

제 66회

ORGAN ON A CHIP

기술교류회

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한림대학교 SmartLEAD 온라인 강연



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1. Education

박사: 서울대학교 의학과 (2008)

석사: 서울대학교 의학과 (2003)

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2. Experience

2011 ~ 현재 분당서울대학교병원 신장내과, 교수

2014 ~ 2015 미시간대학교 의공학교실 장기연수

2008 ~ 2011 가천의대 길병원 신장내과, 조교수

제목

신장칩 연구의 현재와 미래 Kidney on a chip and its application

초록

Kidney dysfunction resulting from various drugs is an important issue during the drug development process. Traditional in vivo animal experiments are limited with respect to evaluating drug efficacy and nephrotoxicity due to discrepancies in drug pharmacokinetics and pharmacodynamics between humans and animals, and static cell culture experiments cannot fully reflect the actual microphysiological environment in humans. The pharmacodynamic and pathophysiological responses of cells are more realistic in microfluidic or 3D culture systems than in conventional 2D culture systems. Recently, several types of kidney-on-a-chip have been developed that reflect the microenvironment of the kidney tubule and have been shown to better reflect actual in-vivo results of drug nephrotoxicity. Using kidney-on-a-chip, investigators can measure various drug-induced biological responses. In the future, it is expected that a multi-organ chip will be utilized to examine the interaction between kidney and other organs, and kidney-on-a-chip can be used in disease modeling and the development of new renal replacement therapy. Using kidney-on-a-chip, researchers can create experimental environments resembling the physiological environments in human organs and obtain experimental results that better reflect human physiology. Kidney-on-a-chip can be used to overcome the drawbacks of traditional animal models and to more effectively identify drug effects, interactions, and drug-induced nephrotoxicity.

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