

Combining the Capabilities of Artificial Intelligence with CRISPR Technology

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ABSTRACT

The integration of artificial intelligence (AI) into CRISPR-Cas9 technology is effecting a significant transformation in genetic engineering, evolving it from a promising experimental concept into a precise and dependable medical reality. The introduction of CRISPR revolutionized the capacity to alter the fundamental code of life; however, the technique initially faced significant technical obstacles, the most prominent being the emergence of unanticipated “off-target” mutations. These unintended genetic modifications present considerable clinical issues, including the emergence of malignant transformations. The human genome is also very big and complicated, which makes it hard and time-consuming for genetic researchers to manually design guide RNA (gRNA). In this huge world of biology, AI, and more specifically advanced machine learning, is now a strong guide. AI algorithms can predict with a high degree of accuracy how certain gRNA sequences will act. This is done by working with huge genomic datasets and learning from thousands of editing results. By using this computational foresight, researchers can pick the candidates with the best chance of success while also avoiding the risk of accidental genetic changes. AI not only makes things more accurate, but it also speeds up the process of finding new CRISPR variations and automates the analysis of experimental results. This synergy makes it easier to create personalized medicine by cutting down on the time needed for research and making mistakes less likely.

Keywords: Artificial Intelligence, CRISPR, Biology, Computational, Human genome.

