Committee on Genetics, Genomics, and Systems Biology

Chair
• Marcelo Nobrega

Professors
• Erin Adams, Biochemistry and Molecular Biology
• Graeme Bell, Medicine
• Joy Bergelson, Ecology & Evolution
• Douglas K. Bishop, Radiation & Cellular Oncology
• Anna DiRienzo, Human Genetics
• M. Eileen Dolan, Medicine
• Wei Du, Ben May Department for Cancer Research
• Richard Fehon, Molecular Genetics & Cell Biology
• Edwin L. Ferguson, Molecular Genetics & Cell Biology
• Yoav Gilad, Human Genetics
• T. Conrad Gilliam, Human Genetics
• Benjamin Glick, Molecular Genetics & Cell Biology
• Michael Glotzer, Molecular Genetics & Cell Biology
• Christopher Gomez, Neurology
• Jean Greenberg, Molecular Genetics & Cell Biology
• Robert Grossman, Medicine
• Chuan He, Chemistry
• Robert Ho, Organismal Biology & Anatomy
• Barbara Kee, Pathology
• Martin Kreitman, Ecology & Evolution
• Stephen J. Kron, Molecular Genetics & Cell Biology
• Bruce T. Lahn, Human Genetics
• Michelle M. Le Beau, Medicine
• Manyuan Long, Ecology & Evolution
• Mary Sara McPeek, Statistics
• Marcelo Nobrega, Human Genetics
• John Novembre, Human Genetics
• Carole Ober, Human Genetics
• Olufunmilayo Olopade, Medicine
• Brian J. Popko, Neurology
• Ilaria Rebay, Ben May Department for Cancer Research
• Rama Ranganathan, Biochemistry & Molecular Biology
• John Reinitz, Statistics
• Marsha Rosner, Ben May Department for Cancer Research
• Lucia Rothman-Denes, Molecular Genetics & Cell Biology
• Michael Rust, Molecular Genetics & Cell Biology
• Andrey Rzhetsky, Medicine
• Neil H. Shubin, Organismal Biology & Anatomy
• Jonathan P. Staley, Molecular Genetics & Cell Biology
• Matthew Stephens, Human Genetics
• Joseph W. Thornton, Ecology & Evolution
• Aaron Turkewitz, Molecular Genetics & Cell Biology
• Chung-I Wu, Ecology & Evolution
• Xiaoxi Zhuang, Neurobiology
The Committee on Genetics, Genomics & Systems Biology (GGSB) is an interdisciplinary PhD granting program that brings together over 60 training faculty representing numerous departments at the University of Chicago. The GGSB program is aimed at training PhD scholars for careers as independent scientists in basic and applied biomedical research and education, leading to Doctor of Philosophy in Genetics. Our PhD training program combines a foundation in modern genetic analysis with training in current methods for formulating and addressing biological questions in the context of complex systems. The presence of both basic and clinical sciences in the Division of Biological Sciences enhances the Committee's broad interdisciplinary approach to teaching and research. GGSB provides an exciting environment to pursue rigorous, high quality training with flexibility in designing programs to meet individual needs. GGSB’s goal is to provide an intellectually stimulating, collegial, and supportive environment for students to progress smoothly from research training to careers as independent scientists.

Curriculum and Timeline - First Year (https://ggsb.uchicago.edu/page/curriculum-timeline-first-year)

**Formal Coursework:** Choice of Two GGSB Tracks: **Empirical Track** (https://ggsb.uchicago.edu/page/ggsb-empirical-track-coursework) or **Computational Track** (https://ggsb.uchicago.edu/page/ggsb-computational-track-coursework)

To obtain a Ph.D. in the Division of Biological Sciences, nine graded courses are required as detailed below.

GGSB has two tracks, 1) “**Empirical Track**” and 2) “**Computational Track**”. While the two tracks are united by the common goals of using genetic, genomic, and systems biology approaches to address important biological questions, the training focuses are different. Training in the “**Empirical Track**” is emphasizes experimental techniques, especially those quantitative in nature, while the “**Computational Track**” trains students in building computational skills.


Training under the Empirical Track is focused on experimental techniques.
At the beginning of the second year of training, students choose a research advisor. Most of the second year is spent developing a research project. A Thesis Advisory Committee is chosen by the student in consultation with his/her mentor and the GGSB Student Advisory Committee. A written research proposal is provided to the Thesis Advisory Committee in advance of the first committee meeting. During this meeting, the student will present and defend his/her proposal. This first meeting constitutes the Qualifying Exam for Ph.D. candidacy. Following Qualifying Exam, the Thesis Advisory Committee meets with, and advises the student on a regular basis throughout the remainder of his/her training.
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Curriculum and Timeline - Advanced Years (https://ggsb.uchicago.edu/page/curriculum-timeline-advanced-years)

After passing the Qualifying Exam and throughout the duration of their studies, students conduct full-time thesis research while continuing to attend seminars, journal clubs, and other educational meetings. Students are welcome to audit courses in which they have an interest. Finally, each graduating student writes a dissertation culminating in a public Thesis Defense.

Application
For information about applying to our graduate program, please visit: https://apply-bsd.uchicago.edu/apply/.

Genetics Courses

**GENE 31800. Current Topics in Genetics. 50 Units.**
This course will expose student to current research topics in genetics for the bi-monthly GGSB Invited Seminar Series. This is a required ½ credit course for all GGSB students and will be graded Pass/Fail. Winter, Spring

**GENE 31900. Introduction to Research. 100 Units.**
Lectures on current research by departmental faculty and other invited speakers. A required course for all first-year graduate students.
Instructor(s): Staff Terms Offered: Autumn, Winter
Equivalent Course(s): HGEN 31900, MGCB 31900, DVBI 31900, BCMB 31900

**GENE 35400. Advanced Developmental Biology. 100 Units.**
This course provides both an overview of developmental biology and an in-depth coverage of selected topics, emphasizing the origins of classical concepts in the field as well as modern molecular and genetic approaches to the study of developmental processes. Subjects include cell fate determination, growth control, stem cells, signal transduction, neurogenesis, and cell polarity in developing systems. Underlying mechanisms are illuminated through discussion of key experiments. Discussion sections cover selected papers from the developmental biology literature, with emphasis on critical evaluation of experimental evidence.
Instructor(s): "E. Ferguson, R. Fehon" Terms Offered: Winter
Prerequisite(s): "BIOS 20182, 20192, or 20235"
Equivalent Course(s): BIOS 21227

**GENE 39900. Readings: Genetics. 300.00 Units.**
A course designed by a student and faculty member. All reading courses must be approved by the Curriculum/Student Affairs Committee prior to registration.
Terms Offered: Summer, Autumn, Winter, Spring

**GENE 40100. Thesis Research: Genetics. 300.00 Units.**
Thesis Research: Genetics
Instructor(s): Gilad Terms Offered: Summer, Autumn, Winter, Spring

**GENE 40200. Non-Thesis Research: Genetics. 300.00 Units.**
Non-Thesis Research: Genetics
Instructor(s): Gilad Terms Offered: Summer, Autumn, Winter, Spring
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

- Times was used instead of Trajan.
- Times was used instead of Palatino.

The editor may contact Leepfrog for a draft with the correct fonts in place.