Stem Cells International

Special Issue on
Genome-Targeted Modifications in Embryonic Stem Cells

CALL FOR PAPERS

Embryonic stem cells (ESCs) are derived from the inner cell mass of blastocyst-stage embryos and are considered to be pluripotent as they can differentiate towards cells from the three embryonic germ layers. They represent an excellent model to study developmental biology, model disease *in vitro*, improve protocols for efficient differentiation into specific cell types, or implement new high throughput technologies seeking for new drugs. However, a very important limitation for this cellular model, especially for human pluripotent stem cells, has been the difficulty in introducing genome-specific modifications to create tools such as knockout or reporter cell lines, isogenic control cell lines, or genetically complex cellular models.

The recent development of powerful genome modification technologies is paving the way for generating a whole new array of cellular tools as well as new applications in which only imagination seems to limit the possibilities. Initially, the development of zinc finger nucleases (ZNF), or the so-called transcription activator like effector nucleases (TALENs), allowed specific genome editing with certain limitations (i.e., efficiency or cost). However, CRISPR/Cas9 technology has democratized the power of easy and affordable genome editing and provoked a whole revolution in the field.

We invite researchers to submit original contributions and review articles for this special issue that provide advances to the field of genome-targeted specific modifications in pluripotent cells or address some of the current concerns and problems associated with these technologies.

Potential topics include, but are not limited to:

- Genome modifications performed in pluripotent stem cells using ZNFs, TALENs, or CRISPR/Cas9
- Genome modification in pluripotent cells from different than human or mouse origin (pig, cow, rat, etc.)
- Development of new technologies or tools in ESCs based on CRISPR/Cas9 technology (gene activation, epigenetic modifications, protein tagging, etc.)
- Characterization of new ESCs tools (reporter cell lines, disease models, etc.)
- CRISPR/Cas9-based screenings using ESCs as cellular model
- New strategies to limit off-target effects as a result of unwanted double strand brakes (DSBs) in the genome of pluripotent cells
- Animal models derived from gene-targeted pluripotent cells by ZNFs, TALENs, or CRISPR/Cas9

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

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