Claims

1. A method of culturing a pancreatic progenitor cell comprising contacting said cell with:
   a. epidermal growth factor (EGF);
   b. retinoic acid (RA);
   c. an inhibitor of transforming growth factor-β (TGF- β) signaling; and
   d. 3T3-J2 fibroblast feeder cells.

2. The method of claim 1, wherein the inhibitor of transforming growth factor-β (TGF-β) signaling is an inhibitor of activin receptor-like kinase (ALK) receptor.

3. The method of claim 2, wherein the inhibitor of activin receptor-like kinase (ALK) receptor is SB431542.

4. The method of any one of claims 1 to 3, wherein the pancreatic progenitor cell is further contacted with B27 supplement.

5. The method of any one of claims 1 to 4, wherein the pancreatic progenitor cell is further contacted with an inhibitor of Notch signaling.

6. The method of claim 5, wherein the inhibitor of Notch signaling is a γ-secretase inhibitor.

7. The method of claim 6, wherein the γ-secretase inhibitor is DAPT.

8. The method of any one of claims 1 to 7, wherein the pancreatic progenitor cell is further contacted with dexamethasone, fibroblast growth factor 10 (FGF10), N2 supplement or combinations thereof.

9. The method of any one of claims 1 to 8, wherein the pancreatic progenitor cell is contacted with:
   a. about 1 ng/ml to about 100 ng/ml of EGF;
   b. about 100 nM to about 10μM of RA; and
   c. about 1μM to about 100μM of SB431542.

10. The method of any one of claims 1 to 9, wherein the pancreatic progenitor cell is contacted with:
    a. about 1 ng/ml to about 100 ng/ml of EGF;
    b. about 1 ng/ml to about 100 ng/ml of FGF10;
    c. about 100 nM to about 10μM of RA;

d. about 1nM to about 100nM of dexamethasone;
e. about 100nM to about 10μM DAPT;
f. about 1μM to about 100μM of SB431542;
g. about 1x B27 supplement; and
h. about 1x N2 supplement.

11. The method of claim 10, wherein the pancreatic progenitor cell is contacted with:
a. about 50 ng/mL EGF;
b. about 50 ng/ml FGF10;
c. about 3μM RA;
d. about 30nM dexamethasone;
e. about 1μM DAPT;
f. about 10μM SB431542;
g. about 1x B27 supplement; and
h. about 1x N2 supplement.

12. The method of any one of claims 1 to 11, wherein the pancreatic progenitor cell is a pancreatic progenitor cell population.

13. The method of claim 12, wherein the pancreatic progenitor cell population is substantially homogenous.

14. The method of claim 13, wherein the pancreatic progenitor cell population is at least 60%homogenous.

15. The method of claim 14, wherein the pancreatic progenitor cell population is at least 99% homogenous.

16. The method of any one of claims 1 to 15, wherein the pancreatic progenitor cell is cultured for at least 5 passages, at least 10 passages, at least 15 passages or at least 20 passages.

17. The method of any one of claims 1 to 16, wherein the pancreatic progenitor cell is derived from a stem cell.

18. The method of claim 17, wherein the stem cell is a human embryonic stem cell (hESC).

19. The method of claim 17, wherein the stem cell is an induced pluripotent stem cell (iPSC).

20. The method of any one of claims 1 to 19, wherein the pancreatic progenitor cell expresses PDX1, SOX9, HNF6, FOXA2 and GATA6.

21. The method of claim 20, wherein the pancreatic progenitor cell does not express SOX2.

22. A cell produced according to the method of any one of claims 1 to 21.

23. A kit when used in the method of any one of claims 1 to 21, comprising one or more containers of cell culture medium , together with instructions for use.

24. The kit according to claim 23, wherein the kit further comprises 3T3-J2 feeder cells.