

*Special Issue Reprint*

## **Stem Cell Bioprocessing and Manufacturing**

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Edited by

Joaquim M. S. Cabral

Cláudia Lobato da Silva

Maria Margarida Diogo



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The next healthcare revolution will apply regenerative medicines using human cells and tissues. The aim of the regenerative medicine approach is to create biological therapies or substitutes in vitro for the replacement or restoration of tissue function in vivo lost through failure or disease. However, whilst science has revealed the potential, and early products have shown the power of such therapies, there is an immediate and long-term need for expertise with the necessary skills to face the engineering and life science challenges before the predicted benefits in human healthcare can be realized. Specifically, there is a need for the development of bioprocess technology for the successful transfer of laboratory-based practice of stem cell and tissue culture to the clinic as therapeutics through the application of engineering principles and practices. This Special Issue of Bioengineering on Stem Cell Bioprocessing and Manufacturing addresses the central role in defining the engineering sciences of cell-based therapies, by bringing together contributions from worldwide experts on stem cell biology and engineering, bioreactor design and bioprocess development, scale-up, and manufacturing of stem cell-based therapies.

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