

**PHCL 800A - Research****Dr. I.G. Sipes & Faculty**

3, 4 or 6 wks; maximum length of 6 wks; offered year round

Directly supervised/Non-patient care.

Maximum enrollment varies

Prerequisites: Consent of Instructor and Coordinator, Dr. J. Palmer (626 4491)

**Goals/Format:** This course consists of full-time and part-time involvement in a particular research project. Areas represented by the faculty are as follows:

David S. Alberts, MD; Phase I and clinical pharmacokinetics of cancer chemotherapeutic and cancer prevention agents; drug interactions; clinical pharmacology; in vitro drug assay and biomarker studies in tumor cells; cancer chemopreventive agent pharmacology; and drug development trials. William T. Bellamy, Ph.D.; Cancer pharmacology with an emphasis on tumor angiogenesis as well as the mechanisms responsible for drug resistance; in vitro and in vivo reversal of drug resistance; in situ hybridization. John W. Bloom, MD; Molecular mechanisms of glucocorticoid action in the lung; mechanisms of eosinophil apoptosis; effects of genetic polymorphisms on gene expression in asthma. G. Timothy Bowden, Ph.D.; Molecular aspects of chemical and physical carcinogenesis; mechanisms of oncogene activation and signal transduction pathways. Margaret M. Briehl, Ph.D.; Relationship between oxidative stress, apoptosis, and the development of cancer. Janis M. Burt, Ph.D.; Mechanisms controlling intercellular signaling via gap junctions in the cardiovascular system; role of gap junctions in growth control, response to injury, cardiac arrhythmias and vascular disease. Qin M. Chen, Ph.D.; Molecular mechanisms of oxidative injury and adaptation, stress signal transduction pathways, stress gene expression, senescence, apoptosis and cardiac hypertrophy. Thomas P. Davis, Ph.D.; Neuropharmacology; molecular regulation of growth factor processing and metabolism; biotech approaches to targeting the blood-brain barrier for new drug development; effects of hypoxia, aglycemia, stroke, peripheral pain, and nicotine on endothelial cell permeability, resistance and cytoarchitecture. Robert T. Dorr, Ph.D.; Toxicology systems and mechanisms of action of cytotoxic anticancer agents; pharmacology of cancer chemopreventive agents. Timothy C. Fagan, M.D.; Cardiovascular effects of antihypertensive drugs; effects of age and gender on drug metabolism; new drug development. Edward D. French, Ph.D.; Neuropharmacology of drugs of abuse, using electrophysiological and behavioral endpoints; application to models of schizophrenia. Bernard W. Futscher, Ph.D.; Functional genomics; molecular biology of cancer; cancer pharmacology. A. Jay Gandolfi, Ph.D.; Bioactivation of xenobiotics: in vitro toxicology systems; renal/hepatic toxicology; toxicity of halogenated hydrocarbons, and metals; mechanisms cell injury. Marilyn J. Halonen, Ph.D.; Immunopharmacology; alterations in cytokine regulation of IgE levels; cell biology of naturally occurring polymorphisms in cytokine genes related to asthma or allergy in humans; immune response development in infancy in relation to respiratory viruses and allergens. David G. Johnson, MD; Endocrine pharmacology; pharmacology and physiology of pancreatic function; peptide hormones; clinical pharmacology. Josephine Y. Lai, Ph.D.; Molecular mechanisms of neuropathic pain; opioid receptor pharmacology; gene targeting; drug discovery. R. Clark Lantz, Ph.D.; Pulmonary toxicology of air pollutants, especially metals; effects of air pollutants on neonatal lung growth and development. Douglas F. Larson, Ph.D.; Immunopharmacology; pharmacology and design of selective immunosuppressive therapies for solid organ transplantation and autoimmune diseases. Carl R. Lupica, Ph.D.; Neurophysiology; neuroanatomy/brain circuitry; neuropharmacology; drug abuse/motivation/reward/reinforcement. Ronald M. Lynch, Ph.D.; Hypertension, diabetes, and obesity; endocrine pharmacology and metabolism; excitability in cells of the pancreas hypothalamic neurons and the vasculature; microscopic spectroscopy and imaging. T. Philip Malan, Jr., M.D./Ph.D.; Neuropharmacology; pharmacology and molecular biology of neuropathic pain. Paul F. McDonagh, Ph.D.; Cardiac protection; blood-blood vessel interactions in the etiology of ischemia-reperfusion injury. Mark A. Nelson, Ph.D.; Molecular mechanisms of carcinogenesis, biochemical and molecular pharmacology of anti-cancer drugs. Claire M. Payne, Ph.D.; Mechanisms of cell death induced by pharmacologic/toxicologic agents. Frank Porreca, Ph.D.; Neurobiology of pain. Garth Powis, D.Phil.; Intracellular signaling pathways that mediate the effects of growth factors and oncogenes in cancer cells. William R. Roeske, MD; Cardiovascular pharmacology; regulation, characterization, and identification of autonomic receptors; neuropharmacology of drugs of abuse. I. Glenn Sipes, Ph.D.; Mechanism of tissue injury induced by drugs or other xenobiotics; mechanisms by which one chemical modulates the toxicity of another; carcinogenesis, human metabolism of environmental pollutants. Robert S. Sloviter, Ph.D.; Neuropharmacology, neurotoxicology, neuroanatomy, and neurophysiology of epilepsy and other neurological disorders; mechanisms of neuronal death; anticonvulsant drug mechanisms. W. Daniel Stamer, Ph.D.; Molecular and cellular mechanisms that underlie the regulation of aqueous humor outflow in the human eye; including receptor activation; second messenger signaling, ion and water transport, and secretory function. Todd Vanderah, Ph.D.; Mechanisms and pharmacology of acute and chronic models of pain; endogenous opioid systems; sensory neural systems; opioid tolerance; antinociceptive synergy between cannabinoids and opioids. Mark L. Witten, Ph.D.; Acute and chronic exposure to environmental toxins and their effect on the pulmonary system including host cellular defense system. Henry I. Yamamura, Ph.D.; Neuropharmacology; mechanism of psychotropic drugs in the CNS; molecular biology of neurotransmitter and drug receptors; second messenger coupling with receptors. Andrea J. Yool, Ph.D.; Viral-mediated gene therapy for ion channel disorders in CNS and skeletal muscle; Molecular mechanisms of ion channel function in Aquaporins.

**Evaluation Methods:** Students will be evaluated according to their laboratory performance.

**PHCL 899 - Independent Study**

**Dr. I.G. Sipes & Faculty**

3 or 6 wks; maximum length of 18 wks; offered year round

Directly supervised/Patient care or non-patient care.

Maximum enrollment varies

Prerequisites: Medical students only

**Goals:** The goal of this elective is to allow the student to work with a particular faculty member in pursuit of a particular field of study in pharmacology.

**Format:** As arranged between student and instructor.

**Evaluation Methods:** As arranged.