Growing Up in Aging Neuroscience

A minisymposium for current and future neuroscientists

Event Program

May 20, 2022
Brown University

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Growing Up in Aging Neuroscience
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Event Locations

Talks

All of the talks will take place in the Petteruti Lounge (2nd Floor) at the Stephen Robert '62 Campus Center. When you enter through the archway, go up the stairs. You can then take the elevator or the stairs to the second floor.

Stephen Robert '62 Campus Center
Petteruti Lounge (2nd Floor)
75 Waterman Street
Providence, RI, 02912

Social Networking Reception

The Social Networking Reception will take place in the Carney Innovation Zone (Fourth Floor) of the Carney Institute for Brain Science. You can to enter the building, and take the elevators to the 4th floor.

Carney Institute for Brain Sciences
Carney Innovation Zone (Fourth Floor)
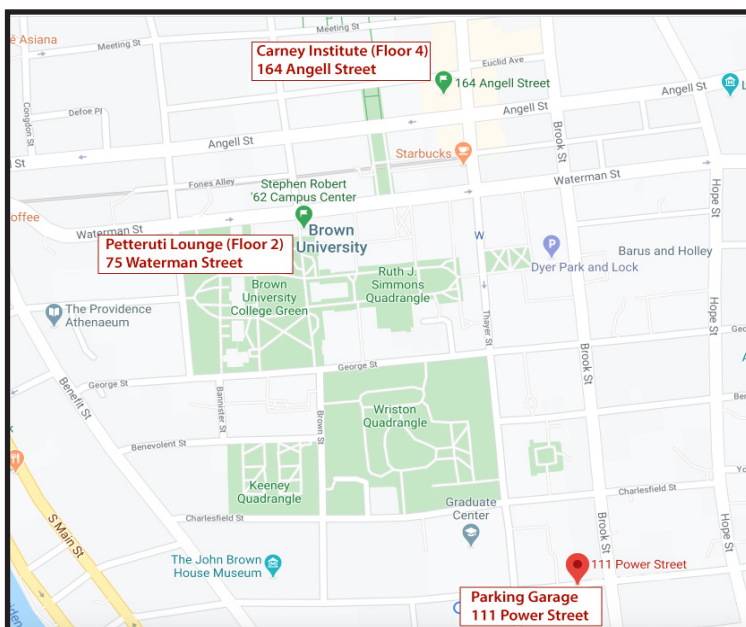164 Angell Street
Providence, RI, 02906

Meals

Breakfast

Breakfast will be provided, and will come from Panera Bread. Please go to the Petteruti Lounge to enjoy.

Lunch

Lunch is not provided, however there is a wide variety of choices aviable nearby. Specifically, Thayer St. has a number of dining establishments that cater to a broad range of tastes and diets.
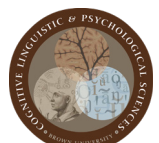
Map

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Growing Up in Aging Neuroscience

A minisymposium for current and future neuroscientists

Event Schedule

May 20, 2022
Brown University

Time	Event
8:30 am – 9:20 am	**Registration and Breakfast**
9:20 am – 9:30 am	**Introduction and Welcome**
9:30 am – 10:00 am	**Age-related Changes in the Optimization of Learning and Memory** Matthew Nassar, PhD, Brown University
10:00 am – 10:30 am	**Focus on the Locus in Aging and Alzheimer's Disease** Heidi Jacobs, PhD, Harvard Medical School
10:30 am – 10:45 am	**Break**
10:45 am – 11:15 am	**The Cognitive and Clinical Relevance of Brain Network Organization** Michael Cole, PhD, Rutgers University
11:15 am – 11:45 am	**Negative BOLD Response; Derivations, Specifications, and Applications** Ray Razlighi, PhD, Weill Cornell Medicine
11:45 am – 1:15 pm	**Lunch** Please take this time to find lunch in the community.
1:30 pm – 2:00 pm	**Decision-making and Learning Under Uncertainty in Aging** Ifat Levy, PhD, Yale University
2:00 pm – 2:30 pm	**Opening a Window on Familial Alzheimer's Disease Before It Strikes** Yakeel Quiroz, PhD, Harvard Medical School
2:30 pm – 3:30 pm	**Growing Up in Aging Neuroscience Panel** Michael Cole, PhD, Rutgers University Heidi Jacobs, PhD, Harvard Medical School Ifat Levy, PhD, Yale University Matthew Nassar, PhD, Brown University Yakeel Quiroz, PhD, Harvard Medical School Ray Razlighi, PhD, Weill Cornell Medicine
3:45 pm – 5:30 pm	**Social Networking Reception** Carney Inovation Zone

