

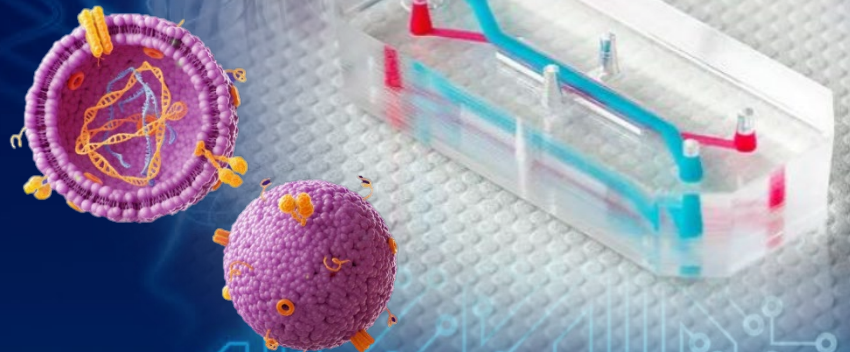
제 108회

ORGAN ON A CHIP

기술교류회

2024.09.12 목 오후 4시 30분

한림대학교 의료·바이오융합연구원 포스터홀



박종민 교수

강원대학교

1. Education

박사: 서울대학교, 화학과 (2012)

학사: 서울대학교, 화학과&생명과학부 (2005)

2. Experience

2018 ~ 현재 강원대학교 화학과, 부교수 (2023~)

2015 ~ 2018 Massachusetts General Hospital /
Harvard Medical School, Post-doc

2012 ~ 2014 서울대학교, Post-doc

제목

체액내 엑소좀 분석을 통한 질병진단

Liquid Biopsy : Extracellular Vesicle Analysis of Human Body Fluids

초록

Extracellular vesicles, including exosomes, are nanoscale membrane particles that carry molecular information on parental cells. They are being pursued as biomarkers of various diseases, especially cancer that are difficult to detect or serially follow. To solve this issue, we developed various sensor technologies for rapid, on-site exosome screening. One of our sensor technologies is based on an integrated magneto–electrochemical assay: exosomes are immunomagnetically captured from patient samples and profiled through electrochemical reaction. By combining magnetic enrichment and enzymatic amplification, the approach enables (i) highly sensitive, cell-specific extracellular vesicle detection and (ii) sensor miniaturization and scale-up for high-through put measurements. We demonstrated this system to screen extracellular vesicles in human body fluids such as plasma or urine samples from patients with kidney transplant rejection, ovarian cancer and colorectal cancer patients. The sensor allowed for the simultaneous profiling of multiple protein markers within an hour, outperforming conventional methods in assay sensitivity and speed. Along with integrated magneto–electrochemical assay, we have developed lateral flow assay systems, surface enhanced Raman spectroscopy and Deep-UV Raman EV analysis systems. Pros and cons of each EV analysis technology will be discussed for disease diagnosis.

주 관 한림대학교 미래융합스쿨 융합신소재공학전공, 융합신소재공학연구소

후 원 한국연구재단 중견연구사업, 글로벌 기초연구실사업

지 원 한림대학교 대학원 나노-메디컬 디바이스 공학 협동과정, 춘천바이오산업진흥원

문의처: de3553@hallym.ac.kr / Tel: 033-248-3557