

Japanese scientists show 'new' liver generation using hepatocyte cell transplantation

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Researchers in Japan have found that hepatocytes, cells comprising the main tissue of the liver and involved in protein synthesis and storage, can assist in tissue engineering and create a "new liver system" in mouse models when donor mouse liver hepatocytes are isolated and propagated for transplantation. Their study is published in a recent issue of *Cell Transplantation* (21:2/3).

"In light of a serious shortage of [donor livers](#) that can be used for hepatocyte isolation, it has become important to establish an efficient way for hepatocytes to be retrieved and propagated for the purposes of tissue engineering," said study lead author Dr. Kazuo Ohashi of Tokyo's Institute of Advanced Biomedical Engineering and Science at Tokyo Women's medical Hospital. "Our study demonstrated the feasibility of propagating mouse hepatocytes by creating a vascularized platform using a growth factor releasing device, and also by creating uniform hepatocyte "sheets" using the isolated individual donor hepatocytes in culture."

Using these approaches and implementing assessment eight weeks following hepatocyte transplantation, the researchers confirmed the functionality of the engineered liver system by documenting the production of liver-specific proteins, by analyzing chemical uptake in the mouse livers and observing subsequent metabolic activity, and by assessing regenerative growth.

The researchers note that the risk of cancer derived from transplanted hepatocytes needs to be addressed because of the "active level of proliferation" following transplantation. In their research, however, and in similar studies they reviewed, it appears that the "risk of cancer cell development is minimal," they concluded.

"The ability to regenerate and expand hepatocytes has potential clinical value when small amounts of tissue can be expanded to sufficient quantities prior to their use in hepatocyte transplantation or other hepatocyte-based therapies," said the researchers.

Provided by Cell Transplantation Center of Excellence for Aging and Brain Repair

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