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Die Physikalisch-Medizinische Sozietät Erlangen und das Max-Planck-Institut für die Physik des Lichts

lädt Sie zu folgendem Vortrag ein:

„Towards organs-on-a-plate and injectable tissues"

Professor Milica Radisic

University of Toronto, Toronto General Research Institute, Canada
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Recent advances in human pluripotent stem cell (hPSC) biology enable derivation of essentially any cell type in the human body, and development of three-dimensional (3D) tissue models for drug discovery, safety testing, disease modelling and regenerative medicine applications. However, limitations related to cell maturation, vascularization, cellular fidelity and inter-organ communication still remain. Relying on an engineering approach, microfluidics and microfabrication techniques Prof. Radisic´s laboratory has developed new technologies aimed at overcoming them. Since native heart tissue is unable to regenerate after injury, induced pluripotent stem cells (iPSC) represent a promising source for human cardiomyocytes. Here, biological wire (Biowire) technology will be described, developed to specifically enhance maturation levels of hPSC based cardiac tissues, by controlling tissue geometry and electrical field stimulation regime (Nunes et al Nature Methods 2013). An overview of two new technologies, AngioChip (Zhang et al Nature Materials 2016) and inVADE (Lai et al Advanced Functional Materials 2017) will be presented, that overcome current organ-on-a-chip limitations and enable engineering of vascularized liver, vascularized heart tissues and studies of cancer metastasis. These platforms enable facile operation and imaging in a set-up resembling a 96-well plate. Finally, to enable minimally invasive delivery of engineered tissues into the body, a new shape-memory scaffold was developed that enables delivery of fully functional tissues on the heart, liver and aorta through a keyhole surgery (Montgomery et al Nature Materials 2017).

Dr. Milica Radisic is a Professor at the University of Toronto, Canada Research Chair in Functional Cardiovascular Tissue Engineering and a Senior Scientist at the Toronto General Research Institute. She obtained B.Eng. from McMaster University in 1999, and Ph.D. form the Massachusetts Institute of Technology in 2004, both in Chemical Engineering. Dr. Radisic received numerous awards and fellowships, including MIT Technology Review Top 35 Innovators under 35. Her research findings were presented in over 150 research papers, reviews and book chapters with h-index of 48 and over 6000 citations. She is a co-founder of a New York-based start-up company TARA Biosystems that uses human engineered heart tissues in drug development and safety testing for major pharmaceutical companies.

Mittwoch, 4. Oktober 2017, 17.15 Uhr

(45 Minuten Vortrag plus Diskussion,
im Anschluss findet die Jahresmitgliederversammlung der PhysicoMedica statt)

Veranstaltungsort:

Seminarraum (1.OG) des Instituts für Klinische Mikrobiologie, Immunologie und Hygiene, Wasserturmstraße 3/5
(Zugang: rückwärtiger Hörsaaleingang gegenüber der Orangerie)

Für Rückfragen wenden Sie sich bitte an:
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