TRANSCRIPT

Reading DNA to discover cancer weaknesses

Your genes control the cells in your body

So if they go wrong, it can cause diseases ranging from rare genetic disorders to cancer

Whole genome sequencing is a game-changer for studying, diagnosing and treating genetic diseases

In whole genome sequencing, DNA is extracted from a cell's nucleus

The building blocks of DNA, called nucleotides, come in four different types — A, G, T, C

Your DNA is made up of a unique sequence of over 3 billion of these four letters

And whole genome sequencing provides this information for scientists to use in research and medicine

When the first whole genome was sequenced in 2001, it had taken over a decade to complete and cost around $300 million

Today, the entire human genome can be sequenced in only a few days and costs less than $1000

Although it’s a relatively new technology, whole genome sequencing has already made a huge difference

Rare genetic diseases are now considerably easier to identify and diagnose

In some forms of cancer, genome sequencing has meant that people with a family history can receive genetic testing and act before developing any tumours

Whole genome sequencing is also paving the way to new treatments

Knowing the genetic changes in cancer cells gives scientists the tools to develop treatments that target just the cancerous cells and leave healthy cells untouched

There are over 200 different types of cancer, but with whole genome sequencing it will be possible to identify weaknesses and develop better treatments