

Bioinformatics

The application of information technology to biological problems



Bioinformatics is dependent on large amounts of genetic data

Bioinformatics is the application of information technology to biological problems, most commonly the analysis of DNA, RNA and protein sequences or structures. It relies heavily on the use of IT, mathematics, and statistics to capture, store, and analyse complex biological information.

Why is bioinformatics important?

Recent advances in molecular biology and genomic technologies have led to an explosion in the amount of biological information generated by biologists. This has led to a huge demand for specialist tools to store, organise, view, index and analyse such data.

Bioinformatics can generate new understanding in genetic interactions, metabolic pathways and drug development. It is crucial to the development of software and technology that assists biologists' research.

Some believe that to work in any biology related field in the future, biologists will need certain competencies in bioinformatics.

What careers are available?

The IT, pharmaceutical and biotechnology industries are all in need of bioinformatics graduates to help develop products like research software or drugs. There is a high demand in the 'omics' research fields (such as genomics, proteomics and glycomics) for competent analysts and computing solutions to process the large quantities of data produced by researchers.

Big employers in the UK include the major pharma companies, the European Bioinformatics Institute, the MRC's Human Genome Mapping Project Resource Centre, and the Wellcome Trust Centre for Human Genetics. Smaller companies are using bioinformatics too, including those involved in agricultural applications, industrial organisms and personal care products.

There is generally thought to be a shortage of expert statisticians working in many areas of biology and bioinformatics.

How do I get into a career involving bioinformatics?

Universities tend to run postgraduate courses in bioinformatics for those with a computer science or bioscience background. Some, such as Imperial, Cranfield or Manchester universities, offer master's courses in bioinformatics or the related computational biology and systems biology. There are many shorter practical training courses to teach scientists how to use specific software tools.

Where can I find out more?

You can find information and announcements on bioinformatics research, industry and education at the Bioinformatics Organization website.

● www.bioinformatics.org

There is also a network for those working in bioinformatics research or industry.

● www.embnet.org