A Novel Myc Oncogene Therapeutic Approach

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Pharmaceuticals

Problem

The Myc oncogene is dysregulated in over 70% of human cancers, acting as a master regulator of cell growth and proliferation. However, its intrinsically disordered structure has made direct targeting with small molecules highly challenging. Current therapeutic strategies, such as BET inhibitors, suffer from limited specificity and a high risk of resistance, reducing their long-term effectiveness. There is a critical need for a novel therapeutic approach that directly and precisely targets Myc, minimising off-target effects and overcoming the limitations of existing treatments.

Solution

Our innovation presents a therapeutic antibody fragment designed with exceptional precision to target the Myc gene promoter region. By disrupting Myc expression through a novel mechanism of action, this strategy overcomes the challenges of directly targeting the Myc protein. Moreover, it significantly reduces the risk of off-target effects associated with broader-spectrum therapies, offering a highly specific and effective solution for Myc-driven cancers.

Harnessing mRNA technology enables intracellular delivery of our antibody fragment as an intrabody for Myc-driven cancer therapy, enhancing stability and efficacy within the cellular environment where Myc regulation takes place.

Recent experimental evidence highlights the therapeutic potential of our antibody fragment, showing a significant reduction in Myc expression in colon and ovarian cancer cell lines. In cancer cell viability assays, our approach demonstrated ~100-fold greater potency than platinum-based chemotherapies, while exhibiting markedly reduced off-target toxicity in non-cancerous cell lines.

While the focus is currently on Myc, the inherent versatility of this strategy, combined with our expertise and capabilities, suggests its potential adaptability to other oncogenes with similar regulatory DNA elements.

Addressing a substantial segment of the rapidly expanding cancer therapeutics market, our technology is poised to make a significant impact. The market, valued at US$220 billion in 2024 and expected to reach USD$409 billion by 2029, is a testament to the growing demand for innovative cancer treatments. Moreover, our mRNA-based delivery system situates us within the growing mRNA therapeutics sector, a market projected to escalate from USD 54.70 billion in 2024 to USD 118.90 billion by 2029.

Intellectual Property Status

Provisional patent application No 2025904018.

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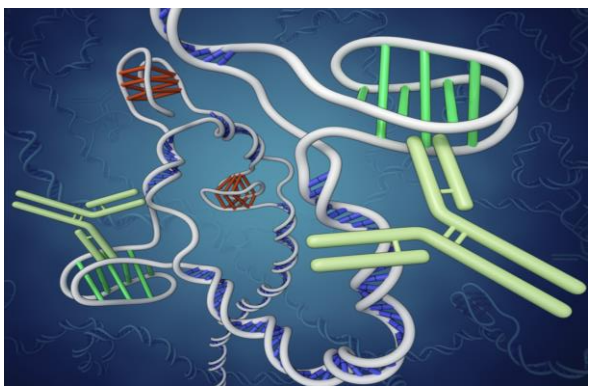

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