CLAIMS

[1] A method of improving iPS cell establishment efficiency, comprising contacting a protein selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxb1, Foxf2 and Foxg1 ~~involved in primitive streak (PrS) formation~~ or a nucleic acid that encodes the same with a somatic cell in a nuclear reprogramming step.

~~[2] The method according to claim 1, wherein the protein is selected from the group consisting of Foxh1, brachyury, goosecoid, Foxa2, comesodermin, LHX1, Sox17, MIXL1, Lefty2, Nodal, Hand1, Wnt3, noggin, CER1, Foxf1, GATA4, GATA6, GSC, HESX1, HNF1A, HNF4A, OTX2, RNF111, Sox7, SP5, TBX6, Foxb1, Foxf2 and Foxg1.~~

~~[3] The method according to claim 1, wherein the protein is selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxf1, Foxb1, Foxf2 and Foxg1.~~

[2~~4~~] The method according to claim 1, wherein the protein is Foxh1.

[3~~5~~] The method according to claim 1 or 2, ~~any one of claim 1 to 4,~~ wherein the somatic cell is further contacted with Glis1 or a nucleic acid that encodes the same and/or a p53 inhibitor in a nuclear reprogramming step.

[4~~6~~] An agent for improving iPS cell establishment efficiency comprising a protein selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxb1, Foxf2 and Foxg1 ~~involved in primitive streak (PrS) formation~~ or a nucleic acid that encodes the same, and further comprising Glis1 or a nucleic acid that encodes the same and/or a p53 inhibitor.

~~[7] The agent according to claim 6, wherein the protein is selected from the group consisting of Foxh1, brachyury, goosecoid, Foxa2, comesodermin, LHX1, Sox17, MIXL1, GDF3, Lefty2, Nodal, Hand1, Wnt3, noggin, CER1, Foxf1, GATA4, GATA6, HESX1, HNF1A, HNF4A, OTX2, RNF111, Sox7, SP5, TBX6, Foxb1, Foxf2 and Foxg1.~~

~~[8] The agent according to claim 6, wherein the protein is selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxf1, Foxb1, Foxf2 and Foxg1.~~

[5~~9~~] The agent according to claim 4~~6~~, wherein the protein is Foxh1.

~~[10] The agent according to any one of claims 6 to 9, further-~~

~~comprising Glis1 or a nucleic acid that encodes the same and/or a p53 inhibitor.~~

[6~~11~~] A method of producing an iPS cell, comprising contacting a protein selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxb1, Foxf2 and Foxg1 ~~involved in primitive streak (PrS) formation~~ or a nucleic acid that encodes the same, and nuclear reprogramming substance(s) with a somatic cell.

[7~~12~~] The method according to claim 6~~11~~, wherein the nuclear reprogramming substance(s) is(are) selected from the group consisting of members of the Oct family, members of the Sox family, members of the Klf family, members of the Myc family, members of the Lin family and the Nanog, as well as nucleic acids that encode the same.

[8~~13~~] The method according to claim 6~~11~~, wherein the nuclear reprogramming substances are Oct3/4, Sox2 and Klf4, or nucleic acids that encode the same.

[9~~14~~] The method according to claim 6~~11~~, wherein the nuclear reprogramming substances are Oct3/4, Sox2, Klf4 and L-Myc or c-Myc, or nucleic acids that encode the same.

~~[15] The method according to any one of claims 11 to 14, wherein the protein involved in primitive streak (PrS) formation is selected from the group consisting of a Fox family member, brachyury, goosecoid, comesodermin, LHX1, Sox17, MIXL1, Lefty2, Nodal, Hand1, Wnt3, noggin, CER1, GATA4, GATA6, GSC, HESX1, HNF1A, HNF4A, OTX2, RNF111, Sox7, SP5 and TBX6.~~

