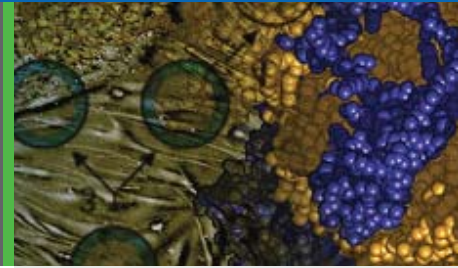


piPSCs: Protein induced pluripotent stem cells

Certified pluripotent stem cells generated using proteins



Reprogrammed with Nonviral and Non-genetic Methods

Available exclusively from SBI, human piPS cell lines

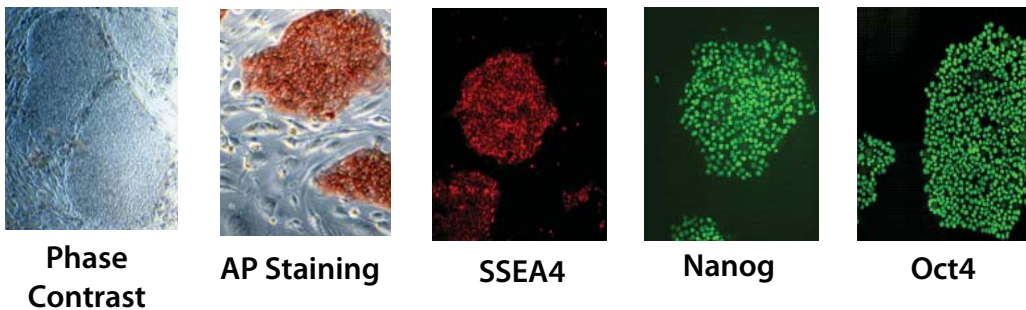
To date, all methods to generate iPSCs require the use of genetic materials and/or potentially mutagenic chemicals. Using protein engineering technology, stable piPSCs were induced from human fibroblasts by directly delivering four reprogramming proteins (Oct4, Sox2, Klf4, and c-Myc) fused with a cell-penetrating peptide, as published in Kim et al., (2009) *Cell Stem Cell*, 4:472-476. These piPSCs exhibited similarities to human embryonic stem cells in morphology, proliferation, global gene expression, DNA methylation patterns, and expression of characteristic pluripotency markers.

- Recombinant proteins used for creating piPSCs
- Stable through 35 passages
- Choice of 2 independent cell lines available
- Capable of differentiating into all three embryonic germ layers
- Positive for teratoma formation in vivo
- Eliminates risks associated with retroviral integrations

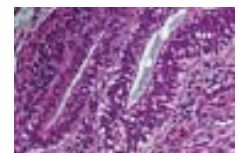
Highlights

- Protein reprogramming method, no residual c-Myc transgene
- Non-viral, non-integrative iPSCs for decreased risk of unwanted cellular transformation
- Certified pluripotent with positive immunostaining
- Multiple lineage potential for differentiation studies
- Derived from newborn human fibroblasts (female)

Pluripotency of PiPSCs (cat# SC801A-1, SC802A-1)



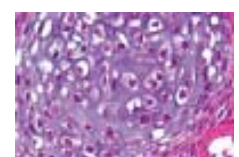
Teratoma Formation



Rosette



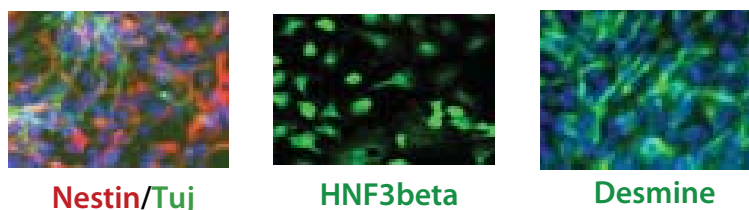
Epithelium



Cartilage

Multiple Lineage Potential of PiPSCs

Embryoid Body Formation



Growth Conditions for Human iPS Cells

Human iPS Cells should be grown on mitomycin C-treated MEF cells

MEFs are available from Applied Stemcell, Inc (<http://www.appliedstemcell.com/>).

For a full protocol of how to grow MEF or human iPS cells, please refer to the user manual. MEF cells must already be growing before thawing and plating iPS cells. http://www.systembio.com/downloads/Manual_iPSCellLines.pdf

Thawing Human iPS Cells

To initially plate human iPS cells, remove the vial from liquid nitrogen and thaw quickly in a 37°C water bath. Remove the vial from the water bath as soon as the cells are half-thawed. Spray the vial with 70% ethanol. Transfer the cells with 10 ml human iPS medium to a 15-ml conical tube and centrifuge at 200g for 5 min. While centrifuging, remove the MEF medium from a 6-well plate of MEFs, and wash twice with 1 ml of DMEM/F12. Add 1 ml of human iPS cell media containing 10µM ROCK inhibitor. Discard the supernatant and resuspend with 1 ml fresh human iPS media with ROCK inhibitor. Plate cells in a 6-well plate. Incubate at 37°C with 5% CO₂. Change the medium every day. ROCK inhibitor may be removed from the media after 1 day of culture.

MEF Media

Component	Cat. #	Final concentration	Source
FBS	16000077	10%	Invitrogen
Glutamax-1	35050061	2 mM	Invitrogen
penicillin and streptomycin	15140122	50 U and 50 µg /ml	Invitrogen
DMEM	11995065		Invitrogen

Human iPS cell media

Component	Cat. #	Final concentration	Source
Knockout serum replacement	10828028	20%	Invitrogen
Glutamax-1	35050061	2 mM	Invitrogen
Nonessential amino acid	11140050	1 x 10 ⁻⁴ M	Invitrogen
2-mercaptoethanol	M7522	1 x 10 ⁻⁴ M	Sigma
penicillin and streptomycin	15140122	50 U and 50 µg /ml	Invitrogen
bFGF	233-FB-025	10 ng/ml	R&D
KO DMEM/F12	12660012		Invitrogen

Component	Cat. #	Final concentration	Source
Rock Inhibitor Y-27632	Y0503	10 mM/ml	Sigma
0.1% (w/v) Gelatin	G1890	Dissolve 0.5 g of gelatin from porcine skin in 500 ml DPBS and autoclave. Stable for 1 yr at room temperature	Sigma
Accutase	SCR005	1:1 dilution into DPBS, aliquot in 10 ml, store -20°C	Millipore

**For freezing, use
90% FBS 10% DMSO
with 10 µM ROCK inhibitor**