BIOC14: Genes, Environment, and Behaviour

Winter 2015

Lectures: Thur 10:00-12:00 **HW 216**

Tutorials: 0001 MON 11:00-12:00 **AA204**; 0002 MON 12:00-13:00 **PO101**; 0003 MON 14:00-15:00 **PO101**
0004 THUR 13:00-14:00 **SW319**; 0005 THURS 14:00-15:00 **BV361**; 0006 THURS 15:00-16:00 **BV361**

Prerequisite: BIOB11H3 or BIOB10Y3

Course Overview:

This class will provide an overview of the role of genes in **behaviour**, either indirectly as structural elements or as direct participants in behavioural regulation. Topics to be covered are methods to investigate complex behaviours, specific examples of genetic effects on behaviour in animals and humans, and studies of gene-environment interactions.

Textbook (recommended): An introduction to Behavioral Genetics (2008) Terence J. Bazzett, Sinauer Press

Articles:

1. Gene targeting in mice: functional analysis of the mammalian genome for the twenty-first century. Nat Rev Genet. 2005 Jun;6(6):507-12.
2. Genetic Dissection of Neural Circuits. Neuron. 2008 Mar 13;57(5):634-60.
3. Behavioral phenotyping strategies for mutant mice. Neuron. 2008 Mar 27;57(6):809-18.
4. Epigenetic regulation of the glucocorticoid receptor in human brain associates with childhood abuse. Nature Neurosci. 2009 Mar;12(3):342-8.

Instructor: Prof McGowan
Office: Science Wing SW548
Phone: 416-208-5153
Office Hours: Wednesdays 1pm-3pm

Teaching assistants: Christine Lum
Wilfred de Vega

Office hours: If you have questions about the material, please ask at the tutorials or come to the office hours. If you have brief questions, please ask during the lecture or tutorial.

NOTE: Content questions will not be answered by email. Please plan to come to office hours for content questions. For administration-related issues (e.g. a missed exam) you must send correspondence to the course email account:

genesC14@gmail.com

Note: To direct an email to your TA or instructor specifically, enter their name in the subject line.

Emails are usually answered within 24 BUSINESS hours. Email sent to our personal accounts will not be answered.

Attendance Policy: Attendance is expected. Lectures will cover the topics in the textbook and articles as well as additional material. Lecture slides will be posted shortly before the class.

Tutorials in this class are mandatory, except as indicated in the tutorial schedule below. Within each tutorial group, students will join a peer group for the semester. Peer groups consist of 4-5 students who will

work together to answer and critique study questions based on lecture material provided the previous week.

Etiquette: To be considerate of your peers (and your instructor), all phones must be turned off or set to vibrate. Please limit in-class discussions that do not involve the rest of the group.

Tentative lecture schedule: consult Blackboard regularly for updates.

Date	Topic	Reading
January 8	Introduction to Behavioural Genetics	Chapter 1,2
January 15	Human Genome Project; Genome Wide Association Studies	Chapter 3,4
January 22	Simple Inheritance; Inheritance of Complex Traits	Chapter 5, 6
January 29	Genes & Environment; Methods in Quantitative Genetics	Chapter 7, 8
February 5	EXAM 1	-
February 12	Mouse Genetic Engineering; Special Lecture: Linking genetically defined neurons to behaviour	Article 1
February 19	READING WEEK: NO LECTURE	-
February 26	Genetic dissection of neural circuits; Behavioural phenotyping strategies for mutant mice	Article 2, 3
March 5	Normal Behavioural Development; Primary Cognitive Disorders	Chapter 9; Chapter 10
March 12	EXAM 2	-
March 19	Psychiatric Disorders; Genetics of Mood, Anxiety, and Personality disorders	Chapter 11, 12
March 26	Environmental Epigenetics; Beyond Psychopathology	Article 4; Chapter 13
April 2	Genetic Counseling, Applied Pharmacogenomics, and Gene Therapy; The Future of Behavioural Genetics	Chapter 14, 15

Tentative tutorial schedule:

Tutorials in this class are mandatory. Q&A sessions prior to exams are not.

Week	Dates	Tutorial Session
1	January 5, 8	NO TUTORIAL
2	January 12, 15	Tutorial 1
3	January 19, 22	Tutorial 2
4	January 26, 29	Q&A EXAM 1: not mandatory
5	February 2, 5	NO TUTORIAL: Exam 1
6	February 9, 12	Tutorial 3
7	February 16, 19	NO TUTORIAL: READING WEEK
8	February 23, 26	Tutorial 4
9	March 2, 5	Q&A EXAM 2: not mandatory
10	March 9, 12	NO TUTORIAL: Exam 2
11	March 16, 19	Tutorial 5
12	March 23, 26	Tutorial 6
13	March 30, April 2	REVIEW

Drop dates:
Sunday March 22nd (no penalty); Thursday April 9th (final date to withdraw).

Standard Grading Criteria:

Exam 1	February 5 Location: GYM	all topics before this date (15%)
Exam 2	March 12 Location: GYM	all topics covered since Exam 1 (20%)
Exam 3	Regular exam period: TBD	all topics covered in entire course (40%)
Tutorial		tutorial attendance (5%)
Tutorial		tutorial presentations and assignments (20%)

Alternate Grading Criteria:

Exam 1	February 5 Location: GYM	all topics before this date (**20**%)
Exam 2	March 12 Location: GYM	all topics covered since Exam 1 (**25**%)
Exam 3	Regular exam period: TBD	all topics covered in entire course (**30**%)
Tutorial		tutorial attendance (5%)
Tutorial		tutorial presentations and assignments (20%)

Note: At the end of the course, your final grade will be calculated using both the Standard and the Alternate grading criteria. Your final grade will be the HIGHER of the two values. This will be calculated automatically after the final exam.

Exams: The exams will reflect the materials from the lectures and tutorials. Some lectures follow closely from the recommended textbook, so it is a good supplement. **Note that not all the lecture information will be on the slides.** Exams will consist of multiple-choice, fill in the blank and short answer. The questions will test both recall and your understanding of the material. The best way to study is to review the lecture notes and text, and to participate with your peer groups in the tutorial sessions. Bring your U of T ID, a 2HB pencil, pen, and eraser to all tests.

Missed exams: Except for an official reason for missing an exam such as documented family emergency and documented illness, missed or unexcused exams will be treated as zeros for the given exam. Doctor's notes will be verified for authenticity. If you are ill, please contact us via the course email address within 3 days of the exam, giving the reason. There will be no re-scheduled or make-up tests. If a student misses an exam but does have a valid excuse, the grade allotment for the missed exam will shift to the final exam.

Academic Integrity: Cheating is not tolerated at this University. Behaviours that constitute academic dishonesty and the processes for addressing academic offences are described in the University of Toronto's *Code of Behaviour on Academic Matters:* http://www.governingcouncil.utoronto.ca/policies/behaveac.htm. Potential offences include, but are not limited to:

ON TESTS AND EXAMS: using or possessing unauthorized aids, looking at someone else's answers during an exam or test, misrepresenting your identity.

Falsifying or altering any documentation required by the University, including doctor's notes.

Accessibility: Students with diverse learning styles and needs are welcome in this course. If you have a disability/health consideration that may require accommodations, please notify me and contact the AccessAbility Services Office (located in SW302) as soon as possible. I will work with you and AccessAbility services to ensure you can achieve your learning goals in this course. Enquiries are confidential, and the staff is available to assess your specific needs, provide referrals, and arrange appropriate accommodations (Tel/TTY: 416-287-7560 or ability@utsc.utoronto.ca).