

# Antigen-specific Cell Programming Using non-viral Approaches

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## **T cell therapies can be costly and carry serious risks**

The problem with current T cell therapies and vaccines is their reliance on costly, time-consuming ex vivo processes and the risk of global T cell activation or suppression, leading to severe toxicity or immunocompromise.

This innovative technology uses synthetic nanoparticles to deliver gene modulators and engineered MHC molecules directly to antigen-specific T cells in vivo. This approach enhances T cell specificity and function while reducing off-target toxicity, significantly decreasing costs and manufacturing time, and providing a more efficient method for inducing effective T cell responses.

## **Novel technology uses synthetic nanoparticles to limit the need for ex vivo processes**

This innovative technology leverages synthetic nanoparticles to deliver gene modulators and engineered MHC molecules directly to antigen-specific T cells in vivo. It demonstrates the capacity to redirect T cell specificity, enhance T cell functions, and sustain their activity against diseases, bypassing the need for costly and time-consuming ex vivo cell manufacturing processes.

## **Summary Bullets**

- This innovative technology uses synthetic nanoparticles to deliver gene modulators and engineered MHC molecules directly to antigen-specific T cells in vivo, enhancing T cell functions and bypassing ex vivo processes.
- The prototype improves T cell specificity and reduces off-target toxicity, significantly lowering costs and manufacturing time for effective T cell therapies.
- It has applications in cancer therapy, immune therapy, autoimmune disease therapy, and infectious disease therapy.

## Solution Advantages

- Antigen-specific targeting capabilities
- Reduced off-target toxicity
- Significantly decreased cost and manufacturing time

#### Potential Commercial Applications

- Cancer therapy
- Immune therapy
- Autoimmune disease therapy
- Infectious disease therapy

#### Inventors

- Dr. Gabriel Kwong  
Associate Professor - Wallace H. Coulter Department of Biomedical Engineering Director, Laboratory for Synthetic Immunity

#### IP Status

<p>The following patent has published</p>: WO2022250811A2

#### Publications

[In vivo gene delivery to immune cells](#), OSFPrePrints - 2023

#### Images

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