What is claimed is:

1. A method to differentiate a population of pluripotent stem cells into a population of cells expressing markers characteristic of the pancreatic endoderm lineage that co-express PDX-1, NKX-6.1, but do not express CDX-2 and NGN-3 comprising the steps of:

   a. Culturing the pluripotent stem cells,

   b. Differentiating the pluripotent stem cells into cells expressing markers characteristic of the definitive endoderm lineage, and

   c. Differentiating the cells expressing markers characteristic of the definitive endoderm lineage into cells expressing markers characteristic of the pancreatic endoderm lineage that co-express PDX1, NKX6.1, but do not express CDX2 and NGN3 by treating cells expressing markers characteristic of the definitive endoderm lineage with a first medium supplemented with FGF7, followed by culturing the cells in a second medium supplemented with FGF7, a factor capable of inhibiting BMP, a TGF-β receptor agonist, retinoic acid, and a hedgehog signaling pathway inhibitor.

What is claimed is:

1. A method to differentiate a population of human pluripotent stem cells into a purified population of pancreatic endoderm cells that co-express PDX-1 and NKX-6.1, but do not express CDX-2 and NGN-3 comprising the steps of:

(a) culturing human pluripotent stem cells,

(b) differentiating the human pluripotent stem cells into definitive endoderm cells by treating the human pluripotent stem cells with a medium supplemented with a TGF-β receptor agonist,

(c) differentiating the definitive endoderm cells into a population of pancreatic endoderm cells that co-express PDX1 and NKX6.1, but do not express CDX2 and NGN3 by treating the definitive endoderm cells with a first medium supplemented with FGF7, followed by culturing the cells in a second medium supplemented with FGF7, a factor capable of inhibiting BMP, retinoic acid, and a hedgehog signaling pathway inhibitor, and a TGF-β receptor agonist selected from the group consisting of: activin B, TGFβ-I, TGFβ-II, GDF-8, and GDF-11, and

(d) selecting cells which co-express PDX-1 and NKX6.1 and do not express CDX2 and NGN3 to obtain a purified population of pancreatic endoderm cells that co-express PDX-1 and NKX-6.1, but do not express CDX-2 and NGN-3.

2. The method of claim 1, wherein the hedgehog signaling pathway inhibitor is cyclopamine-KAAD.