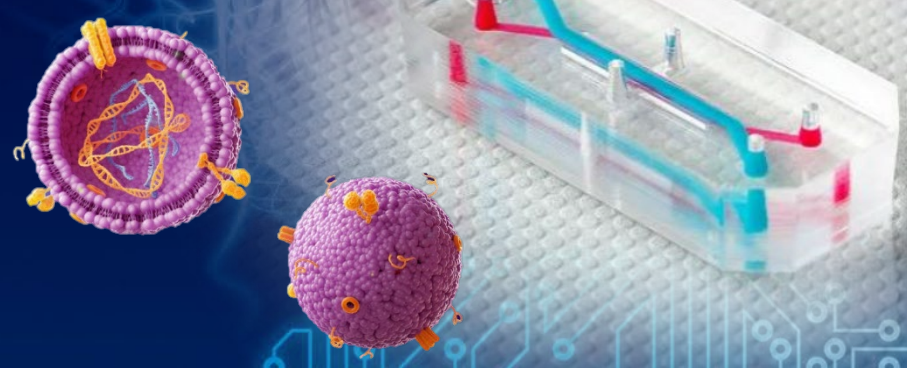
제 125회
ORGAN ON A CHIP 기술교류회

한림대학교

2025.11.20 목 오후 4시 30분

한림대학교 자연과학관 7103호



주진명 교수

울산과학기술원(UNIST)

1. Education

박사: 포항공과대학교 화학공학과 (2012)
학사: 포항공과대학교 화학공학과 (2007)

2. Experience

2019 ~ 현재	울산과학기술원 바이오메디컬공학과, 부교수
2016 ~ 2018	울산대학교 의과대학 융합의학과, 조교수
2013 ~ 2016	Univ. of California, San Diego, Chemistry and Biochemistry, Post-doc associate
2012 ~ 2013	포항공과대학교 환경연구소, Post-doc

나노소재를 이용한 차세대 정밀 의학 시스템

Nanoparticle that interacts with host biology: Toward targeted drug delivery and precision medicine

Nanotechnology have attracted great attention to molecular biology and translational medicine because life processes are maintained by the action of a series of molecular nanomachines in the cell machinery. Recent advances in nanoscale materials that possess emergent physical properties and molecular organization hold great promise to impact human health in the diagnostic and therapeutic arenas. In order to be effective, nanomaterials need to navigate the host biology and traffic to relevant biological structures, such as diseased or pathogenic cells. Moreover, nanoparticles intended for human administration must be designed to interact with, and ideally leverage, a living host environment. Inspired by nature, we use peptides to transfer biological trafficking properties to synthetic nanoparticles to achieve targeted delivery of payloads. In this talk, development of nanoscale materials will be presented with a particular focus on targeted drug delivery for precision medicine. Unique combinations of material properties that can be achieved with nanomaterials provide new opportunities in translational nanomedicine. This framework for constructing nanomaterials that leverage bio-inspired molecules to traffic diagnostic and therapeutic payloads can contribute on better understanding of living systems to solve problems in human health. The biocompatible and self-destructive nanocarriers present promising potential for therapeutic application via targeted delivery. Tailoring design strategies of the biomedical nanoparticle platforms and their practical applications as a theranostic agent are also discussed.

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