~~[16] The method according to claim 15, wherein the Fox family member is selected from the group consisting of Foxa1, Foxa2, Foxa3, Foxb1, Foxc1, Foxc2, Foxd1, Foxd3, Foxd5, Foxe3, Foxf1, Foxf2, Foxg1, Foxh1, Foxi1, Foxi2, Foxj1, Foxj2, Foxj3, Foxk1, Foxk2, Foxl2, Foxm1, Foxn1, Foxan2, Foxn3, Foxn4, Foxo3, Foxo4, Foxp1, Foxp3, Foxp4, Foxr1, Foxr2 and Foxs1.~~

~~[17] The method according to any one of claims 11 to 14, wherein the protein is selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxf1, Foxb1, Foxf2 and Foxg1.~~

[10~~18~~] The method according to any one of claims 6~~11~~ to 9~~14~~, wherein the protein ~~involved in primitive streak (PrS) formation~~ is

Foxh1.

[11~~19~~] The method according to any one of claims 6~~11~~ to 10~~18~~, wherein the somatic cell is further contacted with Glis1 or a nucleic acid that encodes the same and/or a p53 inhibitor.

[12~~20~~] An agent for inducing an iPS cell from a somatic cell, comprising a protein selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxb1, Foxf2 and Foxg1 ~~involved in primitive streak (PrS) formation~~ or a nucleic acid that encodes the same, and nuclear reprogramming substance(s).

[13~~21~~] The agent according to claim 12~~20~~, wherein the nuclear reprogramming substance(s) is(are) selected from the group consisting of members of the Oct family, members of the Sox family, members of the Klf family, members of the Myc family, members of the Lin family and the Nanog, as well as nucleic acids that encode the same.

[14~~22~~] The agent according to claim 12~~20~~, wherein the nuclear reprogramming substances are Oct3/4, Sox2 and Klf4, or nucleic acids that encode the same.

[15~~23~~] The agent according to claim 12~~20~~, wherein the nuclear reprogramming substances are Oct3/4, Sox2, Klf4 and L-Myc or c-Myc, or nucleic acids that encode the same.

~~[24] The agent of any one of claims 20 to 23, wherein the protein involved in primitive streak (PrS) formation is selected from the group consisting of a Fox family member, brachyury, goosecoid, comesodermin, LHX1, Sox17, MIXL1, GDF3, Lefty2, Nodal, Hand1, Wnt3, noggin, CER1, GATA4, GATA6, GSC, HESX1, HNF1A, HNF4A, OTX2, RNF111, Sox7, SP5 and TBX6.~~

~~[25] The method according to claim 24, wherein the Fox family member is selected from the group consisting of Foxa1, Foxa2, Foxa3, Foxb1, Foxc1, Foxc2, Foxd1, Foxd3, Foxd5, Foxe3, Foxf1, Foxf2, Foxg1, Foxh1, Foxi1, Foxi2, Foxj1, Foxj2, Foxj3, Foxk1, Foxk2, Foxl2, Foxm1, Foxn1, Foxan2, Foxn3, Foxn4, Foxo3, Foxo4, Foxp1, Foxp3, Foxp4, Foxr1, Foxr2 and Foxs1.~~

~~[26] The agent according to any one of claims 20 to 23, wherein the protein is selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxf1, Foxb1, Foxf2 and Foxg1.~~

[16~~27~~] The agent of any one of claims 12~~20~~ to 15~~23~~, ~~wherein the protein involved in primitive streak (PrS) formation is~~ comprising Foxh1 or a nucleic acid that encodes the same.

[17~~28~~] The agent of any one of claims 12~~20~~ to 16~~27~~, further comprising Glis1 or a nucleic acid that encodes the same and/or a p53 inhibitor.

[18~~29~~] An iPS cell containing an exogenous nucleic acid that encodes Foxh1.

[19~~30~~] The iPS cell according to claim 18~~29~~, wherein the exogenous nucleic acid is integrated in the genome.

[20~~31~~] A method of producing a somatic cell, comprising performing a differentiation induction treatment on the iPS cell according to claim 18~~29~~ or 19~~30~~ to cause the iPS cell to differentiate into a somatic cell.

