

The background of the slide is a 3D rendering of several neurons. The neurons are depicted with a reddish-brown color and have a central cell body with multiple branching processes extending outwards. Some of the cell bodies are illuminated from within, giving them a glowing appearance. The background is a dark, gradient blue-purple.

Fifth Biennial
Southern Illinois Region

Neuroscience Retreat

September 10–11, 2010
Collinsville Doubletree
Collinsville IL

Welcome to the Fifth Biennial Southern Illinois Region Neuroscience Retreat

We hope that you will enjoy the new format for this year's meeting, with all the scientific presentations being made in a single day. We are also excited about the meeting's new location at the DoubleTree Collinsville Hotel and Conference Center. With 41 oral or poster presentations, and over 60 participants, we are certain that you will find ample opportunity to learn something new through formal and informal interactions with your colleagues. Enjoy the meeting!

Gregory Rose, Ph.D.

President, Southern Illinois Chapter of the Society for Neuroscience
Director, SIU Center for Integrated Research in Cognitive and Neural Sciences

Amy Arai, Ph.D.

President, Sangamon Chapter of the Society for Neuroscience
Dept. of Pharmacology, SIU School of Medicine, Springfield

Meeting sponsorship provided by the SIU Center for Integrated Research in Cognitive and Neural Sciences and the Society for Neuroscience.

Friday, September 10th

4:00–6:30 Check-In/Registration

6:00–8:00 Reception Buffet

7:00–9:00 Poster Viewing

Saturday, September 11th

7:00–8:00 Breakfast

8:15–8:35 Welcome
Opening Remarks
John Koropchak, Ph.D.
Vice Chancellor for Research and Graduate Dean
Southern Illinois University Carbondale

8:35–9:35 Session 1: Development

Networking break

9:50–11:00 Session 2: Brain Injury

Networking break

11:15–12:25 Session 3: Disease, Models and Treatment

12:25–1:25 *Lunch*

1:25–2:45 Session 4: Physiology and Plasticity

Networking break

3:00–4:00 Session 5: Cognitive Processing

Networking break

4:15–5:35 Session 6: Aging and Alzheimer's Disease

5:35 Poster Viewing

6:45 Dinner

7:45 Special Lecture
Rhanor Gillette, Ph.D.
Professor of Molecular and Integrative Physiology and
Biophysics
University of Illinois at Urbana-Champaign

8:45 Closing Remarks

POSTERS

Neuroanatomy of a potential mouse model for hemispatial neglect

Josiah An, Dept. of Physiology, SIU School of Medicine, Carbondale

Possible role of TRPA1 in migraine headache

Xiangying Cheng, PhD, Dept. of Neurology, SIU School of Medicine, Springfield

Increased hippocampal acetate incorporation is associated with the preservation of cognitive status in aged Fischer 344 rats

Jeremy Ebersole, Dept. of Physiology, SIU School of Medicine, Carbondale

Plasticity in the pathway from amygdala to periaqueductal gray (PAG) is an important mechanism of epileptogenesis in audiogenic kindling

Carl Faingold, PhD, Dept. of Pharmacology, SIU School of Medicine, Springfield

FOX01 expression in human pituitary adenomas

Corrie Farris, Dept. of Physiology, SIU School of Medicine, Carbondale

Activated caspase-3, substance P and CGRP expression in embryonic chick DRG neurons after pyridoxine administration

Yuri Fedorovich, Dept. of Physiology, SIU School of Medicine, Carbondale

An Oxidative threshold in glutathione and NADH elevates ROS in AD mouse model neurons

Debolina Ghosh, Dept. of Medical Microbiology, Immunology & Cell Biology, SIU School of Medicine, Springfield

The Forkhead Transcription Factor, FOXP3, Is Essential for Normal Hypothalamic-Pituitary-Gonadal Axis Function

Deborah Jung, Dept. of Physiology, SIU School of Medicine, Carbondale

Aging dependent alteration in CA3 network excitability during 5 Hz mossy fiber stimulation in hippocampal slices from aged Fischer 344 rats

Dan Kanak, Dept. of Physiology, SIU School of Medicine, Carbondale

Targeting cochlear inflammation in the treatment of cisplatin ototoxicity

Tejbeer Kaur, Dept. of Pharmacology, SIU School of Medicine, Springfield

Impaired glucose tolerance precedes neuroanatomical identification of A-beta and hyperphosphorylated tau accumulation in the 3xTg model of Alzheimer's disease

Lauren Macklin, Dept. of Physiology, SIU School of Medicine, Carbondale

Role of the forkhead transcription factor, FOX01, in pituitary gland development

Sreeparna Majumdar, Dept. of Physiology, SIU School of Medicine, Carbondale

Study of sensory control of embryonic chick motility through kinematic and force measurements

Joanna Floria Pakiraih, Dept. of Anatomy, SIU School of Medicine, Carbondale

FOX01 is expressed in actively proliferating cells during pituitary gland development

Adam Ploegman, Dept. of Physiology, SIU School of Medicine, Carbondale

Post-ictal analgesia in genetically epilepsy-prone rats is induced by audiogenic seizures and involves cannabinoid receptors in the periaqueductal gray

Vijay Samineni, Dept. of Pharmacology, SIU School of Medicine, Springfield

Serum withdrawal disrupts cell shape in cultured cells expressing TRPV-1

Sandeep Sheth, Dept. of Pharmacology, SIU School of Medicine, Springfield

Nogo-A mRNA expression by astrocytes after stroke in the rat

Jessica Stout, Dept. of Physiology, SIU School of Medicine, Carbondale

ORAL PRESENTATION SESSIONS

Session 1: Development 8:35–9:35

The Role of forkhead transcription factors in pituitary development and disease

Buffy Ellsworth, PhD, Dept. of Physiology, SIU School of Medicine, Carbondale

The Development of an In Vitro-Based Electroporation Assay to Alter Gene Expression in the Embryonic Hindbrain

