MESSAGE FROM THE DIRECTOR

This edition of the M.S. Program in Cognitive Neuroscience Newsletter features new faculty, the introduction of tutors to some core courses, student research supported by a Research Award, publications, and other remarkable work by faculty and our students, many of whom as in previous years are now being admitted into doctoral programs.

The program continues to expand its faculty roster with the addition of Drs. Sebastian Alvarado, Dina Lipkind, and Wei Wang. Their vast expertise in the field of cognitive neuroscience adds to the program’s list of highly regarded faculty members and provides students with exciting opportunities to conduct research in their labs. Some of Drs. Alvarado’s, Lipkind’s, and Wang’s impressive work is featured in this issue.

Beginning this past fall, we introduced peer-tutors into the Statistics and Neuroscience I core courses, and we have two tutors for this spring semester’s Neuroscience II core course. The tutors, through their recent firsthand experience, provide an excellent resource to help students navigate the rigors of these more challenging courses. In this newsletter, Ella Gregorio describes some of her experiences in this role.

We are also delighted that Dr. Virginia Garcia Marin is teaching our neuroanatomy course this spring semester. In addition to being an outstanding neuroanatomist, students are singing praises for her teaching style and are eagerly looking forward to the brain dissections that will be performed as part of the course later this semester.

The Diversity, Equity, and Inclusion committee, chaired by Dr. Elizabeth Chua, continues to perform important and groundbreaking work. Beginning this year, in lieu of the former GRE requirement for admissions, applicants now complete a QALMRI statement on a recent journal article published from a faculty member with whom they would like to conduct research. The Admissions Committee looks forward to continuing to admit stellar students into the program with this additional information.

If you would like to have your publications, grants, awards, and other accomplishments included in future newsletters, please respond to the invitation for submissions that will come from our office or visit our website. We encourage you to participate, as it will give way to exciting and successful newsletters to share with current and prospective students.
Exploring the brain and space: Nikki Gerohristodoulos

I consider myself someone who will always be a student. This began while I conducted research in a VR lunar psychophysics lab while getting my undergraduate degree in Brain Sciences. I had found what I was passionate about; however, as graduation day approached, I felt slightly envious of my classmates that knew exactly what their next steps were. When I took my time to think about what I had studied, I realized that there are two things I find more fascinating than anything else: the brain and space. A need to explore the unknown, to investigate the conscious human experience and to push science forward with people who feel the same way about neuroscience as I do is what drew me to this master's program. My first academic year helped me develop a strong background in cognition and perception. While this was fulfilling, I still needed something separate from neuroscience. I was selected as an intern at NASA Johnson Space Center to work with a team on developing ways for astronauts to be more autonomous on deep space missions, specifically using virtual and augmented realities. Now while I work in the Ro Lab, I hope to fill the current gaps in literature regarding VR, neurophysiology, and space science by investigating the experience of VR environments, specifically a simulation of the International Space Station. This path may not have been obvious to me when I first started, but now that I have, I feel so passionately about it that I do not see how anyone does anything else.

Brainwaves, Memory, and Reward: Rebecca McCune

Reward is an important motivational device for improving learning and memory, including declarative memory (i.e., general knowledge), which is a key component of classroom education. Traditionally, rewards are only given to reinforce accurate responses. However, this may discourage students from making attempts at difficult questions where the likelihood of being accurate is perceived to be low. Yet, research shows that when people actively generate effortful responses, even if the responses are wrong, they are more likely to learn the content (from feedback) than if they are passive learners. Our research asks: what if we reward students, not only for correct responses but also for “effortful” or “close” incorrect answers? Does a reward structure that incentivizes engagement with difficult material, through intermittent rewards to effortful incorrect answers, ultimately improve error correction and learning? If so, why? This is the question that 2nd year Cognitive Neuroscience master’s student Rebecca McCune is researching under the mentorship of Dr. Jennifer Mangels in the Dynamic Learning Lab at Baruch College. As a recipient of the research award, Rebecca plans to use the funds for equipment to conduct electroencephalography (EEG) as well providing financial incentive within the study design itself for her thesis “Brainwaves, Memory and Reward.”
Reflections From a Recent Graduate: Tikva Nabatian

The Cognitive Neuroscience program has given me the opportunity to engage with graduate level neuroscience courses alongside doctoral students, while also supporting my thesis research through the available research awards and workshops aimed at guiding students through the process of writing and submitting a thesis. These opportunities have fostered the development of skills necessary to succeed in a career in research or future doctoral study. When I started the program, I had a general sense of what areas of neuroscience I was interested in, but through the core courses and electives offered, I was able to hone in on the specific fields of research I am most interested in. Working on my thesis has greatly expanded my capacity and efficiency for independent research, analysis, and writing. I was supported along the way by mentors and staff at the program while working independently on the project, allowing me to develop and recognize the ways in which I work best and to cultivate time-management skills. My advice for students planning on submitting their theses soon is to make a detailed plan for when they will be working on each part of the thesis, since I found it challenging at first to know how to pace writing throughout the semester to allow me time for editing and improving the writing, while also finishing up my course requirements. Overall, my time as a student here has given me the necessary skills to succeed in a career in research. I look forward to my future as a neuroscientist being guided by the tools I have gained from the program.

