

PSYCHOLOGY 405  
MINOR RESEARCH PROBLEMS

PSYCHOLOGY 420  
SPECIAL TOPICS

Spring Semester 2010

INSTRUCTOR/LABORATORY STAFFING:

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COURSE DESCRIPTIONS:

Psy 405: Participate in small research projects under the direction of a faculty member.  
Psy 420: Independent study of topics of mutual interest to student and professor.

MEETING TIMES:

Seminar meetings are scheduled for Monday at 1:00 p.m. in 309 Peabody Building. Laboratory research times (6-9 hrs/week) are TBA depending upon the specific research project. In some cases, you will be required to work weekends. At other times during the term you may have the week off from scheduled lab research. Some research will involve literature searches and reviews. Unless announced in advance, we will always meet for seminar.

COURSE OBJECTIVES:

This course is designed to provide exceptional students an opportunity to learn more about neuroscience and psychopharmacology research. Over the course of the semester, you will learn many aspects of the research process. These include, among others, literature searches, reviews and presentations, research design and statistical analyses, animal care, and various animal experimental procedures from drug injections to data collection. This research laboratory has many research obligations and your participation in this process will help us meet these research agendas.

RESEARCH PROJECTS:

Animal modeling; stress and anxiety/depression, pain and analgesia, drug discovery (botanical-derived products and synthetic chemistry)

UNIVERSITY COMPLIANCE REQUIREMENTS FOR CONDUCTING ANIMAL RESEARCH

To become familiar with the University of Mississippi Animal Care and Use program, go to the Animal Research web site at <http://www.olemiss.edu/depts/research/compliance/animal/index.html>

Prior to working with animals, students must:

1. Complete species-specific training for bird, rat and mouse
2. Complete Health & Safety training (biological, chemical, and pathogen)
3. Submit Occupational Health Evaluation and Occupational Health Risk Inventory
4. Read and submit signed allergy forms
5. Obtain tetanus vaccine (provided free of charge) if you have not had one within the past 10 years

ATTENDANCE POLICY:

Students are required to attend each and every seminar meeting and scheduled laboratory research assignment. If you have to miss a seminar meeting or laboratory research due to an illness or personal emergency, please notify one of us as soon as possible. Arriving late for or missing a scheduled lab will lead to an instructor-initiated drop.

COURSE EXAMS AND GRADING:

There are no exams for this course. Psy 405 and Psy 420 students begin this course with Z and A grades, respectively. Continue to do all the readings, participate in seminars, and show up for all lab assignments and your grade will remain the same. Should your grade slip because you cannot meet these obligations, I will provide extra lab and library assignments.

#### COURSE READING MATERIALS:

Selected articles from scientific journals and/or book chapters (partial reading list is detailed below) will be assigned throughout the term. You will need to be ready to discuss such material in a meaningful way with your colleagues in the laboratory. In many cases, you will be asked to provide oral presentations of such material; students conducting their own research project will be required to propose and defend such project to their lab colleagues.

#### ON ANIMAL MODELING:

- Willner P (1991a). Behavioural models in psychopharmacology. In: Behavioral Models in Psychopharmacology: Theoretical, Industrial and Clinical Perspectives. Willner P (editor). Cambridge: Cambridge University Press; pp 3-18.
- van der Stay, FJ (2006). Animal models of behavioral dysfunctions: basic concepts and classifications, and an evaluation strategy. *Brain Research Reviews* 52:131-159.
- Miczek KA, De Wit H (2008). Challenges for translational psychopharmacology research-some basic principles. *Psychopharmacology*, 199, 291-301.
- Parlee, MB, Bird, SJ (2000). Of mice and men (and women and children): scientific and ethical implications of animal models. *Progress in Neuro-Psychopharmacology & Biological Psychiatry* 24,1219-1227.

#### CHICK ANXIETY DEPRESSION MODEL:

- Kalueff AV, Wheaton M, Murphy DL (2007). What's wrong with my mouse model? *Advances and strategies in animal modeling of anxiety and depression. Behavioral Brain Research* 179:1-18.
- Kalueff AV, LaPorte JL, Murphy DL, Sufka KJ. (2008) Hybridizing behavioral models: a possible solution to some problems in neurophenotyping research? *Progress in Neuro-Psychopharmacology & Biological Psychiatry*, 32, 1172-1178.
- Sufka KJ, Feltenstein MW, Warnick JE, Acevedo EO, Webb HE, Cartwright CM (2006) Modeling the anxiety-depression continuum hypothesis in domestic fowl chicks. *Behavioural Pharmacology*, 17, 681-689.
- Warnick JE, Huang C-J, Acevedo EO, Sufka KJ (2009) Modeling the anxiety-depression continuum in chicks. *Journal of Psychopharmacology*, 23, 143-156.
- Sufka KJ, Warnick JE, Pulaski CN, Slauson SR, Kim YB, Rimoldi JM (2009) Antidepressant efficacy screening of novel targets in the chick anxiety-depression model. *Behavioural Pharmacology*, 20, 146-154.

