

Abstract Submitted
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Physical Detection of Specific Proteins using Gold Nanoparticles

PRIYANKA RAMACHANDRAN, SHAWN CHRISTENSEN, SAMIR IQBAL — Protein function relies on binding to specific target molecules in the context of the proteome, perturbations of the proteome are often coincident with diseases and disorders. The ability to detect proteins at the nano scale can lead to more effective treatments. In this work, we report electrical detection of proteins bound to aptamer DNA. For this, the R2Bm protein-DNA pair is used. The 24 base-pair probe DNA is modified with amino group and attached to silicon chips. The DNA binding region of the R2Bm protein is flowed in to the DNA-chip and allowed to bind. For the electrical detection, modified gold nanoparticles are flowed in. The specific binding of DNA and the protein is confirmed with staining. The binding of the gold nanoparticles to the protein is confirmed by electron microscopy. Our current work with metal nano-electrodes will also be presented.

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