

Behavioral Psychopharmacology (PSYC G4499) - Class Syllabus
[subject to revision]

Recommended textbook: Meyer JS and Quenzer LF (2005): Psychopharmacology: Drugs, the brain and behavior. Sinauer Associates, Inc., Sunderland, MA.

- Week 1**
(01/17) **Course introduction/ Basic principles of neuropharmacology**
-discussion of topics and course requirements;
-pharmacokinetics and pharmacodynamics.
READINGS:
Meyer and Quenzer: Chapter 1
- Week 2**
(01/24) **Chemical signaling in the central nervous system; Molecular targets for psychotropic drug action**
-synaptic transmission; neurotransmitters, neuropeptides, neurotrophic factors and hormones; receptors, receptor signaling;
READINGS:
Meyer and Quenzer: Chapters 2-3
- Week 3**
(01/31) **The major neurotransmitter systems**
- dopamine, norepinephrine, serotonin, acetylcholine, and amino acid neurotransmitters.
Meyer and Quenzer: Chapters 5-7
- Week 4**
(02/07) **Exam (1h)**
- Week 5**
(02/14) **Schizophrenia - neurochemical basis and pharmacotherapy**
READINGS:
Meyer and Quenzer: Chapter 18
- Ross CA, Margolis RL, Reading SA, Pletnikov M, Coyle JT (2006) Neurobiology of schizophrenia. *Neuron*. 52:139-53.
- Gray JA, Roth BL. (2007) The pipeline and future of drug development in schizophrenia. *Mol Psychiatry*. 12(10):904-22.
- Week 6**
(02/21) **Affective disorders - neurochemical basis and pharmacotherapy**
READINGS:
Meyer and Quenzer: Chapter 16
- Krishnan V, Nestler EJ (2008) The molecular neurobiology of depression. *Nature* 455:894-902.
- Thase ME, Denko T. (2008) Pharmacotherapy of mood disorders. *Annu Rev Clin Psychol*. 4:53-91.

Week 7
(02/28)

Journal article presentations/review session

-4 students will critically evaluate a research article on a selected topic covered in weeks 5-6; every presentation will be followed by class discussion.

Week 8
(03/06)

Substance Abuse and Addiction

READINGS:

Meyer and Quenzer: Chapters 8-15

Nestler EJ (2005) Is there a common molecular pathway for addiction?
Nat Neurosci. 8(11):1445-9.

Week 9
(03/20)

Journal article presentations/review session

-4 students will critically evaluate a research article on a selected topic covered in week 8; every presentation will be followed by class discussion.

Week 10
(03/27)

Anxiety and sleep disorders - neurochemical basis and pharmacotherapy

READINGS:

Meyer and Quenzer: Chapter 17

Ravindran LN, Stein MB (2010) The pharmacologic treatment of anxiety disorders: a review of progress. *J Clin Psychiatry.* 71:839-54.

Christmas D, Hood S, Nutt D (2008) Potential novel anxiolytic drugs.
Curr Pharm Des. 14:3534-46.

Week 11
(04/03)

Journal article presentations/review session

-4 students will critically evaluate a research article on a selected topic covered in week 10; every presentation will be followed by class discussion.

Week 12
(04/10)

Sex hormones and brain function

READINGS:

Sherwin BB. (2003) Estrogen and cognitive functioning in women.
Endocr Rev. 24(2):133-51.

Steiner M, Dunn E, Born L. (2003) Hormones and mood: from menarche to menopause and beyond. *J Affect Disord.* 74(1):67-83.

Deecher D, Andree TH, Sloan D, Schechter LE. (2008) From menarche to menopause: exploring the underlying biology of depression in women experiencing hormonal changes. *Psychoneuroendocrinology*. 33(1):3-17.

Maia H Jr, Casoy J, Valente J. (2009) Testosterone replacement therapy in the climacteric: benefits beyond sexuality. *Gynecol Endocrinol*. 25(1):12-20.

Zitzmann M. (2006) Testosterone and the brain. *Aging Male*. 9(4):195-9.

Hijazi RA, Cunningham GR. (2005) Andropause: is androgen replacement therapy indicated for the aging male? *Annu Rev Med*. 56:117-37.

Week 13 **A future for epigenetic drugs in the pharmacotherapy of psychiatric disorders**

(04/17) READINGS:

Tsankova N, Renthal W, Kumar A, Nestler EJ. (2007) Epigenetic regulation in psychiatric disorders. *Nat Rev Neurosci*. 8(5):355-67.

Grayson DR, Kundakovic M, Sharma RP. (2010) Is there a future for histone deacetylase inhibitors in the pharmacotherapy of psychiatric disorders? *Mol Pharmacol*. 77(2):126-35.

Week 14 **Journal article presentations/review session**

(04/24) -4 students will critically evaluate a research article on a selected topic covered in weeks 12-13; every presentation will be followed by class discussion.

V. Course requirements and grading [subject to revision]:

Exam (to be given in Week 4):

A test (multiple-choice and a few short-answer questions) will be given following the general part of the course (the first 3 sessions). This test will be designed to assess students' understanding of basic concepts of neuropharmacology presented in the class, and to ensure that students will be able to follow more specific topics covered in the second part of the course.

Oral Presentation and Essay:

Students will be expected to give a presentation and write a paper on a single subject chosen from a list of topics covered in the class. Three separate sessions will be devoted to the student presentations (4 presentations/session), in which each student will be given 20 minutes to present followed by 5-10 min for questions and discussion. Presentations should focus on one to two recently published basic or clinical research articles in

student's area of interest, and should include: introduction to the research area, discussion of methods, results and conclusions of each paper, as well as future directions. Students not presenting will be expected to read the papers before coming to the class and to participate in discussions following presentations. Throughout the course, students will also be expected to participate in class discussions that will follow the overview lectures given by the instructor. The 10-page term paper will be due at the end of the course, and should be written in the style of a review article that summarizes the current state of knowledge and research in the student's area of interest.

Course grades will be based on: multiple-choice exam (20%), class attendance and participation (25%), oral presentation (25%), and the term paper (30%).