Master Thesis Proposal

Title: Development of Logic Gating CAR T Cells for Solid Tumors
Lab: Max Delbrück Center, Department of Translational Tumorimmunology
Location: Berlin-Buch, Germany
Supervisor: Dr. Armin Rehm; Group Leader
Co-supervisor: Dr. Filippos Charitidis

Project Overview:
We are excited to announce an opening for a Master's thesis project in our lab at the Max Delbrück Center, Department of Translational Tumorimmunology. The project focuses on the development of logic gating CAR T cells designed to improve specificity and efficacy of immunotherapy against solid tumors. Chimeric Antigen Receptor (CAR) T cell therapy has shown tremendous success in treating hematological malignancies. However, its application to solid tumors remains challenging due to the tumor microenvironment and off-target effects. This project aims to address these challenges by engineering CAR T cells with logic gating systems that can enhance target specificity and efficacy.

Key Objectives:

- **Construction of CAR receptors:** You will use molecular cloning techniques to create novel CAR constructs with logic gating capabilities.
- **Cell culture and transduction:** You will gain hands-on experience in culturing cancer cells and T cells, and retro-/lentivirally transducing them with CAR constructs.
- **Functional assays:** You will perform assays such as flow cytometry and ELISA to assess CAR T cell functionality, including cytokine production, cytotoxicity, and specificity.
- **Data analysis and interpretation:** You will analyze experimental data to determine efficacy and specificity of the engineered CAR T cells.
- **Interdisciplinary Collaboration:** Engage with experts in immunology, molecular biology, and clinical research.

Ideal Candidate:
We are looking for a dedicated and ambitious student with a passion for molecular cancer research. The candidate will have strong communication skills, be highly motivated, and be eager to contribute to cutting-edge research in tumor immunology. A background in molecular biology, immunology, or a related field is preferred.

Requirements:

- **Education:** Enrollment in a Master's program in Molecular Biology, Immunology, Biotechnology, or a related discipline.
- **Skills:** Basic experience in molecular biology techniques (e.g., PCR, cloning), cell culture, and/or data analysis is advantageous.
- **Soft Skills:** Teamplayer, problem-solving abilities, and a commitment to scientific excellence.

Application Process:
Please send your CV, a cover letter detailing your motivation, research interests and relevant experience, and contact information of one academic reference, preferably as a single PDF via Email.

Contact Information: Dr. Armin Rehm; Email: arehm@mdc-berlin.de, Phone: 030-9406 3817
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