Lung-targeted LNP precision therapeutics for COPD

The Problem

Pulmonary macrophages are essential for lung defence and repair, yet when dysregulated, they contribute to chronic lung diseases, including chronic obstructive pulmonary disease (COPD), tuberculosis, and long COVID-associated inflammation/lung damage.

Current treatments lack cell-specific targeting, leading to off-target toxicity, poor delivery to lung macrophages, and limited ability to suppress the key pro-inflammatory pathways driving disease.

The Solution

- We have developed a lipid nanoparticle (LNP) platform that enables precise, cell-type–specific delivery of RNA therapeutics to lung macrophages *in vivo*.
- Our LNPs are engineered with signal lipids to promote selective uptake by pulmonary macrophages via intranasal or intravenous administration.
- This platform allows delivery of mRNA as well as siRNA therapeutics with minimal off-target uptake and no detectable toxicity, even with repeated treatment.

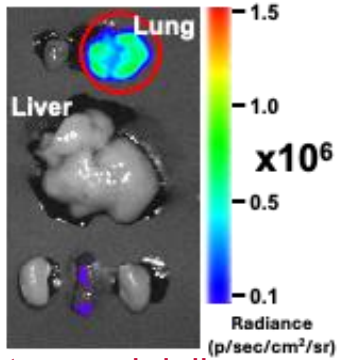
Our Program

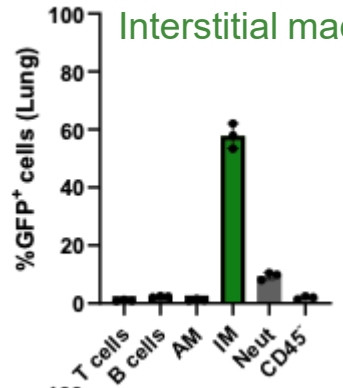
- Progress: We have designed a dual treatment approach for COPD, reducing the pathogenic macrophage population by delivering apoptosis-inducing siRNA, paired with anti-inflammatory mRNA to rewire cytokine signalling in the lung and repopulate it with pro-repair macrophages.

- To generate first proof-of-principle in a lung macrophage-driven disease, we used our apoptosis-inducing siRNA-LNPs to kill off *Mycobacterium tuberculosis*-infected alveolar macrophages and promote pathogen clearance *in vivo*, in a preclinical tuberculosis model.

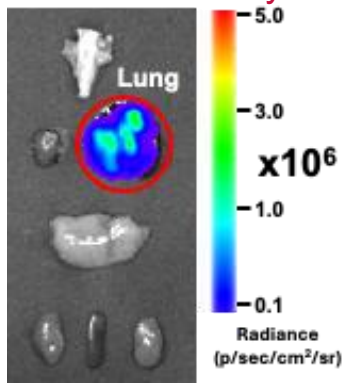
Seeking ***partnership, investment and/or commercial feedback***

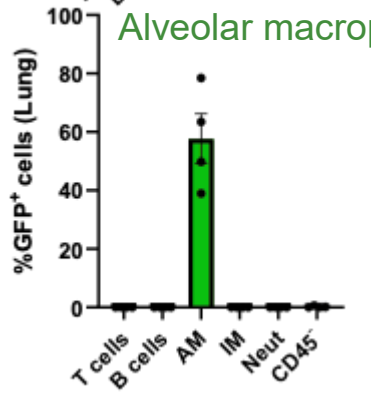
Intravenous delivery





Intranasal delivery





Our Team

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