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Injecting life into damaged livers

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PATIENTS suffering from liver failure could be injected with tiny replacement organs grown from their own stem cells within the next 10 years.

Scientists have for the first time grown miniature precursors to human livers, known as liver buds, using a combination of three different types of stem cells taken from bone marrow, blood vessels and reprogrammed skin cells.

When the buds were transplanted into mice, they matured into adult livers.

The scientists behind the research now aim to develop a new treatment for liver patients that could reduce the need for donated organs.

They claim that if thousands of liver buds are injected into the blood stream, they will become part of the damaged liver and restore its function.

Professor Takanori Takebe, who led the research at Yokohama City University in Japan, said the work on animals suggests they could restore up to 30 per cent of a patient's liver function.

Experts have greeted the research as a "huge step" towards producing off-the-shelf livers that can be transplanted into patients.

About 700 liver transplants are carried out in the UK each year but about 100 patients die due to a shortage of organ donors.

The liver plays an important role in metabolising drugs and sugar. It also helps remove potentially harmful toxins from the blood.

There is currently no way to compensate for the loss of liver function. While the liver has a great capacity to repair itself, diseases such as hepatitis or alcohol abuse can damage it.

Professor Stuart Forbes, from the Centre for Regenerative Medicine at the University of Edinburgh, described the findings as "exciting" but added that "there is still a lot more research needed before this approach could be applied to patients with liver disease.

"The liver buds were small and scaling up to a 'human relevant size' may be a challenge, as will creating a true liver structure."

PHIL JONES