컬러-코딩된 하이드로젤 마이크로입자를 이용한 히스톤 변형의 다중검출

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The epigenetic modifications in gene expression are influenced by environment. The individualized genome-wide analysis has become a essential technology for recent trends in clinical field. We report 3-multiplex detection of changes in modified histones using Quantum Dot-encoded polyethylene glycol diacrylate hydrogel microparticles. We present the simultaneous detection of acetylation of lysine 9 of histone 3, di-methylation of H3K9, and tri-methylation of H3K9 from three distinct regions in the brain of cocaine-exposed mice. Our hydrogel-based epigenetic assay enabled relative quantification of the three histone variants from only 10 μL of each brain lysate per mouse. We proved that the cocaine treatment induced a significant increase of acetylation while a notable decrease in methylation in NAc.