

# PSYC 470. THE NEUROBIOLOGY OF AFFILIATIVE BEHAVIOUR 2016 WINTER SYLLABUS

Instructor:	Prof. Viara Mileva-Seitz
Email:	<a href="mailto:milevav@queensu.ca">milevav@queensu.ca</a>
Office hours:	by appointment
Lectures:	Humphrey Hall 223
	Tuesday 4.00 pm – 5.30 pm
	Thursday 2.30 pm – 4.00 pm

## COURSE DESCRIPTION

Animals engage in a wide range of behaviors aimed at fostering and strengthening inter-individual social relationships, including parent-offspring relationships, sibling relationships, and relationships between sexual partners. This seminar course will provide an opportunity to study some of the core neurobiological mechanisms proposed to regulate affiliative behavior across species ranging from voles through monkeys to humans. We will explore research examining genetic and epigenetic mechanisms, brain imaging, physiological mechanisms; and the role of experience, stress, and deprivation.

**Reading materials:** Weekly readings are mandatory and will normally consist of two to three peer-reviewed papers on the topic of the presentation/discussion for each week (normally one presentation per lecture, with 45 minutes of discussion). Background papers will also be assigned.

**Web Site:** All course-related information can be found here: <https://moodle.queensu.ca/> (look for PSY 470 W Neurobiology of affiliative behavior)

*NOTE: If you have never used Moodle before you can get online help:*  
<http://www.queensu.ca/its/moodle/studentfaqs.html>

## TIMETABLE (tentative until confirmed during the first lecture)

Date	Theme/lecture topic	Paper(s) (see pg 4)	Presenter
Jan 5	Class organization & Intro	-	-
Jan 7	Effective presentations & writing	-	-
Jan 12	Cross-cultural Attachment, neurobiology	(1-3)	-
Jan 14	Approaches to study affiliative behavior	(1-3)	-
presentations begin			
Jan 19	Processing of communicative gestures	(4)	1.
Jan 21	Maternal separation, artificial rearing	(5)	2.
Jan 26	Social synchrony	(6)	3.
Jan 28	Neural network of emotional recognition	(7)	4.
Feb 2	Neural correlates of friendship & love	(8)	5.
Feb 4	Neural processing of sexual cues	(9)	6.
Feb 9	Menstrual cycle and cognitive modulation	(10)	7.
Feb 11	Sexual behavior & dopamine in rats	(11)	8.
Feb 15-19	READING WEEK	NO CLASSES	
Feb 23	Discussion about paper topics		-
Feb 25	Pair-bonding in voles	(12)	9.
Mar 1	Romantic love	(13)	10.
Mar 3	The importance of touch	(14)	11.
Mar 3	PAPER PROPOSAL DUE		
Mar 8	Orphanages and brain abnormalities	(15)	12.
Mar 10	Neurobiological basis of attachment	(16)	13.
Mar 15	Parenting: oxytocin	(17)	14.
Mar 17	Parenting: genetics	(18)	15.
Mar 22	Parenting: epigenetics	(19)	16.
Mar 24	Infanticide	(20)	17.
Mar 29	Brain imaging: romantic and parental love	(21)	18.
Mar 31	Brain imaging: responses to infant cues	(22)	19.
Apr 2		TERM PAPER DUE	

**Grading:**

<b>1. Class participation</b>	<b>20%</b>
Instructor evaluation 15%	
Peer evaluation 5%	
<b>2. Oral Presentation</b>	<b>35%</b>
Instructor evaluation 30%	
Peer evaluation 5%	
<b>3. Term paper</b>	<b>45%</b>
Proposal 10% (2-page max) due March 3	
Full paper 35% (15-page max) due April 2	

---

<b>Total</b>	<b>100%</b>
--------------	-------------

**Class Participation:**

The class presentation mark is based on your involvement in discussion after each presentation, as well as on your preparation of a question for each presentation. You are expected to read the assigned articles ahead of class, and to prepare ONE question per article to be used in discussion following your peers' presentations on that article. Questions can concern methods, results, theoretical implications, etc.

**Oral Presentation:**

You will be asked to present ONE of the assigned research papers. The topics and presentation dates are listed in the TIMETABLE above. Assigned papers will be updated by the second week of January. Presentations should be between 20 and 30 minutes long, preferably in Powerpoint or other presentation software. The presentation should include: a review of the relevant literature presented in the article, the methodology used, the results, and the discussion of the results. Finally, you should include your own critical appraisal of the paper (one slide) and two possible discussion questions/future research suggestions (one slide).

**Term Paper:**

You will write a review of original articles on a topic in neurobiology of affiliative behavior. The paper should be a maximum of 15 double-spaced pages (11-point font, one-inch margins), not including references. Formatting should follow APA formatting style. Your review must include a minimum of 20 references to empirical papers. Fifteen of these must be recent articles (e.g. after

2000), although you are welcome to use older (e.g. foundational) original papers, books, and review papers as background. Articles on both human and non-human animals are permissible. 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). More information about grading policies will be provided well ahead of time on Moodle. We will have one lecture dedicated to discussing topics and suitability, and you will be expected to write a 2-page (max) double spaced proposal about your review topic, which will serve as an abstract/mini review of your idea. I will provide you with feedback on the proposal which you should use to write the final term paper.