Congolese Royalty Visits to Look at African Cichlid Research: Dr. Sebastian Alvarado & Anastasia Martashvili

On November 30th, Queen Diambi Kabatusuila Tshiyoyo Muata paid a visit to Queens College to learn about the behavioral neuroscience and ecology taking place in the Alvarado Lab. During her visit, Queen Diambi discussed ongoing fieldwork on Lake Tanganyika, which borders the Democratic Republic of Congo, Zambia, Burundi, and Tanzania. Her visit even included the live birth of a few dozen fry from a mouthbrooding mother. Queen Diambi spoke with Cognitive Neuroscience Master’s student Anastasia Martashvili, who is currently investigating how visual ecology can shape female mate preference in the African cichlid, Astatotilapia burtoni. This visit highlighted many of the ways in which Lake Tanganyika and the Congo River Basin remain largely unexplored and how seasonal changes in the region are shaping both the coloration and behavioral profiles of cichlid fish. This is particularly important for Ms. Martashvili’s work, for which the Graduate Center has awarded her a research grant. Queen Diambi's visit included a tour of Queens College labs followed by a reception in Rosenthal Library emphasizing the importance of collaboration across borders and the broad challenges of climate change. The Alvarado Lab and its research program leverage these natural changes in seasonal biology to understand how phenotypic plasticity can be shaped by epigenetic changes, broadly speaking. Cichlid fish are an emerging model family in the study of neurobiology, as behavior and morphology have been two hallmarks driving their rapid speciation in the Great African East Rift Lakes.

Dr. Klara Marton’s Recent Grants

Drs. Klara Marton (CUNY & ELTE; P.I.) and Bence Kas (ELTE; Co-P.I.) have received a 4-year grant from the Hungarian Academy of Sciences for a study that aims to identify children with language learning difficulties among those who are at high risk of failure or drop-out from school and to distinguish between children with language differences (e.g., low proficient bilingual children) and those with developmental language disorder (DLD).

A PSC-CUNY grant was also awarded to Dr. Klara Marton (P.I.) to develop a new classification approach for English-language learners and bilingual children with language disorder. Both studies will test the hypothesis that measures of cognitive control functions better distinguish between children with language differences and disorders than the traditional language tests.
Leveraging Data Science for Cognitive Neuroscience Research

Dr. Wei Wang, our newest faculty member in the Program, conducts research in conjunction with data science and cognitive neuroscience. Wang is an Associate Professor of Psychology at the CUNY Graduate Center and leads the Computational Psychology Lab (https://www.computationalpsychology.org/). His lab is particularly interested in how sophisticated computational modeling—combining cognitive neuroscience—may advance our understanding of many critical psychological problems, such as intelligence, emotional intelligence, autistic spectrum disorders (ASD), leadership, etc. With funding support from National Science Foundation (NSF), the current research projects in his lab leverage eye-tracking and electroencephalogram (EEG) techniques and various machine-learning models to pinpoint emotional regulation abilities and aggression personality traits. The lab is also currently working to collect eye-tracking and EEG data from ASD individuals to explore neurodiversity in both school settings and the workplace.

Dr. Wang’s lab constantly seeks graduate research assistants, providing supervision opportunities for thesis advisement. Interested students are welcome to contact him directly via his email address wwang@gc.cuny.edu.

Learning complex vocal skills in animals and humans

Animals and humans have a remarkable capacity to learn complex skills, from using tools to performing intricate vocalizations. Learning a new skill is a challenging task that often requires weeks, months, and even years of practice to accomplish. Why is lengthy practice required to become skilled, and what is happening during practice that makes a learner progressively better? Research in Dr. Dina Lipkind’s lab aims to answer these questions using zebra finches, an Australian songbird species, as a model system. Young zebra finch males learn their courtship song by listening to their father’s singing, and gradually matching their own singing to resemble it in a developmental process that takes several weeks of vocal practice. We combine experimental methods for controlling and manipulating song learning with artificial stimuli, and computational tools for analyzing continuously recorded vocal output, to tease apart and understand the components of this process. A parallel line of research focuses on translating the insights and methodology from our birdsong studies to understand how humans acquire the pronunciation of a new language.
M.S. Program in Cognitive Neuroscience Faculty
Members’ Recent Publications

Richard Bodnar


Elizabeth Chua

Tracy Dennis

Timothy Ellmore


Jon Horvitz

Klara Marton


Yoko Nomura

Lucas Parra

Tony Ro & Zhigang Zhu

Orie Shafer

Wei Wang

Douglas Whalen

Zhigang Zhu

Cognitive Neuroscience Students and Faculty Convene at Student-coordinated Events

The COVID-19 pandemic has greatly impacted students’ physical and mental health, and students have felt isolated during these difficult times. To help with feelings of isolation and to promote community and inclusion, the M.S. Program in Cognitive Neuroscience Social Liaisons have worked with staff to host our annual Meet and Greet and End of the Semester Event, which took place on September 20, 2022 and December 13, 2022, respectively. These events not only allowed students and faculty to share their research and resources, but also provided some time for students to de-stress and reflect on the past semester. The M.S. Program in Cognitive Neuroscience would like to thank Ella Gregorio, Vaidehi Patel, Kendra Stephens-Jones, and Steven Wendel, our program’s Social Liaisons, as they have been instrumental in the success of our events. We look forward to continuing working with them this spring 2023 semester to foster a diverse, equitable, and inclusive environment for our students, faculty, and staff.