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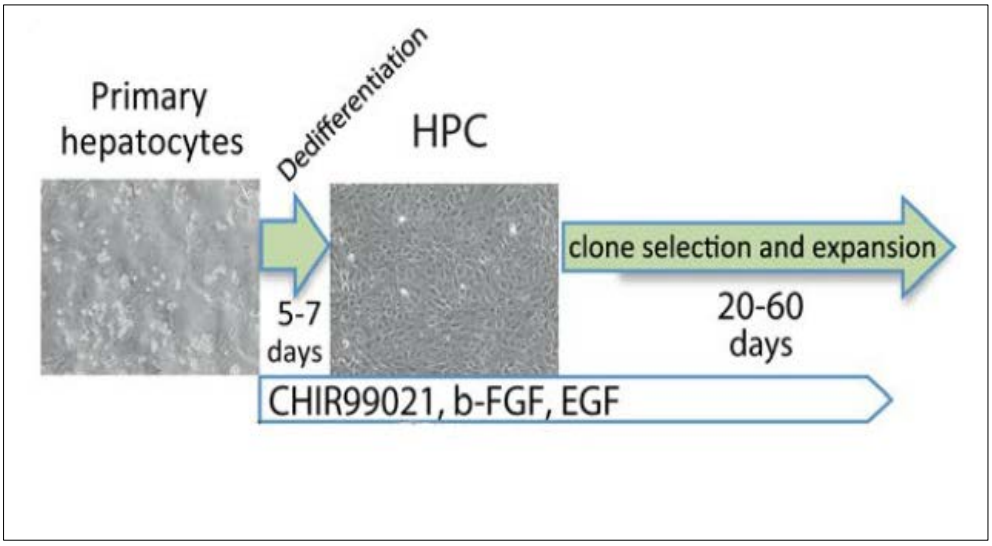
Licensing Opportunity

TTO – Technology Transfer Office

Method for preparing proliferative induced hepatic progenitor cells



Experimental protocol for the generation of induced HPC from primary human hepatocytes

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Hepatocytes
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iHPC
Bio artificial liver

Intellectual Property

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Description

Liver transplantation is currently the only curative treatment for a broad range of metabolic diseases. Due to the shortage of donors as well as the high risk associated with this procedure, there is a need for developing efficient and safe alternatives. Cell therapy by implantation of normal hepatocytes is an attractive option, but these cells are difficult to expand insufficient amounts due to their natural quiescence. Differentiation of induced pluripotent stem cells (iPSC) yields only incompletely mature hepatocytes, and iPSCs are also prone to carry genetic and epigenetic abnormalities at the outset of reprogramming, which can lead to oncogenic transformation. We generated an alternative by developing a method of dedifferentiation of hepatocytes into induced hepatic progenitor cells (iHPC). Devoid of genetic manipulation, this purely pharmacological method, using a culture medium that mimics the signaling events involved in liver regeneration with ad hoc growth factors, yields iHPCs that can be readily expanded and re-differentiated into hepatocytes.

Advantages

The generated iHPC are capable of proliferating in culture and differentiating into hepatocytes or hepatic stellate cells, and are exempt of any tumorigenic features.

Applications

- Liver cell therapy as an alternative to liver transplantation against a number of inherited and acquired hepatic diseases
- Research tool for personalized drug screening or metabolic studies
- Contribution to the development of a bio artificial liver