

Public Abstract

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Department:Physics

Degree:PhD

Title:Investigating Peptide-Lipid Interactions at Single Molecule level.

Despite the utmost importance of protein- lipid interactions in cellular activity, due to technical difficulties, this class of interactions has not been understood mechanistically. Obtaining a more complete understanding of these interactions would, for example, aid the design of more compatible and effective medicine to target specific cells. We developed a physical technique to study such interactions and investigated the interactions between small portions of a model protein with different types of membrane. We were able to detect physical interaction differences between the two at the single-molecule level. This technique is generalizable to study other small molecule-membrane interactions and helps scientists to have a better understanding of the transport of energy, nutrition and waste in and out of the cells. The machine that has been used in our investigations is a mechanical microscope called an AFM (atomic Force Microscope). In addition to making a topographical images, this tool enables us to pick up small molecules in a controlled and precise manner.