Technology Overview

Dr. Matthias Stephan developed a biopolymer scaffold harboring both cancer-fighting immune cells and vaccine adjuvants to stimulate endogenous lymphocytes. The resorbable polymeric device is surgically implanted on inoperable tumors or in sites of tumor resection. The immune cells can migrate out of the biopolymer and eradicate tumors more effectively compared to systemic delivery of the same cells. Codelivery of vaccine adjuvants stimulates immune responses to eliminate tumor cells that are not recognized by the adoptively transferred immune cells. In vivo applications of T cell seeded biopolymer scaffolds codelivered with vaccine adjuvants in murine models of breast, skin, ovarian and pancreatic cancer exhibited rapid tumor clearance and systemic anti-tumor immunity. This device can improve the effectiveness of immunotherapy in solid tumors and help protect against the emergence of escape variants.

Applications

- Solid tumors therapy
- Targeted delivery of immunotherapy and vaccine adjuvants

Advantages

- Treatment of inoperable solid tumors
- Stimulation of systemic anti-tumor immunity

Market Overview

This technology can be developed to treat many types of solid tumors, with the global oncology market topping $100 billion in 2015. The cancer immunotherapy market is set to reach $9 billion worldwide by 2020.

Investigator Overview

Matthias Stephan, MD, PhD, Clinical Research Division