Program
Winter Conference on Learning and Memory
Thursday January 5 – Sunday January 8, 2017
Park City, Utah

Overall Session Co-Organizers: Rebecca Burwell and Arnold Bakker

THURSDAY JANUARY 5

Registration: *3:00-4:00 p.m. (Outside Prospector 1-2)*

SESSION 1: Dave Olton Data Blitz

Time: 4:00-6:00 p.m.

Location: Prospector 1-2

Organizer:

Description: If you would like to present at this session, please e-mail Rebecca Burwell at rebecca_burwell@brown.edu with the title of your presentation. Presentations are limited to 5 minutes including discussion. Presentations are strictly limited to 1 slide with a single panel.

(See Final list of presenters and titles at the end of the program)

PIZZA PARTY:

Time: 6:30-8:00 p.m.

Location: Atrium

SESSION 2: Hyperactive or hypoactive? Medial Temporal Lobe Imbalance in Amnestic Mild Cognitive Impairment

Time: 8:00-10:00 p.m.

Location: Prospector 1-2

Organizer: Arnold Bakker (JHU)

Description: Description: Increased hippocampal activation in the context of decreasing memory function is observed in aging and considered a characteristic feature of the early stages of Alzheimer's disease. However, the entorhinal cortex, which serves as the primary relay for both input and output to and from the hippocampus, is the site of the earliest pathological changes including neuronal, synaptic and volume loss. This session will discuss recent evidence from animal models and human subjects for the role of medial temporal lobe dysfunction and particularly focus on the role of the entorhinal cortex in age- and disease related memory decline.

Speakers:

Arnold Bakker (JHU): "Lateral entorhinal cortex hypoactivation in amnestic mild cognitive impairment"

Rebecca Haberman (JHU): "Age-related medial temporal lobe network dysfunction: Contributions from animal models"

Emrah Duezel (DZNE): "Functional organization of the entorhinal cortex and first data on the mnemonic discrimination for objects and scenes for the DELCODE study"

Laszlo Zaborszky (Rutgers): Integrity of basal forebrain cholinergic space and its relation to the hippocampus in mild cognitive impairment"

FRIDAY JANUARY 6

SESSION 3: Sleep and Memory

Time: 4:00-6:00 p.m.

Location: Prospector 1-2

Organizer: Mark Gluck (Rutgers U, Newark)

Description: Over the last two decades, sleep has been repeatedly implicated in a wide array of learning and memory processes, with specific sleep stages and their corresponding neurophysiological characteristics differentially contributing to specific types of cognitive abilities. Ongoing research in both humans and animals is honing in on the precise nature of these relations and is attempting to decipher their underlying mechanisms. In our session, we will present a sample of contemporary work in the field covering a variety of methods and

theories. Itamar Lerner and Mark Gluck (Rutgers-Newark) will present a recently developed computational model, based on studies of compressed memory replay during Slow-Wave-Sleep (SWS), to explain how sleep facilitates insight learning through a 'temporal scaffolding' mechanism. Jessica Payne (Notre Dame) will describe the unique interaction between stress and sleep and how it influences emotional memory. Sara Mednick (UC Riverside) will speak about the role of autonomic changes during sleep and their impact on memory consolidation. Lastly, Gina Poe (U. Michigan) will show how the specific neurochemical and electrophysiological features of Rapid-Eye-Movement (REM) sleep alter hippocampal-neocortical networks, based on rodent studies.

Speakers:

Itamar Lerner & Mark Gluck (Rutgers U Newark): "Effects of sleep on insight learning is explained by a 'temporal scaffolding' mechanism based on compressed memory-replay"

Jessica Payne (U Notre Dame): "Sleep-stress interactions in emotional memory consolidation"

Nicola Celline & Sara C. Mednick (UC Riverside): "What is the role of the autonomic nervous system during sleep-dependent memory consolidation?

Gina Poe (U Michigan): "How REM sleep neurochemistry and electrophysiology alters hippocampal and neocortical memory networks"

SESSION 4: Systems consolidation and memory transformation — From neurons to networks

Time: 6:00-10:00 p.m.

Location: Prospector 1-2

Organizers: Melanie Sekeres (Baylor U) and Paul Frankland (U Toronto)

Description: Memory consolidation is a dynamic process occurring over the lifetime of a memory, yet the underlying mechanisms are not well understood. The hippocampus is considered to be a critical structure for the acquisition, initial storage, and retrieval of a memory, but there is considerable debate over the continuing role of the hippocampus in representing a memory as it ages and loses precision. Do the same neurons involved in the initial acquisition of a memory continue to support its retrieval as the memory transforms over time? What are the broader networks beyond the hippocampus and prefrontal cortex that become increasingly engaged as a memory ages and forms distributed traces in the cortex? In this session, we propose to explore the contribution of neuronal ensembles involved in memory acquisition and retrieval, as well as broader memory networks in rodents and humans. We will consider the degree to which evidence related to the mechanistic basis of memory consolidation in rodents applies to complex human memory.

Speakers:

Paul Frankland (U Toronto): "Chemogenetic interrogation of a fear memory network"

Melanie Sekeres (Baylor U): "The neural basis of episodic memory transformation"

Brian Wiltgen (UC Davis): "The role of the hippocampus in memory consolidation"

Kiriana Cowansage (UCSD): "Mapping reverberations of prior experience to a self-generated circuit trace"

SATURDAY JANUARY 7

SESSION 5: The Role of the Medial Temporal Lobe in Sensory Discrimination and the Relationship with Memory

Time: 4:00-6:00 p.m.