Dr. Michael Cole

Talk Title:
The Cognitive and Clinical Relevance of Brain Network Organization

Official Bio

Michael W. Cole earned his bachelor's degree in cognitive science at the University of California, Berkeley, and his doctorate in neuroscience at the University of Pittsburgh. His doctorate was supplemented by involvement in the Center for the Neural Basis of Cognition (CNBC), a joint program across the University of Pittsburgh and Carnegie Mellon University. He arrived as a tenure-track faculty member at Rutgers University-Newark in 2014 after completing a postdoctoral fellowship at Washington University in St. Louis.

His lab's research focuses on discovering the cognitive and neural mechanisms that make human behavior flexible and goal-directed. This is accomplished using a variety of techniques, applying network science, computational modeling, and machine learning approaches to data collected from the human brain (with fMRI, MEG, EEG, diffusion MRI, and behavioral measures) and neural network simulations.

Much of this work involves understanding the role of brain connectivity in producing the computations apparent in task-driven brain activity patterns and behavior. This facilitates theoretical understanding of cognitive processes as they emerge from brain network interactions, providing insights into both natural and artificial intelligence.

Unofficial Bio

Michael attended UC Berkeley for an undergraduate degree, starting out with broad interests in philosophy, psychology, literature, and computer science. He tried his hardest to remain indecisive by pursuing a degree in cognitive science (combining philosophy, psychology, linguistics, computer science, and neuroscience).

While still in college, he leveraged his experience in computer science classes to get an internship at Apple in nearby Cupertino. With his head in the clouds (rather than his wallet), he passed on pursuing a career in software engineering at Apple (the world's most valuable company 10 years later). He passed on that opportunity because the cognitive science major also exposed Michael to neuroscience, leading him to volunteer in a cognitive neuroscience lab.

After making some friends in that lab and annoying others (a postdoc once complained that his opinions were too strong for an undergrad), he eventually completed an honors thesis in cognitive neuroscience.

Just before graduation, Michael's father had a stroke and passed away, deeply affecting him and his family on many levels. This almost led Michael to go to medical school, but he decided that he was too excited about research to focus on the practicalities of medicine for 4+ years. Nonetheless, after starting as a student in the psychology PhD program at the University of Pittsburgh he decided, in part to honor his father, to switch to the neuroscience PhD program.

After overworking to get his PhD done on time, he realized he had graduated just as the academic job market was drying up due to the delayed impact of the 2008 financial crisis. Michael then started a postdoc at Washington University in St. Louis. Soon after, several of his NIH training grants were rejected, followed by an NIH K99/R00 grant somehow getting funded.

This led to a position at Rutgers University-Newark, where he has been able to realize his dream of starting his own lab, getting to work with amazing people to pursue one of life's greatest mysteries: how the human brain produces our minds, nothing short of the thing that makes us each ourselves.

Dr. Heidi Jacobs

Talk Title: Focus on the Locus in Aging and Alzheimer's Disease

Official Bio

Heidi Jacobs obtained her master's degree in Biological Psychology from Maastricht University (Netherlands) in 2002. She then worked for several years in a clinical setting as a psychotherapist and neuropsychologist, and in 2006 started her PhD. She completed her PhD in structural and functional brain changes in Alzheimer's disease at Maastricht University in 2011.

After her postdoctoral training at the Research Center in Jülich (Germany), she received the prestigious VENI-independence award allowing her to return to the Netherlands in 2014. In 2015, Heidi started working at MGH with Dr. Keith Johnson to learn more about PET-imaging in aging and Alzheimer's disease.