#### DEPRESSION MODELS:

- Willner P (1991b). Animal models of depression. In: Behavioral Models in Psychopharmacology: Theoretical, Industrial and Clinical Perspectives. Willner P (editor). Cambridge: Cambridge University Press; pp 91-125.
- Matthews K, Christmas D, Swan J, Sorrell E (2005). Animal models of depression: navigating through the clinical fog. *Neuroscience and Biobehavioral Reviews* 29:503-513.
- Morilak DA, Frazer, A (2005). What should animal models of depression model? *Neuroscience and Biobehavioral Reviews* 29:515-523.
- McArthur R, Borsini F (2006). Animal models of depression in drug discovery: a historical perspective. *Pharmacology, Biochemistry and Behavior* 84:436-452.

#### COGNITIVE BIAS & ENDOPHENOTYPING:

- Kalueff AV, Murphy DL. (2007) The importance of cognitive phenotypes in experimental modeling of animal anxiety and depression. *Neural Plasticity*, 2007, 1-7.
- Brilot BO, Normandale CL, Parking A, Bateson M. (2009) Can we use starlings' aversion to eyespots as the basis for a novel 'cognitive bias' task? *Applied Animal Behaviour Science*, 118, 182-190.
- Burman OHP, Parker RMA, Paul ES, Medl MT. (2009). Anxiety-induced cognitive bias in non-human animals. *Physiology & Behavior*, 98, 345-350.

#### STATE VS. TRAIT ANXIETY:

Goes TC, Antunes FD, Teixeira-Silva F. (2009). Trait and state anxiety in animal models: Is there correlation? *Neuroscience Letters*, 450, 266-269.

#### ENVIRONMENTAL ENRICHMENT:

Jones, R. B., Carmichael, N. L., & Rayner, E. (2000). Pecking preferences and pre-dispositions in domestic chicks: implications for the development of environmental enrichment devices. *Applied Animal Behavior Science*, 69, 291-312.

Shields, S.J. and Duncan, I.J.H., 2008. An HSUS Report: A Comparison of the Welfare of Hens in Battery Cages and Alternative Systems. <<http://www.humanesociety.org/assets/pdfs/farm/hsus-a-comparison-of-the-welfare-of-hens-in-battery-cages-and-alternative-systems.pdf>><http://www.humanesociety.org/assets/pdfs/farm/hsus-a-comparison-of-the-welfare-of-hens-in-battery-cages-and-alternative-systems.pdf>

#### PAIN AND ANALGESIA MODELS:

Bannon AW, Malmberg AB; Models of nociception: hot plate, tail flick, and formalin tests in rodents. *Current Protocols in Neuroscience*, 2007, Ch. 8.

McCurdy CR, Sufka KJ, Smith GH, Warnick JE, Nieto MJ (2006) Antinociceptive profile of Salvinorin A, a structurally unique kappa opioid receptor agonist. *Pharmacology Biochemistry and Behavior*, 83, 109-113.

#### BIOCHEMICAL SUBSTRATES IN STRESS MODELS:

Hellhammer DH, Rea MA, Bell M, Belkien L, Ludwig M. (1984). Learned helplessness: Effects on brain monoamines and the pituitary–gonadal axis. *Pharmacology Biochemistry and Behavior*, 21, 481-485.

Jeannotte AM, McCarthy JG, Redei EE, Sidhu A. (2009). Desipramine modulation of  $\alpha$ -,  $\gamma$ -synuclein, and the norepinephrine transporter in an animal model of depression. *Neuropsychopharmacology*, 34, 987-998.

#### NOTA BENE:

- This is an extraordinary opportunity for you to be involved in high stakes research projects. These projects reflect a tremendous investment from the scientists involved. Treat this experience and those people leading the projects with commitment, conscientiousness and respect.
- Any evidence of research misconduct will result in your removal from course, assignment of an F grade and a recommendation of expulsion from UM.
- When the Graduate Research Assistants ask you to do something, think of this as coming from me.