

Neurotransmitter Signaling & Neuropsychopharmacology (NGG 510 / PHRM 510 / PSYCH 750)

TIME: **Tuesdays & Thursdays, 9:30 - 11 AM**

Spring 2020

LOCATION: **John Morgan, Room 140 (Barchi Library)**

TEXTS: **Basic Neurochemistry, 8th Edition**, c. 2011; Editor: Brady et al.; Academic Press/Elsevier

Molecular Neuropharmacology, 3rd Edition, c. 2015; Editor: Nestler et al.; McGraw-Hill

Both are excellent and either is highly recommended. We all have online access to **Basic Neurochem** via <http://hdl.library.upenn.edu/1017.12/927914>. The chapters listed below with each lecture refer to this text. These texts can also be found at the Biomed Library.

WEB: **Canvas** – for lectures and non-text readings

COURSE DIRECTORS:

Steve Thomas	573-4950	sathomas@upenn.edu
Liz Heller	573-7038	eheller@upenn.edu
Wade Berrettini	898-0092	wadeb@upenn.edu

GOALS:

- A) Provide an overview of major psychiatric disorders, and in-depth information on neurotransmitters, emphasizing the wealth of new molecular information on how neurons function and communicate, as well as the basis for neuropsychotherapeutics.
- B) Develop skills to appreciate, present and critically evaluate original research literature in neurotransmitter signaling and neuropsychopharmacology.

REQUIREMENTS: ~1-2 in-class presentations of original research articles; participation in discussions

Paper Presentations

For each class in which papers will be discussed (Tuesdays), there will be two 30-40 minute PowerPoint presentations (including discussion), with each one covering a relatively recent original research article selected by the lecturer. These papers will highlight an active area of research on the neurotransmitter system presented the previous week on Thursday. In preparation, students are encouraged to discuss the papers, as well as any issues related to their presentation, with the lecturer in advance. ~10 min should be devoted to introduction/background material and the scientific issues being addressed in the study (the big picture). This should be followed by a concise summary of the work that was done and presentation of key figures and methods (the latter are often worth discussing as well). The presenter should encourage discussion of the study during the presentation, as well as at the end by outlining some potential future directions, for example. Grading will be based on the quality of the presentations, as well as participation in the discussion of other presentations. Students are expected to have read the papers in advance and come to class with questions/thoughts for discussion.

SCHEDULE

Day	Date	Subject	Instructor
<u>A. Major Psychiatric Disorders</u>			
Thurs	1/16	Introduction to NT Signaling/Neuropsychopharm	<u>Wade</u> Steve Thomas
Tues	1/21	Schizophrenia TRL Room 124	Wade Berrettini
Thurs	1/23	Anxiety TRL Room 124	Wade Berrettini
Tues	1/28	Depression & Bipolar TRL Room 124	Wade Berrettini
Thurs	1/30	Autism TRL Room 124	Ted Brodtkin
Tues	2/4	Addiction TRL Room 124	Wade Berrettini
<u>B. Fast (& Slower) Neurotransmission</u>			
Thurs	2/6	Excitatory Amino Acids (Ch 17)	<u>Liz / Steve</u> Mike Robinson
Tues	2/11	Excitatory Amino Acids - <i>Paper presentations</i>	Mike Robinson
Thurs	2/13	Inhibitory Amino Acids (Ch 18)	Liz Heller
Tues	2/18	Inhibitory Amino Acids - <i>Paper presentations</i>	Liz Heller
Thurs	2/20	Acetylcholine (Ch 13)	Mariella de Biasi
Tues	2/25	Acetylcholine - <i>Paper presentations</i>	Mariella de Biasi
Thurs	2/27	Purines (Ch 19)	Claire Mitchell
Tues	3/3	Purines - <i>Paper presentations</i>	Claire Mitchell
<u>C. Monoamine Neurotransmitters</u>			
Thurs	3/5	Serotonin (Ch 15)	<u>Steve</u> Shinjae Chung
Tues	3/10	<i>(Spring Break - no class)</i>	
Thurs	3/12	<i>(Spring Break - no class)</i>	
Tues	3/17	Serotonin - Paper presentations	Shinjae Chung
Thurs	3/19	Dopamine (Ch 14)	Julie Blendy
Tues	3/24	Dopamine - Paper presentations	Julie Blendy
Thurs	3/26	Norepinephrine (Ch 14)	Steve Thomas
Tues	3/31	Norepinephrine - <i>Paper presentations</i>	Steve Thomas
Thurs	4/2	Histamine (Ch 16)	Steve Thomas
Tues	4/7	Histamine - <i>Paper presentations</i>	Steve Thomas
<u>D. Neuropeptide & Neurolipid Signaling</u>			
Thurs	4/9	Orexins (Ch 20; Rev. by Sakurai)	<u>Liz</u> Max Kelz
Tues	4/14	Orexins - <i>Paper presentations</i>	Max Kelz
Thurs	4/16	Opioids (Ch 20; Rev. by Al-Hasani)	Wade Berrettini
Tues	4/21	Opioids - <i>Paper presentations</i>	Wade Berrettini
Thurs	4/23	CRF (Ch 20; Revs. by Grammatopoulos; Bale)	Seema Bhatnagar
Tues	4/28	Corticotropin Releasing Factor - <i>Paper presentations</i>	Seema Bhatnagar
Thurs	4/30	Cannabinoids (Revs. by Haring; Solinas)	Liz Heller
Tues	5/5	Cannabinoids - <i>Paper presentations</i>	Liz Heller

Happy Summer!

Directory of Instructors

Berrettini	Psychiatry 2206 Translational Res. Labs	898-0092	wadeb@upenn.edu
Bhatnagar	Anesthesiology 402B Abramson Res. Center	267-426-0951	bhatnagars@email.chop.edu
Blendy	Pharmacology 2211 Translational Res. Labs	898-0730	blendy@upenn.edu
Brodkin	Psychiatry 2206 Translational Res. Labs	746-0118	ebrodkin@upenn.edu
de Biasi	Psychiatry 217 Clinical Res. Bldg	898-9579	mariede@upenn.edu
Chung	Neuroscience 10-133 Smilow	746-1122	shinjaec@upenn.edu
Heller	Pharmacology 10-115 Smilow	573-7038	eheller@upenn.edu
Kelz	Anesthesiology & Critical Care 334 John Morgan	662-3713	kelzma@uphs.upenn.edu
Mitchell	Physiology 440 Levy Labs	573-2176	chm@dental.upenn.edu
Robinson	Pediatrics/Pharmacology 502 Abramson	590-2205	robinson@upenn.edu
Thomas	Pharmacology 103 John Morgan	573-4950	sathomas@upenn.edu