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Review | Open access | Published: 14 June 2024

CRISPR/Cas9 gene editing: a novel strategy for fighting drug resistance in respiratory disorders

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Cell Communication and Signaling **22**, Article number: 329 (2024) | Cite this article

Abstract

Respiratory disorders are among the conditions that affect the respiratory system. The healthcare sector faces challenges due to the emergence of drug resistance to prescribed medications for these illnesses. However, there is a technology called CRISPR/Cas9, which uses RNA to guide DNA targeting. This technology has revolutionized our ability to manipulate and visualize the genome, leading to advancements in research and treatment development. It can effectively reverse epigenetic alterations that contribute to drug resistance. Some studies focused on health have shown that targeting genes using CRISPR/Cas9 can be challenging when it comes to reducing drug resistance in patients with respiratory disorders. Nevertheless, it is important to acknowledge the limitations of this technology, such as off-target effects, immune system reactions to Cas9, and challenges associated with delivery methods. Despite these limitations, this review aims to provide knowledge about CRISPR/Cas9 genome editing tools and explore how they can help overcome resistance in patients with respiratory disorders. Additionally, this study discusses concerns related to applications of CRISPR and provides an overview of successful clinical trial studies.