What is claimed is:

1. A population of cells, wherein greater than 85% of the cells in the population express markers characteristic of the definitive endoderm lineage.

2. A method for generating a population of cells wherein greater than 85% of the cells in the population express markers characteristic of the definitive endoderm lineage, comprising the steps of:

    a. Culturing a population of pluripotent stem cells,

    b. Differentiating the population of pluripotent stem cells to a population of cells wherein greater than 85% of the cells in the population express markers characteristic of the definitive endoderm lineage in medium lacking serum and supplemented with BSA and a factor selected from the group consisting of insulin and IGF-1.

3. The method of claim 2, wherein the population of pluripotent stem cells are differentiated to a population of cells wherein greater than 85% of the cells in the population express markers characteristic of the definitive endoderm lineage using activin A and a Wnt ligand.

4. The method of claim 2, wherein the population of pluripotent stem cells are differentiated to a population of cells wherein greater than 85% of the cells in the population express markers characteristic of the definitive endoderm lineage using GDF-8 and at least one other factor is selected from the group consisting of: an aniline-pyridinotriazine, a cyclic aniline-pyridinotriazine, N-{[1-(Phenylmethyl)azepan-4-yl]methyl}-2-pyridin-3-ylacetamide, 4-{[4-(4-{[2-(Pyridin-2-ylamino)ethyl]amino}-1,3,5-triazin-2-yl)pyridin-2-yl]oxy}butan-1-ol, 3-({3-[4-({2-[Methyl(pyridin-2-yl)amino]ethyl}amino)-1,3,5-triazin-2-yl]pyridin-2-yl}amino)propan-1-ol, N~4~-[2-(3-Fluorophenyl)ethyl]-N~2~-[3-(4-methylpiperazin-1-yl)propyl]pyrido[2,3-d]pyrimidine-2,4-diamine, 1-Methyl-N-[(4-pyridin-3-yl-2-{[3-(trifluoromethyl)phenyl]amino}-1,3-thiazol-5-yl)methyl]piperidine-4-carboxamide, 1,1-Dimethylethyl {2-[4-({5-[3-(3-hydroxypropyl)phenyl]-4H-1,2,4-triazol-3-yl}amino)phenyl]ethyl}carbamate, 1,1-Dimethylethyl {[3-({5-

[5-(3-hydroxypropyl)-2-(methyloxy)phenyl]-1,3-oxazol-2-yl}amino)phenyl]methyl}carbamate, 1-({5-[6-({4-[(4-Methylpiperazin-1-yl)sulfonyl]phenyl}amino)pyrazin-2-yl]thiophen-2-yl}methyl)piperidin-4-ol, 1-({4-[6-({4-[(4-Methylpiperazin-1-yl)sulfonyl]phenyl}amino)pyrazin-2-yl]thiophen-2-yl}methyl)piperidine-4-carboxamide, and 2-{[4-(1-Methylethyl)phenyl]amino}-N-(2-thiophen-2-ylethyl)-7,8-dihydropyrido[4,3-d]pyrimidine-6(5H)-carboxamide.

5. The method of claim 4, wherein the at least one other factor is 14-Prop-2-en-1-yl-3,5,7,14,17,23,27-heptaazatetracyclo[19.3.1.1~2,6~.1~8,12~]heptacosa-1(25),2(27),3,5,8(26),9,11,21,23-nonaen-16-one.

6. The method of claim 2, wherein the population of pluripotent stem cells is differentiated in the medium lacking serum and supplemented with BSA and a factor selected from the group consisting of insulin and IGF-1 for a period of at least 6 days.

7. The method of claim 2, wherein the population of pluripotent stem cells is differentiated in the medium lacking serum and supplemented with BSA and a factor selected from the group consisting of insulin and IGF-1 for a period of at least 7 days.

What is claimed is:

1. A population of cells, wherein greater than 80% of the cells in the population express markers characteristic of the definitive endoderm lineage.