Induced liver regeneration enhances CRISPR/Cas9-mediated gene repair

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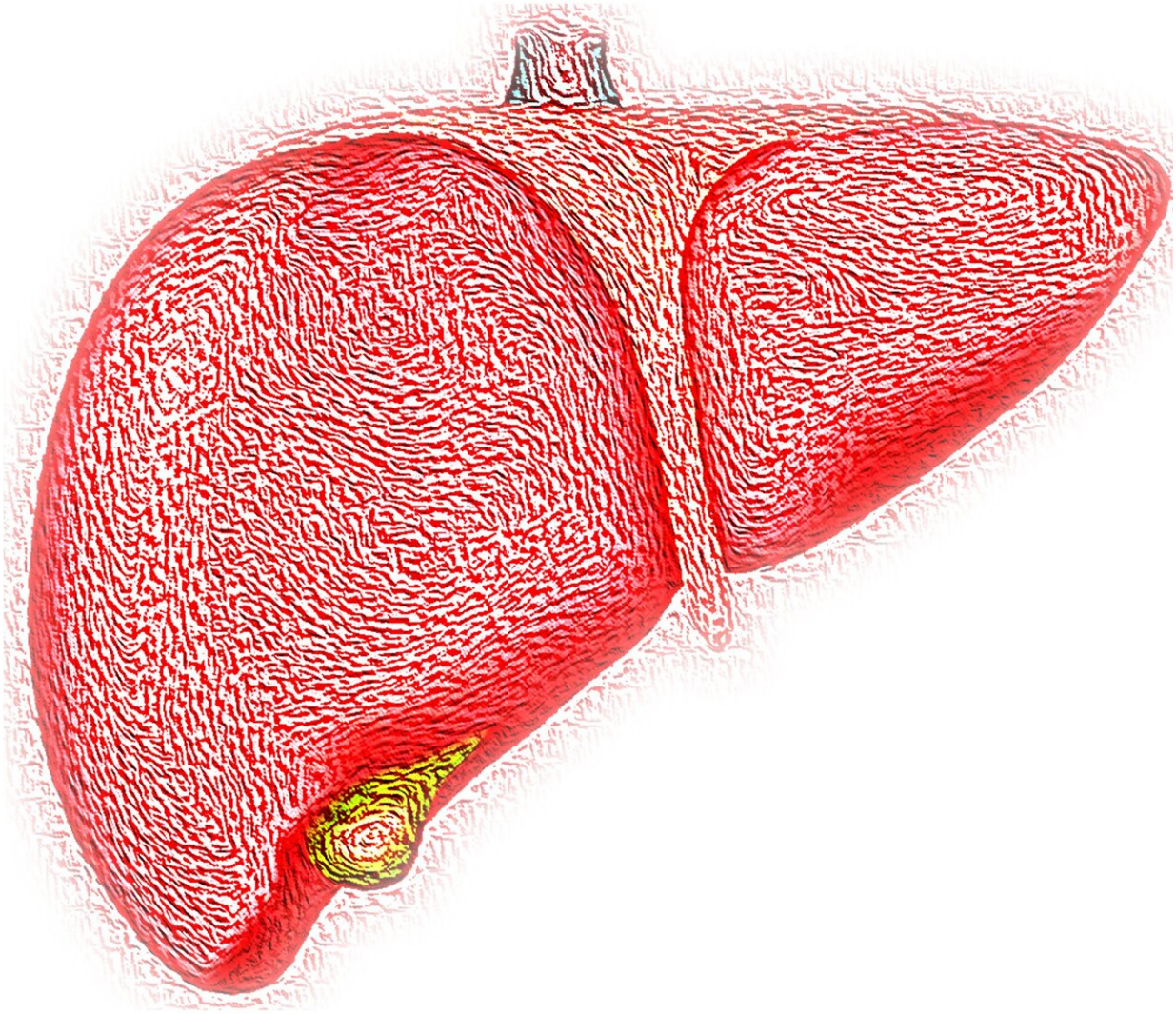

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Use of thyroid hormone to boost hepatocyte proliferation enhanced the efficiency of CRISPR/Cas9-mediated gene correction in the mouse liver. This dietary induction of hepatocyte regeneration may be a viable clinical strategy to enhance gene repair in the liver, according to the peer-reviewed journal *Human Gene Therapy*.

The study was done in a mouse model of tyrosinemia type 1. "In neonatal mice, a gene correction frequency of ~10.8% of hepatocytes was achieved," said Qing-Shuo Zhang, Oregon Health & Science University and coauthors. "The efficiency in adult mice was significantly lower at ~1.6%."

Use of thyroid hormone T3 to temporarily induce hepatocyte division in the adult mice led to a significant increase in the gene correction efficiency to 3.5%.

"The promise of gene editing for human gene therapy is being realized initially with ex vivo manipulation of stem cells and lymphocytes and in small organ targets like the retina. If gene editing becomes efficient enough to correct genetic defects in vivo in the liver, it could then be used to treat a much wider variety of disorders. The work in this paper moves the field closer to that goal," according to Editor-in-Chief of *Human Gene Therapy* Terence R. Flotte, MD, Celia and Isaac Haidak Professor of Medical Education and Dean, Provost, and Executive Deputy Chancellor, University of Massachusetts Medical School.

More information: Qing-Shuo Zhang et al, Induced Liver Regeneration Enhances CRISPR/Cas9-Mediated Gene Repair in Tyrosinemia Type 1, *Human Gene Therapy* (2020). DOI:

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