



Thesis Project Form

Title (tentative): Self-assembled peptides for cancer treatment

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Description

Motivation and application domain

Self-assembled enzyme-induced anticancer peptides represent a novel and targeted strategy against breast cancer. These peptides activate in response to tumor-specific enzymes, forming nanostructures that disrupt cancer cells selectively, enhancing therapeutic efficacy and minimizing side effects.

General objectives and main activities

This project focuses on the development of self-assembled enzyme-induced anticancer peptides for targeted breast cancer treatment. The aim is to design peptide sequences that remain inactive in healthy tissue but self-assemble into therapeutic nanostructures upon encountering enzymes overexpressed in the tumor microenvironment. These nanostructures selectively disrupt cancer cell function, triggering apoptosis while minimizing harm to surrounding healthy cells. The project involves peptide design, in vitro and in vivo testing, and evaluation of therapeutic efficacy and biocompatibility.

Training Objectives (technical/analytical tools, experimental methodologies)

The project uses peptide synthesis, enzyme-responsive design, self-assembly analysis (TEM, DLS), cytotoxicity assays and fluorescence imaging.

Place(s) where the thesis work will be carried out: University of North Texas

Additional information

Maximum number of students: 1

Financial support/scholarship: Erasmus placement