

NEURAL INJURY AND REPAIR

16:963:632

Course Directors:

Dr. Patricia Sonsalla
sonsalla@rwjms.rutgers.edu

Dr. Huaye Zhang
zhang29@rutgers.edu

Course Description: The Neural Injury and Repair Course is a graduate level course that has 5 modules: Neurobiological Substrates of Injury/ Repair and Neurodevelopmental Disorders; Mechanisms and Targets of Neural Injury; Neurodegeneration, Neural Injury and Genetics; Potential Novel Repair Mechanisms; and Neurotoxic Chemicals. It is a lecture series in which the topics are covered by Rutgers faculty with expertise in the area covered. Topics include but are not limited to developmental disturbances, mechanisms of neuronal damage/death in the adult brain, neurodegenerative diseases, genetics, stem cells, and neurotoxicants (e.g., solvents).

LECTURE SCHEDULE

Topic	Instructor
Module A: Neurobiological Substrates of Injury/Repair and Neurodevelopmental Disorders	
Developing nervous system	E. DiCicco-Bloom
Axonal Growth and Guidance	R. Zhou
Neuronal Migration in Normal Brain and in Lissencephaly	G. D'Arcangelo
Synaptogenesis	H. Zhang
Non-neuronal Cells: Microglia, Development and Neuromodulation	L. Wu
Non-neuronal Cells and Influences on Neural Injury: Focus on Astrocytes	C. Dreyfus
Neuropathology of Developmental Disturbances	K. Reuhl
Neurodevelopmental Disorders: Focus on Gene-Teratogen Model	W. Johnson
Module B: Mechanisms and Targets of Neural Injury	
Mechanisms of Cell Death: ROS, RNS, Excitotoxicity	F. Sesti
Mechanisms of Cell Death: Mitochondrial Dysfunction, Calcium Mishandling, Apoptosis	P. Sonsalla
Dysfunctional Protein Degradation: Proteasomes, Lysosomes and Autophagy	K. Madura
Lysosomal Storage Disease	D. Sleat
Brain Adhesion Molecules in Plasticity and Disease	D. Comoletti
Inflammatory Immune Responses and Microglial Activation: Cytokines in Neurodegeneration	H. Zhang
Module C: Neurodegenerative Disorders, Genetics and Neural Injury	
Parkinson's Disease as a Model of Chronic Prionopathy	L. Golbe
Neurodegenerative Diseases: Parkinson's, Alzheimer's, Huntington's Disease, ALS	P. Sonsalla
Traumatic Brain Injury and Spinal Cord Injury	D. Crockett
Effect of Noise on Neural Injury in the Auditory System	R. Davis
Module D: Potential Novel Mechanisms for Repair	
Characteristics of Stem Cells	R. Hart
Neurotrophins as Repair Molecules	J. Alder
Past and Future of Cell Transplants for Repair	Z. Pang
Repair of Damaged Dendritic Trees	H. Menon
Optogenetics	Z. Pang
Module E: Neurotoxic Chemicals	
Cognitive and Sensory Effects of Chronic Exposure to Neurotoxicants	N. Fiedler
Toxicants and Olfaction	J. McGann

