



# A career as a **Bioinformatician**

Becoming a Bioinformatician will allow you to pursue a fascinating career which will put you at the cutting edge of scientific technology. Bioinformatics is growing in importance as the demand for genomic testing and interpretation of genomic data increases and as we move further towards precision medicine to help ensure better outcomes for individuals' healthcare.



## What is a Bioinformatician?

A Bioinformatician is a specialist who combines computer science into the area of biology by analysing large data sets such as raw genomic data for clinical and research purposes. Bioinformaticians create and maintain databases of genomic information, develop and use mathematical models for statistical analysis and carry out dynamic simulations and pattern analysis. Bioinformaticians apply their knowledge to address complex problems in healthcare such as how to analyse genomic sequence data from many patients to guide screening and treatment helping to make sure they receive the best care and treatment.



## Genetics or Genomics?

Historically, genetic testing could only be performed on one gene at a time, whereas now genomic testing allows testing of all genes in one test. Genomic testing allows analysis of how different genes interact with each other and how this can influence an individual's health.



## Where do Bioinformaticians work?

Bioinformaticians often work within laboratories as part of the scientific team involved in genomics testing and analysis. The Bioinformatician plays a crucial part in interpreting the complex sequencing information generated by examining an individual's DNA. Bioinformaticians are often consulted by the laboratory team to help interpret genomic sequencing data which will ensure the most accurate test result for a patient. Bioinformaticians within the genomic space can work in a number of areas such as:

- Clinical genomics including cancer and rare diseases
- Research (e.g. population genomics, phylogenomics)
- Metagenomics (e.g. Human microbiome analysis)
- Pathogen Genomics (Infectious Disease)



## Future for Bioinformaticians

As the demand for genomic testing increases the role of the Bioinformatician will continue to grow in importance and evolve to meet the growing need.

Technological advances are allowing genomic testing to be offered to a growing number of patients and their families. These technological advancements will require increasing data storage and innovative database design as well as variant interpretation, which will put Bioinformaticians at the forefront of medical advancements. Working as a Bioinformatician within NSW Health will allow you to work with complex patient data as well as provide effective communication between biological and information systems. This will put Bioinformaticians at the forefront of the genomic revolution and precision medicine in healthcare.



## Career Journey

HSC including relevant science subjects

Undergraduate degree in: Computer Science; one of the biosciences\*

Bioinformatician

Senior Bioinformatician (Post Graduate Qualifications)



\*Please check with individual undergraduate course to confirm up to date information on their entry requirements