

세미나 초록

발표주제	Engineering organoids for regenerative medicine and drug development
발표내용	<p>Organoids have been highlighted for regenerative medicine, precision medicine, disease modeling, and drug discovery. However, current organoid culture methods and protocols have several limitations due to a lack of tissue-specific microenvironments and well-controlled dynamic culture systems, leading to immature structural and phenotypic characters and limited functionality. Therefore, we have developed functional hydrogels and microfluidics for improving organoid development and functions. Combination of tissue-mimetic hydrogels and microfluidic devices with dynamic flow could successfully recapitulate in vivo-like microenvironments favorable for organoids derived from stem cells, resulting in structural and functional maturation of several types of tissue organoids including brain, intestine, stomach, and liver. Accordingly, the organoids generated with engineering platforms exhibited improved metabolic activity and drug responses which are critical for the performance of drug testing platforms. They also showed regenerative efficacy upon transplantation into injured tissue. The bioengineering tools including biomaterials and devices reported herein would be able to facilitate the development of highly effective organoid platforms for tissue engineering, disease modeling, and drug discovery.</p>