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Bioengineering Liver Transplantation

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The aim of this Special Issue is to review, understand, and evaluate new and exciting opportunities from the field on regenerative medicine, biomaterials, and stem cell research for the bioengineering of human liver grafts that can be applied for transplantation and personalized treatment of end-stage liver disease.The development of culture conditions for long-term expansion of LGR5+ intestinal stem cells as crypt-villus structures demonstrated the feasibility of deriving complex, organ-like structures in vitro from primary adult tissues, including the liver. Moreover, human pluripotent stem cells (hPSCs) can be applied to generate functionally maturated liver and bile duct epithelial cells.In this Special Issue, we welcome reviews and original papers focussing on hepatic cell sources, including adult hepatic stem cells, organoids, fetal and induced pluripotent stem cells, and primary cells (i.e., hepatocytes, cholangiocytes, and endothelial cells) and how these cells can be applied in tissue engineering strategies to generate implantable and personalized liver grafts. Potential topics include, but are not limited to, the following: liver tissue engineering, liver regeneration, graft repair, liver stem cells and organoids, bio-scaffolds, and 3D printing.We invite you to contribute original research papers, as well as comprehensive reviews, aligned with these themes, to advance and improve the actual state-of-the-art in liver bioengineering and providing new opportunities for the imminent medical problem of organ and tissue shortage for transplantation.

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