

PROBLEMS IN PHARMACY COURSES

INFORMATIONAL BOOKLET



COLLEGE OF PHARMACY

UNIVERSITY OF FLORIDA

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INTRODUCTION

The Problems in Pharmacy courses are available to students who would like to gain insight into the research process through independent study and direct supervision by a faculty member. The types of projects can vary considerably by academic discipline and by research interests of faculty members. Students are encouraged to explore their curiosity about how problems in pharmacy can be solved through scientific research.

COURSES AVAILABLE

Each of the five departments in the College of Pharmacy offers a Problems in Pharmacy course. These courses are:

PHA 4901 Problems in Pharmacy Health Care Administration 1-2 cr.

PHA 4902 Problems in Pharmacodynamics 1-2 cr.

PHA 4905 Problems in Pharmaceutics 1-2 cr.

PHA 4906 Problems in Medicinal Chemistry 1-2 cr.

PHA 4907 Problems in Pharmacy Practice 1-3 cr.

A Problems in Pharmacy course in a department may be taken for a maximum of 6 credits.

GRADING

The Problems in Pharmacy courses are offered on a satisfactory-unsatisfactory grade basis. Students may petition at the beginning of the semester with faculty member support to have the grading based on letter grades.

COURSE SYLLABUS

The faculty member who supervises a Problems in Pharmacy course should prepare a syllabus that indicates the objectives, activities, requirements, time commitment, evaluation process, and criteria for grading.

TIME COMMITMENT

Students should plan on committing a minimum of 3 hours a week for each semester credit hour of the course. Thus, a student who registers for 2 credits of a Problems in Pharmacy course would be expected to devote 6 hours a week during the semester to the project.

REGISTRATION

Students may register for a Problems in Pharmacy course with faculty member permission. The Office for Student Affairs will have the section number specific for the department offering and the faculty member who will supervise the student. Students can take two such courses in the same or different department during the same semester. Students should make arrangements with a faculty member as far in advance of the semester as possible. Students are reminded to discuss their plans for such courses with their faculty advisor.

TYPES OF PROJECTS AVAILABLE

Several faculty members have expressed an interest in offering these courses. Their names, phone numbers, and titles of research projects are listed for your information. Please keep in mind that other faculty may be willing to offer such courses. Students should feel free to inquire of any faculty member about the possibility of taking a Problems in Pharmacy course.

PHA 4901 Problems in Pharmacy Health Care Administration

[Please contact Dr. Segal (392-5270), Chairman of the Department of Pharmacy Health Care Administration, for information on faculty members available for supervision of projects]

C. Douglas Hepler, Ph.D.
392-5270
hepler@cop.ufl.edu

1. Educational needs for pharmaceutical care
2. "Breakthrough" (systems) thinking about drug therapy
3. Medication use and outcome studies
4. Formularies and prescribing influence programs

PHA 4902 Problems in Pharmacodynamics

[Please contact Dr. Meldrum (392-3408), Chairman of the Department of Pharmacodynamics, for information on faculty members available for supervision of projects in the Department of Pharmacodynamics]

Ralph Dawson, Jr., M.A., Ph.D.

392-3408

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- Study of taurine (an amino acid) and its role as an antioxidant in preventing cell death in experimental models of diseases such as Parkinson's, Alzheimer's, hypertension and diabetes.
- Role of renal dopamine transport and synthesis in salt-dependent hypertension. Cell culture and tissue slice models are used to determine molecular mechanisms that may explain how high salt diets trigger hypertension.
- Studies to determine how taurine is regulated during aging and how this information can be applied to nutritional strategies to prevent oxidative damage in normal aging.
- Studies of leptin, a hormone that regulates body fat and appetite, and how it acts in the hypothalamus to regulate body weight.
- Other projects related to neurotoxicology in general.

Michael J. Katovich, Ph.D.