Currently, Heidi is an Assistant Professor of Radiology at Massachusetts General Hospital of Harvard Medical School and visiting associate professor at Maastricht University. She directs the Jacobs Lab, also referred to as the blue spotters, with a focus on improving the early detection and treatment of sporadic Alzheimer's disease by targeting the earliest brain sites of pathology ("ground zero"). She is a co-investigator within the Harvard Aging Brain Study and vice-chair of the "neuromodulatory subcortical systems" professional interest area of ISTAART. Her work is currently supported by the NIH-NIA and Alzheimer foundation funding.

Unofficial Bio

I was born in rural Belgium as a daughter of two hard-working entrepreneurs and at the age of 18 I moved to the Netherlands to study Biological Psychology. I was and still am the first person in my family to obtain a university degree, and to move to another country.

After finishing my master's degree in 2002 I moved back to Belgium and landed a job as a cognitive behavioral psychotherapist during which I was mentored by two terrific clinicians. I combined this with a position as neuropsychologist in a cognitive rehabilitation clinic of neurologic patients, which was further stimulated my amazement for the brain.

However, slowly I realized that I wanted to learn more and also contribute to our knowledge. Because of my fascination for the brain, I applied for PhD-positions focused on neuroimaging but was rejected because of a lack of MRI experience or training. Not taking no for answer, I decided to pay for a two-week intensive course in MRI-physics and got accepted into a PhD-program on brain changes in Alzheimer's disease at Maastricht University. I still remember my conversation with my supervisor after one year: "I have found my purpose, this fits with me". My PhD was a wonderful time, I learned a lot, had the freedom to pursue my own research ideas.

Unfortunately, my first postdoctoral period was difficult, ranging from language barriers, cultural differences, being lonely in my specific field, and having to set everything up from scratch as a young postdoc to a negative work climate. As my parents taught me to put in the effort, I tried hard and fought to make it work. But after four years, I was very fortunate to obtain two grants that brought me to a much happier place: one supporting my assistant professorship at Maastricht and one supporting me to work at MGH.

Coming to MGH and working with Drs. Sperling and Johnson was eye-opening and inspiring. The warm, open, and supportive culture and at the same time the push to not be satisfied too quickly, to work on understanding and keep learning is exhilarating. My husband changed his career from an at-heart clinician to a researcher to allow me to build a career in the US. The last four years have been a dream, building my group has stimulated my excitement for research and has taught me that I love supporting and mentoring young researchers. I probably work too much, but in my spare time, I love watching good movies, eating sushi, traveling, and dancing.

Dr. Matthew Nassar

Talk Title: Age-related Changes in the Optimization of Learning and Memory

Official Bio

Matt Nassar is an Assistant Professor in the Department of Neuroscience at Brown University. He received his BA at Colgate University and his Doctorate from the University of Pennsylvania. He completed post-doctoral training at the University of Pennsylvania and Brown University before joining faculty at Brown.

His research examines how the brain prioritizes, segregates, and combines information collected in complex environments and how this process differs across individuals, pathologies, and over healthy aging. For example, why and how do people prioritize sensory information arriving at certain times or locations? How does this prioritization differ across individuals and change across healthy aging? How does the internal state of the brain affect ongoing cognition and sensory processing? What functions might these dynamic fluctuations serve in the real world?

Unofficial Bio

Matt Nassar grew up in Norwich, a small town in rural upstate New York, and attended college thirty minutes away at Colgate University in Hamilton, NY. After getting cut from his soccer team, he spent more time on his studies and discovered neuroscience.

After college, he took the MCAT (just in case), and started doing research as a volunteer while waiting tables to pay rent. He wrote a grant to turn his volunteer job into a paid position; it didn't get funded, but it did get him in touch with Mark Mattson, chief of the NIA Laboratory of Neuroscience, who then took him on as a research trainee. As an IRTA scholar in the Mattson lab, Matt studied the molecular mechanisms of aging before applying to grad school and eventually beginning a PhD in the Neuroscience Graduate Program at the University of Pennsylvania.