Location: Prospector 1-2

Organizer: Sara Burke (U Florida)

Description: The extent to which the hippocampus and rhinal cortical areas participate in high-level sensory perception is actively debated. Recent data from studies in human subjects as well as animal models have highlighted that working memory may support discrimination abilities and that perceptual difficulty modulates memory performance. Speakers in this session will highlight current evidence that sensory discrimination across modalities is tightly related to memory performance. Discussion will focus on the potential mechanisms that link these cognitive processes and the extent to which perception and memory can be parsed into distinct cognitive domains.

Speakers:

Jennifer Bizon (U Florida): "Using olfactory discrimination to understand mechanisms of age-related cognitive decline"

Andrew Maurer (U Florida): "Lateral entorhinal cortical activation during exploration predicts object discrimination performance"

Michael Yassa (UC Irvine): "Extrahippocampal contributions to mnemonic discrimination and implications for age-related cognitive decline"

Sarah Johnson (University of Florida): Hippocampal contributions to mnemonic discrimination are experience-dependent"

SESSION 6: Critical role of the nucleus reuniens in hippocampus and medial prefrontal cortex dependent memory systems

Time: 6:00-10:00 p.m.

Location: Prospector 1-2

Organizers: Timothy A. Allen (FIU) and Aaron Mattfeld (FIU)

Description: The nucleus reuniens of the ventral midline thalamus (RE) has been the focus of several recent studies which collectively implicate RE as critical for memory. Anatomically, the nucleus reuniens bi-directionally connects the medial prefrontal cortex (mPFC) and hippocampus (HC) in rodents and primates placing it at a critical nexus for modulating memory. In this session the speakers will (1) discuss the anatomical basis for understanding the role of RE in memory, (2) provide behavioral evidence that RE is critical to memory, (3) describe neural representations in and dependent on RE, and (4) relate these findings in a larger framework of an HC-RE-mPFC mnemonic system.

Speakers:

Robert P. Vertes (FAU): "Anatomical connections of nucleus reuniens with the hippocampus and medial prefrontal cortex and their functional significance"

Timothy A. Allen (FIU): "The role of the nucleus reuniens in the temporal organization of memories"

Amy Griffin (UD): "The nucleus reuniens orchestrates hippocampal-prefrontal synchrony during working memory"

Aaron Mattfeld (FIU): "Identification and function of nucleus reuniens in the humans"

SUNDAY JANUARY 8

SESSION 7: UNDER CONSTRUCTION

Time: 4:00-6:00 p.m.

Location: Prospector 1-2

Organizer: Pam Kennedy (UCLA)

Description:

Speakers:

BUSINESS MEETING

Time: 6:00-6:30 p.m.

Location: Prospector 1-2

BANQUET

Time: 7:30-11:00 p.m.

Location: Prospector 1-2

SOCIAL ACTIVITIES

DINNER

January 5th - Pizza Party - *For registrants or guests, no extra cost*

January 6th - Dinner (on your own)

January 7th - Dinner (on your own)

January 8th - Banquet - $40 for registrants and guests

CASH BAR

Thursday, Friday and Saturday evenings

Time: 10:00 p.m. - 12:00 a.m.

Location: Timbers

Data Blitz Presentations 2017

Name	Institution	Title
Rebecca Burwell	Brown University	Recognition memory deficits in an animal model of normal pressure hydrocephalus
Kate W. Turk and Andrew E. Budson	VA Boston	Utility of event-related potentials in a memory disorders clinic
Mark Gluck	Rutgers Newark	Fitness and lifestyle affect neural and cognitive risk factors for Alzheimer's Disease in older African Americans.
Karienn Montgomery	Texas A&M	Cognitive impairment and AD: targeting presynaptic therapeutic mechanisms
Dan Press	Beth Israel	Levetiracetam alters oscillatory connectivity in Alzheimer's Disease
Abbi Hernandez	U. of Florida	Age-related alterations in prefrontal cortical-medial temporal lobe interactions during biconditional associations
Stephanie Leal	UC Berkeley	Hippocampal activation is associated with longitudinal amyloid accumulation and cognitive decline
Audrey Branch	Johns Hopkins	Intact memory performance and gene induction in cue mismatch task by aged rats with preserved spatial memory
David Smith	Cornell	Ensemble coding of long-term spatial memory in the retrosplenial cortex
Andrew Garcia	U. Delaware	Investigating the role of nucleus reuniens in spatial working memory
Maanasa Jayachandran	Florida Int. U.	Role for medial prefrontal cortex to nucleus reuniens pathway in sequence memory revealed by projection-specific DREADDs
Aaron Mattfeld	Florida Int. U.	The neural correlates of fixed versus conditional visuomotor associative learning in humans
Elizabeth McDevitt	UC Riverside	Napping for memory enhancement cannot be learned
Cory Shields Inman	Emory U.	Memory enhancement via amygdala stimulation in humans
Caesar Hernandez	U. Florida CoM	Optogenetic Inactivation of Basolateral Amygdala During Delay Discounting Task
Tim Allen	Florida Int. U.	NeuroCap: A 3D printed system for precise intracranial implants without a stereotax
Michael Bienkowski	USC	Genetic architecture and connectivity of the mouse hippocampus
Ehren Newman	Indiana U.	Network neuroscience: Finding neural computation in the rich club

2017 Attendance List: Faculty

First Name	Last Name	Institution	E-mail
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2017 Attendance List: Post-Docs and Graduate Students

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