

HUMAN INDUCED PLURIPOTENT STEM CELL-DERIVED EXTRACELLULAR VESICLES REVERSE HEPATIC STELLATE CELL ACTIVATION

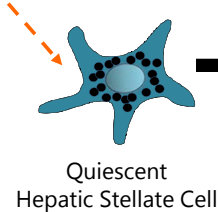
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Key role of hepatic stellate cells in liver fibrosis

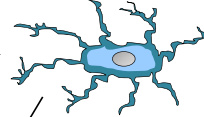
Viral (HBV, HCV)
Alcoholic
Metabolic
Autoimmune
Genetic



Quiescent
Hepatic Stellate Cell



Myfibroblast-like
Hepatic Stellate Cell



Cell Responses

- Chemotaxis
- Proliferation
- ECM remodeling

Mesenchymal stem cells as anti-fibrotic strategy

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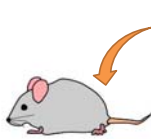
BASIC STUDIES

Effect of human umbilical cord blood-derived mesenchymal stem cells in a cirrhotic rat model

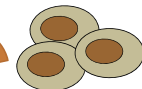
Kyung Hee Jung¹, Hyun Phil Shin², Sun Lee², Yun Jeong Lim¹, Soo Han Hwang², Hoon Han¹, Hwon Kyum Park¹, Joo-Ho Chung¹ and Sung-Vin Yim¹

Mesenchymal stem cells facilitate recovery from chemically induced liver damage and decrease liver fibrosis

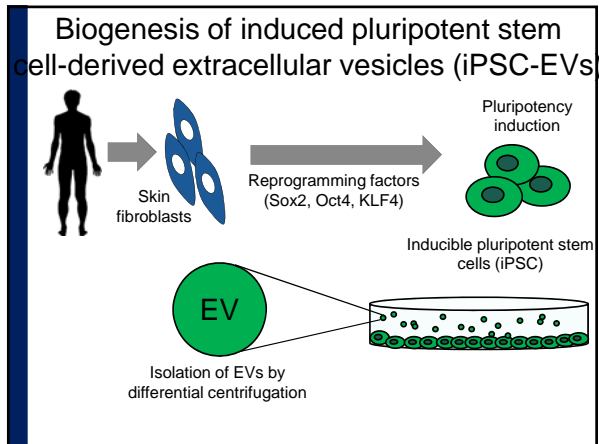
Yao-Jen Chang¹, Jen-Wei Liu², Po-Cheng Lin³, Li-Yi Sun³, Chih-Wen Peng¹, Geng-Hong Luo³, Tse-Min Chen³, Ru-Ping Lee³, Shinn-Zong Lin¹, Horng-Jyh Harn^{3,4,5,6}, Tzzy-Wen Chiou^{3,6}