He did two rotations in molecular biology labs before he tried something totally different and rotated in a systems neuroscience lab run by Josh Gold. He joined the lab, learned to code, taught himself some math, and did a thesis aimed at understanding how fluctuations in arousal alter information processing in the brain.

In the middle of his thesis, he traveled to the Max Planck Institute for Human Development in Berlin where he was able to employ these research tools to better understand how aging affects the computations that underlie learning in the brain. After grad school, Matt stuck around UPenn to do a short post-doc with Joe Kable learning to collect and analyze fMRI data. He then took a post-doc with Michael Frank at Brown University where he drastically expanded his knowledge of computational modeling and cognitive neuroscience.

After an extensive job search for a faculty position, it amazingly worked out for him to stay at Brown as an Assistant Professor in the Neuroscience Department. He started his lab virtually in January 2019, obtained physical space in February 2019, got kicked out of physical space at the onset of the Covid-19 pandemic in March 2020 and has lived in a state of confusion about whether meetings are in person or virtual ever since. He lives in Providence, RI with his wife and 3 daughters; he enjoys walking his kids to school, running along the waterfront, and occasionally still getting beat at soccer.

Dr. Ifat Levy

Talk Title: Decision-making and Learning Under Uncertainty in Aging

Official Bio

Ifat Levy is an Associate Professor of Comparative Medicine at Yale School of Medicine and a member of the Yale Wu-Tsai Institute, with appointments in the departments of Neuroscience and Psychology. Dr. Levy has undergraduate degrees in physics and law from Tel Aviv University, and a PhD in computational neuroscience from the Hebrew University of Jerusalem. She joined the faculty of Yale University in 2009 after completing postdoctoral training at New York University.

Her research combines behavioral and neuroimaging techniques to study decision-making under uncertainty in the general population, in aging and in psychopathology, and is supported by NIH and NSF.

Ifat's lab trains individuals at all stages of the academic path, from high-school students to associate research scientists, and lab alumni have gone on to academic, industry and clinical positions.

Unofficial Bio

I grew up in Tel Aviv, Israel. After completing my mandatory military service, I couldn't decide what to study, and ended up with separate bachelor's degrees in physics and law. While I loved the law, physics made me realize that science is the thing for me. I was less interested in theoretical physics though, and more in using experiments and math to understand the human brain.

I therefore continued to a PhD in the interdisciplinary center for neural science at the Hebrew University of Jerusalem. I was very fortunate to have Rafi Malach from the Weizmann Institute, a pioneer of fMRI, as my advisor.

Under Rafi's mentoring I studied the visual cortex, and learned how to do research. After graduating, I sought to extend my research from perception to active behavior – decision-making – and was also dreaming of living in New York. I achieved both of these goals by doing my postdoc training at NYU with Paul Glimcher, one of the founding parents of neuroeconomics.

Towards the end of my postdoc, I got married, and - since my husband started a faculty position at Yale - applied to a position in the department of comparative medicine. I was extremely lucky to get the job, and have been very fortunate to be working along fantastic colleagues and amazing lab members for over 12 years.

Dr. Ray Razlighi

Talk Title: Negative BOLD Response; Derivations, Specifications, and Applications

Official Bio

Ray Razlighi is an Associate Professor of Neuroscience in the Department of Radiology at Weill Cornell Medicine. He is the director of the Quantitative Neuroimaging Laboratory (https://qnlab.weill.cornell.edu/) and the imaging director of the Brain Health Imaging institute. He received his undergraduate degree in Electrical Engineering and his Ph.D. in Signal and Image Processing from the University of Texas. He joined the faculty of Columbia University in 2013 after completing two postdoctoral fellowships at the New York State Psychiatric Institute and Columbia University Irving Medical School.

His research focus is on functional brain imaging to understand how brain networks function and interact to execute complex tasks. He has authored over 70 scientific articles. He is currently an associate editor for Brain Connectivity and Journal of Alzheimer's Disease and a member of numerous research communities included but not limited to: Society for Neuroscience, Human Brain Mapping, and IEEE.

