

ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəyəm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

COURSE INFORMATION

Course Title	Course Code Number	Credit Value
Developmental Origin of Human Disorders	MEDG419	3

PREREQUISITES

UBC BIOL234 (72% minimum) and one of either BIOL331 or BIOL335 (72% minimum).

COREQUISITES

None.

CONTACTS

Course Instructor	Contact Details	Office Location	Office Hours
Dr. Cathy Van Raamsdonk (Course coordinator)	cvr@mail.ubc.ca	Life Sciences Centre 2350 Health Sciences Mall Rm 5.504	Instructors will be available upon request by email
Dr. Louis Lefebvre	louis.lefebvre@ubc.ca	Life Sciences Centre 2350 Health Sciences Mall Rm 5.503	
Dr. Wendy Robinson	wrobinson@bcchr.ca	BC Children's Hospital Research Institute, 938 W 28th Ave, Rm 2082 (off campus)	
Dr. Pamela Hoodless	hoodless@bccrc.ca	BC Cancer Agency 675 W 10th Ave. (Off campus)	

OTHER INSTRUCTIONAL STAFF

Teaching Assistant: Giulia Del Gobbo; gdelgobbo@bcchr.ca

OVERVIEW

MEDG 419 (3 credits) is a 4th year course for undergraduates and first year graduate students in Medical Genetics and covers genetic and epigenetic determinants of development from conception to birth, particularly as they relate to congenital genetic disorders of development and pregnancy complications.

COURSE STRUCTURE

The course consists of lectures in the first half of the term. Instructors alternate giving lectures (see Schedule of Topics below). In the second half of the term, students will sign up in pairs to present a 30 minute slide presentation on an assigned research paper. Presentations occur at the start of each class (one presentation per class). Instructors will then lecture for the remainder of the time. The course also includes guest lectures. Marks are given for a quiz, the midterm exam, class participation, student presentation, discussion questions formulated based on the research papers, and the final exam. Six optional tutorial sessions will be led by the Teaching Assistant on Fridays during the term. The time and location of the tutorials will be determined at the start of the term.

Mid-term: **Tuesday, October 20 at 3:30 p.m. Zoom invigilation.**

Covers everything presented in Lectures 1-11

Final exam: **December exam period, TBD. Zoom invigilation.**

Covers everything presented in Lectures 12-24, assigned research papers, all experimental methodology, and all material in the first half of the term that supports the understanding of material in the second half of the term.

SCHEDULE OF TOPICS

The class meets on Tuesday and Thursday from 3:30 pm to 5:00 pm. Below is the schedule of topics.

Lecture	Date	Lecturer & Topic	Student presentation
1	Tues. Sep 8 Thurs. Sep 10 Fri. Sep 11	Imagine Day - no class Lefebvre – Introduction and technologies for mouse models No Tutorial	None
2 3	Tues. Sep 15 Thurs. Sep 17 Fri. Sep 18	Lefebvre – Pre-implantation development Lefebvre – Embryonic stem cells and chimeras Tutorial – TA	None
4 5	Tues. Sep 22 Thurs. Sep 24 Fri. Sep 25	Van Raamsdonk - Neural tube defects Van Raamsdonk - Teratogens No Tutorial	None

6 7	Tues. Sep 29 Thurs. Oct 1 Fri. Oct 2	Robinson – Chromosomal abnormalities Robinson – Diagnosis of chromosomal and molecular genetic abnormalities Tutorial – TA	None
8 9	Tues. Oct 6 Thurs. Oct 8 Fri. Oct 9	Robinson – Reproduction and infertility Van Raamsdonk - Neural crest No Tutorial	None
10 11	Tues. Oct 13 Thurs. Oct 15 Fri. Oct 16	Hoodless – Kartagener's syndrome Hoodless – Regenerative medicine Tutorial for Midterm Exam -TA	None
12	Tues. Oct 20 Thurs. Oct 22 Fri. Oct 23	Midterm Exam Lefebvre – Placental development No Tutorial	presentation 1
13 14	Tues. Oct 27 Thurs. Oct 29 Fri. Oct 30	Lefebvre – Germ line development Lefebvre – Genomic imprinting Tutorial – TA	presentation 2 presentation 3
15 16	Tues. Nov 3 Thurs. Nov 5 Fri. Nov 6	Hoodless – Heart development Hoodless – Alagille Syndrome No Tutorial	presentation 4 presentation 5
17 18	Tues. Nov 10 Thurs. Nov 12 Fri. Nov 13	Van Raamsdonk - Treacher Collins syndrome Van Raamsdonk - GWAS Tutorial – TA	presentation 6 presentation 7
19 20	Tues. Nov 17 Thurs. Nov 19 Fri. Nov 20	Guest lecture Robinson - Human placenta No Tutorial	Presentation? presentation 8
21 22	Tues. Nov 24 Thurs. Nov 26 Fri. Nov 27	Robinson – Mosaicism and chimerism Van Raamsdonk - Pigmentary disorders Tutorial – TA	presentation 9 presentation 10
23 24	Tues. Dec 1 Thurs. Dec 3	This week will depend on final enrollment: Van Raamsdonk - Gene therapy for congenital blindness Guest lecture Student presentations Course evaluation The tutorial for the Final Exam will be scheduled in November	Presentation 11 Presentation 12

LEARNING OUTCOMES

The objectives of this course are to learn key concepts in human and mouse genetics and developmental biology; to critically and effectively read original research papers; and to learn how to present and discuss scientific research.

LEARNING ACTIVITIES

This class is conducted in a combination of instructor lectures, student presentations, discussions of research papers - both in class and on UBC's interactive learning interface (Canvas)- and tutorial sessions. See the "Student Presentation Guidelines" document for more details on the student presentations.

LEARNING MATERIALS

Lecture slides, lecture notes, links to research and review papers, student presentation slides, and one page presentation summaries will be posted on Canvas. Students should check for updates frequently. Students will post questions and respond to questions about the research papers on Canvas in the Discussion area (See the "Student Presentation -Discussion assignment" document for instructions.) There is no text book. The lecture material on Canvas is organized by instructor name -> class date.

ASSESSMENTS OF LEARNING

The course will be graded based on class participation (5%), a quiz (5%), the midterm exam (25%), student presentations (15%), the presentation discussion assignments (15%), and the final exam (35%). Exams are written. See the "Class participation" document for more information on how class participation is marked.

UNIVERSITY POLICIES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on [the UBC Senate website](#).

LEARNING ANALYTICS

Learning analytics includes the collection and analysis of data about learners to improve teaching and learning. In this course, I plan to

- Track overall class progress
- Acquire personalized feedback via a mandatory questionnaire at the conclusion of the class

LEARNING RESOURCES

Source material required to cover content in the class should be available through PubMed or the UBC library, or will be posted on Canvas.

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Recording this class is not permitted.

ACCESSING CLASSES

Classes and tutorials will take place online either using Zoom or Collaborate Ultra. Instructions will be provided. Login 5 minutes in advance and contact the TA by email if you have any technical difficulties. Cameras must remain on during all classes for class participation credit.

FACULTY OF MEDICINE STATEMENT ON ACADEMIC FREEDOM

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0> for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: <http://academic.ubc.ca/support-resources/freedom-expression>.