



2014 Summer Institute in Cognitive Neuroscience

Week 1: Attention & Brain Function Course Director: Tirin Moore (Stanford University)

Attention is a fundamental cognitive function that allows us to filter out irrelevant sensory information in favor of the relevant. It is an ability that is critical for normal goal-directed behavior. This week's lectures investigate psychophysical and physiological mechanisms of attentional selection processes in sensory systems, and address how top-down neural system control perception. Cellular neurophysiology, functional neuroimaging, neuropharmacological methods and computational approaches will be presented.

Monday (6/23): Introduction to Attention and its Neural Basis

8:30-9:00 Breakfast
9:00-9:30 Introductory Remarks – Tirin Moore and Ron Mangun
9:30-10:45 Tirin Moore (Stanford) – *Basics of attention: Measurement, varieties & neurophysiological correlates*
10:45-11:00 Break
11:00-12:15 Tirin Moore (Stanford) – *Neural control of selective visual attention*
12:15-1:45 Lunch
1:45-5:00 Lab Session: Taraz Lee (UCSB) – Transcranial Magnetic Stimulation
5:00 Adjourn

Tuesday (6/24): Mechanisms of Attention: Human Neuroimaging Studies

8:30-9:00 Breakfast
9:00-10:30 Justin Gardner (Stanford) – *Efficient selection of sensory signals for attention*
10:30-10:45 Break
10:45-12:15 Justin Gardner (Stanford) – Q & A and Discussion
12:15-1:45 Lunch
1:45-3:15 Adam Gazzaley (UCSF) – *Neural networks underlying top-down modulation of visual processing*
3:15-3:30 Break
3:30-5:00 Adam Gazzaley (UCSF) – Q & A and Discussion
5:00 Adjourn

Wednesday (6/25): Parietal and Prefrontal Mechanisms of Attention

8:30-9:00 Breakfast
9:00-10:30 Timothy Buschman (Princeton) – *Prefrontal and parietal control of attention*
10:30-10:45 Break
10:45-12:15 James Bisley (UCLA) – *The role of parietal cortex in guiding the allocation of attention*
12:15-1:45 Lunch
1:45-5:00 Lab Session: Ben Turner (UCSB) -- MVPA Methods
5:00 Adjourn

Thursday (6/26): Neural Circuits of Attention

- 8:30-9:00 Breakfast
9:00-10:30 Farran Briggs (Dartmouth) – *Circuit mechanisms of attention*
10:30-10:45 Break
10:45-12:15 Behrad Noudoost (Montana State Univ.) – *Dopamine-mediated prefrontal control of visual signals*
12:15-1:45 Lunch
1:45-5:00 Lab Session: Matt Cieslak (UCSB) – White Matter Imaging

Friday (6/27): Computational Models and Frameworks of Attention

- 8:30-9:00 Breakfast
9:00-10:30 Miguel Eckstein (UCSB) – *Attention in real world scenes*
10:30-10:45 Break
10:45-12:15 Alireza Soltani (Dartmouth) – *Computational models of bottom-up attention*
12:15-1:45 Lunch
1:45-3:15 Marc Zirnsak (Stanford) – *Attention and eye movements*
3:15-3:30 Break
3:30-5:00 Grand Discussion (all lecturers)
5:00 Adjourn

5:30 **BBQ at Goleta Beach**

***** **Weekend Free: Enjoy Santa Barbara!** *****

Some Suggestions:

- *Shopping in Santa Barbara*
- *Wine Tasting in Santa Barbara or nearby Santa Ynez Valley*
- *Swimming, Surfing or Kayaking in the Pacific Ocean*
- *Working on your tan on the beach*



2014 Summer Institute in Cognitive Neuroscience
Week 2: Emotional Learning and Memory
Course Director: Kevin LaBar (Duke University)

Emotional experiences and their motivational contexts exert potent influences on learning and memory systems in the brain. This week's lecture sessions cover contemporary research describing these influences from a cognitive neuroscience perspective. Topics include reward and fear learning, emotional modulation of sensory and memory systems, the role of stress and sleep, and modification of emotional memories through extinction and reconsolidation.

Monday (6/30): Reward Learning

- 8:30-9:00 Breakfast
- 9:00-9:30 Introductory Remarks – Kevin LaBar (Duke)
- 9:30-10:45 Brian Knutson (Stanford University) – Nucleus accumbens activity: Information or affect?"
- 10:45-11:00 Break
- 11:00-12:15 Mauricio Delgado (Rutgers University) – Reward processing in the human striatum
- 12:15-1:45 Lunch
- 1:45-5:00 Lab Session: T. Swaab (UCD) /B. Giesbrecht (UCSB) Human Electrophysiology
- 5:00 Adjourn

Tuesday (7/1): Modulatory Influences of Emotion

- 8:30-9:00 Breakfast
- 9:00-10:30 Mara Mather (University of Southern California) – Emotion's dual power
- 10:30-10:45 Break
- 10:45-12:15 Elizabeth Kensinger (Boston College) – How valence and arousal modulate episodic memory processes
- 12:15-1:45 Lunch
- 1:45-3:15 Jessica Payne (Notre Dame) – Sleep, stress & emotional memory
- 3:15-3:30 Break
- 3:30-5:00 Jay Gottfried (Northwestern University) – Everything you always wanted to know about the emotional system but were afraid to smell
- 5:00 Adjourn

Wednesday (7/2): Extinction Learning

- 8:30-9:00 Breakfast
- 9:00-10:30 Marie Monfils (University of Texas, Austin) – Understanding the factors that facilitate or hinder the efficacy of extinction/exposure therapy
- 10:30-10:45 Break
- 10:45-12:15 Mohammed Milad (Harvard University) – Neurobiology of fear extinction: Clinical relevance
- 12:15-1:45 Lunch
- 2:00-3:30 Mike Miller (UCSB) Scientific Misconduct and fMRI - When Is The Line Crossed?
- 3:30-5:00 Debate Preparation Time
- 5:00 Adjourn
- 6:30-8:00 **DEBATES** (fellows will be organized into teams during week 1)

Thursday (7/3): Motivation and Generalization

- 8:30-9:00 Breakfast
9:00-10:30 Alison Adcock (Duke University) How motivation shapes memory
10:30-10:45 Break
10:45-12:15 Kevin LaBar (Duke University) Neurobehavioral mechanisms of fear generalization
12:15-1:45 Lunch
1:45-5:00 Lab Sessions (Group assignments to follow):
(Group 1) EEG/ERP Methods – Tom Bullock (UCSB), ERP Basics (NOTE: THIS LAB IN PSYCH EAST Rm 3834);
(Group 2) Mary MacLean (UCSB), EEG Oscillations (NOTE: This session in Mosher)
5:00 Adjourn

5:00 **Banquet (Mosher Alumni House- Whalen Plaza)**

Friday (7/4): Emotional Memory Reconsolidation

- 8:30-9:00 Breakfast
9:00-10:30 Daniela Schiller (Mt. Sinai School of Medicine) Reconsolidation of emotional memories
10:30-10:45 Break
10:45-12:15 Fellow Presentations
12:15-1:45 Adjourn and Lunch (afternoon free)

*******Celebrate the 4th of July!*******

