Stem Cells International

Special Issue on

Factors Regulating Stem Cell Biology in Development and Disease

CALL FOR PAPERS

One of the major characteristics of stem cells is the ability to divide symmetrically, the so-called self-renewal. Genes preserving stem cell identify are termed "stem cell factors." Although the most prominent pluripotent stem cell factors are comprised by the Yamanaka factors, other genes such as Nanog or Tbx3 play crucial roles in maintaining the pluripotency circuitry. However, such "stem cell factors" not only ensure stem cell function but also play so far underestimated roles.

First, recent reports suggest that "stem cell factors" fulfill additional functions during the stepwise phases of cell lineage commitment. For instance, during germ layer formation, Oct4 and Tbx3 promote mesodermal and endodermal fate and limit neuroectoderm differentiation potential. In contrast, Sox2 enhances neuroectoderm specification while restricting mesoderm and endoderm lineage development. Later, these factors are subsequently involved in tissue development.

Second, one hallmark of cancer is the ability to reactivate genetic programs known from early development and stem cells. Interestingly, signaling cascades regulating early patterning in the embryo such as Nodal signaling are again overexpressed during cancer development, and "stem cell factors" can drive dysplasia and tumorigenesis suggesting an intimate link between embryonic cell fate decisions, stem cells, and tumor development. In this special issue, we welcome review and original papers focusing on alternate functions of "stem cell factors" playing a role in disease but also during cell fate determination.

Additionally, we encourage reports on "disease specific genes" and their role in preserving stem cell identity as well as on new factors regulating cancer stem cell identity.

Potential topics include, but are not limited to:

- New stem cell factors
- Expression patterns of stem cell factors
- Impact of stem cell factors on cell differentiation and function
- Disease specific genes and their role in preserving stem cell identity
- New factors regulating cancer stem cell identity

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

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