Stem Cells International

Hindawi

Special Issue on

The Circadian Rhythm in Homeostasis and Dysfunction of Organisms from Cell to Organ 2023

CALL FOR PAPERS

The circadian rhythm is an intrinsic autonomous oscillator, which controls daily rhythms of molecular and physiological activities to allow organisms to anticipate and adapt to daily environmental changes. The circadian rhythm is being studied in depth in differentiated cells, adult stem cells, and even embryonic stem cells, contributing to the interpretation of the mechanisms by which chronic 'mis-phasing' of clocks in a modern society of extended artificial light and extensive shift work might lead to the increased prevalence of cancer, metabolic and cardiac diseases observed in recent years.

The circadian rhythm emerges gradually during ontogeny. The circadian rhythm system may coordinate and symphonize all kinds of stem cell proliferation, microenvironment, and signaling networks that control differentiation and self-renewal, thereby promoting tissue homeostasis and regeneration, such as hematopoietic progenitor cell migration, hair follicle cycle, bone remodeling, regenerative myogenesis, and neurogenesis. However, how do circadian rhythms evolve during embryonic and pluripotent stem cell differentiation, how do rhythmic interactions in the maintenance of adult stem cell function, and how does the rhythm control organism homeostasis such as organogenesis, tissue and organ regeneration, and aging as well as the abnormal by driving some specific mechanism? Answering these temporal physiology-related questions is a timely and exciting challenge for physiology and pathology beyond stem cells and organogenesis in the future.

This Special Issue aims to collect original research and review articles that focus on cell differentiation, organogenesis, tissue regeneration, and dysfunction with normal or abnormal homeostasis involved in circadian rhythms. We hope this Special Issue will facilitate discussion, support, and advocacy on how the circadian regulatory network regulates body balance.

Potential topics include but are not limited to the following:

- The circadian rhythm in embryonic and pluripotent stem cells to differentiated cells and organoids
- The circadian rhythm and developmental time in organogenesis
- The circadian rhythm and developing synchronization in embryonic and adult stem cells
- Crosstalk between stem cell clocks and their niches
- Extrinsic signals and the interaction between stem cells and their niches
- Light, metabolites, and hormones in the regulation of the circadian rhythm for synchronization of cells and tissue and/or organ
- Using proteomics, large-scale genome sequencing, and gene editing technologies to study organ development and regression under circadian rhythm regulation
- The changes of the tissue microenvironment and circadian rhythm regulate stem cell fate during aging and disease
- Circadian rhythm disorders in dysfunction or disease beyond hairless diabetics and NASH
- Development of translational studies and optimized protocols for stem cells based on chronobiology
- Chronobiology-based bioengineering techniques used to reshape the microenvironment to regulate the fate of stem cells
- Small molecule manipulation of the circadian rhythm used for tissue regeneration and anticancer therapy
- Molecular pathways that regulate circadian rhythms and cause disease
- Photoreceptor mechanisms in circadian regulation and genetic predisposition to circadian photosensitivity

Authors can submit their manuscripts through the Manuscript Tracking System at https://review.wiley.com/submit?specialIssue=656532.

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

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