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(56) References cited:

- **SUSKIND D L ET AL: "Searching for common stem cells of the hepatic and hematopoietic systems in the human fetal liver: CD34<+> cytokeratin 7/8<+> cells express markers for stellate cells", JOURNAL OF HEPATOLOGY 200402 NL, vol. 40, no. 2, February 2004 (2004-02), pages 261-268, XP002539349, ISSN: 0168-8278**
- **HIGASHI N ET AL: "Vitamin A storage in hepatic stellate cells in the regenerating rat liver: With special reference to zonal heterogeneity", ANATOMICAL RECORD - PART A DISCOVERIES IN MOLECULAR, CELLULAR, AND EVOLUTIONARY BIOLOGY 200510 US, vol. 286, no. 2, October 2005 (2005-10), pages 899-907, XP002539350, ISSN: 0003-276X**
- **ZHOU X ET AL: "Engagement of [alpha]v[beta]3 integrin regulates proliferation and apoptosis of hepatic stellate cells", JOURNAL OF BIOLOGICAL CHEMISTRY 20040604 US, vol. 279, no. 23, 4 June 2004 (2004-06-04), pages 23996-24006, XP002539351, ISSN: 0021-9258**

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- SICKLICK JASON K ET AL: "Overlapping expression profile for hepatic epithelial progenitors and hepatic stellate cells", *GASTROENTEROLOGY*, vol. 130, no. 4, Suppl. 2, April 2006 (2006-04), page A834, XP009120863, & DIGESTIVE DISEASE WEEK MEETING/107TH ANNUAL MEETING OF THE AMERICAN-GASTROENTEROLOGICAL-ASSOCIATION; LOS ANGELES, CA, USA; MAY 19 24, 2006 ISSN: 0016-5085
- OGAWA T ET AL: "Identification of vitamin A-free cells in a stellate cell-enriched fraction of normal rat liver as myofibroblasts", *HISTOCHEMISTRY AND CELL BIOLOGY* 200702 DE, vol. 127, no. 2, February 2007 (2007-02), pages 161-174, XP019473905, ISSN: 0948-6143
- KORDES C ET AL: "CD133<+> hepatic stellate cells are progenitor cells", *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS* 20070112 US, vol. 352, no. 2, 12 January 2007 (2007-01-12), pages 410-417, XP005724522,
- KUBOTA H ET AL: "Identification and characterization of vitamin A-storing cells in fetal liver: Implications for functional importance of hepatic stellate cells in liver development and hematopoiesis", *STEM CELLS* 200709 US, vol. 25, no. 9, September 2007 (2007-09), pages 2339-2349, XP002539352, ISSN: 1066-5099
- WINAU ET AL: "Into Cells are Liver-Resident Antigen-Presenting Cells for Activating T Cell Responses", *IMMUNITY, CELL PRESS, US*, vol. 26, 1 January 2007 (2007-01-01), pages 117-129, XP008100728, ISSN: 1074-7613, DOI: 10.1016/J.IMMUNI.2006.11.011
- MORINI SERGIO ET AL: "GFAP expression in the liver as an early marker of stellate cells activation", *ITALIAN JOURNAL OF ANATOMY AND EMBRYOLOGY*, vol. 110, no. 4, October 2005 (2005-10), pages 193-207, XP9155892, ISSN: 1122-6714
- BUNIATIAN G H: "Stages of activation of hepatic stellate cells: Effects of ellagic acid, an inhibitor of liver fibrosis, on their differentiation in culture.", *CELL PROLIFERATION*, vol. 36, no. 6, December 2003 (2003-12), pages 307-319, XP002668183, ISSN: 0960-7722
- SUGITA MASAHIKO ET AL: "CD1-A new paradigm for antigen presentation and T cell activation", *CLINICAL IMMUNOLOGY AND IMMUNOPATHOLOGY*, vol. 87, no. 1, April 1998 (1998-04), pages 8-14, XP002668192, ISSN: 0090-1229
- Yunfang Wang ET AL: "Paracrine signals from mesenchymal cell populations govern the expansion and differentiation of human hepatic stem cells to adult liver fates", *Hepatology*, vol. 52, no. 4, 18 August 2010 (2010-08-18), pages 1443-1454, XP55113757, ISSN: 0270-9139, DOI: 10.1002/hep.23829