



Red Arrow Therapeutics

Red Arrow develops pH-sensitive nanopolymer technology to deliver biologics safely and effectively through the body. The nanopolymer shell wraps around the drug and only opens at the target disease site. Our first pipeline delivers cytokines for solid tumor treatment.



Company Overview

We develop a nanotechnology-driven drug delivery system which safely and precisely deliver biologics through the body to the target disease site. Our patented nanopolymers wrap around the cytokine IL-12 and create a shell. IL-12 has antitumoral properties but is highly toxic. The drug is systemically injected and travels safely to the tumor. Once at the tumor, the shell breaks apart triggered by pH drop, and IL-12 is delivered precisely to the tumor and kills the cancer.

Problem

Immunotherapy has the potential to completely cure non-treatable cancers but does not work in 80% of cancer patients. This is due to sparse immune cell distribution in the tumor microenvironment and limited treatment options; namely, an inability to selectively stimulate the immune system at the tumor site but not throughout the rest of the body. Such patients must rely on more traditional and less effective treatments such as chemotherapy. Our technology precisely delivers cytokines to the tumor site, which will recruit various immune cells and kill the cancer.

Highlights

We have been selected as Cohort 15 of UC Berkeley's SkyDeck and received an investment of \$200K, and we are currently part of MassChallenge US Early Stage Accelerator. We are under negotiation with multiple pharmaceutical companies to deliver their active pharmaceutical ingredient with our nanopolymers for non-cancer indications. Finally, we have been selected as the Top 10 Most Promising Biotech Startups from Asia 2023 by Asia Business Outlook magazine.

Go-To-Market Strategy

We plan to build a large molecule-drug delivery platform with our pH-responsive nanopolymer technology. We aim to out-license the technology or projects to pharmaceutical manufacturers or sell the company as M&A. To reach clinicians, we plan to utilize the existing commercial channels in the pharmaceutical industry.

What Makes Us Special

Our novelty is a pH-sensitive prodrug system for inflammatory cytokines. Our drug is inactive in healthy tissues, while competitors' naked cytokine or cytokine-productive genes are active off-target as well, resulting in toxicities against healthy tissues. In addition, our

Financial Info

Raising

\$4M

Valuation

\$3.53M

Business Stage

Seed

Business Type

Technology, Healthcare,
Engineering, Biotechnology

Meet the Team



Rika Tajima
VP Business

drug releases cytokines in tumors by sensing pathological signals, such as acidic pH, which we selected for its uniform distribution in the body and tumors. On the other hand, polymer-cytokine conjugates and antibody-cytokine fusion proteins compromise cytokine activation and therapeutic outcomes, resulting in lower efficacy compared to our drug. Furthermore, we are first in the race to deliver IL-12 to solid tumors using polymer-based drug delivery systems. Our patented pH-activated nanopolymers completely, yet reversibly, mask IL-12 in micelle form, leading in robust safety and efficacy. Therefore, we chose IL-12 for its crucial properties against cancer and its ability to recruit various immune cells to the tumor.