

Genes and Cells 2016 vol.10 N4, pages 23-28

Hepatic stellate cells - Regional stem cells of the liver or a component of microenvironment?

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Abstract

For years, it is debated about the nature and localization of stem cell of the liver. In recent years, a particular interest is paid to hepatic stellate cells. According to the conducted researches, these cells are actively involved in restoring of hepatocytes population by different liver damages and they have a number of properties specific to stem cells. It should be noted that hepatic stellate cells are able to maintain viability in culture and differentiate into hepatocyte direction under certain conditions in vitro. Interestingly, hepatic stellate cells may themselves create such conditions for progenitor cells in vivo, as well as in vitro. This is achieved thanks to the hepatic stellate cells secretion of the extracellular matrix proteins, a complex of growth factors and establishment of direct intercellular contacts. Stellate cells, localized in perisinusoidal space, are also influenced by the surrounding hepatocytes and endothelial cells. Thus, perisinusoidal space is a kind of dynamic system, in which hepatocytes and endothelial cells determine the "resting" state of stellate cells, and the latter, if necessary, can be activated and participate in restoration of the liver cell populations. Based on these data, the researchers suggest that the hepatic perisinusoidal space - a niche of hepatic stellate cells, regional stem cells of the liver.

Keywords

Hepatic regional stem cells, Hepatic stellate cells, Microenvironment