Advances in CRISPR-Cas9 Genome Editing Technology

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Abstract. This paper reviews recent advancements in CRISPR-Cas9 technology, focusing on its applications in molecular biology. We discuss the improvements in gene editing precision and efficiency, as well as the development of new delivery methods. The potential for CRISPR-Cas9 to revolutionize therapeutic approaches for genetic diseases is examined, highlighting its role in advancing personalized medicine.

Keywords: CRISPR-Cas9, genome editing, personalized medicine, gene therapy, molecular biology

Introduction

CRISPR-Cas9 has emerged as a groundbreaking technology in the field of molecular biology, offering unprecedented precision in genome editing. Recent advancements have enhanced the accuracy and efficiency of CRISPR-Cas9-mediated gene modifications, expanding its potential applications in research and medicine. This review explores the latest developments in CRISPR-Cas9 technology, including novel delivery systems and strategies to minimize off-target effects. We also discuss the implications of these advancements for the treatment of genetic disorders and the future of personalized medicine. The transformative potential of CRISPR-Cas9 continues to shape the landscape of molecular biology, providing new opportunities for scientific discovery and clinical application.

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