Yoshiaki Ito, J Cell Sci Ther 2017, 8:1 (Suppl)
http://dx.doi.org/10.4172/2157-7013.C1.038

Identification of RUNX1 enhancer element that targets tissue stem cells of gastric and other organs

Yoshiaki Ito
National University of Singapore, Singapore

The understanding of gastric carcinogenesis is still relatively poor, because of the lack of knowledge of stem cells in stomach. Stomach is roughly divided into the corpus (main body) and antrum (next to duodenum). Rapidly growing cells are located in the isthmus of both corpus and antrum. We reported earlier on the 270 bp RUNX1 enhancer element that drives the expression of RUNX1 in hematopoietic stem cells (HSC), termed eR1. We now show that eR1 also targets isthmus of both the corpus and antrum. A well-known stem cell marker, Lgr5 was reported to identify stem cells of stomach but never in the isthmus. In the antrum, Lgr5+ cells are located at the base of antrum below the location where eR1+ cells reside. Both Lgr5+ cells and eR1+ cells have the ability to form organoids which are considered to develop only from stem cells. I will discuss about the presence of more than one stem cell types in a given tissue. Small number of eR1+ cells is also detected in fully differentiated chief cells that express pepsinogen located at the base of corpus. There are several reports showing the ability of chief cells to proliferate. Currently, there are disagreements among the researchers as to whether chief cells have potential to have stem cell activity. The consequence of K-rasG12 expression in eR1+ cells will also be discussed.

Biography

Yoshiaki Ito has obtained his MD and PhD from Tohoku University, Japan and studied in Duke University, USA, Imperial Cancer Research Fund Laboratories, UK and NIH, USA. He became Professor in 1984 in the Institute for Virus Research, Kyoto University and served as Director between 1995-2001. In 2002, he moved to the Institute of Molecular and Cell Biology in Singapore and also served as Director of Oncology Research Institute, National University of Singapore (NUS) between 2002 and 2008. He is currently a Senior Principal Investigator at the Cancer Science Institute of Singapore, NUS. He discovered the middle T of polyomavirus and RUNX gene.

csiitoy@nus.edu.sg

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