

Special Issue

Molecular Basis of Intestinal Epithelial Stem Cell Specification, Maintenance and Differentiation

Message from the Guest Editors

The small intestine has many vital functions, including absorption of nutrients, secretion of hormones and barrier in host defence against microorganisms. These functions of the small intestine depend on the correct specification and maintenance of differentiated epithelial cells. The continuous renewal of the epithelium is supported by Intestinal Stem Cells (ISCs). We know relatively well genetic factors that control self-renewal and differentiation of ISC population in homeostasis. Yet, we do not know whether each ISC responds equally to the differentiation stimuli. The molecular events that control de-differentiation and proliferation of the intestinal epithelium upon injury are unclear. Recent studies demonstrated that reciprocal interactions between ISCs and immune cells are essential for tissue repair without excessive proliferation. There are strong links between the regeneration of intestinal epithelium, diet-derived nutrients, gut microbiota and their metabolites. However, the mechanisms underlying these correlations are not well established. This special issue focuses on the molecular mechanisms regulating intestinal stem cell functions in homeostasis and disease.

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