Neuroscience seminar series Calendar
Spring 2020

Tuesday, January 28th, 2020
CU-Boulder – Interdepartmental Neuroscience Seminar Series
Muenzinger Psychology, Room E214, 4-5 pm

Kevin Jones, Professor, Department of Molecular, Cellular and Developmental Biology, Univ of Colorado Boulder

Tales of mouse genetics- From neurotrophic factor functions to screening for neurotherapeutics

Brain-derived Neurotrophic Factor (BDNF) is a signaling protein that enhances the survival and function of neurons. Many researchers have obtained evidence that reduced BDNF levels compromise brain function and contribute to the impairments found in many neurological disorders including Alzheimer's disease, Down syndrome, Huntington's disease, and Rett syndrome. We have used mouse genetic techniques to rigorously test requirements for BDNF in the developing and adult cerebral cortex and found that BDNF is indeed needed both for normal development and to maintain neurons in the adult brain. These observations suggest that it would be useful to increase BDNF production to treat many neurological disorders. Thus, we are taking advantage of a mouse strain we engineered to screen for chemical compounds that increase BDNF production. We hope to thereby identify mechanisms that regulate BDNF expression, and ultimately candidate therapeutics.

Tuesday, February 11th

CU-Boulder – Interdepartmental Neuroscience Seminar Series
Muenzinger Psychology, Room E214, 4-5 pm

Matthew Kennedy, Associate Professor, Department of Pharmacology, Univ of Colorado School of Medicine

New approaches for manipulating synapse function and neuronal cell biology with light

Our brains contain billions of neurons that communicate with each other through connections called synapses. Our daily experiences lead to structural and molecular changes to synapses that can alter the flow of information through neural circuits that control our thoughts, memory and movement. This "plasticity" in synaptic composition and structure is critical for our ability to think, learn, remember, and the cellular and molecular processes responsible are disrupted or maladapted in numerous neuropsychiatric disorders and diseases. We study how synapses in the central nervous system are modified by experience, with the ultimate goal of understanding how these mechanisms contribute to normal cognitive function and how they break down in various brain diseases and disorders.

Tuesday, February 25th

CU-Boulder – Interdepartmental Neuroscience Seminar Series
Muenzinger Psychology, Room E214, 4-5 pm

Beatriz Luna, Staunton Professor of Psychiatry and Pediatrics, Department of Psychiatry, School of Medicine, and Department of Psychology, University of Pittsburgh, PA

Specialization of cognitive and reward brain systems through adolescence

Cognitive and reward systems undergo unique maturation in adolescence believed to underlie sensation seeking and vulnerabilities to the emergence of psychopathology (e.g., mood disorders, addiction, psychosis). In our Driven Dual Systems Model we propose that adolescence is characterized by a time of new access to adult level executive control, that is still stabilizing, and is predominated by reward processing supporting exploration needed for specializing brain systems determining adult trajectories. Multimodal neuroimaging evidence will be presented supporting this model including fMRI evidence for access to prefrontal systems, increased variability in engaging executive systems, and specialization of frontolimbic functional connectivity as well as MRI and PET evidence for specialization of the reward dopaminergic system. Finally, initial evidence for critical period plasticity during adolescence will be presented showing changes in the excitatory (glutamate)/inhibitory (GABA) balance through adolescence. Together, these results suggest a model of adolescence as a time of critical specialization of cognitive and reward systems supporting the establishment of adult trajectories.

Tuesday, March10th

CU-Boulder – Interdepartmental Neuroscience Seminar Series
Muenzinger Psychology, Room E214, 4-5 pm

Rebbeca Shansky, Associate Professor, Department of Psychology, Northeastern University, Boston, MA.

A neural basis for sex differences in fear responding

For decades, Pavlovian fear conditioning has been a cornerstone for the study of aversive learning and memory, but its reliance on a singular measure of fear (freezing) limits our ability to assess the broader repertoire of defensive behaviors that animals might use. In addition, the neglect of female subjects in the field has led to fundamental gaps in our understanding of core circuits that drive these behaviors. We have found that females are more likely than males to engage in a conditioned escape-like response ("darting"), which may represent an adaptive strategy that provides long-term benefits. To determine the neural basis of this response, we have begun to explore the role that the prefrontal cortex plays in mediating a switch between freezing and darting.

Tuesday, April 7th

CU-Boulder – Interdepartmental Neuroscience Seminar Series
Muenzinger Psychology, Room E214, 4-5 pm

Catharine Winstanley, Professor, Department of Psychology and Centre for Brain Health, Univ of British Columbia, Vancouver, BC, Canada

Against the odds: How can rodent behavioural models help us understand disorders

Abstract TBA

Tuesday, April 21st

CU-Boulder – Interdepartmental Neuroscience Seminar Series
Muenzinger Psychology, Room E214, 4-5 pm

Dayu Lin, Assistant Professor, Institute of Neuroscience & Department of Psychiatry, New York University Langone Medical Center, NY.

Neural mechanisms of aggression

Aggression is an innate social behavior essential for competing for resources, securing mates, defending territory and protecting the safety of oneself and family. In the last decade, significant progress has been made towards an understanding of the neural circuit underlying aggression using a set of modern neuroscience tools. Here, I will talk about the history and recent progress in the study of aggression.