

2023-073

Therapeutic



- > TRL 3
- > Pre-clinical

Problem

Emerging and re-emerging viral diseases continue to pose a major global health challenge, as demonstrated by the COVID-19 pandemic. Current antiviral treatments are often pathogen-specific, can be slow to develop against new threats, and may not provide broad protection across diverse viruses. Many medically important viruses, including coronaviruses, influenza, respiratory syncytial virus (RSV), and hepatitis C, exploit gaps in the body's natural antiviral defenses. There remains a need for scalable, rapidly deployable therapies that can strengthen host immunity and provide broad-spectrum antiviral activity against existing and future viral threats, particularly during outbreaks and pandemics

Solution

This technology uses engineered versions of TLR3, a naturally occurring antiviral receptor involved in the body's innate immune response. The modified TLR3 variants have demonstrated enhanced antiviral activity and potent suppression of SARS-CoV-2 infection in laboratory studies. The therapeutic payload is delivered as mRNA encapsulated within lipid nanoparticles, leveraging a clinically validated delivery approach. By boosting antiviral signaling pathways within host cells, the platform is designed to provide broad-spectrum protection against multiple RNA viruses. The technology has potential to be administered through respiratory or systemic delivery routes and represents a novel host-directed antiviral strategy.

Intellectual Property Status

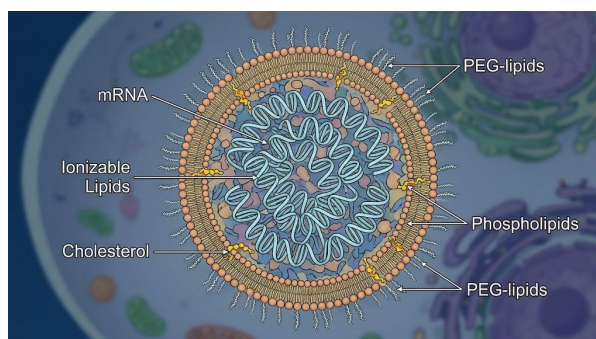
This invention is the subject of a provisional patent application AU: 2026901255

Potential Commercial Applications

- Broad-spectrum antiviral therapeutics for respiratory viral infections
- Pandemic preparedness and rapid-response antiviral platforms
- Treatment of coronavirus infections, including emerging variants
- Therapeutics for influenza and RSV infections
- Liver-targeted antiviral treatments for hepatitis-associated diseases
- Platform technology for future mRNA-based infectious disease therapies

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