

# Simple protocol for assessing maturation of HPCs from induced pluripotent stem cells

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Researchers have developed a guide to help labs standardize the production of mature hepatic-like cells (HPCs) from stem cells and easily compare gene expression of HPCs to actual human liver tissue. This moderately high throughput protocol can enable a relatively quick assessment of the efficacy of stem cell differentiation and help guide the

optimization of differentiation conditions in regenerative medicine applications. The protocol and its implications are published in *Stem Cells and Development*.

"Guide to the Assessment of Mature Liver Gene Expression in Stem Cell-Derived Hepatocytes" was coauthored by Stephen Strom, Karolinska Institutet (Stockholm, Sweden) and Alejandro Soto-Gutierrez, University of Pittsburgh (PA), and colleagues from Karolinska Institutet, Royan Institute for Stem Cell Biology (Tehran, Iran), and University of Pittsburgh. The researchers used real time-quantitative polymerase chain reaction (rt-qPCR) to determine the mRNA expression of more than 60 [genes](#) expressed in fetal and mature human liver samples, normalized to an internal control. They measured [gene expression](#) in iPCs produced in their own lab and in those purchased from commercial labs. Genes evaluated included those for liver-specific plasma proteins, cytochrome P450 enzymes, transporters, multi-drug resistant proteins, and the genes requires for pluripotency and the ability of iPCs to differentiate into different cell types.

Graham C. Parker, Ph.D., Editor-in-Chief of *Stem Cells and Development* and The Carman and Ann Adams Department of Pediatrics, Wayne State University School of Medicine, Detroit, MI states: "The ability to direct the differentiation of a stem cell population to a target mature cell type and demonstrate the persistence and validity of that achievement is still beyond the skill of most stem cell biologists, and, more worryingly, the field continues to tolerate the assumption that a given paper has achieved this without proof. In their landmark paper, Stephen Strom and colleagues provide a benchmark technique for other laboratories to compare their stem cell derived hepatocyte-like [cells](#) to actual human liver samples."

**More information:** Mihaela Zabolica et al, Guide to the Assessment of Mature Liver Gene Expression in Stem Cell-Derived Hepatocytes,

*Stem Cells and Development* (2019). [DOI: 10.1089/scd.2019.0064](https://doi.org/10.1089/scd.2019.0064)

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