BIOINFORMATICS IS A REWARDING CAREER IN NEED OF NEW RECRUITS

A CAREER IN BIOINFORMATICS can be intellectually satisfying and financially lucrative. It's open to anyone with a relevant background, but new researchers are in frustratingly short supply.

Bioinformatics is a rapidly growing field with huge potential, both for those it promises to help, and for those who work within it. Adil Mardinoglu is an expert in bioinformatics, a professor of systems biology at King's College London and KTH-Royal Institute of Technology in Stockholm, and has founded more than six start-up companies. Buoyed by the rewards that come with a career in bioinformatics, Mardinoglu is now keen to attract others to the area.

▲ **Biomedical research is powered by big data, and people who can analyse it are in high demand.**

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Why is bioinformatics so important?

The goal of bioinformatics is to characterize humans at the molecular level, and to use this information to prevent and treat disease, and improve health and longevity. From genomics to proteomics, metabolomics to metagenomics, 'omics research is generating a flood of data. Bioinformaticians use systems biology, AI and machine learning approaches to look for patterns in the data. From this we can begin to unravel the mechanisms of disease, identify novel biomarkers and drug targets, and eventually develop therapies. It's tremendously exciting.

How big is the big data that you use?

Through multi-omics analysis, we generate around a billion data points for every person we study. By the end of 2024, we will have recruited 10,000 people (both healthy and patients with various diseases). I believe this will be the largest and richest dataset of its kind. When you pool data from patients with the same disease, it gives insight into that disease mechanism. When you study the same people over time, you can give them tailored feedback on things like lifestyle changes, disease risk or the most appropriate treatments. My companies focus on both these approaches.

What are the companies you've founded?

Two-year old SZA Longevity offers multi-omics-derived personalized health advice. It was recently valued at more than US$100 million, and attracted internationally recognized investors. Bash Biotech develops platforms for multi-omics data interpretation using AI and systems biology, and has completed preclinical development for compounds targeting kidney and lung cancers. ScandiBio has completed phase II trials in Alzheimer's disease and plans to start phase III in early 2024. ScandiEdge has developed drug candidates for non-alcoholic steatohepatitis (NASH) and liver cancer, with phase I planned for 2024. These companies have created huge value for the founders. However, it's important to give back, so I have set up Trustlife, a fund that supports projects developing bioinformatics-inspired therapies and AI-based drug development. As of September 2023, we have raised $10 million and funded nine projects. We aim to raise a further $20 million in 2024.

Are bioinformaticians in demand?

With datasets growing faster than they can be thoroughly analysed, there's a desperate need for new talent. It's very difficult for me to retain my post-docs, because they are in high demand. We often lose them to pharma or start-up companies after a year or two, but I don't begrudge this because it allows them to acquire new skills and progress their careers.

What is the career progression like?

Once you are in the field, career progression can be fast. I started in bioinformatics in 2010. I became an assistant professor in 2015, associate professor in 2018 and, three months later, I got my position at Kings, making me one of their youngest professors. The people I recruit progress swiftly as well. I had a PhD student who recently graduated with more than 30 papers. He's now a post-doc at the NIH and expects to obtain a faculty position within a couple of years.

What sort of background do you need to become a bioinformatician?

The field is looking to recruit people from a diverse range of backgrounds. I trained as an electronics and communication engineer before I did my PhD in computational biology. Now, it tends to happen in one of two ways. You either recruit a clinician, molecular biologist or a chemist, and train them in computer science, or you recruit a computer scientist and train them in biology. Bioinformatics is open to anyone with experience in a relevant subject. ■