

## Protein Aptasensor Using an Activation of DNA Polymerase Activity

정유진, 이창열, 박기수<sup>1</sup>, 박현규<sup>†</sup>

KAIST; <sup>1</sup>Konkuk University

(hgpark@kaist.ac.kr<sup>†</sup>)

In this study, a novel protein detection method based on the activation of DNA polymerase induced by the conformational change of the protein aptamer was described. Proteins, which is vital macromolecules in living organisms, are involved in almost life activities such as maintenance of body tissue, hormone regulation, and immune responses. The target protein aptamer is designed to be released from the DNA polymerase aptamer, due to the specific interaction with target protein. Therefore regulated polymerase activity by the DNA polymerase aptamer/protein aptamer complex is recovered, consequently leading to the increase of fluorescence signal in the second signal transduction step. The active DNA polymerase initiates primer extension reaction coupled with TaqMan probe. Also, the primer at 3' end of the protein aptamer is extended and destabilize the protein-aptamer interaction. Based on this method, we successfully determined the model protein lysozyme. Since this method consisted of separated target recognition step and signal transduction step, this new approach could be further applied to the development of universal protein assays by rationally designing of DNA probes.