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**강연 제목: 암 바이오마커의 고민감도 검출을 위한 나노표면개질 기술 개발: 나노
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**Surface Engineering for Efficient Capture of Tumor Biomarkers: From
Nanoscale Analysis to Clinical Application**

Abstract:

The utilization of circulating tumor cells (CTC) as an indicator of tumor malignancy can improve patient care with the development of a comprehensive isolation device. However, the capture of CTCs has halted progress due to poor translational results from media trials of human blood. This paper details the efficacious development of a system that achieves highly sensitive CTC capture through a combination of dendrimer-mediated multivalent binding, biomimetic cell rolling, and the use of antibody cocktails.¹ Nano-engineered dendrimers with densely functionalized antibodies lowers the kinetic off-rate towards the target molecules, increasing the cell capture sensitivity. Moreover, the use of an antibody cocktail outperforms the conventional EpCAM-based approach through active targeting of CA9, EGFR, and c-MET. The exploitation of selectin-induced cell rolling further improves cancer cell detection by reducing the cell velocity in fluidic channels. As a result, the combination of these strategies enables to detect CTCs from patients' samples with higher sensitivity than the conventional EpCAM-based approach. The results demonstrate the potential to ultimately enable personalized medicine using CTCs.