Rational Engineering of Modular Peptides for the Study of Cancer Cells and for Therapeutic Applications

Peptides are versatile biocompatible and biodegradable biopolymers that have a wide variety of applications in biotechnology and medicine. One of our objectives is to incorporate several biologically active key protein domains into short peptides for the development of modular materials for applications in cancer research. The engineered peptides are synthesized in our lab using automated solid phase microwave assisted peptide synthesis. We apply orthogonal chemistry strategies for the conjugation of several different small peptides and/or small molecules to produce tailored macromolecules or nanoparticles that exhibit multiple biological activities.