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Pluripotent Stem Cells for Cardiac Differentiation and Disease Modeling

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Message from the Guest Editor

Cardiovascular disease is responsible for the highest mortality rate worldwide. Since the groundbreaking discovery of human-induced pluripotent stem cells (iPSCs), many scientific reports have appeared on the differentiation of specialized cardiac cell types and derivation of patient-derived iPSCs for modeling cardiac disease or for potential therapeutic applications in regenerative medicine.

Despite these recent advances, significant hurdles need to be overcome. How can we accomplish cardiovascular cell cultures and multicellular vascularized cardiac tissues with a similar level of maturation, organization, and function as observed in vivo – if possible or required at all? How can we mimic monogenic, polygenic, or multifactorial human cardiac diseases, or important aspects or phases of cardiac disease? Current advances in various technologies, including stem cell differentiation, genetic modification, tissue engineering or organoid formation, microfabrication, and microfluidics (organs-on-chip), which are needed to close the gap between human in vitro models and the patient, will be discussed in this Special Issue.









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Message from the Editor-in-Chief

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