Rebecca Landsberg, PhD, Dept. of Biology, University of Illinois Springfield

Optogenetic approaches for understanding sensorimotor development in chick

Andrew Sharp, PhD, Dept. of Anatomy, SIU School of Medicine, Carbondale

Networking break

Session 2: Brain Injury 9:50–11:00

Recovery of function after stroke

Joe Cheatwood, PhD, Dept. of Anatomy, SIU School of Medicine, Carbondale

The Evaluation of post traumatic stress disorder (PTSD) following traumatic brain injury in the rat

Michael Hoane, PhD, Dept. of Psychology, Southern Illinois University Carbondale

Cognitive training in a middle-aged model of traumatic brain injury

Alicia Swan, Dept. of Psychology, Southern Illinois University Carbondale

Data Blitz: The Effect of continuous nicotinamide administration on recovery from traumatic brain injury in rats

Cole Vonder Haar, Dept. of Psychology, Southern Illinois University Carbondale

Networking break

Session 3: Disease, Models and Treatment 11:15–12:25

Recent challenges to CNS translational research

Jeffrey Bennett, MD, Dept. of Psychiatry, SIU School of Medicine, Springfield

Novel Strategies for treating hearing loss

Vickram Ramkumar, PhD, Dept. of Pharmacology, SIU School of Medicine, Springfield

Quetiapine protects against the white matter alterations and behavioral changes of mice exposed to cuprizone

Haiyun Xu, PhD, Dept. of Anatomy, SIU School of Medicine, Carbondale

Data Blitz: Neuropsychological consequences of head and neck cancer

Sheryl Reminger, PhD, Dept. of Psychology, University of Illinois Springfield

Lunch

Session 4: Physiology and Plasticity 1:25–2:45

Activity response of patterned hippocampal network cultures to chronic stimulation and astroglial addition

Michael Boehler, MS, Dept. of Medical Microbiology, Immunology & Cell Biology, SIU School of Medicine, Springfield

Synchronous gating of ryanodine receptor channels in muscle

Julio Copello, PhD, Dept. of Pharmacology, SIU School of Medicine, Springfield

Awakening of cultured hippocampal networks in the context of EEG frequency bands

Stathis Leondopoulos, PhD, Dept. of Medical Microbiology, Immunology & Cell Biology, SIU School of Medicine, Springfield

Functional alpha7 nicotinic acetylcholine receptors in hippocampal CA1 pyramidal neurons

Victor Uteshev-Gaard, PhD, Dept. of Pharmacology, SIU School of Medicine, Springfield

Networking break

Session 5: Cognitive Processing

3:00–4:00

Improving spatial working memory through intermittent visual feedback: behavioral and neuroimaging evidence

Matthew Schlesinger, PhD, Dept. of Psychology, Southern Illinois University Carbondale

Evaluation of impulsive behavior using a video game

Michael Young, PhD, Dept. of Psychology, Southern Illinois University Carbondale

Data blitz: Genotype and brain activity relate to children's behaviors

Lisabeth DiLalla, PhD, Dept. of Family and Community Medicine, SIU School of Medicine, Carbondale

Data blitz: Neural processing of emotional faces under restricted and unrestricted viewing conditions

Karen Pressley, PhD, Dept. of Psychology, University of Illinois Springfield

Networking break

Session 6: Aging and Alzheimer's Disease

4:15–5:35

I. Enhanced neuronal networks

II. Aging brain bioenergetics and epigenetics

Gregory Brewer, PhD, Dept. of Medical Microbiology, Immunology & Cell Biology, SIU School of Medicine, Springfield

Decline of autophagy in aging non-transgenic and 3xTg-AD mice

Kelsey Levault, Dept. of Medical Microbiology, Immunology & Cell Biology, SIU School of Medicine, Springfield

The aging hippocampus: inhibition and glucose

Peter Patrylo, PhD, Dept. of Physiology, SIU School of Medicine, Carbondale

Visual function and Alzheimer's pathology

Robert Struble, PhD, Center for Alzheimer Disease, SIU School of Medicine, Springfield

Poster Viewing

5:35–6:45

SPECIAL GUEST LECTURE

**Neuronal Mechanisms of Appetitive State and Choice:
Toggling the Approach/Avoidance Decision**

Rhanor Gillette, Ph.D.

Professor of Molecular and Integrative Physiology and Biophysics
University of Illinois at Urbana-Champaign



Dr. Gillette received his Ph.D. from the University of Toronto in 1974. His research activities are aimed at how animals organize their behavior by integrating motivation, experience and sensation. Using the carnivorous marine snail *Pleurobranchaea californica* as a model of a generalized predator with simple behavior and brain, his laboratory analyzes decision-making in behavioral expression and the underlying neural network circuitry.

Abstract of Dr. Gillette's Lecture

Appetitive state manifests in the excitation state of a goal-directed neuronal network, sets sensory thresholds for behavioral output and biases an effector network between alternative outputs in the predatory sea-slug *Pleurobranchaea californica*. Appetitive state is conserved in the isolated CNS in terms of feeding network excitation state and decisions between fictive avoidance and orienting. These decisions are reversibly controllable through manipulating the excitatory state of the feeding network. Corollary outputs from the feeding network target specific neurons of the turn network to bias the symmetry of the turn network output response to sensory input from avoidance to orienting. The simple neuronal scheme relating appetitive state and approach/avoidance decision in this model system may constitute a core of both simple and complex economic decision-making across phyla. They also provide basis for autonomous cost-benefit decision in artificial-life modeling and robotics.

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