Washington University in St. Louis

BIOLOGY & BIOMEDICAL SCIENCES

Computational and Systems Biology

The goal of the **Computational and Systems Biology** program

The goal of the **Computational and Systems Biology** program is to train the next generation of scientists in technology-intensive, quantitative, systems-level approaches to molecular biology. As technological changes generate exponentially larger amounts of data, the scale of the biological questions under investigation grows ever larger.

Students in the Computational and Systems Biology program will learn to leverage advances in cutting-edge, high-throughput experimental and computational tools. Because of its interdisciplinary nature, the program's curriculum accommodates students with a wide variety of backgrounds including genetics, biochemistry, molecular biology, mathematics, engineering, physics, chemistry, computer science and statistics.

Research Environment

The faculty in the program are highly interdisciplinary and specialize in the application of computer science, information technology, biophysicss, biochemistry, genetics, applied mathematics, and statistics to problems in molecular biology.

research areas include:

- large-scale genetic network analysis and reconstruction
- technology development for high-throughput collection of genetic and biochemical data
- real-time, single-cell analyses of genetic regulatory circuits
- specificity and evolution of DNA-protein interactions
- algorithm development for comparison of DNA, RNA, and protein sequences
- synthetic biology
- metagenomics and microbiomes
- epigenetics and epigenomics
- functional genomic studies of population genetic variation
- big-biodata integration and modeling

Computational and Systems Biology
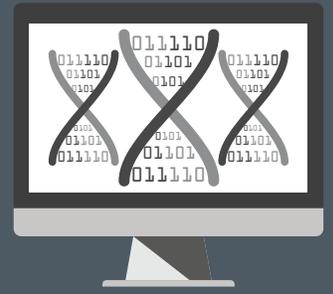
Required Courses

- Computational Molecular Biology
- Genomics
- Ethics & Research Science
- Graduate Research Fundamentals

Advanced Electives *Select THREE (3) from:*

- Population Genetics
- Molecular Evolution
- Protein Structure and Function
- Mathematical Methods for Biophysics and Biochemistry
- Molecular Recognition
- Computational Biochemistry
- Algorithms for Computational Biology
- Nucleic Acid and Protein Biosynthesis

- Computational Neuroscience
- Advanced Genetics
- Statistical Thermodynamics
- Statistical Computation
- Probability
- Mathematical Statistics
- Statistical Mechanics

APPLICATION DEADLINE
DECEMBER 1

EXPLORE & APPLY:
tinyurl.com/dbbstour

For more information about the COMPUTATIONAL AND SYSTEMS BIOLOGY program and faculty research:
tinyurl.com/dbbs-csbfaculty

✉ dbbs-info@email.wustl.edu   f facebook.com/wustldbbs   🐦 📷 @WUSTLdbbs

Program Benefits & Support

- **Full tuition funding and benefits*, including:**
  generous stipend | travel funds for scientific meetings | health, life, and disability insurance coverage

- **Opportunities to obtain nationally competitive fellowships, awards, and grants**

- **Free Metro U-Pass to travel in and around the St. Louis area**

- **Access to all university educational, entertainment, and recreational resources**

*guaranteed, provided that satisfactory progress towards completion of degree requirements is met