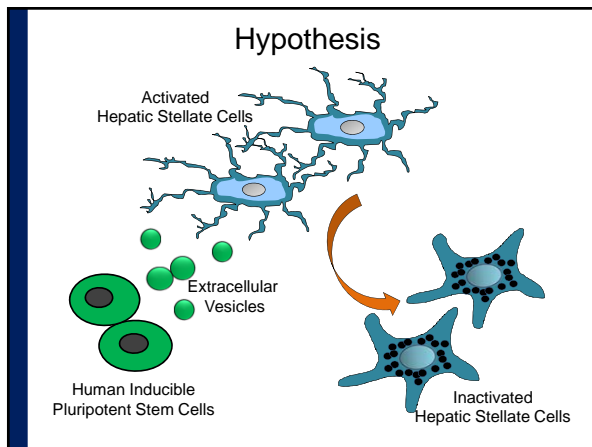


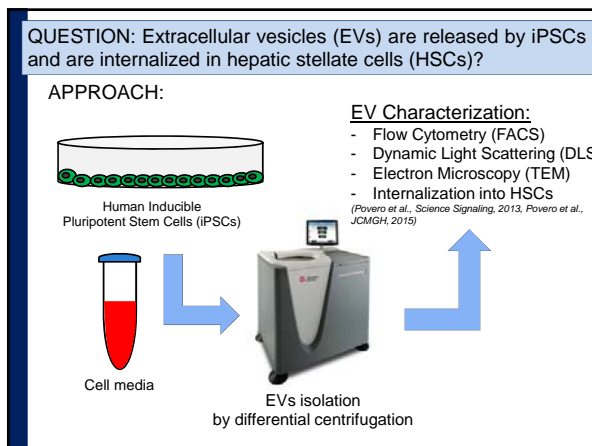
Experimental liver fibrosis models

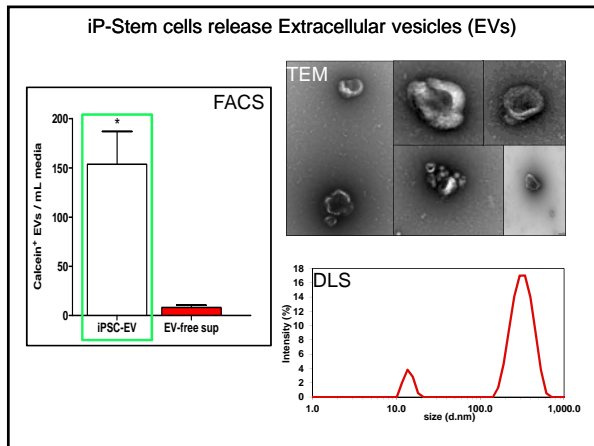


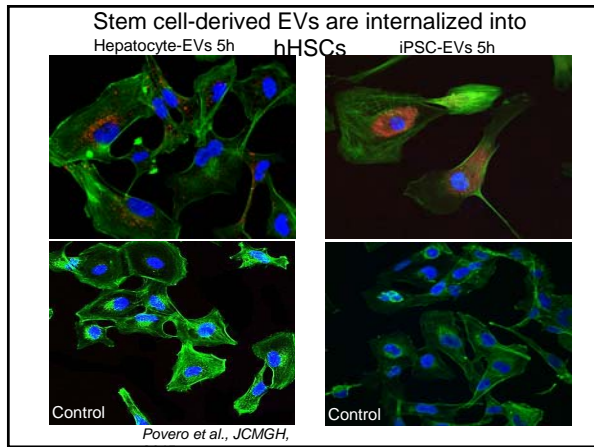
Mesenchymal stem cells (MSCs)

