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A method for incorporating peptides into homogenous biosensors

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Abstract

Peptide ligands binding a number of important macromolecules are known in the literature. These include antibody epitopes and mimotopes, protein-protein interaction motifs, peptides discovered using phage display and protease recognition sequences. However there isn't a facile method of deriving homogenous biosensors based on these peptides. Here we present a method wherein the peptide is incorporated in a recombinant fusion protein as an allosteric hinge between an enzyme and its inhibitor. Upon interaction with its binding protein or cleaving protease, inhibitor dissociation from enzyme is effected, leading to signal generation in one step. We demonstrate specific and sensitive visual detection of multiple proteases and peptide binding proteins. The same system has been proven to be functional in vivo as well.

Biography

Dr. Saurabh Rajendra Nirantar completed my bachelor's degree in Biotechnology and Biochemical Engineering from the Indian Institute of Technology, Kharagpur in 2002. Thereafter I enrolled in a Ph.D program at the Institute of Molecular and Cell Biology (IMCB) in Singapore, completing in 2009. My work involved investigation of the mechanism of DNA damage checkpoint in budding yeast. My thesis was titled "Regulation of spindle behavior by DNA replication and damage checkpoints in budding yeast". Since September 2009 I have been working in the p53Lab in Singapore. My current work involves homogenous recombinant biosensors.