# Career Spotlight

Computational Biologist

A computational biologist (bioinformatics) applies the techniques of computer science, applied mathematics, and statistics to address biological problems. His/her main focus lies on developing mathematical modeling and computational simulation techniques. By these means it addresses scientific research topics without a laboratory.
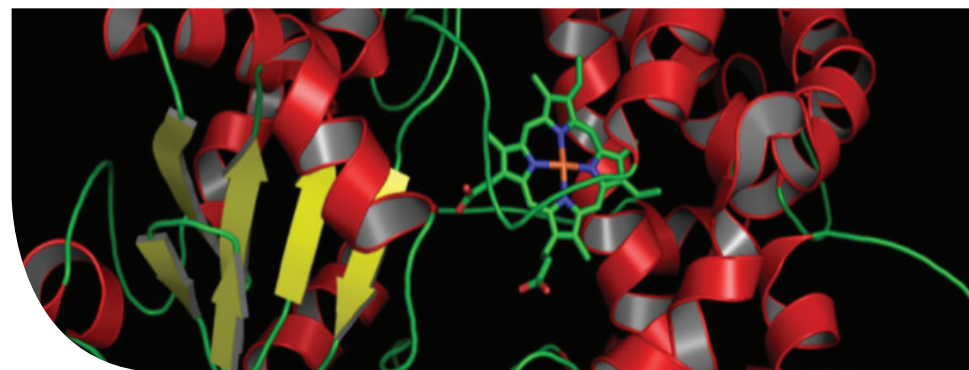
EDUCATION

Until recently, there were no formal educational opportunities in computational biology at the graduate level. Therefore, most of the current practitioners and authorities in the field have a combination of degrees at the graduate (master's or doctorate) and undergraduate levels in mathematics, computer science, and biology. Today there are many computational biology programs at many schools accross the United States.

WHEN MATH IS USED

Computational biologists use math as they apply algorithms and statistical techniques to the interpretation, classification and understanding of biological data. These typically consist of large numbers of DNA, RNA, or protein sequences. They also are concerned with building computational models of biological systems and mathematically modeling the behavior or molecules.

POTENTIAL EMPLOYERS

Highly qualified individuals are in demand at academic, private, and government research institutes alike.the BLS. Potential employers include the federal and state government, collges, research development agencies, and pharmaceutical companies. Faster than average job growth is predicted. Projected growth is in the fields of research and development in biotechnology, especially genetics.

FACTS

Many subfields of computational biology exist, including computational genomics, which is the study of genomes of cells and organisms. Currently, the Human Genome Project is set to sequence the entire human genome into a set of data. Once finished, this will allow doctors to analyze an individual patient's genome, their entire genetic hereditary information. Another important field is cancer computational biology, which uses an algorithmic approach to predict future mutations in cancer.

CITATIONS

http://en.wikipedia.org/wiki/Computational_biology
http://www.answers.com/topic/computational-biologist
http://www.simplyhired.com/a/salary/search/q-Computational+Biologist
https://www.wpi.edu/academics/bcb/career-outlook.html

MATH REQUIRED

• College Algebra
• Trigonometry
• Calculus I and II
• Linear Algebra
• Numerical Analysis
• Differential Equations
• Probability and Statistics

Low-end Salary: $38,780/yr
Median Salary: $68,220/yr
High-end Salary: $102,300/yr

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