(b) contacting cells of the ASC-derived cellular aggregate with a first culture medium comprising Activin A and fibroblast growth factor (FGF) to produce a precursor cell population; and

(c) contacting cells of the precursor cell population with a second culture medium comprising hepatocyte growth factor (HGF) to produce an induced cell population that comprises hepatocyte-like cells.

In another aspect of the present disclosure, there is provided a use of a composition comprising hepatocyte-like cells produced by the method disclosed herein, wherein 25% or more of the cells of the cell population are hepatocyte-like cells, in the manufacture of a medicament for treating an individual, wherein an effective number of the hepatocyte-like cells is to be administered to the individual to improve liver function.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is best understood from the following detailed description when read in conjunction with the accompanying drawings. It is emphasized that, according to common practice, the various features of the drawings are not to-scale. On the contrary, the dimensions of the various features are arbitrarily expanded or reduced for clarity. Included in the drawings are the following figures.

Figures 1A-E provide a comparison of SCi-Heps to Chi-Heps, and a comparison of the methods of generating SCi-Heps and Chi-Heps. (**A**) The two different methods for

Claims:

1. A method of producing a population of hepatocyte-like cells from a population of adipocyte-derived stem cells (ASCs), the method comprising:

(a) placing a population of ASCs into a three dimensional culture selected from the group consisting of: stirred suspension culture, hanging drop suspension culture, high density cell culture, spinner flask culture, microcarrier culture, and bioreactor culture, for a period of time sufficient to produce an ASC-derived cellular aggregate;

(b) contacting cells of the ASC-derived cellular aggregate with a first culture medium comprising Activin A and a fibroblast growth factor (FGF) to produce a precursor cell population; and

(c) contacting cells of the precursor cell population with a second culture medium comprising hepatocyte growth factor (HGF) to produce an induced cell population that comprises hepatocyte-like cells.

2. The method of claim 1, wherein the three dimensional culture is a high density cell culture selected from a spinner flask culture and a bioreactor culture.

3. The method of claim 1 or claim 2, wherein the three dimensional culture is a microcarrier culture.

4. The method of claim 1, wherein the three dimensional culture is a hanging drop suspension culture.

5. The method of any of claims 1-4, wherein:

(i) the population of ASCs of step (a) is placed into the three dimensional culture for 3 days or less to produce the ASC derived cellular aggregate; and/or

(ii) the contacting of step (b) is for 3 days or less; and/or

(iii) the contacting of step (c) is for 8 days or less; and/or

(iv) the total time elapsed from beginning step (a) to the production of an induced cell population in step (c) is less than 13 days.

6. The method of any of claims 1-5, wherein the FGF is FGF4.

7. The method of any of claims 1-6, wherein the first culture medium further comprises a Wnt signaling agonist.

8. The method of any of claims 1-7, wherein the second culture medium further comprises a compound selected from the group consisting of: oncostatin M (OSM), dexamethasone (Dex), Dimethyl sulfoxide (DMSO), and a combination thereof.

9. The method of any of claims 1-8, further comprising determining the percentage of cells of the induced cell population that are hepatocyte-like cells.

10. The method of any of claims 1-9, wherein 11% or more of the cells of the induced cell population hepatocyte-like cells.

11. The method of any of claims 1-10, further comprising enriching the induced cell population for hepatocyte-like cells.

12. The method of any of claims 1-11, further comprising preserving the hepatocyte-like cells for future use.

13. Use of a composition comprising hepatocyte-like cells produced by the method of any of claims 1-12, wherein 25% or more of the cells of the cell population are hepatocyte-like cells, in the manufacture of a medicament for treating an individual, wherein an effective number of the hepatocyte-like cells is to be administered to the individual to improve liver function.

14. The use according to claim 13, wherein the hepatocyte-like cells of the composition are preserved for future use.

15. The use according to claim 13 or claim 14, wherein at least $1x10^4$ hepatocyte-like cells are to be administered.

16. The use according to any of claims 13-15, wherein the hepatocyte-like cells are to be transplanted into the individual’s liver.

17. The use according to any of claims 13-16, wherein the ASCs used in the method to produce the hepatocyte-like cells are autologous to the individual being treated.

18. The use according to any of claims 13-16, wherein the ASCs used in the method to produce the hepatocyte-like cells are not from the individual being treated and are instead from a related or unrelated individual.