. *Journal of the International Neuropsychological Society : JINS*, *25*(6), 557–568.

Callow, D.D., Arnold, N.A., ***Jordan, L.,*** Pena, G., Won, J., Woodard, J., **Smith, J.C.** (2020). The Mental Health Benefits of Physical Activity for Older Adults Survive the COVID-19 Pandemic. Submitted: *The American Journal of Geriatric Psychiatry, 28*(10), 1046–1057.

Brown, J.B., Brittan-Powell, E.F., **Dooling, R.J.**, ***Fishbein, A.R.,*** **Ball, G.F.,** Madison, F.N. (2019). Strain differences in hearing in song canaries. *Journal of the Acoustical Society of America*, *146*(1), EL71.

Fishbein, A.R., Prior, N.H., **Ball, G.F., Dooling, R.J.** (2020). Limitations in Avian Perception of Vocal Sequences: Implications for Language Evolution. Abstract for *EvoLang 13*, Belgium.

Haakenson, C.N., Madison, F.N., **Ball, G.F.** (2019). Effects of Song Experience and Song Quality on Immediate Early Gene Expression in Female Canaries (Serinus canaria). *Developmental Neurobiology*, *79*(6), 521–535.

Chapin, A.A., Han, J., ***Ho, T.,*** **Herberholz, J.,** Ghodssi, R. (2020). A Hybrid Biomonitoring System for Gut-Neuron Communication. *IEEE JMEMS*.

Day, T.C., ***McNaughton, K.A.,*** Naples, A.J., McPartland, J.C. (2020). Self-reported social impairments predict depressive disorder in adults with autism spectrum disorder. *Autism*, *24*(2), 297–306.

McNaughton, K.A., **Redcay, E.** (2020).Interpersonal synchrony in autism. *Current Psychiatry Reports*, 22(3), 12.

Omaki, A., ***Ovans, Z.,*** Yacovone, A., Dillon, B. (2019). Rebels without a clause: Processing reflexives in fronted wh-predicates, *Journal of Memory and Language*, *107*, 80-94.

Keifln, R., ***Pribut, H.J.,*** Shah, N.B., Janak, P.H. (2019). Ventral tegmental dopamine neurons participate in reward identity predictions. *Current Biology*, *29*(1), 93-103, e3.

Sengupta, D.C., Lantz, C.L., Rumi, M.A.K., **Quinlan, E.M.** (2019). 17α Estradiol promotes plasticity of spared inputs in the adult amblyopic visual cortex. *Scientific Reports, 9*(1), 19040.

Shaw, E.P., Rietschel, J.C., Shuggi, I.M., Xu, Y., Chen, S. ***Miller, M.W.,*** **Hatfield, B.D., Gentili, R.J.** (2019). Cerebral cortical networking for mental workload assessment under various demands during dual-task walking. *Experimental Brain Research*, *237*(9), 2279–2295.

Shuggi, I.M., Oh, H., Wu, H., Ayoub, M.J., Moreno, A., ***Shaw, E.P.,*** Shewokis, P.A., **Gentili, R.J.** (2019). Motor performance, mental workload and self-efficacy dynamics during learning of reaching movements throughout multiple practice sessions. *Neuroscience*, *423*, 232–248.

Congratulations Recent Graduates!

Spring 2020

Kevin Armengol
Advisor: Patrick Kanold

Maureen Bowers
Advisor: Nathan Fox

Wanyi Liu
Advisor: Shihab Shamma

Emma Shaw
Advisor: Rodolphe Gentili

Isabelle Shuggi
Advisor: Rodolphe Gentili

Lucy Venuti Winter
Advisor: Jens Herberholz

Summer 2020

Jawshan Ara
Advisor: Elizabeth Quinlan

Aybike Saglam
Advisors: Dr. Susan Wray
Dr. Ricardo Araneda

Lauren Weiss
Advisor: J. Carson Smith

Ovans, Z., **Huang, Y.**, **Feldman, N.** (2020). The (Un)surprising Kindergarten Path, *Proceedings of the 42nd Annual Meeting of the Cognitive Science Society.*

Sanket, N.J., ***Parameshwara, C.M.***, Singh, C.D., Kuruttukulam, A.V., **Fermüller, C.,** Scaramuzza, D., **Aloimonos, Y.** EVDodge: (2020). Embodied AI for High-Speed Dodging On a Quadrotor Using Event Cameras. *2020 IEEE International Conference on Robotics and Automation.*

Vázquez, D., Pribut, H.J., Burton, A.C., Tennyson, S.S., **Roesch, M.R.** (2020). Prior cocaine self-administration impairs attention signals in anterior cingulate cortex. *Neuropsychopharmacology*, *45*(5), 833–841.

Waddington, E., Jaekel, B.N., ***Tinnemore, A.R.,*** **Gordon-Salant, S., Goupell, M.J.** (2020). Recognition of Accented Speech by Cochlear-Implant Listeners, *Ear and Hearing*: January 29, 2020 - Volume Published Ahead of Print – Issue.

Agarwal, P., Palin, N., ***Walker, S.L.,*** **Glasper, E.R.** (2020). Sex-dependent effects of paternal deprivation and chronic variable stress on novel object recognition in adult California mice (Peromyscus californicus). *Hormones and Behavior, 117*, 104610.

