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This week in techniques

Approach	Summary	Licensing status	Publication and contact information
Drug platforms			
Functional, expandable human hepatocytes obtained by direct reprogramming	Two studies suggest functional, proliferative hepatocytes generated from human fibroblasts could be used for drug testing and regenerative medicine approaches. In one study, lentiviral expression of hepatocyte lineage–specific transcription factors and subsequent introduction of SV40 large T antigen reprogrammed human fetal and adult fibroblasts into proliferating human induced hepatocytes (HiHeps), which were able to store glycogen, triglycerides and lipids and express liver-specific, detoxifying cytochrome P450 (p450) enzymes. In a mouse model of liver failure, intrasplenic transplantation of HiHeps increased survival from four to more than nine weeks compared with no transplant. Next steps include investigating techniques that could allow fibroblast-to-hepatocyte conversion without lentiviral integration into the genome. In a second study using a different protocol, lentiviral expression of three hepatic fate conversion factors plus three hepatic maturation factors in combination with siRNAs against p53 and c-Myc (MYC) also converted human fibroblasts into HiHeps. The cells had activity levels for five major drug-metabolizing p450 enzymes and sensitivity to model hepatotoxins that were similar to what was seen with isolated human hepatocytes. In an immunodeficient mouse model of inducible liver injury, intrasplenically injected reprogrammed cells repopulated 30% of liver parenchyma and remained functional. Next steps could include additional comparisons of the drug-metabolizing activities of the reprogrammed cells with primary human hepatocytes.	Patent application filed for findings in first study; unavailable for licensing Patent and licensing status for findings in second study unavailable	Huang, P. *et al. Cell Stem Cell*; published online Feb. 28, 2014; doi:10.1016/j.stem.2014.01.003 **Contact:** Lijian Hui, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, China e-mail: ljhui@sibcb.ac.cn Du, Y. *et al. Cell Stem Cell*; published online Feb. 28, 2014; doi:10.1016/j.stem.2014.01.008 **Contact:** Hongkui Deng, Peking University, Beijing, China e-mail: hongkui_deng@pku.edu.cn **Contact:** Yan Shi, Peking University Shenzhen Graduate School, Shenzhen, China e-mail: shiyan@pkusz.edu.cn **Contact:** Shichun Lu, Chinese PLA General Hospital, Beijing, China e-mail: lsc620213@aliyun.com

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