

BC UNDERGRADUATE NEUROSCIENCE EXPRESS



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A Publication of the Brooklyn College Psychology Department

Welcome back to Brooklyn College. We hope you had a rejuvenating summer break and are off to productive Fall semester. This is an exciting time for the neurosciences at BC, and we are pleased to present a new edition of the Undergraduate Neuroscience Express. This issue contains an overview of upcoming events, synopses of neuroscience developments, and information about relevant BC faculty. We look forward to seeing you this semester.

Neuroscience Lecture Delivered by BC ALUM Leib Litman, Ph.D.

On April 15, 2008, Dr. Leib Litman addressed members of the Neuroscience Interest Group. His talk entitled "Consciousness, Functional Specificity, and Memory Consolidation" focused on the medial temporal lobe (MTL) of the human brain. Dr. Litman and his New York University colleagues use behavioral and fMRI techniques to investigate how episodic memories are formed, stored, and retrieved. Since the landmark case of patient H.M., scientists have known that MTL

damage leads to the loss of recent memories while leaving older memories intact. This suggests that human memory becomes more robust with time - a process known as consolidation, which is intimately tied with the MTL, particularly, the hippocampus. Dr. Litman explores the conditions and neural

mechanisms via which the passage of time can be beneficial for episodic memory retention. During the talk, he presented findings demonstrating that a key to the consolidation process may be memory reactivation. For example, reactivating, or re-encoding a memory after a relatively long time interval such as 24 hours, led to decreased long-term forgetting, relative to reactivation after a shorter time interval. This shows that a time period after learning contributes to long-term memory strength, when combined with memory reactivation. Using fMRI to examine the neural systems underlying these memory-strengthening

effects, Dr. Litman found that hippocampal involvement in memory formation was enhanced when memories were reactivated after a time lapse. He also showed that increased functional connectivity between the hippocampus and other brain structures occurred when time passed prior to reactivation.

Dr. Litman, currently an Assistant Professor at Touro College, is following up these results by examining how anxiety interferes with consolidation, and by exploring whether distributed reactivation can enhance consolidation in cognitively compromised populations such as the elderly and those with brain injury.

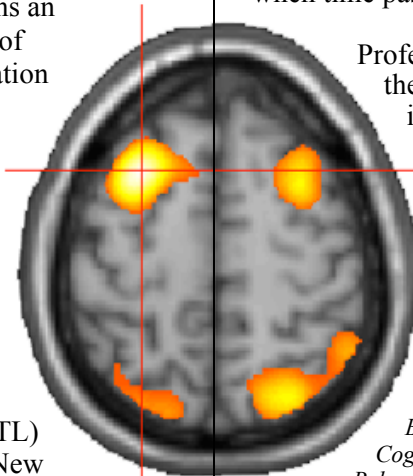
NEUROSCIENCE JOURNALS OF INTEREST

Our favorites include: *Neuron, Brain, Nature Neuroscience, Biological Psychiatry, Human Brain Mapping, Cerebral Cortex, Journal of Cognitive Neuroscience, Journal of Neuroscience, Behavioral Neuroscience, Journal of Computational Neuroscience, and Journal of Psychiatry and Neuroscience*

<http://thalamus.wustl.edu/journals.html>

** BC Fall Colloquia Series ** (Room 5117 James Hall)

- Wed, 9/3, 3:45pm:** Professor Jeffrey Halperin
Queens College/CUNY
Title: "Neurodevelopmental Perspectives on ADHD"
- Fri, 10/10, 1pm:** Professor Larry Seidman
Harvard Medical School
- Wed, 10/15, 3:45pm:** Dr. Joshua Davis
Columbia University
Title: "Understanding Emotion within an Embodied Mind"
- Wed, 10/22, 3:45pm:** Tari Awipi
New York University
Title: "Content specific memory formation"
- Wed, 11/5, 3:45pm:** Professor David Sobel
Brown University
Title: "Domain-specific causal knowledge and children's reasoning about hypotheses, fantasy, and counterfactuals"
- Fri, 11/14, 1pm:** Professor Kathleen O'Connell
Columbia University
Title: "Extinction and Acquisition of Urges: Pavlovian Processes in Smoking Cessation and Urinary Incontinence"
- Wed, 11/19, 3:45pm:** Professor Peter Bergold
SUNY Downstate
- Wed, 12/3, 3:45pm:** Professor Andrea Bergman
St. John's University



Dr. Litman

NEUROSCIENCE IN THE NEWS

“The Role of the Right Temporo-Parietal Junction in Maintaining a Coherent Sense of One’s Body”

