

PSYC 470 – Neurobiology of Emotion – 2015

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Class Hours: Tuesdays 11:30 – 1:00
Friday 1:00 – 2:30
Office Hours: Mondays 1:00-2:00
Thursdays 3:30-4:30
(please notify me)

COURSE DESCRIPTION

Lectures will focus on current theories on the neurobiology of emotion. Student led seminars will focus on the evaluation of empirical studies relevant to the key topics of the course.

PREREQUISITES: PSYC 205, 271 and 272, or equivalent.

There is **no** required text for the course.

ASSIGNMENTS AND GRADING

	ROLE	
ORAL PRESENTATION	Peer evaluation	5%
	Instructor Evaluation	25%
CLASS PARTICIPATION	Reader	5%
	General Participation (group discussion/peer evaluation)	10%
PRESS RELEASE	Peer evaluation	5%
	Instructor Evaluation	5%
TERM PAPER		45%

ORAL PRESENTATIONS

Each student will give one classroom presentation on a recently published article. (Presentation dates and articles are listed under the "Student Presentations" sections of the course schedule below). The presentations should be in Power Point format and approximately 30 minutes in length. You should include a summary of the relevant background information, specific purpose of the study, methods (with a primary focus on behavioral methods) and results of the article. You should also discuss the relevance of the article to our understanding of psychopathology.

Class Participation

There are two components to class participation. First, each student will be assigned as a reader to two oral presentations. The reader's role is to read the empirical paper they are assigned to (as a reader) and come to class with 4-5 questions (written out) that you will ask at the end of the presenter's presentation. The 2nd component involves general class participation; e.g., coming to class, being engaged during presentations, and peer marking/evaluation (i.e., you will evaluate and mark student press releases and oral presentations.)

PRESS RELEASE

The press release will be based on the paper used for your oral presentation. It should be written using the format of a media news release and should not be longer than 2 pages. You may be as creative as you like, but will be marked on content only (i.e., how well you summarize and present the study's findings and implications). Your press release is due 2 days prior to your oral presentation and should be sent to me as an e-mail attachment. The reports will be placed on the PSYC 473 Web site as a means to prepare your fellow students for the oral presentation.

TERM PAPER

The term paper will be a review of original research articles on the neurobiology of a psychopathological disorder. The paper should not exceed 15 double-spaced pages (11 pnt font), not including references. Your review must include at least 15 references to recent (i.e., 1995-2015) original empirical papers. Books, review papers or empirical papers published prior to 1995 can be used for background material but they will not contribute to the requirement of reviewing *at least* 15 recent references. The articles can come from either the clinical (human) or preclinical (animal) literature. Term papers will be graded for content (e.g., introduction, body, integration and conclusions) as well as style (e.g., overall readability, organization, grammar, spelling, punctuation and correct referencing style). The paper should illustrate how the research findings might further our understanding of the neurobiology of emotion. You are **encouraged** to run your ideas for the topic of your term paper by me (email me your ideas first).

The term paper is due on **April 4** (1% deduction for every day a paper is late).

DATE	LECTURE TOPIC
Tues. Jan. 6	Class Organization
Fri. Jan. 9	Lecture 1 – fMRI: physics
Tues. Jan. 13	Lecture 2 – fMRI: study design and interpretation
Fri. Jan. 16	Lecture 3 – SOCIAL BONDING – OXYTOCIN (AND VASOPRESSIN)

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DATE/ Presenter	Readers	STUDENT PRESENTATIONS – SOCIAL BONDING
Tues. Jan. 20		Rimmele et al. (2009) Oxytocin Makes a Face in Memory Familiar. The Journal of Neuroscience, 29(1): 38-42.
		AND Scheele D et al. (2012) Oxytocin Modulates Social Distance between Males and Females. The Journal of Neuroscience, 32(46): 16074-16079.
		Petrovic et al. (2008) Oxytocin Attenuates Affective Evaluations of Conditioned Faces and Amygdala Activity. The Journal of Neuroscience, 28(26): 6607-6615.
Fri. Jan. 23	CLASS CANCELLED	
Tues. Jan. 27		Young et al. (2014) Oxytocin Reverses Amphetamine-Induced Deficits in Social Bonding: Evidence for an Interaction with Nucleus Accumbens Dopamine. The Journal of Neuroscience, 34(25):8499-8506.
		Liu et al. (2011) Social Bonding Decreases the Rewarding Properties of Amphetamine through a Dopamine D1 Receptor-Mediated Mechanism. The Journal of Neuroscience, 31(22): 7960-7966.

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DATE	LECTURE TOPIC
Fri. Jan. 30	Lecture 4 - AGGRESSION

DATE/ Presenter	Readers	STUDENT PRESENTATIONS – AGGRESSION
Tues. Feb. 3		Schlüter et al. (2013) The Impact of Dopamine on Aggression: An [¹⁸F]-FDOPA PET Study in Healthy Males. The Journal of Neuroscience, 33(43): 16889-16896.
		Crockett et al. (2013) Serotonin Modulates Striatal Responses to Fairness and Retaliation in Humans. The Journal of Neuroscience, 33(8):3505-3513.
Fri. Feb. 6		Takahashi et al. (2010) Neurons in the Dorsal Raphé Nucleus and Escalation of Aggression in Mice. The Journal of Neuroscience, 30(35): 11771-11780.
		Audero et al. (2013) Suppression of Serotonin Neuron Firing Increases Aggression in Mice. The Journal of Neuroscience, 33(20): 8678-8688.