[21~~32~~] A method of producing a somatic cell, comprising the steps of:

(1) producing an iPS cell by the method according to any one of claims 6~~11~~ to 11~~19~~, and

(2) performing a differentiation induction treatment on the iPS cell obtained through the step (1) to cause the iPS cell to differentiate into a somatic cell.

[22~~33~~] A use of a protein selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxb1, Foxf2 and Foxg1 ~~involved in primitive streak (PrS) formation~~ or a nucleic acid that encodes the same in the manufacture of an agent for improving the efficiency of establishment of iPS cells.

~~[34] The use according to claim 33, wherein the protein is selected from the group consisting of Foxh1, brachyury, goosecoid, Foxa2, comesodermin, LHX1, Sox17, MIXL1, Lefty2, Nodal1, Hand1, Wnt3, noggin, CER1, GATA4, GATA6, GSC, HESX1, HNF1A, HNF4A, OTX2, RNF111, Sox7, SP5 and TBX6, Foxb1, Foxf2 and Foxg1.~~

~~[35] The use according to claim 33, wherein the protein is selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxf1, Foxb1, Foxf2 and Foxg1.~~

[23~~36~~] The use according to claim 22~~33~~, wherein the protein is Foxh1.

[24~~37~~] A use of a protein selected from the group consisting of Foxh1,

brachyury, Foxa2, LHX1, Foxb1, Foxf2 and Foxg1 ~~involved in primitive streak (PrS) formation~~ or a nucleic acid that encodes the same in combination with nuclear reprogramming substance(s) in the manufacture of an agent for producing an iPS cell.

[25~~38~~] The use according to claim 24~~37~~, wherein the nuclear reprogramming substance(s) is(are) selected from the group consisting of members of the Oct family, members of the Sox family, members of the Klf family, members of the Myc family, members of the Lin28 family, and the Nanog, as well as nucleic acids that encode the same.

[26~~39~~] The use according to claim 24~~37~~, wherein the nuclear reprogramming substances are Oct3/4, Sox2 and Klf4, or nucleic acids that encode the same.

[27~~40~~] The use according to claim 24~~37~~, wherein the nuclear reprogramming substances are Oct3/4, Sox2, Klf4 and L-Myc or c-Myc, or nucleic acids that encode the same.

~~[41] The use according to any one of claims 37 to 40, wherein the protein involved in primitive streak (PrS) formation is selected from the group consisting of a Fox family member, brachyury, goosecoid, comesodermin, LHX1, Sox17, MIXL1, Lefty2, Nodal, Hand1, Wnt3, noggin, CER1, GATA4, GATA6, GSC, HESX1, HNF1A, HNF4A, OTX2, RNF111, Sox7, SP5 and TBX6.~~

~~[42] The method according to claim 41, wherein the Fox family member is selected from the group consisting of Foxa1, Foxa2, Foxa3, Foxb1, Foxc1, Foxc2, Foxd1, Foxd3, Foxd5, Foxe3, Foxf1, Foxf2, Foxg1, Foxh1, Foxi1, Foxi2, Foxj1, Foxj2, Foxj3, Foxk1, Foxk2, Foxl2, Foxm1, Foxn1, Foxan2, Foxn3, Foxn4, Foxo3, Foxo4, Foxp1, Foxp3, Foxp4, Foxr1, Foxr2 and Foxs1.~~

~~[43] The use according to any one of claims 37 to 40, wherein the protein is selected from the group consisting of Foxh1, brachyury, Foxa2, LHX1, Foxf1, Foxb1, Foxf2 and Foxg1.~~

[28~~44~~] The use according to any one of claims 24~~37~~ to 27~~40~~, wherein the protein is Foxh1.

[29~~45~~] A use of the iPS cell according to claim 18~~29~~ or 19~~30~~ in producing a somatic cell.

[30~~46~~] The iPS cell according to claim 18~~29~~ or 19~~30~~ as a source of

cells for producing a somatic cell.