Throughout his career, he has trained approximately 25 undergraduate students, 5 Ph.D. students, and 7 postdoctoral fellows in his laboratory. He is the recipient of numerous research awards from Columbia University research initiatives in science and engineering (RISE), Taub Institute Alzheimer's disease research center (ADRC), and Irving Institute integrating special populations (ISP). His current research is supported by the National Institute of Mental Health, and the National Institute on Aging.

Unofficial Bio

For as long as I can remember, I loved discovering toys, tools, appliances, and electronics around me. I knew from an early age that I'm deeply into science and engineering – apparently, I broke every toy I had, especially the electric ones, to figure out how they work or move. I had planned to become a mechanical or civil engineer, but in high school I learned about electromagnetic and microwaves. Having gotten a taste of the amazing new cellphone as the most heartwarming gadget of those days, I yearned for more, and my dreams came true as I began my undergrad education in Electrical Engineering and Telecommunication. As a top student, I received a full scholarship for my undergraduate study covering both my tuition and living expenses which was unquestionably the best thing that could have happened to me. It was amazing that within four years not only did I learn a lot about the cellphone networks, but I also pretty much had an overall understanding about any electronics around me. I graduated as an honor student, and immediately received a job offer from an R&D company developing cellphone network's equipment.

However, like many fresh graduates, I soon became unsatisfied and bored as I realized that pursuing an industry career was not fulfilling my curiosity and my desire to discover new things. So, I enrolled in a PhD program with a research focus on signal and image processing. During my PhD training, I introduced a new causal Markov random field (MRF) model, named Quadrilateral MRF, which has been influential for image registration and segmentation. So far, it has resulted in twelve publications and one patent. Before graduation I had been offered a postdoctoral position to apply my new models to medical imaging and particularly brain images.

During my postdoctoral training I had also been introduced to MRI and fMRI, which with my background in telecommunication and electromagnetic waves seemed like a perfect match. Over the past decade, I could not have been more amazed with fMRI research. The fact that our understanding about brain function and its underlying neurophysiology is so little makes this field extremely appealing to me because there is a lot to be discovered, and to my understanding, fMRI with all its pros and cons is the best available tool for this line of research. In fact, most of the fMRI findings initially were controversial because of this lack of preliminary knowledge about the brain neurophysiology.

After my postdoc training, I became a faculty of Neurology at Columbia University, and started building my laboratory. The main track of research in my lab is one of the fMRI controversies, often referred to as negative BOLD response which essentially provides evidence that brain hemodynamic response to any external stimulation is more often in the opposite direction (loss of blood flow/volume). In 2020, I transferred my laboratory to Weill Cornell Medicine where I plan to explore applications of the negative BOLD signal in understanding brain healthy functioning as well as its malfunctioning during the course of numerous neurodegenerative diseases.

In my leisure time, I can most often be found playing with my nine year old daughter and seven year old son, or doing some small projects around the house. I also enjoy playing soccer, barbequing, and swimming or dancing with my daughter. My family and I love to be outdoors, hiking, or just sitting together at the beach and reading. While I appreciate warmer weather in the winter breaks, I usually prefer cold and snow which lets me ski with my family.

![Dr. Yakeel Quiroz]

Dr. Yakeel Quiroz

Talk Title: Opening a Window on Familial Alzheimer's Disease Before it Strikes

Official Bio

Dr. Quiroz is an Associate Professor in the Departments of Psychiatry and Neurology at Harvard Medical School and Massachusetts General Hospital (MGH) in Boston, MA. She is the Director of the MGH Familial Dementia Neuroimaging Lab and the Multicultural Alzheimer's Prevention Program-MAPP.

She earned her master's degree in cognitive neuroscience and PhD in clinical psychology from Boston University. She completed a postdoctoral fellowship in neuropsychology and brain imaging of Alzheimer's disease (AD) at MGH. Her research interests include brain imaging, genomics, early detection and preclinical biomarkers of Alzheimer's disease and other dementias.

