**Technology Overview**

Currently, there are no reliable vaccines physicians can use to treat infectious diseases that require responses by T cells. For example, even though biotechnology continues to reveal antigens that T lymphocytes can target in vitro, clinical trials for corresponding vaccines often fail because many immunized patients do not produce enough cells that express the required receptors. To address this problem, Dr. Matthias Stephan has developed nanoreagents that can genetically program T cells to bind selected vaccine epitopes. These can be injected in combination with a vaccine antigen to generate defined T-cell receptor mediated immunity in any individual independent of the pre-existing TCR repertoire. Nanoparticles are both easy to produce in a stable form and easy to administer, so this strategy will provide an inexpensive way for physicians to generate pathogen-specific immunity in a variety of clinical settings.

**Application**

- Vaccines

**Advantages**

- Currently no method for programmed T cell immunity
- Cost-effective

**Market Overview**

This technology can be adapted for use with many vaccine types. The global vaccines market is expected to reach $48 Billion by 2021 driven by the high prevalence of disease.

**Investigator Overview**

Matthias Stephan, MD, PhD

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**BUSINESS OPPORTUNITY**

- Exclusive License
- Sponsored Research

**TECHNOLOGY TYPE**

Therapeutic

**STAGE OF DEVELOPMENT**

Pre-clinical in vitro

**PATENT INFORMATION**

Patent pending

**LEARN MORE**

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**GENETIC PROGRAMMING OF T CELLS TO PREVENT VACCINE FAILURES**

**Synthetic Nanoparticles for Increased Vaccine Effectiveness**

**Brief Description of Technology**

Nanoparticles to establish immunity against defined pathogens by introducing exogenous antigen-specific TCRs into T cells