

## Stiffness of Cancer Tissue Impacts Efficacy of Immune Therapies: 3D-Printing Meets T-cells

Imagine a world where cancer can be treated with remarkable success using the body's own immune system. T-cell therapy, a revolutionary approach that engineers immune cells to target cancer, has made significant strides in treating blood cancers. However, its efficacy against solid tumors, like those in breast or bone tissues, has been limited. The reason? Neglecting the impact of the mechanical properties of cancer tissues on T-cell behavior.

### Research project

Our MSC thesis projects, "Stiffness of Cancer Tissue Impacts Efficacy of Immune Therapies: 3D-Printing Meets T-Cells," endeavors to bridge this critical knowledge gap. We aim to engineer 3D-printed microscaffolds that mimic the mechanical and morphological properties of breast cancer tissue. Through this, we will explore how these properties influence T-cell proliferation and responses. This innovative project blends bioengineering of T-cells with the fabrication of a 3D tumor microenvironment *in vitro*.

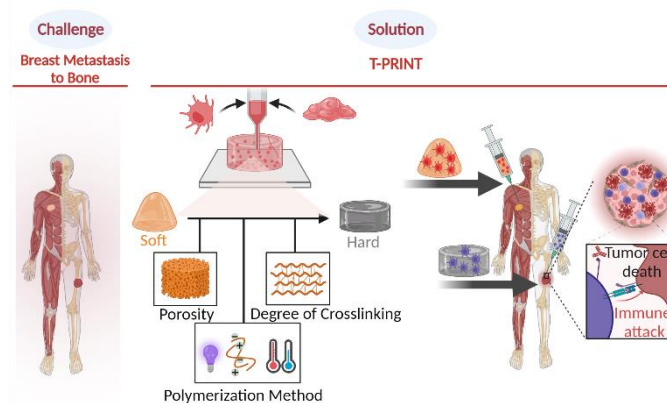


Figure 1. Schematic of problem, proposed solution

### What You'll Gain:

Joining this project is an opportunity to take your skills and knowledge to the next level. Here's what's in it for you:

- **Deepen Your Knowledge:** You will delve deep into the world of biomedical engineering and T-cell therapy, gaining a comprehensive understanding of cutting-edge research in these fields.
- **Multidisciplinary Skill Development:** You'll have the chance to develop a unique skill set by working at the intersection of bioengineering, cancer biology, and biological analysis.
- **Clinical and Technical Expansion:** Your involvement in this project will broaden your clinical and technical skills, preparing you for a successful career in the biomedical field.

**Collaboration:** This exciting project is a collaborative effort between the Department of Oncology at Erasmus MC and the Department of Chemical Engineering at TUDelft.

**Contact:** We are actively seeking several dedicated Master students to contribute to this groundbreaking research. If you are a highly motivated individual with a passion for bridging the gap between clinical and technological advancements, we encourage you to get in touch with Dr. Mahdiyeh Nouri. (e-mail: [m.nourigoushki@tudelft.nl](mailto:m.nourigoushki@tudelft.nl)).