

# **Psychology 462**

## **Drugs and Behavioral Neuroscience**

### Instructor:

Matthew Hill

Room: 3512

Email: [mhill\\_psych\\_abc@hotmail.com](mailto:mhill_psych_abc@hotmail.com)

Office hours: by appointment

### TA:

Ryan McLaughlin

Room: 3512

Email: [rjmclagh@mta.ca](mailto:rjmclagh@mta.ca)

Office hours: Monday 1-2

### Course Time:

Monday: 5:00-7:30pm

### Course Description:

The aim of this course is to develop an introduction to the field of neuropsychopharmacology, which examines the integration of psychiatry and neuroscience. We will cover a basic introduction to neurochemistry, neuropharmacology and neuroanatomy. The second portion of the course will employ this knowledge to examine the neurobiological theories, animal models and psychotherapeutic drugs for various psychiatric disorders.

Readings:

Neuroscience/Biochemistry Handouts

*Paper Package:*

1. Herman et al (2003) **Central mechanisms of stress integration: hierarchical circuitry controlling hypothalamo-pituitary-adrenocortical responsiveness.** *Frontiers Neuroendocrinol* 24, 151-180.
2. Wong and Licinio (2001) **Research and treatment approaches to depression.** *Nat Rev Neurosci* 2, 343-351.
3. Berton and Nestler (2006) **New approaches to antidepressant drug discovery: beyond monoamines.** *Nat Rev Neurosci* 7, 137-151.
4. Cryan and Mombreau (2004) **In search of a depressed mouse: utility of models for studying depression-related behavior in genetically modified mice.** *Mol Psychiatry* 9, 326-357.
5. Belzung and Griebel (2001) **Measuring normal and pathological anxiety-like behaviour in mice: a review.** *Behav Brain Res* 125, 141-149.
6. Sandford et al (2000) **The psychobiology of anxiolytic drugs. Part I: basic neurobiology.** *Pharmacol Ther* 88, 197-212.
7. Blair (2007) **The amygdala and ventromedial prefrontal cortex in morality and psychopathy.** *Trends Cogn Sci* 11, 387-392.

Grading:

- 30% Midterm Exam (February 28)
- 30% Review Paper (Due April 7)
- 30% Final Exam (date to be announced)
- 5% 2 Paper Critiques
- 5% Critique Presentation

## Outline of the Term:

- Jan 7: Neuronal Morphology, Conductance and Neurotransmitter Release
- Jan 14: Neurotransmitter Receptors and Intracellular Signaling
- Jan 21/28: Neuro transmitter Classes
- Feb 4: Plasticity, Neuroanatomy and the Pharmacology of Recreational Drugs
- Feb 11: Critique Presentations
- Feb 25: Midterm Exam
- Mar 3: Stress-Anatomy, Neurochemistry, Typology and Plasticity
- Mar 10/17: Depression-Phenomenology & Subtypes, Neurobiology, Animal Models and Antidepressants
- Mar 24: Easter Monday—**No Class**
- Mar 31: Anxiety-Anxiety Disorders & Neurobiology, Animal Models & Anxiolytics; Psychopathy-Clinical Profile & Neurobiology
- April 7: Critique Presentations, Course Summary and Paper Submissions

Past Topics for Review Paper:

Neurogenesis and Depression

The Serotonin 5-HT<sub>2A</sub> Receptor and Depression

Effects of GABA Drugs on Anxiety Behavior in the Elevated Plus Maze

Fatty Acids and Depression

Endocannabinoid Signaling in the Amygdala and Anxiety

The Role of Calcineurin in Extinction of Fear Memories

Depression and the Immune System

Sleep and Memory Consolidation

Chronic Mild Stress as an Animal Model of Depression

Glucocorticoid/Norepinephrine Interactions in Aversive Memory

The Role of the Hippocampus in HPA Axis Regulation

Cannabis and Schizophrenia: Mechanisms of Interactions

Serotonin and Psychopathy