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DATE	LECTURE TOPIC
Tues. Feb. 10	Lecture 5 – GUT-BRAIN AXIS AND EMOTION

DATE/ Presenter	Readers	STUDENT PRESENTATIONS – GUT-BRAIN AXIS AND EMOTION
Fri. Feb. 13		<p>Heijtz et al. (2011) Normal gut microbiota modulates brain development and behavior. Proc Natl Acad Sci U S A.; 108(7): 3047–3052.</p>
		<p>Bravo et al. (2011) Ingestion of Lactobacillus strain regulates emotional behavior and central GABA receptor expression in a mouse via the vagus nerve. Proc Natl Acad Sci U S A: 108(38):16050-5.</p>
Feb17 & 20	READING WEEK	
Tues. Feb. 24		<p>Klarer et al. (2014) Gut Vagal Afferents Differentially Modulate Innate Anxiety and Learned Fear. The Journal of Neuroscience, 34(21): 7067-7076.</p>
		<p>Bercik et al. (2011) The anxiolytic effect of <i>Bifidobacterium longum</i> NCC3001 involves vagal pathways for gut–brain communication. Neurogastroenterology & Motility, 23(12): 1132-1139.</p>

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DATE	LECTURE TOPIC
Fri. Feb 27	GUEST LECTURE – LINDA BOOIJ – SEROTONIN AND DEPRESSION: GENETIC AND EPIGENETIC MECHANISMS.

DATE/ Presenter	Readers	STUDENT PRESENTATIONS - DEPRESSION
Tues. Mar. 3		<p>Ichise et al. (2006) Effects of Early Life Stress on [¹¹C]DASB Positron Emission Tomography Imaging of Serotonin Transporters in Adolescent Peer- and Mother-Reared Rhesus Monkeys The Journal of Neuroscience, 26(17):4638-4643.</p>
		<p>AND</p> <p>Volman et al (2013) Reduced Serotonin Transporter Availability Decreases Prefrontal Control of the Amygdala The Journal of Neuroscience, 33(21):8974-8979.</p>
		<p>Rebello et al. (2014) Postnatal Day 2 to 11 Constitutes a 5-HT-Sensitive Period Impacting Adult mPFC Function. The Journal of Neuroscience, 34(37):12379-12393.</p>
Fri. Mar. 6		<p>Koenigs et al (2008) Distinct Regions of Prefrontal Cortex Mediate Resistance and Vulnerability to Depression The Journal of Neuroscience, 28(47):12341-12348.</p>
		<p>Johnstone et al. (2007) Failure to Regulate: Counterproductive Recruitment of Top-Down Prefrontal-Subcortical Circuitry in Major Depression. The Journal of Neuroscience, 27(33):8877-8884.</p>

DATE	LECTURE TOPIC
Tues. Mar. 10	Lecture 7 – MIRROR NEURONS AND EMPATHY

DATE/ Presenter	Readers	STUDENT PRESENTATIONS – NEUROBIOLOGY OF EMPATHY
Fri. Mar. 13		Hurlemann et al. (2010) Oxytocin Enhances Amygdala-Dependent, Socially Reinforced Learning and Emotional Empathy in Humans The Journal of Neuroscience, 30(14):4999-5007.
		<p>Telzer et al. (2013) Early Experience Shapes Amygdala Sensitivity to Race: An International Adoption Design. The Journal of Neuroscience, 33(33):13484-13488.</p> <p style="text-align: center;">AND</p> <p>Xu et al. (2009) Do You Feel My Pain? Racial Group Membership Modulates Empathic Neural Responses. The Journal of Neuroscience, 29(26):8525-8529.</p>
Tues. Mar. 17		Corradi-Dell'Acqua et al. (2011) Felt and Seen Pain Evoke the Same Local Patterns of Cortical Activity in Insular and Cingulate Cortex The Journal of Neuroscience, 31(49): 17996-18006.
		Benuzzi et al., (2008) Does It Look Painful or Disgusting? Ask Your Parietal and Cingulate Cortex The Journal of Neuroscience, 28(4): 923-931.

DATE	LECTURE TOPIC
Fri. Mar. 20	Lecture 8 – EMOTION REGULATION; MEDITATION AND THE BRAIN

DATE/ Presenter	Readers	STUDENT PRESENTATIONS – EMOTION REGULATION AND THE BRAIN
Tues. Mar. 24		Erk et al. (2010) Acute and Sustained Effects of Cognitive Emotion Regulation in Major Depression The Journal of Neuroscience, 24 November 2010, 30(47): 15726-15734.
		Schweizer et al. (2013) Training the Emotional Brain: Improving Affective Control through Emotional Working Memory Training The Journal of Neuroscience, 33(12): 5301-5311.
Fri. Mar. 27		Zeidan et al. (2011) Brain Mechanisms Supporting the Modulation of Pain by Mindfulness Meditation. The Journal of Neuroscience, 31(14):5540-5548.
		Lutz et al. (2008) Regulation of the neural circuitry of emotion by compassion meditation: effects of meditative expertise. <i>PLoS ONE</i> 3(3):e1897-.

Tues. Mar. 31		Weng et al. (2013) Compassion Training Alters Altruism and Neural Responses to Suffering. Psychological Science, 24(7): 1171-1180.