Neuroscience Concentration

-We study the only organ that can study itself

Website:

http://neuroscience.ufl.edu/education/

Concentration Directors:

Dr. Harry Nick
Dr. Jada Lewis

Chair, Department of Neuroscience:

Dr. Lucia Notterpek
NEUROLOGICAL DISEASE

Alzheimer's Disease

Hemorrhagic Stroke

Movement Disorders

Transgenic Alzheimer’s Mouse Models

Demyelinating Disorders

Human Alzheimer’s Disease (AD) brain
“Plaques” (brown) containing abnormal Amyloid Beta

Transgenic mouse brain containing Human AD mutation
“Plaques” (brown) containing abnormal Amyloid Beta

Multiple sclerosis, leukodystrophies and neuropathies
NEURODEVELOPMENT and SENSORY SYSTEMS

Olfactory Function

Taste Signaling and Obesity

Cilia in Normal Brain Development, Neurological Disease and Cancer
ADDICTION AND PSYCHIATRIC DISORDERS

**Rodent Behavioral Models**
- Risky Decision Making
- Drug Self-Administration

**NeuroImaging**
- Nicotine-induced BOLD signaling

**Cellular Mechanisms**

**Human Behavior and Cognition**
- Driving Simulator
- Assessing Brain Activity With EEG

Dopamine, amphetamine and methamphetamine increase extracellular flux of dopamine.
AGE-RELATED MEMORY LOSS

GABA Signaling in Prefrontal Cortex

Assessing Rodent Memory
Spatial Memory (Water Maze)

Hippocampal Synaptic Plasticity

In Vivo Neurophysiology in Behaving Rodents

Working Memory and Decision Making

Object-Place Associations

NMDAR-mediated synaptic potentials are reduced in CA1 of aged hippocampus

Adult Neurogenesis

BrdU

BrdU DCX
BRAIN AND SPINAL CORD REPAIR

Functional Assessment of Neural Connectivity

A. T1 and T2-weighted image of surviving spinal cord transplant in cat and Syringomyelia transplant patient

Neurophysiologically-guided anterograde tracing of axons originating within the VRC

Neurophysiological Assessment

B. Chronic Cervical Spinal Cord Injury: Hypoxia Effects on Phrenic Nerve

Spinal Cord Transplant

C. Diaphragm EMG

D. Multi-unit Inspiratory Activity

T1 and T2-weighted image of surviving spinal cord transplant in cat and Syringomyelia transplant patient
EVOLUTION OF NEURAL SYSTEMS

[Diagram showing evolutionary timeline and neural systems across various species]

8-10 month old Aplysia

[Image of a scientist holding an Aplysia]

Single Neuron Isolation

Neuron Isolation & RNA/DNA content

FMRFamide in situ hybridization

500 μm
Placement of Recent Neuroscience Graduates

- Mt. Sinai School of Medicine – Dr. Ethan Anderson
- Brigham Women’s Hospital, Harvard University- Dr. Mark DeAndrade
- National Institute on Aging- Dr. Cristina Banuelos
- University of North Carolina, Chapel Hill- Dr. Rachel Bailey
- National Institute of Mental Health- Sofia Beas
- University of Chicago- Dr. Sara Guadiana
- University of Alabama, Birmingham - Dr. Kim Hawkins
- University of California, San Francisco- Dr. Joo-In Jung
- University of Wisconsin-Madison- Dr. Wei-Hua Lee
- Yale University- Dr. Marci Mitchell
- University of Washington –Dr. Sara Mondello
- Baylor College of Medicine- Dr. Karienn Montgomery