BC UNDERGRADUATE NEUROSCIENCE EXPRESS

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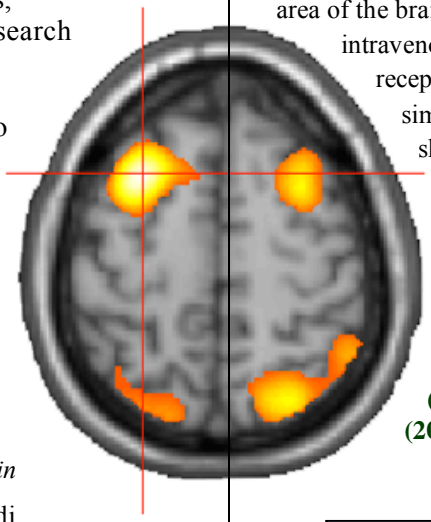
Happy Spring semester – we hope you are off to a stimulating and productive start to the new term. We are pleased to present a new edition of the BC Undergraduate Neuroscience Express. This newsletter is intended to update you about BC Neuroscience Interest Group meetings, developments in our education and research programs, and related neuroscience information. This issue contains an overview of upcoming events, links to community activities, synopses of neuroscience developments, and summer research opportunities. Enjoy the newsletter! We look forward to seeing you at our upcoming events over the course of the semester.



Neuroscience Lecture Delivered by Queens College Professor

Reported by Gregory Perrin

On December 4, Dr. Robert Ranaldi addressed the BC Psychology Department and members of the Neuroscience Interest Group. His talk entitled "Neurobiology of Reward-Related Associative Learning" covered aspects of his current research at Queens College. Dr. Ranaldi investigates the neural, environmental, and behavioral mechanisms, underlying learning, motivation, and drug addiction. In his lab, he exposes animals to environmental conditions that lead to goal-directed learning. Subsequently, he employs behavior analysis (i.e., schedules of reinforcement, choice behavior) and neuroscience techniques (i.e., brain microinjections and micro dialysis) to identify the mechanisms underlying aspects of reward-related learning of interest.

During his BC talk, Dr. Ranaldi presented findings related to the restriction of dopamine in the rat midbrain. Brain dopamine plays important roles in the rewarding effects of natural substances such as food as well as drugs of abuse. Using a lever press and food reward design, his rats were given microinjections (via cannulae) of a chemical that blocks NMDA receptor function in the pathway for strengthening of dopamine release. He found that a blocking of dopamine function in the food-based reward system led to a significant decrease in test group's associative memory versus that of control animals. This is in line with Dr. Ranaldi's previous research on cocaine-based reward systems, and is particularly important in research on addiction. For example, Dr. Ranaldi has shown that blockade of D1-type receptors in the ventral tegmental area of the brain reduces the rewarding effects of intravenous cocaine and that blockade of D1 receptors in the adjacent substantia nigra yields similar effects. Overall, Dr. Ranaldi's research sheds light on the role that neurotransmitter systems and brain regions play in cocaine administration and reward, with possible implications for addiction treatment.

For more information see:

(1) Sharf, R. & Ranaldi, R. (2006). *Psychopharmacology, 184,* 87-94

(2) Sharf, R., Lee, D.Y. & Ranaldi, R. (2005). *Brain Research,* 1033, 179-185.

Shown Here:
Dr. Ranaldi addressing the BC Neuroscience Interest Group, December 4, 2007.

NEUROSCIENCE JOURNALS OF INTEREST

(1) http://www.neuroguide.com/neurojour.html
(2) http://thalamus.wustl.edu/journals.html
Our favorites include: *Neuron, Brain, Nature Neuroscience, Biological Psychiatry, Human Brain Mapping, Cerebral Cortex, and the Journal of Cognitive Neuroscience*

WEBSITES OF INTEREST

(1) New York Academy of Sciences:
http://www.nyas.org
(2) Neuroanatomy & Neuropathology on the Internet:
http://www.neuropat.dote.hu/anatomy.htm
(3) Society for Neuroscience:
http://www.sfn.org/
(4) National Institutes of Health:
http://www.nih.gov/
(5) Cognitive Neuroscience Society:
http://www.cogneurosociety.org/
(6) International Behavioral Neuroscience Society:
http://www.ibnshomepage.org/

NEUROSCIENCE IN THE NEWS

"Brain Regional Neuropeptide Changes Resulting From Social Defeat"

Reported by Bracha Goykadosh

A recent study published in *Behavioral Neuroscience* examined levels of cholecystokinin, CCK-8, in the brains of rats. CCK-8, a neuropeptide, is linked with pain and anxiety in humans. When a human with a history of panic attacks is intravenously injected with CCK, pain and anxiety arises. Researchers believe that high levels of CCK are linked with and promote stress, anxiety, and depression. In this study, the experimental rats encountered other previously aggressive rats in a separate room, so as not to disturb the activities of the colony. Aggression was measured in terms of bites received and submissive behavior -- measured in terms of "freezing" (i.e., no movement after five consecutive seconds accompanied by 20-k HZ ultrasonic vocalizations).

