MEDG 505 2025W GENOME ANALYSIS

Investigation of genetic information as it is organized within genomes, genetic and physical map construction, sequencing technologies, gene identification, proteomics, database accessing and integration, applications to medicine, functional organization of genomes from contemporary, historic, and evolutionary perspectives.

Credit value: 3

Prerequisite: BIOL 234 (Fundamentals of Genetics)

COURSE COORDINATORS

Dr. Michael Kobor michael.kobor@ubc.ca

Dr. Inanc Birol ibirol@bcgsc.ca

Office hours: By appointment

COURSE TEACHING ASSISTANT

Oguz (Oz) Ozgoren oguzo@student.ubc.ca

Office hours: By appointment

CLASS FORMAT

Classes are held in person on **Fridays, from 9:30am to 12:30pm**, room LASR5C. The course consists of guest lectures by invited speakers on their field of interest within genomics. Each speaker selects two papers for students to present and discuss with the class.

9:30am	Lecture by faculty member and ongoing discussion
10:35am	Discussion
10:50am	Break
11:10am	Student presentation #1: 25 minutes + 10 minute discussion
11:45am	Student presentation #2: 25 minutes + 10 minute discussion

LEARNING MATERIALS

All reading materials will be available as online documents through the course home page on Canvas.

SCHEDULE

Week	Date	Topic	Speaker
1	January 9, 2026	**Intro to Genome Analysis, Genetic Networks; PanGenome**	Phil Hieter hieter@msl.ubc.ca
2	January 16, 2026	**Personal Genomics**	Steven Jones sjones@bcgsc.ca
3	January 23, 2026	**How Do Cancers Begin?**	Emilia Lim emilia.lim@ubc.ca
4	January 30, 2026	**Cancer Genomics**	Marco Marra mmarra@bcgsc.ca
5	February 6, 2026	**Human Population Epigenetics**	Michael Kobor michael.kobor@ubc.ca
6	February 13, 2026	**AI for Single-Cell Biology**	Xin Tang xin.tang@msl.ubc.ca
7	February 20, 2026	Reading Break – no class	
8	February 27, 2026	**Midterm Assignment** Student presentations of Wikipedia articles	
9	March 6, 2026	**Proteomics**	Leonard Foster foster@msl.ubc.ca
10	March 13, 2026	**Rare Diseases and Functional Genomics**	Mahmoud Pouladi mpouladi@bcchr.ca
11	March 20, 2026	**Antimicrobial Resistance**	Inanc Birol ibirol@bcgsc.ca
12	March 27, 2026	**Ethical, Legal, Social Issues; Genomes**	Holly Longstaff holly.longstaff@phsa.ca
13	April 3, 2026	Good Friday Statutory Holiday – no class	
14	April 10, 2026	**Final Project** Debate of Current Topics in Genome Analysis	

COURSE ASSIGNMENTS

- **Student presentations**
  Students will give a 25-minute presentation of a paper assigned by the guest speaker and then lead 5 to 10 minutes of discussion with the class. Presentations should include the following items:
  - Background
  - Methods
  - Results, analysis
  - Conclusion
  - Critique
  - Discussion points

- **Midterm assignment**
  Students will work in pairs to write and publish a Wikipedia article on a novel technology in genomics. They will present their work in class on February 27, 2026.

- **Final project**
  A debate of current topics in genome analysis. The topic will be determined before the mid-term break, and the debate will take place during the final class.

GRADING

The grading scheme is a simple formula. Come prepared for class, read the papers carefully, ask questions, and contribute.

25%	Paper presentation
25%	Class participation
25%	Midterm assignment: Wikipedia article
25%	Final project: Debate

ARTIFICIAL INTELLIGENCE TOOLS AND ACADEMIC INTEGRITY

In this course, students are permitted to use artificial intelligence (AI) tools for formative work such as gathering information or brainstorming but may not use it on any assessed work or final submission, including the paper presentation, midterm assignment, or final project. Using AI tools without the permission of the instructor is considered Academic Misconduct as per UBC's policy (3. Academic Misconduct by UBC Students).

COURSE ILLNESS POLICY

Students are encouraged to stay at home if they have a communicable illness (such as flu-like symptoms) to prevent the further spread of illness to other students, staff, or faculty. If you are too ill to attend class, you should email the course coordinators as soon as possible.

If an illness or injury requires an extended absence, students should discuss with the course coordinators as soon as possible and explore whether academic concession may be needed.

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, spiritual and cultural 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 at https://senate.ubc.ca/vancouver/policies-resources-support-student-success/.

LAND ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the hən̓q̓əmin̓əm̓-speaking xʷməθkʷəy̓əm (Musqueam) people. These lands have long been a place of learning for xʷməθkʷəy̓əm (Musqueam), who for millennia have passed on their cultural and traditional knowledge from generation to generation on this site.