Awards and Accomplishments

Catherine Carr, Distinguished Professor of Biology, and **Sandra Gordon-Salant,** Professor of Hearing and Speech Sciences, submitted a renewal of the training grant, *Comparative and Evolutionary Biology of Hearing*. Catherine was re-elected President of the Grass Foundation. She was invited to present in 2019 at the Heiligenberg memorial lecture at UCSD, and published a paper with postdoctoral fellow, Lutz Kettler titled, Neural Maps of interaural time difference in the American alligator. The paper was featured in *Neuronline, r/neuroscience*, and in other popular science pages.

Doug Fields, Chief, Nervous System Development and Plasticity Section NIH, NICHD, was elected a Fellow of the American Association for the Advancement of Science for his scientific contributions to cellular neuroscience.

Quentin Gaudry, Associate Professor of Biology, was co-awarded a BBI grant with Antony Jose on *Engineering a Heritable Behavior*. He also recently contributed to a paper published in *Current Biology* titled, A Population of Interneurons Signals Changes in the Basal Concentration of Serotonin and Mediates Gain Control in the Drosophila Antennal Lobe, with Yoshinori Suzuki, Jonathan E Schenk, and Hua Tan. Quentin's lab has also received an R21 from the NIDCD titled, *Glomerular specific neuromodulation via differential serotonin receptor trafficking*.

Erica Glasper, Associate Professor of Psychology, **Jens Herberholz**, Associate Professor of Psychology, **Anna Li**, Assistant Professor of Psychology, Farrah Madison, Assistant Professor of Biology at Hope College, and **Matthew Roesch,** Professor of Psychology, received a Strategic Growth Fund Award from the UMD VPR's Office titled, *Comparative Analysis of Neurobehavioral Responses to Short-term Social Isolation.*

Ken Grant, Chief of Scientific and Research Studies at Walter Reed National Military Medical Center, published four manuscripts titled, *Clinical Assessment of Functional Hearing Deficits: Speech-in-Noise Performance*; *Modality Effects on Perceptual Encoding and Memory Representations of Spoken Words*; *Effects of temporal distortions on consonant perception with and without undistorted visual speech cues*; and, *Auditory and auditory-visual frequency-band importance functions for consonant recognition.* He also presented speeches and posters at five conferences.

Jens Herberholz, Associate Professor of Psychology, received a grant titled, *Developing engineering solutions to measure, investigate, and predict gut microbiome-to-neuron communication,* from the National Science Foundation with his collaborators in Physics (Wolfgang Losert) and the A. James Clark School of Engineering (Reza Ghodssi, William Bentley). Jens also co-authored a paper with his research assistants titled, Discrete modulation of antipredatory and agonistic behaviors by sensory communication signals in juvenile crayfish, in the *Journal of Experimental Biology*.

Yi Ting Huang, Associate Professor of Hearing and Speech Sciences, along with a colleague from Boston College, Josh Hartshorne, received an NSF Rapid award for collaborative research titled, *RAPID: Collaborative Research: A "Citizen Science" approach to examine COVID-19 social distancing effects on children's language development.* She and Josh have built a web-based platform for parents with children aged 1 to 8 to record short audio recordings of family interactions. This is a "citizen scientists" project to research COVID-19 impact on families all over MD and the US.

Nobuyuki Ishibashi, Director of Cardiac Surgery Research Lab, and his team at Children's National Hospital were awarded several grants, an NIH R33 clinical trial grant, NIH R01, and a DoD CDMRP.

Katrina MacLeod, Associate Research Scientist in the Department of Biology, was awarded the 2020 College of Mathematical and Natural Science's Dean's Distinguished Research Scientist Award.

Rochelle Newman, Chair and Professor of Hearing and Speech Sciences, was named a campus Distinguished Scholar-Teacher in 2020.

Derek Paley, Professor of Aerospace Engineering, was named a 2020-2021 UMD Distinguished Scholar-Teacher.

Kenneth Rubin, Professor of Human Development and Quantitative Methodology, received the International Society for the Study of Behavioral Development Lifetime Achievement Award, 2020.

Jonathan Simon, Professor of Electrical and Computer Engineering and Biology, gave an invited talk titled, *Towards Objective Measures of Speech Perception,* at the Conference on Implantable Auditory Prostheses (CIAP), July 14-19, 2019, Lake Tahoe, California.

Colenso Speer, Assistant Professor in Biology, received the 2019 NARSAD Young Investigator Grant from the Brain and Behavior Research Foundation. This award supports work using super-resolution microscopy and translating ribosome affinity purification techniques to study the development of synaptic connections from intrinsically photosensitive neurons of the retina to the central circadian pacemaker of the brain, the suprachiasmatic nucleus.

Congratulations to NACS Faculty awarded FY20 BBI Seed Grants!

Aniket Bera, **Jae Shim,** and Dinesh Manocha : *Learning Age and Gender Adaptive Gait Motor Control-based Emotion Using Deep Neural Networks and Affective Modeling.*

Alisa Morss Clyne, **J. Carson Smith,** and Ganesh Sriram: *Sex Differences in Exercise Effects of Brain Microvascular Endothelial Glucose Metabolism.*

Gregory Ball, Robert Dooling, and Srinivasa Raghavan: *Time-Release Capsules for Neurotransmitter Delivery to the Brain of Behaving Birds.*

Quentin Gaudry and Antony Jose: *Engineering a Heritable Behavior.*

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 Nicole Catanzarite (ncatanz@umd.edu) or Gloria Kim (hkim1230@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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