The term paper proposal is due March 3<sup>rd</sup>. Term paper is due April 2<sup>nd</sup>.

### **PAPERS (subject to change)**

1. Insel TR. The challenge of translation in social neuroscience: a review of oxytocin, vasopressin, and affiliative behavior. *Neuron* [Internet] 2010 [cited 2012 Nov 1];65:768–79. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/20346754>
2. Numan M, Young LJ. Neural mechanisms of mother-infant bonding and pair bonding: Similarities, differences, and broader implications. *Horm Behav* [Internet] 2015; Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26062432>
3. Hurlemann R, Scheele D. Dissecting the role of oxytocin in the formation and loss of social relationships. *Biol Psychiatry* 2015;79:185–93.
4. Redcay E, Carlson T a. Rapid neural discrimination of communicative gestures. *Soc Cogn Affect Neurosci* 2014;1–7.
5. Lovic V, Fleming AS. Propagation of maternal behavior across generations is associated with changes in non-maternal cognitive and behavioral processes. *Behav Processes* 2015;117:42–7.
6. Levy J, Goldstein A, Zagoory-Sharon O, et al. Oxytocin Selectively Modulates Brain Response to Stimuli Probing Social Synchrony. *Neuroimage* 2015;124:923–30.
7. Jezzini A, Rozzi S, Borra E, Gallese V, Caruana F, Gerbella M. A shared neural network for emotional expression and perception: an anatomical study in the macaque monkey. *Front Behav Neurosci* 2015;9:1–17.
8. Hutcherson C a., Seppala EM, Gross JJ. The neural correlates of social connection. *Cogn Affect Behav Neurosci* 2015;15:1–14.
9. Voon V, Mole TB, Banca P, et al. Neural correlates of sexual cue reactivity in individuals with and without compulsive sexual behaviours. *PLoS One* 2014;9:e102419.
10. Roberts GMP, Newell F, Simões-Franklin C, Garavan H. Menstrual cycle phase modulates cognitive control over male but not female stimuli. *Brain Res* [Internet] 2008;1224:79–87. Available from: <http://www.sciencedirect.com/science/article/pii/S0006899308012298>

11. Graham MD, Gardner Gregory J, Hussain D, Brake WG, Pfaus JG. Ovarian steroids alter dopamine receptor populations in the medial preoptic area of female rats: implications for sexual motivation, desire, and behaviour. *Eur J Neurosci* 2015;42:3138–48.
12. Aragona BJ, Liu Y, Curtis JT, Stephan FK, Wang Z. A critical role for nucleus accumbens dopamine in partner-preference formation in male prairie voles. *J Neurosci* 2003;23:3483–90.
13. Acevedo BP, Aron A, Fisher HE, Brown LL. Neural correlates of long-term intense romantic love. *Soc Cogn Affect Neurosci* 2012;7:145–59.
14. Chatel-Goldman J, Congedo M, Jutten C, Schwartz J-L. Touch increases autonomic coupling between romantic partners. *Front Behav Neurosci* 2014;8:1–12.
15. Tottenham N, Hare T a, Quinn BT, et al. Prolonged insitutional rearing is associated with atypically larger amygdala volume and difficulties in emotion regulation. *Dev Sci* 2010;13:1–26.
16. Atzil S, Hendler T, Feldman R. Specifying the Neurobiological Basis of Human Attachment: Brain, Hormones, and Behavior in Synchronous and Intrusive Mothers. *Neuropsychopharmacology* 2011;36:2603–15.
17. Riem MME, Voorthuis A, Bakermans-Kranenburg MJ, van Ijzendoorn MH. Pity or peanuts? Oxytocin induces different neural responses to the same infant crying labeled as sick or bored. *Dev Sci* 2014;17:248–56.
18. Mileva-Seitz VR, Fleming AS, Meaney MJ, et al. Dopamine receptors D1 and D2 are related to observed maternal behavior. *Genes Brain Behav* [Internet] 2012 [cited 2012 Oct 29];11:684–94. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22574669>
19. Essex MJ, Boyce WT, Hertzman C, et al. Epigenetic vestiges of early developmental adversity: childhood stress exposure and DNA methylation in adolescence. *Child Dev* [Internet] 2013 [cited 2014 May 23];84:58–75. Available from: <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3235257&tool=pmcentrez&rendertype=abstract>
20. Knott CD, Emery Thompson M, Stumpf RM, McIntyre MH. Female reproductive strategies in orangutans, evidence for female choice and counterstrategies to infanticide in a species with frequent sexual coercion. *Proc R Soc B Biol Sci* 2010;277:105–13.
21. Bartels A, Zeki S. The neural correlates of maternal and romantic love. *Neuroimage* [Internet] 2004;21:1155–66. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/15006682>
22. Strathearn L, Fonagy P, Amico J, Montague R. Adult attachment predicts maternal brain and oxytocin response to infant cues. *Read* [Internet] 2011;34:2655–66. Available from: <http://www.nature.com/npp/journal/v34/n13/abs/npp2009103a.html>