

Special Issue

Molecular Mechanisms of Tumorigenesis of Human and Animal Stem Cells

Message from the Guest Editor

Pluripotent stem cells (PSCs), including both embryonic stem cells (ESCs) and induced pluripotent stem cells (iPSCs), have become important tools in biomedical research. Despite their potential, growing concerns exist about the spontaneous mutations and large-scale chromosomal aberrations these cells can acquire during extended culture. Although an ongoing research and debate topic, multiple studies have indicated that these genetic changes often affect genes crucial for cell cycle regulation, possibly leading to a growth advantage for aberrant hPSCs and an increased risk of malignancy in vivo. Therefore, a deeper understanding of the onset and consequences of these chromosomal aberrations and single-nucleotide mutations is essential. This knowledge is necessary to ensure the safety and effectiveness of hPSC-derived products for therapeutic uses and their reliability in tissue and disease modeling. This need is underscored by the guidelines from the International Society for Stem Cell Research (2023a) and the FDA's safety testing guidelines for human allogeneic cells used in cell-based medical products.

Guest Editor

Prof. Dr. Daniela Salvatori

Anatomy and Physiology, Department of Clinical Sciences, Faculty of Veterinary Medicine, Utrecht University, Yalelaan 1, 3584 CL Utrecht, The Netherlands

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MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
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