



THE UNIVERSITY *of* EDINBURGH

News Release

UNDER STRICT EMBARGO UNTILL: 16.00HRS ON MONDAY 20 JULY 2015

Liver regrown from stem cells

Scientists have repaired a damaged liver in a mouse by transplanting stem cells grown in the laboratory.

It is the first time researchers have restored function to a severely damaged liver in a living animal using stem cells.

Their findings pave the way for cell-based therapies that could one day replace the need for liver transplants.

Researchers from the Medical Research Council (MRC) Centre for Regenerative Medicine at the University of Edinburgh transplanted liver stem cells* into mice with liver failure. They found that over several months major areas of the liver were regrown from these cells, improving the structure and function of their livers.

The liver has a great capacity to repair itself, however in conditions such as cirrhosis and acute liver failure, it becomes damaged beyond repair.

Within the liver, hepatocytes are the essential cells that make many proteins and break down toxins, and while they have been used for transplantation their use has been limited as they don't grow well under laboratory conditions. Liver stem cells overcome this as they can be grown under laboratory conditions and have the flexibility to change into hepatocytes or other important types of liver cells.

This is the first time that researchers have proven that liver stem cells can regrow the liver to such an extent. If they can show the same effect with human cells then they may be useful as a treatment for liver failure. Transplanting such cells into patients with liver failure could one-day offer an alternative to liver transplants.

In the long term, scientists hope to find a way of stimulating the patient's own stem cells to repair the damaged liver using medicines.

The research was funded by the Medical Research Council, the UK Regenerative Medicine Platform and the Wellcome Trust. It is published in the journal *Nature Cell Biology*.

Ranked among the top universities in the world

Professor Stuart Forbes, of the MRC Centre for Regenerative Medicine at the University of Edinburgh, said: “Revealing the therapeutic potential of these liver stem cells brings us a step closer to developing stem cell based treatments for patients with liver disease. It will be some time before we can turn this into reality as we will first need to test our approach using human cells. This is much needed as liver disease is a very common cause of death and disability for patients in the UK and the rest of the world.”

Dr Rob Buckle, Director of Science Programmes at the MRC, said: “This research has the potential to revolutionise patient care by finding ways of co-opting the body’s own resources to repair or replace damaged or diseased tissue. Work like this, building upon a precise understanding of the underlying human biology and supported by the UK Regenerative Medicine Platform, will give doctors powerful new tools to treat a range of diseases that have no cure, like liver failure, blindness, Parkinson’s disease and arthritis.”

Ranked among the top universities in the world