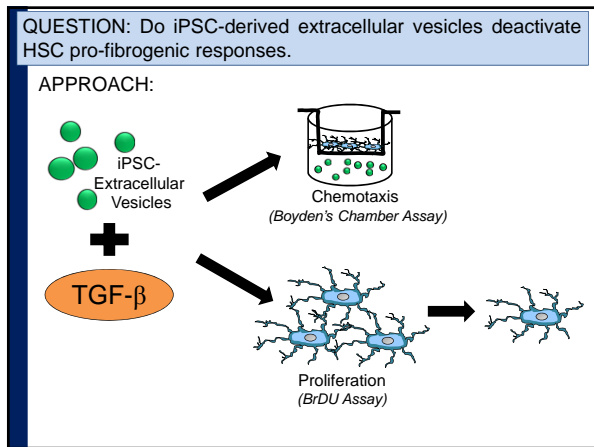


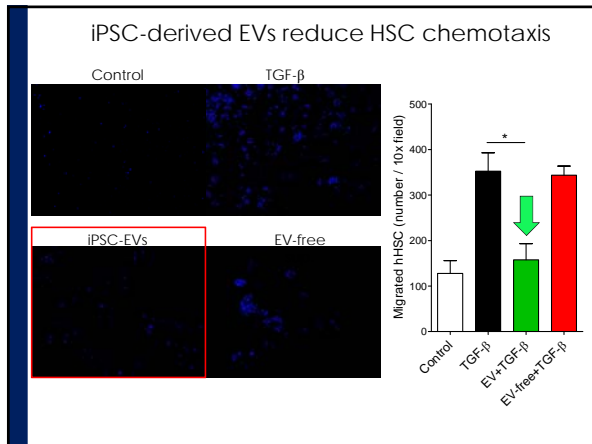


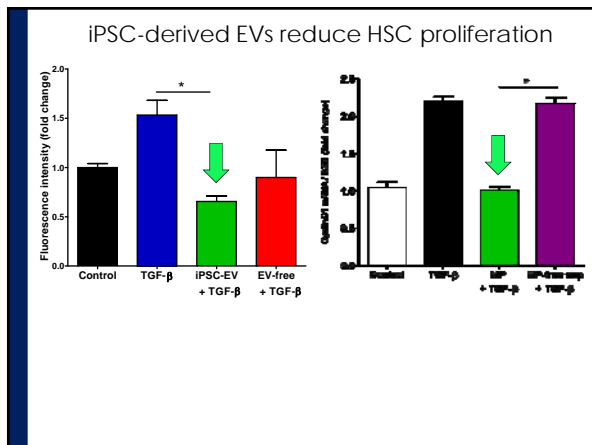


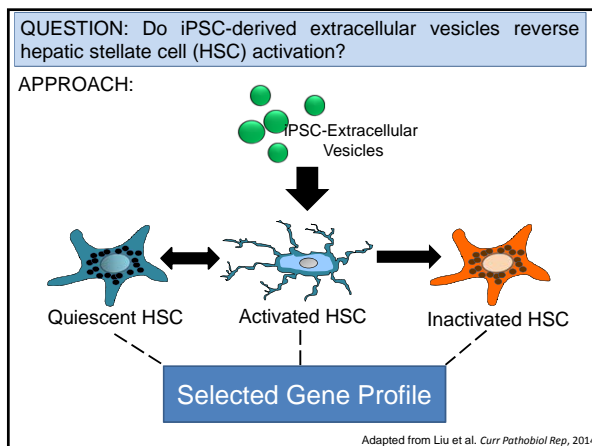


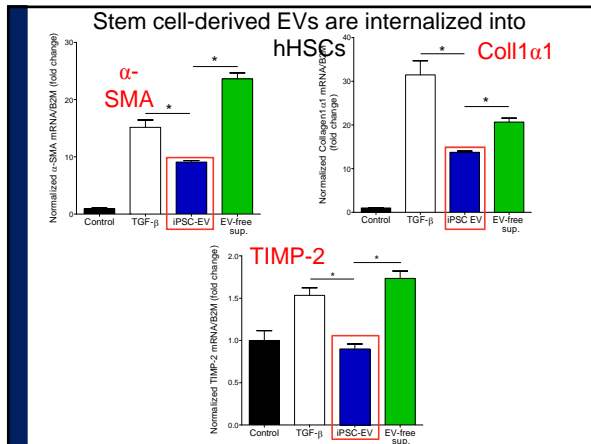


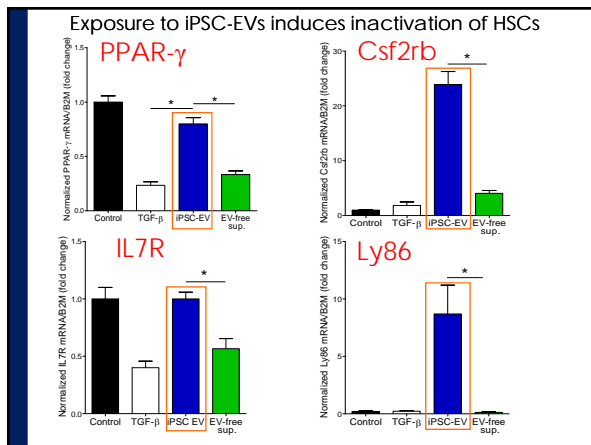












- Summary**
- Human pluripotent stem cells (iPSCs) release extracellular vesicles (EVs) with an anti-fibrotic potential.
 - EVs released and isolated by iPSC induce a reversal from activated to inactivated hepatic stellate cells (HSCs).
 - iPSC-derived EVs prevent HSCs migration and proliferation, two of the main cell responses of activated HSCs in liver fibrosis.

Future Directions

- Investigate the miRNA cargo of iPSC-EVs.
- Investigate the gene profile of hHSC exposed to iPSC-derived EVs.
- Inject mouse iPSC-derived EVs in fibrotic murine models to stop or reverse liver fibrosis.

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NIH