Reported by Bracha Goykadosh

A recent study published in *Neuropsychologia*, addressed the issue of how the body produces a sense of self, a sense of body-ownership. Most of us probably take for granted the ability to feel, see and move our bodies, without doubt that they are our own. Imagine, however, if this wasn’t the case. Recent research suggests that the right temporo-parietal junction (rTPJ) supports an internal model of the body that allows the brain to maintain a coherent representation of one’s body. Lesions in this region may cause a “denial of ownership” of the contralateral hand, neglect of the left side of the body, and other problems. It is no surprise that our brains can easily differentiate our limbs, eyes, and ears as belonging to us and not to foreign objects. But what is the neural basis for this phenomenon? In the current study, European researchers hypothesized that by disrupting activity in the rTPJ, they would impair participants’ ability to demarcate one’s body as a physical object distinct from external objects or other agents.



The researchers used correlated visual and tactile stimulation to experimentally induce a bodily illusion and discover whether an external object would be processed by the mind as being part of the body. Transcranial magnetic stimulation disturbed the temporo-parietal junction in the brain and muddled the distinction between what was part of the body and what was an external object. Results clarified the neural basis of the distinction between what may or may not be part of one’s own body – highlighting the important role of the rTPJ in the process of establishing one’s physical self as distinct from external, non-corporeal objects.

Reference: M. Tsakiris, M. Costantini, & P. Haggard. (2008). *Neuropsychologia*, 46, 3014-3018.

LOCAL COLLOQUIA

- **NYU Neuroscience Colloquia:**
<http://www.cns.nyu.edu/colloquia/>
- **Columbia University Neuroscience Seminars:**
<http://neuroscience.columbia.edu/index.php?page=12>
- **New York Neuropsychology Group:**
<http://www.nyng.org/events.html>
- **SUNY Downstate – Colloquium Series:**
<http://138.5.102.101/grad/gradan01.htm>
- **New York Neuroscience Network Logs:**
<http://nyc-neuro-net.blogspot.com/>

In the Spotlight: Undergraduate Research Highlights from BC Science Day, Spring 2008

- **Csilla Antonovsky:** *Perceptual Grouping & Visual Cognition*
- **Farham Bukhari:** *Computer Programming for Generating Visual Stimuli*
- **Erin Bythrow:** *Effects of Prey Size on Prey-Capture Behavior in Catfish* ** **Winner of Zimbardo Award** **
- **St. Clair DeShong:** *Instrumentation for Luminance Regulation in Perceptual Measurements*
- **Elizabeth Fahey:** *Explorations of the Temporal Control of Body Patterns by Octopus*
- **Mame Fall:** *Signaling Intermediate Dunc-115 Regulates Axon Projection*
- **Kamil Kloskowi:** *Plume Finding Using a Levy Taxis Based Algorithm: A Parameter Search Optimization Study* ** **Winner of Wantman Prize** **
- **Dylan Lombardo:** *Virtually Testing Ant Strategies of Pheromone Tracking*
- **Hans Michell:** *Substrate Effect on Learning Ability and Aggression Patterns in Freshwater Crayfish*
- **Gregory Perrin:** *Toward the Development of an Artificial Biosensor Sensory System: Role of the Tragus in the Spatial Sensitivity of a Model Bat Ear*
- **Stephen Volz:** *Robot Implementation of the Levy-Taxis Algorithm for Plume-Finding*

NATIONAL CONFERENCES OF INTEREST

National Academy of Neuropsychology (NAN)

October 22-25, 2008: New York, NY

<http://www.nanonline.org/NAN/home/home.aspx>

Society for Neuroscience (SFN)

November 15-19, 2008: Washington, DC

<http://www.sfn.org/am2008/>

Cognitive Neuroscience (CNS)

March 21-24, 2009: San Francisco

<http://www.cogneurosociety.org/content/meeting>

NARSAD CONFERENCE NEWS BRIEF

Reported by Maureen Daly

On Sept 14th, NARSAD organized free nationwide public forums entitled: *Healthy Minds Across America* to reflect on progress in mental health research, address challenges and questions in the field, and provide hope for future research and treatment of disorders such as depression and schizophrenia. Speakers, such as Nobel Prize recipient Dr. Eric Kandel from Columbia University, emphasized neuroimaging, pharmacological, and genetic findings. (<http://www.narsad.org/help/campaign/institutions.html#hmb>)

** ANNOUNCEMENT **

Drs. Rabin & Walder will hold a Neuroscience Interest Group Office Hour on **Tuesday, Nov. 11th at 10-11a.m.**, Suite 5303 James Hall. Please attend & bring questions!

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<http://depthome.brooklyn.cuny.edu/psych/NeurosciTrackBrochure032907.pdf>
http://depthome.brooklyn.cuny.edu/psych/BC_Undergrad_Neurosci032907.pdf