2024

PSK-이녹스 신진연구자 웨비나

2024년 8월 19일(월) AM 10:00 - 11:30 | 온라인 상

https://ewha.zoom.us/j/81650287696

주최 한국고분자학회 주관 의료용 고분자 부문위원회 후원 INNOX

○ 초대의 글

'PSK-이녹스 신진연구자 웨비나'는 우수한 연구역량을 가진 신진연구자를 발굴하여 교류의 장을 넓히고자 (주)이녹스의 후원과 한국고분자학회 주최로 마련한 온라인 세미나입니다. 이번 세미나에서는 Extracellular Vesicle을 활용한 첨단 의약 기술 및 고분자 박막을 활용한 줄기세포 테라퓨틱스 기술 관련 선도연구를 수행하는 신진연구자의 우수한 연구성과를 공유하는 자리를 마련하였으니 관심있는 분들의 많은 참여 부탁드립니다.

○ 일정

AM 10:00 - 10:45

Innovation for Biomedicine: Engineering Strategies of Extracellular Vesicles for in vivo Fate Control

Dong Gil You (유동길), dgyou@mgh.harvard.edu
Center for Systems Biology, Massachusetts General Hospital, Harvard Medical School

ABSTRACT: Extracellular vesicles (EVs), small membrane-bound particles (average diameter 150 nm) secreted by cells and containing a variety of cargoes (e.g., RNA, DNA, proteins), are emerging as cell-free therapeutic nanomedicines. However, clinical applications of EVs have been limited because they are primarily accumulated in and cleared by the liver and spleen, resulting in short biological half-lives in the body after administration. In this seminar, we will discuss engineering strategies of EVs to control their in vivo fate. The first chapter concerns surface modification strategies for stem cell-derived EVs and their application in treating liver fibrosis and rheumatoid arthritis. Next, we discuss the hydrogel system for EV delivery as a skin anti-aging strategy.

AM 10:45 - 11:30

Clinically Applicable Stem Cell Therapeutics: Xeno-Free Culture and Rapid Cell-Sheet Engineering Using Functional Polymer Films

Younghak Cho (조영학), ycho@kist.re.kr
Brain Science Institute, Korea Institute of Science and Technology (KIST)

ABSTRACT: Current challenges in cell therapeutics include the reliance on animal-derived materials in cell culture and the loss of cell performance during transplantation, which limit clinical applicability and raise safety concerns. Addressing these issues is crucial for advancing the field and ensuring the effectiveness of stem cell-based treatments. This research focuses on improving cell therapeutics by replacing animal-derived materials with functional polymers and enhancing the efficiency of cell sheet production for transplantation. To replace animal-derived materials like Matrigel, functional polymer films were created using chemical vapor deposition. These films support the culture of human embryonic and induced pluripotent stem cells in a chemically defined environment, enhancing their clinical potential. A novel method for creating cell sheets was developed by combining monomers with different surface energies to control cell adhesion. Additionally, removing divalent cations from the culture medium weakens adhesion protein binding, allowing rapid cell sheet production under isothermal conditions. This method shows superior therapeutic efficacy compared to traditional approaches. Overall, this research proposes innovative solutions to enhance cell therapeutics. By improving cell sheet engineering and developing alternatives to animal-derived materials, we aim to advance the field of cell therapy and its potential medical applications.

한국고분자학회
The Polymer Society of Korea