Special Issue

Organoids and Advanced 3D Models in Biomedical Research

Message from the Guest Editor

Biomedical research faces a demanding need for the replacement of animal experiments by reliable, safe, and accurate in vitro models that fully recapitulate the structure and function of human tissues. Advances in stem cells bioengineering enabled adult stem cells (ASCs) and induced pluripotent stem cells (iPSCs) long-term culture in a 3D cellular structure named organoids. They recreate cellular architecture; are functionally similar to the tissue they are modeling and their use as models allow research without confusing influences from the local microenvironment. This Special Issue aims to disseminate state-of-the-art science around organoid model systems, covering organoids models in 3D microenvironments, genetic engineering of organoids and microphysiologic systems, as well as methods for improving organoids culture and high throughput screening. In this Special Issue, original research articles and reviews are welcome. Research areas may include (but not limited to) the following: disease modeling, personalized medicine, drug screening, tissue engineering, biomaterials, regenerative medicine and 3Rs.

Guest Editor

Dr. Marta Alves da Silva

Laboratory Animal Science Group, i3S-Instituto de Investigação e Inovação em Saúde, Rua Alfredo Allen, 208, 4200-135 Porto, Portugal

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Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
organoids@mdpi.com

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About the Journal

Message from the Editor-in-Chief

Functional human 3D tissue models are attractive platforms for disease studies, drug development and toxicity testing. They serve as a bridge between cell cultures, animal models and clinical trials. Such models are called organoids. Numerous scientists worldwide are currently researching the generation of new complex organoid models and improving culturing conditions to handle them in a way that is reproducible, cost-effective, and easy. Achieving this goal is still a major challenge, but the organoid field has developed rapidly in recent years, reaching a new level of complexity and playing a growing role in medical research. Organoids' goal is to create a platform to present new and exciting data covering all aspects of organoid, assembloid, embryoid, or organ-on-a-chip research.

Editor-in-Chief

Prof. Dr. Süleyman Ergün
Institute of Anatomy and Cell Biology, University of Würzburg, 97070 Würzburg, Germany

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