392-3408

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- Insulin Resistance and Hypertension
- Renin-angiotensin alterations in Hypertension
- Gene therapy in Hypertension
- Role of Angiotensin in thermoregulation
- Prenatal effects of NaCl on the renin angiotensin system
- Endocrine alterations in Diabetes
- Vascular reactivity alterations in Hypertension and Diabetes
- Menopause
- Effects of gravity on cardiovascular function

Maureen E. Keller-Wood, Ph.D.

392-3408

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- Control of the Brain-Pituitary-Adrenal Axis
- Endocrine Responses to Stress
- Alterations in Hormones Controlling Blood Volume and Pressure

Michael J. Meldrum, Ph.D.
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- Autonomic Pharmacology
- Neurochemistry
- Neuropharmacology
- Dietary Salt and Hypertension

William J. Millard, Ph.D.
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- Endocrine Control of Growth and Development
- Neuroendocrine Regulation of the Pituitary Gland
- Brain Peptides and Aging
- Sexual Differentiation of the Brain
- Perinatal Effects of Drugs of Abuse on Growth and Development

Joanna Peris, Ph.D.
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- GABAergic Neurochemistry and Alcohol Abuse
- Neurochemical Changes in the Brain Caused by Cocaine Use
- Combined Effects of Cocaine and Alcohol Use
- Neuropharmacology of Tolerance and Sensitization to Drugs

James W. Simpkins, Ph.D.
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- Neuroendocrinology of Aging
- Regulation of Luteinizing Hormone Secretion
- Mechanisms of Opiate Withdrawal
- Ovarian Steroid Effects on the Brain
- Neurotrophic Effects of Ovarian Steroids
- Alzheimer's disease mechanism
- Neuroprotection from brain ischemia
- Assessment of cytoprotective drugs

Charles A. Sninsky, M.D.
374-6055
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- Alterations in Myoelectric Activity of Small Intestine
 - * In Diabetes
 - * During Morphine Dependency and Withdrawal
 - * With Chemotherapeutic Agents
- Motility Effects of Neuropeptide Y

PHA 4905 Problems in Pharmaceutics

[Please contact Dr. Raymond Bergeron, Graduate Coordinator, Department of Pharmaceutics for information about Problems in Pharmaceutics]

Hartmut Derendorf
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- Pharmacokinetic and pharmacodynamic correlation of drugs (corticosteroids, antibiotics)
- Analysis of drugs and metabolites in biological fluids
- Optimization of asthma therapy with corticosteroids
- Tissue distribution of antibiotics

Gayle A. Brazeau
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- Alcohol-induced, cocaine-induced, or other drug-induced skeletal muscle damage
- Parenteral-induced muscle damage associated with IM, SC injection
- Gene Delivery and Therapy
- Estrogen's effect on skeletal muscle

The focus of the laboratory is to understand and determine the interaction between drugs and skeletal muscle. Students can conduct projects in the following areas:

1. Determining the myotoxicity or muscle damage caused by drugs and/or drug formulations.
2. Investigating the mechanisms underlying the development of alcohol-induced muscle damage.
3. Investigate the mechanisms underlying the development of cocaine-induced muscle damage.
4. Investigate the mechanism underlying the development of other drug-induced muscle damage (e.g., steroids, HMG-CoA reductases, AZT).
5. Investigate novel dosage forms which might be used to reduce drug-induced muscle damage without affecting bioavailability.
6. Investigate aspects of gene delivery to skeletal muscle.
7. Role of estrogen in skeletal muscle function.

