Programming human somatic cells into hepatocytes for applications in toxicology

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There is an unmet need for functional primary human hepatocytes to support the pharmaceutical and (bio)medical demand. The unique discovery, a decade ago, that somatic cells can be drawn out of their apparent biological lockdown to reacquire a pluripotent state has revealed a completely new avenue of possibilities for generating surrogate human hepatocytes. Since then, the number of papers reporting the direct conversion of somatic cells into induced hepatocytes (iHeps) has burgeoned. A hepatic cell fate can be established via the ectopic expression of native liver-enriched transcription factors in somatic cells, thereby bypassing the need for an intermediate (pluripotent) stem cell state. In this webinar, special attention is paid to the role of liver-enriched transcription factors as hepatogenic reprogramming tools and the potential role of iHeps in toxicity testing and their clinical application. To conclude, I formulate recommendations to optimise, standardise and enrich the *in vitro* production of iHeps, and propose minimal criteria for their characterisation.