

Epigenomic Analysis of Lgr5+ Stem Cells in Gastrointestinal Tract

Authors : Hyo-Min Kim, Seokjin Ham, Mi-Joung Yoo, Minseon Kim, Tae-Young Roh

Abstract : The gastrointestinal (GI) tract of most animals, including murine, is highly compartmentalized epithelia which also provide distinct different functions of its own tissue. Nevertheless, these epithelia share certain characteristics that enhance immune responses to infections and maintain the barrier function of the intestine. GI tract epithelia also undergo regeneration not only in homeostatic conditions but also in a response to the damage. A full turnover of the murine gastrointestinal epithelium occurs every 4-5 day, a process that is regulated and maintained by a minor population of Lgr5+ adult stem cell that commonly conserved in the bottom of crypts through GI tract. Maintenance of the stem cell is somehow regulated by epigenetic factors according to recent studies. Chromatin vacancy, remodelers, histone variants and histone modifiers could affect adult stem cell fate. In this study, Lgr5-EGFP reporter mouse was used to take advantage of exploring the epigenetic dynamics among Lgr5 positive mutual stem cell in GI tract. Cells were isolated by fluorescence-activated cell sorting (FACS), gene expression levels, chromatin accessibility changes and histone modifications were analyzed. Some notable chromatin structural related epigenetic variants were detected. To identify the overall cell-cell interaction inside the stem cell niche, an extensive genome-wide analysis should be also followed. According to the results, nevertheless, we expected a broader understanding of cellular niche maintaining stem cells and epigenetic barriers through conserved stem cell in GI tract. We expect that our study could provide more evidence of adult stem cell plasticity and more chances to understand each stem cell that takes parts in certain organs.

Keywords : adult stem cell, epigenetics, LGR5 stem cell, gastrointestinal tract

Conference Title : ICECT 2018 : International Conference on Epigenetics, Chromatin and Transcription

Conference Location : Singapore, Singapore

Conference Dates : January 08-09, 2018