After testing, the rat brains were harvested and dissected into various anatomical regions for study. Contrary to expectations, there was a reduction of CCK-8 in the experimental rats (exposed to social aggression) as compared to the control rats (exposed to social nonaggression) in the posterior cortex. In previous studies there had been an increased level of CCK-8 when rats were subjected to social defeat. The researchers postulated that the decrease in CCK-8 levels occurred because the rats were subjected to higher levels of emotional arousal and submissive behavior in the current study. The stronger levels of aggression and consequent emotional arousal likely led to the increased utilization of CCK-8 in defeated rates (and consequently to lower content of CCK-8). The authors also pointed out that more work is needed to establish functional links between various neuropeptide changes associated with defeat and the cascade of events that establish a defeat-induced depressive tone within the brain. This work certainly will have implications for human disorders that are stress induced -- such as anxiety and depression.

Reference: Panksepp, J., Burgdorf, J., Beinfeld, M., Kroes, R., & Moskal, J. (2007). Behavioral Neuroscience, 121, 1364-1371.

LOCAL COLLOQUIA

(1) BC Psychology Department Colloquia:
http://depthome.brooklyn.cuny.edu/psych/events.htm

(2) NY Academy of Sciences (Upcoming Conference):
http://www.nyas.org/events/eventDetail.asp?eventID=11003&date=6/20/2008%208:30:00%20AM

(3) Queens College Psychology Department Colloquia:
http://qcpages.qc.cuny.edu/Psychology/activities/colloquium.html

(4) NYU Neuroscience Colloquia:
http://www.cns.nyu.edu/colloquia/

(5) Columbia University Neuroscience Seminars:
http://neuroscience.columbia.edu/index.php?page=12

(6) New York Neuropsychology Group:
http://www.nyng.org/events.html

(7) SUNY Downstate – colloquium series & research day:
http://138.5.102.101/grad/gradan01.htm
http://www.downstate.edu/grad/ard/research_day.html

(8) New York Neuroscience Network Logs:
http://nyc-neuro-net.blogspot.com/

SPRING 2008 FEATURED SPEAKER

Dr. Leib Litman

Consciousness, functional specificity and memory consolidation: A tour of the medial temporal lobe

Tuesday April 15 at 1:30PM, JAMES 5109

PLEASE PLAN TO ATTEND!

Dr. Litman will answer questions about graduate school, postdoctoral fellowship, & beyond…

SUMMER RESEARCH OPPORTUNITIES

Below you will find links to websites with available summer research programs. We encourage you obtain more information about programs of interest prior to applying, and we are available to discuss specific placements as you gather information.

(1) The American Physiological Society Undergraduate Summer Research Fellowships: http://www.the-aps.org/education/ugsrf/SumResLINKs.htm

(2) Listing of a wide range of Neuroscience Internship Opportunities (including in NYC and at the NIH): http://www.psych.westminster.edu/psybio/internops.htm

(3) Summer Internships in the Neurosciences: http://www2.cedarcrest.edu/academic/bio/kfitzgerald/neuroscience/internships.html

(4) Summer Undergraduate Research Programs: http://www.aamc.org/members/great/summerlinks.htm

(5) Summer Honors Undergraduate Research Program, specifically for students belonging to minority groups: http://www.hms.harvard.edu/dms/diversity/shurpintro.html

(6) NYU Center for Neural Science Summer Research: http://www.cns.nyu.edu/undergrad/surp/

(7) Summer Internships at the Weizmann Institute: http://www.yu.edu/faculty/babich/Summer%20Internships/Summer%20Internships%202007.pdf

(8) Albert Einstein College of Medicine Summer Undergraduate Research Program: http://www.aecom.yu.edu/phd/summer.htm

ADDITIONAL RESEARCH OPPORTUNITY

(1) NSF Research Experience for Undergrads (at Baruch): http://www.baruch.cuny.edu/psychology/research/reustudent.htm

** ANNOUNCEMENT **

Drs. Rabin & Walder will hold a Neuroscience Interest Group Office Hour on **Tuesday, April 8 at 12:30 – 1:30 pm 5303 James.** Please attend & bring questions!

TO CONTACT US

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