CLAIMS

1. An isolated cell population comprising at least 60% of adult liver progenitor cells characterized in that said cells are measured positive for:
    a. at least one hepatic marker selected from albumin, HNF-3B, HNF-4, CYP1 A2, CYP2C9, CYP2E1 and CYP3A4;
    b. at least one mesenchymal marker selected from Vimentin, CD90, CD73, CD44, and CD29;
    c. at least one liver-specific activity selected from urea secretion, bilirubin conjugation, alpha-1 -antitrypsin secretion, and CYP3A4 activity;
    d. Sushi domain containing protein 2 (SUSD2); and
    e. Cytokeratin-19 (CK-19),

    characterized in that the cells are measured negative for one or more of CD140b, CD45, CD117, CD31, CD133, and CD326, wherein said cells are further measured positive for Cytokeratin-18 (CK-18) and/or alpha smooth muscle actin (ASMA), and wherein said cells are further measured positive for at least one liver-specific activity selected from sulfotransferase activity, tryptophan-2,3-dioxygenase activity, liver carboxylase activity, ammonia metabolism, and glycogen storage, and wherein said cells have a cuboidal meso-epithelial morphology.

2. The isolated cell population of Claim 1 wherein said cells are measured:
    a. positive for albumin, Vimentin, CD90, CD73, urea secretion, bilirubin conjugation, alpha-1 -antitrypsin secretion, CYP3A4 activity, Sushi domain containing protein 2, Cytokeratin-19, and liver carboxylase activity; and
    b. negative for CD140b.

3. The isolated cell population of Claim 1 or 2 wherein said cells are capable of forming three-dimensional cell clusters in suspension and/or differentiating into cells presenting liver- specific activities.

4. The isolated cell population comprising between 60% and 99% or at least 70% of said human adult liver progenitor cells.

5. The cell population of Claim 4 wherein the population comprises adherent cells or form three-dimensional cell clusters in suspension and presents inducible Phase I CYP- dependent activity and uptake of at least one of Taurocholate, Estrone-3-sulfate, and 1-methyl-4-phenylpyridinium.

6. The cell population of any one of the preceding Claims wherein said cell population

is modified by means of one or more chemical agents, cell culture medium, growth factors, and/or nucleic acid vectors.

7. A method for obtaining the isolated cell population of claim 1 comprising:
    a. disassociating adult liver or a part thereof to form a population of primary liver cells;
    b. generating a preparation of the population of primary liver cells of (a);
    c. culturing cells comprised in the preparation of (b) in a culture medium onto a support that allows adherence and growth of cells thereto and the emergence of a population of cells having cuboidal meso-epithelial morphology;
    d. passaging the cells of (c) having a cuboidal meso-epithelial morphology at least once in said culture medium of step (c); and
    e. isolating a population of cells obtained after the passaging of step (d) that maintain a cuboidal meso-epithelial morphology, that are positive for cytokeratin 19, albumin, alpha-1-antitrypsin secretion, Sushi domain containing protein 2, and CYP3A4.

8. The method of Claim 7 wherein the cells of step (c) and/or the cell population of step (e) are further measured positive for Cytokeratin-18 (CK-18) and/or alpha smooth muscle actin (ASMA) and are measured negative for CD140b.

9. The method of Claim 7 to 8 wherein the cell population of step (e) is maintained in cell culture conditions that allow formation of three-dimensional cell clusters in suspension.

10. A composition comprising the cell population according to any one of the Claims 1 to 6.

11. The cell population of any one of Claims 1 to 6, or the composition of Claim 10, for use in treating a liver disease.

12. The cell population of any one of Claims 1 to 6, or the composition of Claim 10 for use in treating a liver disease, wherein the liver disease is an inborn error of liver metabolism, Factor V Deficiency, Factor VII Deficiency, Factor VIII Deficiency, Factor IX Deficiency, Factor XIII Deficiency, progressive familial intrahepatic cholestasis type 1 / 2 / 3, alpha 1 -Antitrypsin Deficiency, defect of liver cell transporters, Porphyria, fatty liver or other fibrotic liver disease, primary biliary cirrhosis, sclerosing cholangitis, liver degenerative disease, or acute or chronic liver failure.

13. An *in vitro* method for evaluating the efficacy, the metabolism, the stability, and/or the toxicity of one or more exogenous components, said method comprising:
    a. providing the cell population of any one of Claims 1 to 6, or the composition of Claim 10;
    b. exposing said cell population or said composition or said biological material to one or more exogenous components selected from chemical compounds, proteins, nucleic acids, lipids, sugars, metals, salts, viruses, bacteria, and cells; and
    c. detecting the effects of said one or more exogenous components on said cell population, said composition, or said biological material and/or detecting the presence, localization, or modification of said one or more exogenous components following the exposure to said cell population, said composition, or said biological material.

14. Use of a cell population of any one of Claims 1 to 6, or a composition of Claim 10, for evaluating the efficacy, the metabolism, the stability, and/or the toxicity of one or more exogenous components selected from chemical compounds, proteins, nucleic acids, lipids, sugars, metals, salts, viruses, bacteria, and cells.

15. A kit comprising a cell population of any one of Claims 1 to 6 or a composition of Claim 10, wherein said kit further comprises one or more vials containing said cell population, or said composition, one or more of the following elements: devices, disposable materials, solutions, chemical products, biological products, and/or instructions.

16. A kit comprising a cell population of any one of Claims 1 to 6 or a composition of Claim 10, wherein said kit further comprises one or more vials containing said cell population, or said composition, and one or more of the following elements: devices, disposable materials, solutions, chemical products, biological products, and/or instructions for use in the in-vitro evaluation of the efficacy, the metabolism, the stability, and/or the toxicity of one or more exogenous components selected from chemical compounds, proteins, nucleic acids, lipids, sugars, metals, salts, viruses, bacteria, and cells.