

## The science of listening to what life is telling us

Bioinformatics is an interdisciplinary field of study that develops software to make sense of vast amounts of biological data. The software helps in finding patterns in seemingly random sets of data that are generated from biological systems and processes.

The scientist Margaret Belle Oakley Dayhoff is generally considered the pioneer of bioinformatics. In the 1950s and 1960s Dayhoff pioneered the use of mathematics and computational methods to study biological systems. She compiled one of the first protein sequence databases.

Since then, with the growth of computing technology, the field of bioinformatics has grown by leaps and bounds, finding particular use in genomics and genetics. The primary goal of bioinformatics is to gain a deeper understanding of biological processes.

Prof. Sanghamitra Bandyopadhyay's work builds on the advances in bioinformatics. Prof. Bandyopadhyay is a computer scientist

who has designed algorithms that can be used to search for patterns and information in large biological data sets. These algorithms are also able to help run computer programs faster and more efficiently in finding an optimal solution while also improving the quality of the solution.

Bandyopadhyay's work has led to the discovery of a new microRNA marker for breast cancer.

The algorithms designed by Bandyopadhyay have also helped to sift through vast amounts of data and detect the mechanisms for diseases such as HIV-1 and the role of the brain's white matter in Alzheimer's disease.

Some of Bandyopadhyay's microRNA target predictions are indexed in miRBase, a biological database for microRNA managed by the Griffiths-Jones Laboratory at the Faculty of Life Sciences, University of Manchester, UK.

