



Programmable Polymeric RNA Scaffolds for Multimodal Immune Activation and Delivery

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Therapeutics and Vaccines
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Accelerate Blue Foundry -
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Accelerate Blue Foundry - 2025 (Life Sciences)

OVERVIEW

A customizable RNA-based platform organizes multiple immune-activating signals onto a single molecule, enabling more targeted and effective stimulation of the immune system—offering a breakthrough approach for improving cancer treatments and vaccines.

DESCRIPTION

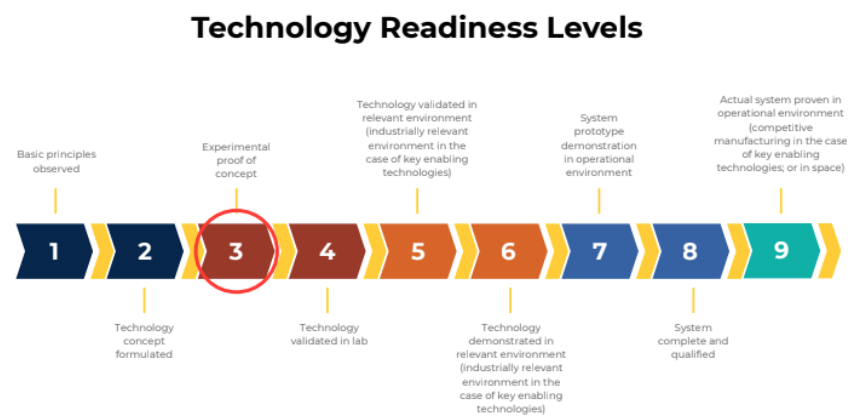
This technology uses custom-built chains of RNA as a structural backbone onto which various immune-stimulating molecules can be attached in specific arrangements. Unlike current solutions that use only one type of immune trigger, these RNA macromolecules are designed to display multiple triggers at once, mimicking the complex signals found in real pathogens and fine-tuning how the immune system responds. Additional enhancements—like attaching sugars or lipids—boost the stability and delivery of the construct, ensuring the immune activators reach the right cells and stay intact long enough to function. The process is highly customizable, allowing for the easy mixing and matching of different immune triggers and delivery elements depending on the desired therapeutic application.

VALUE PROPOSITION



- Allows the precise combination and spatial arrangement of multiple immune-stimulating agents, unlocking synergistic immune effects not achievable with single-component adjuvants.
- Acts as both an activator and a specialized delivery vehicle, protecting components and directly targeting relevant immune cells for maximal therapeutic impact.
- Highly modular design enables rapid customization for disease-specific applications, from preclinical research to scalable clinical immunotherapies and vaccines.

TECHNOLOGY READINESS LEVEL



INTELLECTUAL PROPERTY STATUS

Patent applications pending.

MARKET OPPORTUNITY

There is a substantial unmet need for more effective immunotherapies and vaccines, particularly for cancers and infectious diseases where current treatments benefit only a minority of patients. This technology’s ability to orchestrate powerful, targeted immune responses opens the door to high-value applications in oncology, infectious disease prevention (vaccines), and possibly autoimmune disorders, with partners ranging from pharmaceutical companies to advanced biotechnology firms. The platform’s versatility also positions it well for research tool development, enabling new discoveries in immunology and drug delivery. Recent growth in immuno-oncology and the global vaccine market underscores this demand, with combination adjuvant approaches attracting increased interest and investment.