

**Sensitive and optimal detection of mutations in epidermal growth factor receptor via gold nanorods-quantum dots FRET biosensor**

안희영, 강태경, 윤경아<sup>1</sup>, 이강택\*  
연세대학교; <sup>1</sup>국립암센터  
(ktleee@yonsei.ac.kr\*)

We report a simple, sensitive fluorescence assay for the detection of mutations in epidermal growth factor receptor (EGFR) by using gold nanorods. Almost of oncogenic mutations were located in exon 19 and exon 21 of EGFR gene from patients with non-small cell lung cancer (NSCLC). Gold nanorods with localized surface plasmon resonance (LSPR) peak at 600nm well caused fluorescence quenching with quantum dots (QD) on the basis of the fluorescence resonance energy transfer (FRET). The quenching efficiency is related to the spectral overlap of the GNR absorption and QD emission, distance between the two nanoparticles and probe length for hybridization. This study will be useful for sensitive and efficient detection of EGFR mutations in lung cancer.