Stem Cells International

Special Issue on

Modeling CNS Development and Disease

CALL FOR PAPERS

The ultimate goal for the majority of stem cell research is directed at uncovering mechanisms of and developing treatments for disease and/or injury. The central nervous system (CNS) presents an unparalleled challenge for these studies due to the diversity of cell types and their interrelated functions in health and disease. For this reason extensive effort has been placed on developing methods to differentiate appropriate populations of cells that reside within the CNS (e.g., neuronal subtypes, astrocytes, and oligodendrocytes), each with unique roles in disease processes. Much of this work has been informed by basic developmental studies that have identified cell-intrinsic and -extrinsic signaling mechanisms, as well as transcriptional programs involved with cell fate specification. In turn, the use of these factors to direct differentiation of stem cells can be reciprocally informative to non-stem-cell biologists, especially for use as fate markers and for cross-species comparisons. While early work focused on the use of mesenchymal stem cells, embryonic carcinoma cells, and fetal stem cells, more recent efforts have proliferated in the areas of embryonic stem cells, induced pluripotent stem cells, and direct conversion of somatic cells. These new sources typically require slightly different methods to direct differentiation to various CNS fates, although many mechanisms appear to converge on common signaling pathways.

In this special issue we invite investigators to contribute original research as well as review articles that address the proliferation and refinement of methods to define and characterize multiple types of CNS populations for the study of development and disease.

Potential topics include, but are not limited to:

- Intrinsic and/or extrinsic signaling mechanisms for fate specification
- Improving cell fate specification for:
  - Neurons
  - Astrocytes
  - Oligodendrocytes
  - Microglia
  - Other cells residing in the CNS (pericytes, epithelia, etc.)
- Direct conversion of progenitors and somatic cells
- Methods for validating cell types including the use of markers and functional assays
- Comparisons of neural "induction" protocols and the process of standardization for various methodologies
- 3D cultures to model self-organization and organogenesis
- Modeling neurodegenerative diseases using hESC, iPSCs, and direct programming
- Small molecules and endogenous morphogen for regionalization
- Methods for maintaining progenitor populations
- Bioinformatic analysis of cell populations

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

Lead Guest Editor
Jason Weick, University of New Mexico, Albuquerque, USA
jpweick@salud.unm.edu

Guest Editors
Jason Meyer, Indiana University-Purdue University at Indiana, Indianapolis, USA
meyerjas@iupui.edu

Julia Ladewig, University of Bonn, Bonn, Germany
jladewig@uni-bonn.de

Weixiang Guo, Chinese Academy of Sciences, Beijing, China
wxguo@genetics.ac.cn

Yan Liu, Nanjing Medical University, Nanjing, China
yanliu@njmu.edu.cn

Manuscript Due
Friday, 18 December 2015

First Round of Reviews
Friday, 11 March 2016

Publication Date
Friday, 6 May 2016