

# 2023 Cognitive & Computational Neuroscience Program Review

Dr. Hal S. Greenwald | November 7-9, 2023 | Arlington, VA -hybrid

Basic Research Innovation Collaboration Center (BRICC)  
4100 N Fairfax Drive, Suite 450 | Arlington, VA 22203

## Agenda Day 1 | Tuesday, November 7, 2023

Time	Topic	Speaker
8:30	In-person check in / Zoom login	
9:00	Introduction	Hal Greenwald, AFOSR
9:15	(YIP) Neurogenesis in Neuromorphic Computing: Hippocampus-inspired Dynamic Networks	Gina Adam, George Washington University
9:45	ExPlor - Expedition on Brain-Derived Neuromorphic Computing with Intelligent Photonic and Electronic Materials	Ben Yoo, UC Davis
10:45	<b>BREAK</b>	
11:15	Cognitive Maps in Rats, Robots & Men: A Brain Inspired, Neuroevolutionary Approach	Jeff Krichmar, UC Irvine
11:45	Probability theory from neurons to cognition	Chris Eliasmith, University of Waterloo
12:15	<b>LUNCH</b>	
13:30	Computationally constrained control in complex causal tasks	Xaq Pitkow, Baylor College of Medicine/Rice University/CMU
14:00	High resolution imaging of cortical activity during memory formation and recall	Mark Reimers, Michigan State University
14:30	<b>BREAK</b>	
15:00	Restoring Access to Memories "Lost" as a Result of Sleep Deprivation	Steve Ramirez, Boston University
15:30	Cellular foundations of memory	Sam Gershman, Harvard University
16:00	Sensory, cognitive, and transcranial neuromodulation of goal representations	Anastasia Kiyonaga, UC San Diego
16:30	<b>Review Adjourned</b>	

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## Agenda Day 2 | Wednesday, November 8, 2023

Time	Topic	Speaker
8:30	In-person check in / Zoom login	
9:00	Probing Plasticity of Color Perception with the Oz Vision Platform; (MURI) Probing, Modeling & Reprogramming Visual Perception at the Level of Individual Photoreceptors	Ram Sabesan, Univ. of Washington & Austin Roorda, UC Berkeley (PI: Ren Ng, UC Berkeley)
10:00	(MURI) Single Retinal Ganglion Cells and Sensation	David Williams, University of Rochester
11:00	<b>BREAK</b>	
11:30	A Traveling Wave Basis for Coding Touch: Unraveling recurrent and translaminar circuit contributions to sensory-evoked traveling waves	Krishna Jayant, Purdue University
12:00	Uncovering population dynamics in spinal circuitry	Chethan Pandarinath, Emory University
12:30	<b>LUNCH</b>	
13:30	Quantifying tissue-level intelligence via synthetic living constructs	Wesley Clawson, Tufts Univ. (PI: Mike Levin, Tufts University)
14:00	Minimal Models of Sensory Perception	Joost le Feber, Univ. of Twente (PI: Sarah Marzen, Claremont McKenna College)
14:30	(YIP) Computational architecture of high-level attention: Reverse-engineering representations and goals that drive seeing in complex, dynamic environments	Ilker Yildirim, Yale University
15:00	<b>BREAK</b> (Zoom session ends for the day)	
15:30	Fireside Chat	<i>In-person attendees only</i>
<b>Review Adjourned</b>		
17:00	Networking Social at Bronson Bier Hall (Ground Floor, outside)	

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## Agenda Day 3 | Thursday, November 9, 2023

Time	Topic	Speaker
8:30	In-person check in / Zoom login	
9:00	Behavioral time scale plasticity and learning in the mammalian brain and emulation studies in oxide devices	Shriram Ramanathan, Rutgers & Christine Grienberger, Brandeis
9:30	(DEPSCoR) Using Meta-Plasticity to Discover the Biophysics of Learning	Robert Rosenbaum, University of Notre Dame
10:00	The Neural Architecture of Reinforcement Learning in Partially Observable Environments	Will Alexander, Florida Atlantic Univ. (PI: Sam Gershman, Harvard)
10:30	<b>BREAK</b>	
11:00	Biological algorithms for learning in the mammalian brain	Alison Barth, Carnegie Mellon University
11:30	Neuromodulatory correlates of continual learning in the neocortical circuits	Srikanth Ramaswamy, University of Newcastle
12:00	<b>LUNCH</b>	
13:00	Innate Memory - the Plasticity of Instinct	Tomas Ryan, Trinity College Dublin
13:30	Rapid measurement of prefrontal cortical activity using parallelized diffuse correlation spectroscopy	Roarke Horstmeyer, Duke Univ.
14:00	Topological Identification and Analysis of Cyclic Features in Neural Population Coding	Chad Giusti, University of Delaware
14:30	(YIP) Investigating Single-Neuron Mechanisms of Face Coding in the Human Brain	Shuo Wang, Washington Univ. in St. Louis/WVU
15:00	<b>BREAK</b>	
15:30	Optical Stimulation of Visual Areas to Elucidate Cognitive Decision-making Behavior in a Vertebrate Brain	Xin Tang, University of Florida
16:00	(YIP) Neural computations and information flow underlying uncertainty evaluation	Megan Peters, UC Irvine/UC Riverside
16:30	<b>Review Adjourned</b>	