She is the principal investigator of the Colombia-Boston (COLBOS) longitudinal biomarker study of autosomal-dominant Alzheimer's disease, which follows individuals from the world's largest extended family with a single, AD-causing mutation (E280A in Presenilin1). Dr. Quiroz's research has focused on characterizing biological and physiological changes that may predispose individuals to develop memory loss or dementia later in life.

Her work has already provided evidence of brain abnormalities in cognitively-intact individuals at high risk for AD, decades before their clinical onset. Her findings have helped the field to re-conceptualize Alzheimer as a sequence of changes that begins decades before cognitive decline, and which may be targeted by promising disease-slowing treatments at a time in which they might have their most profound effect.

Dr. Quiroz's work has been recognized with several awards, including an NIH Director's Early Independence Award, the FABBS Foundation Early Career Impact Award, the MGH Research Scholar Award and the 2020 Alzheimer's Association Inge Grundke-Iqbal Award for Alzheimer's Research.

Unofficial Bio

Dr. Quiroz earned her Bachelor's Degree in Psychology from the University of Antioquia in Colombia (South America) in 2000. She joined Dr. Francisco Lopera's neuroscience research group when she was a junior in college, and since then she has been working with families with autosomal dominant Alzheimer's disease. She went to La Havana, Cuba to complete her senior honors thesis with Dr. Maria Antonieta Bobes at the Centro de Neurociencias, which was recognized in 2001 by the Interamerican Society of Psychology with an award for best research conducted by an undergraduate student.

In 2003 she moved to Boston with her husband to pursue graduate education, and was accepted into the master's program in psychology at Boston University in 2004 where she learned to use functional magnetic resonance imaging (fMRI) to understand how different types of memory were represented in the normal brain. This experience solidified her decision to pursue a Ph.D. in cognitive neuroscience.

After graduating from the master's program, Dr. Quiroz enrolled in the Brain, Behavior and Cognition PhD program at Boston University. She worked with Dr. Chantal Stern in the Center for Memory and Brain in the Department of Psychology where she received a fellowship award (Clara Mayo Fellowship) to apply fMRI methods for the study of familial Alzheimer's disease.

With that fellowship, she was able to pioneer the establishment of fMRI methodologies in the city of Medellin (Colombia), her hometown, and was able to conduct the first fMRI/ MRI studies with the Colombian families with AD. She also established scientific

collaborations with the Banner Alzheimer's Institute in Arizona, and the Brigham and Women's Hospital. She began an ambitious series of projects in which she collaborated with two US psychiatrists, Dr. Eric Reiman and Dr. Pierre Tariot from the Banner Alzheimer's Institute, to optimize the use of neuroimaging methods for early detection of Alzheimer's disease and bring clinical trials to families with familial forms of AD in Colombia.

She served as a liaison between the Colombian and American research teams during the early years of the project conceptualization. In this capacity, she helped the teams to overcome cultural barriers, educated families in Colombia about the possible benefits and risks involved in a clinical trial, and advised the Colombian team on ethical issues related to the conduct of research with vulnerable populations.

This work culminated in several successful research publications and contributed to the launching of the Alzheimer's Prevention Initiative (API) and a clinical trial that promises to unveil key aspects of our understanding of AD prevention and provide an essential test to the amyloid hypothesis.

After three years of graduate training in the Brain, Behavior and Cognition Ph.D. program, Dr. Quiroz decided to transfer to the Clinical Psychology Program at the same institution. Soon after her transfer, she received a Kirschstein-NRSA Individual Predoctoral Fellowship (F31) from the NINDS to expand her work in Colombia and add novel imaging methods and blood biomarkers to her research.

After completing her graduate studies, Dr. Quiroz was awarded a highly competitive NIH Director's Pioneer Early Independence Award (DP5), a 5-year grant from the Common Fund's High-Risk, High-Reward Research program, which allowed her to skip her formal postdoctoral training and launch her independent lab, the MGH Familial Dementia Neuroimaging Lab, and the Colombia-Boston (COLBOS) Biomarker Study at MGH.

Since establishing her lab, Dr. Quiroz has made seminal contributions to our understanding of preclinical Alzheimer's disease, and has published over 80 papers, including several as senior author.