

Peptide biosensor for the molecular recognition of liver biomarker proteins

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A novel peptide capable of binding to alanine transaminase (ALT) was discovered by biopanning an M13 phage-displayed library. The selection procedure readily converged to a peptide (ALT5-8), with an amino acid sequence WHWRNPDFWYLK. The binding affinity of the peptide-containing phage particles was assessed by ELISA and the specific recognition of ALT was observed with a picomolar binding constant ($K_{app} = 8.14 \text{ pM}$). To evaluate this system, peptides with the same sequence were chemically synthesized with a C-terminal cysteine and immobilized on a gold surface. A quartz crystal microbalance (QCM) is used as a diagnosis tool during biosensor development, and electrochemical techniques (cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS)) are also used as the detection methods in the biosensor. In this talk, a general method for the facile development of new biosensors for detection of liver biomarker protein targets will be presented.