Guenther Hochhaus, Ph.D.
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- Peptide Metabolism
- Improvement of antiasthma therapy
- PK/PD relationships to optimize therapy

Jeffrey Hughes, Ph.D.
392-5880
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- Determining the relationship between physicochemical properties and cellular disposition of antisense oligonucleotides and other macromolecules
- Drug delivery of macromolecules
- Gene Delivery and Therapy

Nicholas Bodor, Ph.D. - Center for Drug Discovery
392-3417
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- Design of drugs with improved therapeutic index
- Design of new chemical and physical delivery systems
- Computer-assisted drug design

Laszlo Prokai, Ph.D. - Center for Drug Discovery
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- Metabolism-based drug design to enhance targeting/delivery
- Delivery of neuropeptides into the central nervous system
- Pharmaceutical and biomedical mass spectrometry
- Peptide neurochemistry

PHA 4906 Problems in Medicinal Chemistry

[Please contact Dr. James (392-5900), Chairman, Department of Medicinal Chemistry for information about Problems in Medicinal Chemistry]

Margaret James, Ph.D.
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- Metabolism of dichloroacetic acid
- Role of the intestine in first pass drug metabolism

Stephen Schulman, Ph.D.

846-1953

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Research interests include electronic absorption, fluorescence and phosphorescence spectroscopy, analytical chemistry in biological media; Physical chemistry of partially aqueous solutions; Chemiluminescence, Luminescence from solid drugs; Proton transfer kinetics and Mechanisms; Complexes of drugs with metal ions, proteins and nucleic acids and chemistry of snake venoms.

Raymond Bergeron, Ph.D.

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Ongoing research interests programs include total synthesis of natural products, the development of metal chelators for iron overload disease, and the design testing of new antiviral, anticancer, antiarrhythmics, antihypertensives, antitumor, and antisecretory agents. Students are presented with an opportunity to develop a wide spectrum of skills in each of these programs in the areas of organic synthesis, molecular biology and whole animal models.

John Perrin, Ph.D.

846-1955

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Research interests include interactions between small molecules and between small molecules and macromolecules. Chemiluminescence as an analytical tool for antibiotics. Synthesis of cancer codrugs.

Kenneth B. Sloan

846-1957

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Research interests include pro-drug and soft drug approaches, diffusion of drugs through membranes (especially skin), chemical reaction mechanisms.

Ian Tebbett, Ph.D.

392-3223

tebbett@cop.ufl.edu

Research involves the analysis for drugs and environmental toxins in human and animal biological specimens in support of the following projects:

- The effects of cocaine exposure during pregnancy on the development of the newborn
- Health effects of exposure to environmental toxicants
- Gulf War syndrome

PHA 4907 Problems in Pharmacy Practice

[Please contact Professor Delafuente (392-3155), Associate Chairman of the Department of Pharmacy Practice, about the availability of faculty members to supervise projects]

Janet Karlix, Pharm.D.
392-3155
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Clinical Science Research Opportunities

The student may choose either a laboratory or clinical based project.

1. Structure relationship activity of drugs in T cell activation pathways
2. Immunopharmacologic effects of drugs

The goals of these projects are to develop an understanding of tissue culture laboratory techniques and the rationale of these techniques; acquire an understanding of the relationship between immune responses and drug activity (immunopharmacology); and, understand experimental design, including methodology and data analysis. The objectives of these projects are isolation of lymphocytes from body tissue or fluids; calculation of percent inhibition of lymphocyte proliferation as applied to immune modulators; experimental design, and data analysis. Students will acquire skills in lymphocyte isolation, lymphocyte culturing and freezing, lymphocyte proliferation measurements, dilution calculations, controlled lymphocyte freezing, use of computers, data analysis/interpretation, documentation of activities in lab notebook, and tissue plating. Students will be required to demonstrate competency in at least 5/9 lab skills, maintain an accurate lab notebook, and participate in weekly lab meeting.

3. Solid organ transplant project

The goal of this project is to develop hypothesis testing in the solid organ transplant patient population. Responsibilities include obtaining informed consent, participation in protocol development, transplant research meetings, statistical analysis and presentation of results.

Paul Doering, M.S.P.
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Professor Doering is interested in working with students to design a Problems in Pharmacy Practice project according to the student's interest. Please contact Professor Doering for information regarding opportunities.