

FORMATIVE BIOFABRICATION USING MAGNETIC LEVITATION

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Several research groups in USA, Turkey and Russia recently demonstrated the principal feasibility of magnetic levitational bioassembly of tissue engineered constructs from living tissue spheroids in the presence of paramagnetic medium. However, employed paramagnetic medium containing Gadolinium is relatively toxic at concentration enabling magnetic levitation. Using high magnetic field at the European high field magnet laboratory (HFML) at Nijmegen, The Netherland, it was possible first time to perform magnetic levitational assembly of tissue constructs from tissue spheroids biofabricated from osteosarcoma cells at 100 times lower concentration of Gadolinium. High magnetic field in this situation works as a temporal and removal support or scaffold. The magnetic levitation can serve as a Earth based model of space microgravity. Thus, formative biofabrication of tissue engineered constructs from tissue spheroids in the high magnetic field is a promising research direction



Biography

Vladimir Mironov has completed his MD from The Ivanovo State Medical Institute in 1977, PhD in 1980 from The Moscow Pirogov State Medical Institute and Post-doctoral studies from The Max Planck Institute for Psychiatry in Martinsried, Germany and from Medical University of South Carolina, Charleston, USA. He was a Director of the first Advanced Tissue Biofabrication Center in USA. He is now a Chief Scientific Officer of company 3D Bioprinting Solutions. He is a world recognized pioneer of organ printing technology. His company developed a first Russian commercial 3D bioprinter Fabion and then bioprinted a world first functional and vascularized organ – mouse thyroid gland construct.

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