

Advancements in CRISPR Technology for Gene Editing

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Abstract. CRISPR technology has revolutionized gene editing, offering precise and efficient methods for modifying genetic material. This paper highlights recent advancements in CRISPR applications in cell biology, including genome-wide screening and therapeutic interventions. By exploring these developments, researchers are paving the way for novel treatments for genetic disorders and enhancing our understanding of gene function in cellular processes.

Keywords: CRISPR, Gene Editing, Genome Screening, Therapeutics, Cell Biology

Introduction

CRISPR-Cas9, a groundbreaking gene-editing technology, has transformed the field of genetics by enabling precise modifications to the genome. Originally discovered as a bacterial immune system, CRISPR-Cas9 has been harnessed to edit genes in various organisms, offering vast potential for research and therapeutic applications. Recent advancements have expanded its utility, allowing for genome-wide screening, functional genomics studies, and the development of CRISPR-based therapeutics. These innovations have opened new avenues for understanding cellular processes and treating genetic disorders. This paper reviews the latest progress in CRISPR technology, discussing its applications in cell biology and the ethical considerations surrounding its use. We also explore future directions for CRISPR research, including the development of more efficient and accurate editing tools and their potential impact on medicine and biotechnology.

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