

Special Issue on Cell Cycle and Apoptosis Regulation of Stem Cells

CALL FOR PAPERS

Stem cells have the capacity to self-renew and the ability to differentiate into specialized cell types. Among these cells, pluripotent stem cells (embryonic or induced pluripotent) hold great promise as models for development and disease studies, cell-replacement therapies, drug discovery, and in vitro cytotoxicity tests. Cell proliferation, differentiation, and death are fundamental processes in multicellular organisms, and several lines of evidence link apoptosis to proliferation. Thus, all attempts to define the mechanisms that govern cell cycle and cell survival in stem cells and their differentiating progeny would shed light on the knowledge of stem cell biology and further use in medicine. Noteworthy, the maintenance of genome integrity is critical for stem cells, and, as a consequence, they are exceptionally sensitive to exogenous stressors or improper signals and quickly undergo apoptosis rather than attempting to repair the compromised genome. The understanding of why stem cells are so sensitive to external cues could help to improve large-scale in vitro expansion of stem cells, the generation of a safe transplantable cell source with no or minimal risk for tumor/teratoma formation, and the clinical outcome of therapies relying stem cells-derived cells.

On the other hand, cancer stem cells, which represent a minor sub population within tumor cells, can differentiate into heterogeneous tumor populations and are thought to be responsible for drug resistance and tumor relapse. Given the heterogeneity of the response of cancer stem cells to chemotherapeutic drugs, understanding their cell cycle and apoptosis regulation would help the development of new anti-cancer therapies and pave the way towards precision medicine.

The aim of this special issue is to find some answers about how to selectively target undifferentiated, and thus more dangerous, pluripotent stem cells (as a potential teratoma source) and cancer stem cells and to also summarize the most recent and advanced developments and approaches on this field.

Potential topics include but are not limited to the following:

- ▶ Molecular pathways that regulate cell cycle/apoptosis of pluripotent stem cells and its differentiated progeny
- ▶ New insights into cell cycle regulation and DNA damage response in stem cells (embryonic and induced pluripotent)
- ▶ Novel methods or drugs that allow specific elimination by apoptosis induction of residue-undifferentiated pluripotent stem cells that have teratoma potential before the clinical application of stem cells-derived cells
- ▶ Identification of new cell cycle/apoptosis targeting agents for cancer stem cells
- ▶ Novel aspects of cell cycle/apoptosis regulation in cancer cells reprogramming

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/sci/ccpc/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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