

Here's how biotechnology is offering new hope for personalized cancer treatments

Cancer occurs when mutations, or accidental changes, take place in the DNA of specific cells or tissue within the body. These cells then continue to grow excessively, forming a tumour, which then pushes into the surrounding body tissues, and may spread to other parts of the body.

The same type of tumor, e.g. a lung tumor, from different patients can have different mutations, and the primary tumour can also have different mutations compared to tumours which have spread to other organs in the same patient. However, understanding exactly where the DNA is mutated could help oncologists to choose more effective therapies for each specific type of cancer.

This is known as precision oncology, and would aim to improve treatment efficacy, while reducing adverse effects.

Considering the need to understand the genetic mutations within cancer, there has been much research done in this field over the past few years. Some of the biggest breakthroughs include the discovery of both CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) and circulating tumour DNA.

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Personalized medicine will have a profound impact on human health, and although genomics is the driving force behind it, the combination of next generation sequencing, artificial intelligence and gene-editing could cure cancer.

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