Stem Cells International

Hindawi

Special Issue on

Transcriptional Regulatory Mechanisms in Pluripotency and Self-Renewal of Pluripotent and Cancer Stem Cells

CALL FOR PAPERS

Pluripotent stem cells are of great interest as a model system for studying early developmental processes and they possess great potential in regenerative medicine. Cancer stem cells are considered the tumor initiating cells responsible for tumor resistance or recurrence after chemotherapy.

The two main characteristics common to pluripotent and cancer stem cells are pluripotency and self-renewal. It has been hypothesized that the similarities between pluripotent stem cells and cancer stem cells might relate to their shared patterns of gene expression regulation, which might be associated with the 'embryonic' state. Both of these 'stemness' processes are tightly regulated at the transcriptional level, with a level of complexity that is becoming always deeper than in the past.

During the past decade, advances in high-throughput technologies, such as gene expression profiling by microarrays or sequencing, global mapping of transcription factor-DNA interactions and histone modifications by chromatin immunoprecipitation (ChIP) sequencing, mapping of protein-protein interactions with the identification of members of protein complexes by affinity purification followed by mass spectrometry, and the unbiased knockdown of genes by RNA interference (RNAi), have allowed the assembly of considerable databases of proteomic and genomic information.

These new tools have provided the basis for deeply understanding the complex transcriptional regulatory mechanisms involved in pluripotency and self-renewal of pluripotent and cancer stem cells. Many laboratories are starting to investigate how all involved molecules interact with each other in the complex regulatory networks governing pluripotency and self-renewal.

This special issue intends to shed light on this accumulating information, which can be critical for the establishment of new targeted therapies to selectively modulate such 'stemness' properties and hopefully hit chemoresistant cancer. We invite reviews and original research articles describing current state and/or new challenges on mechanisms governing transcription regulation in pluripotent and cancer stem cells.

Potential topics include, but are not limited to:

- Regulatory networks in stem cell self-renewal
- Growing pathways in pluripotency maintenance
- Embryonic and cancer stem cells: similarities and differences in transcriptional pathways
- The Sox2-interactome in brain tumors
- Chromatin complexes in stem cell self-renewal
- The Nanog-interactome in pluripotency and self-renewal
- Targeting self-renewal in cancer stem cells
- The emerging epigenetic factors of pluripotency
- OCT4 in normal and aberrant mammary gland
- MicroRNA modulation of pluripotency-associated genes
- New players in reprogramming process

Authors can submit their manuscripts via the Manuscript Tracking System at http://mts.hindawi.com/submit/journals/sci/pluplu/.

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