

CRISPR-Cas9: Revolutionizing Genome Editing and Its Ethical Landscape

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Abstract: CRISPR-Cas9 technology has emerged as a revolutionary tool for precise genome editing, offering unprecedented opportunities for genetic manipulation across various organisms. This paper provides a comprehensive overview of CRISPR-Cas9, encompassing its molecular mechanisms, applications, challenges, and ethical considerations. We discuss the fundamental principles of CRISPR-Cas9, including the role of guide RNA (gRNA) in directing the Cas9 nuclease to target DNA sequences, leading to double-strand breaks and subsequent genomic modifications

Keywords: CRISPR-CAS9 , gRNA , Genome Editing, Base Editing , Protospacer Adjacent Motif (PAM) , Multiplex Genome Editing

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