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Vortragsankündigung

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Tissue spheroids as building blocks for biofabrication and and 3D bioprinting

Date: Thursday, 14.3.2019, 14.15 – 15.15
Location: Technische Universität Berlin, Institut für Biotechnologie, Building 21, Gustav-Meyer-Allee 25,13355 Berlin, Room 21-004

Organ printing could be defined as a robotic automated additive biofabrication of 3D tissues and organs using tissue spheroids and biomaterials (hydrogel based bioink) according to digital model. The three main advantages of using tissue spheroids as building blocks in bioprinting and biofabrication include: i) maximal possible cell density; iii) round shape suitable for bioprocessing and iii) intrinsic capacity of tissue spheroid for tissue fusion. Tissue spheroids (chondrospheres) are already used in clinical practice starting from 2008 by German biotech company "Co.don" (> 14000 cases) with success rate 75% for treatment cartilage defects. Enabling platform technology for 3D bioprinting of human endocrine organs using tissue spheroids will be presented. New innovative concept of formative biofabrication using magnetic, acoustic and magneto-acoustic fields as a new type of scaffold-like temporal and removable support (so-called "scaffield") will be presented including results of first successful magnetic levitational bioassembly of 3D tissue constructs at The International Space Station in the condition of microgravity using tissue spheroids (chondrospheres and thyrospheres) as building blocks. Finally, the indispensable role of biomaterials in any type of novel biofabrication technology will be discussed.

Short CV Vladimir Mironov

Vladimir Mironov was born in Russia in 1954. Vladimir Mironov finished Ivanovo State Medical Institute in 1977 as a medical doctor. He got his PhD in Developmental Biology from Second Moscow Pirogov Medical Institute in 1980. He was trained by Prof. Peter Kaufmann at The Department of Anatomy RWTH in Aachen and Werner Risau's lab in Germany in The Max Planck Institute for Psychiatry in Matinsried, Germany. He later worked at The Department of Anatomy and Regenerative Medicine and Advanced Tissue Biofabrication Center in The Medical University of South Carolina in Charleston, SC, USA and then at The Division of 3D Technologies of Renato Archer Institute for InformationTechnology at Campinas, SP, Brazil. Last 5 years he worked as a Chief Scientific Officer at 3D Bioprinting Solutions and Leading Scientist at Regenerative Medicine Institute of The Moscow Sechenov Medical University, Moscow, Russia. He is one of pioneer of 3D bioprinting technology and bioprinted a first functional and vascularized organ construct - a mouse thyroid gland. He got a prestigious Senior Investigation Award 2018 from The International Society of Biofabrication for pioneering contribution to development of 3D bioprinting technology. Last year his team performed first magnetic levitational bioassembly of 3D tissue construct sat The International Space Station.

How to find the seminar room: