

Materials List for

Differentiation of Human Pluripotent Stem Cells into Insulin-Producing Islet Clusters

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Materials

Name	Company	Catalog Number	Comments
3,3',5-Triiodo-L-thyronine (T3)	Sigma	T6397	Thyroid hormone
4% PFA solution	Santa Cruz Biotechnology	sc-281692	Should be handled in fume hood
96-Well, Ultralow Attachment, flat bottom	Corning Costar (VWR)	CLS3474	Flat bottom; for static suspension culture in the last three stages
Accutase	STEMCELL Technologies	07920	Dissociation reagent for Stage 4 cells
Aggrewell400 plates	STEMCELL Technologies	34415	400 µm diameter microwell plates
Aggrewell800 plates	STEMCELL Technologies	34815	800 µm diameter microwell plates
Alexa Fluor 488 Goat anti-Human FOXA2 (goat IgG)	R&D Systems	IC2400G	1:100 in flow cytometry; used for assaying Stage 1 cells
Alexa Fluor 488 Goat IgG Isotype Control	R&D Systems	IC108G	1:100 in flow cytometry
Alexa Fluor 488 Mouse anti-Human SST (mouse IgG2B)	BD Sciences	566032	1:250 in flow cytometry; used for assaying Stage 7 cells
Alexa Fluor 488 Mouse IgG2B Isotype Control	R&D Systems	IC0041G	1:500 in flow cytometry
Alexa Fluor 647 Mouse anti-Human C-peptide (mouse IgG1κ)	BD Pharmingen	565831	1:2,000 in flow cytometry; used for assaying Stage 7 cells
Alexa Fluor 647 Mouse anti-Human INS (mouse IgG1κ)	BD Sciences	565689	1:2,000 in flow cytometry
Alexa Fluor 647 Mouse anti-Human NKX6.1 (mouse IgG1κ)	BD Sciences	563338	1:33 in flow cytometry; used for assaying Stage 4 cells
Alexa Fluor 647 Mouse anti-Human SOX17 (mouse IgG1κ)	BD Sciences	562594	1:50 in flow cytometry; used for assaying Stage 1 cells
Alexa Fluor 647 Mouse IgG1κ Isotype Control	BD Sciences	557714	1:50 in flow cytometry
ALK5i II	Cayman Chemicals	14794	TGF-beta signaling inhibitor
Anti-Adherence Rinsing Solution	STEMCELL Technologies	7010	Microwell Rinsing Solution

Assay chamber	Cellvis	D35-10-1-N	For static GSIS and confocal imaging purposes
Bovine serum albumin (BSA)	Thermo Fisher Scientific	BP1600-100	For immunostaining procedure
CK19 antibody	DAKO	M0888	1:50 in whole mount immunofluorescence
D-glucose	Sigma	G8769	Medium supplement
DAPI	Sigma	D9542	For nuclear counterstaining
DMEM/F12, HEPES	Thermo Fisher Scientific	11330032	Matrix diluting solution
Donkey anti-goat Alexa Fluor 555	Life technologies	A21432	1:500 in whole mount immunofluorescence
Donkey anti-goat Alexa Fluor 647	Life technologies	A21447	1:500 in whole mount immunofluorescence
Donkey anti-mouse Alexa Fluor 555	Life technologies	A31570	1:500 in whole mount immunofluorescence
Donkey anti-mouse Alexa Fluor 647	Life technologies	A31571	1:500 in whole mount immunofluorescence
Donkey anti-rabbit Alexa Fluor 555	Life technologies	A31572	1:500 in whole mount immunofluorescence
Donkey anti-rabbit Alexa Fluor 647	Life technologies	A31573	1:500 in whole mount immunofluorescence
Donkey anti-sheep Alexa Fluor 647	Life technologies	A21448	1:500 in whole mount immunofluorescence
DPBS	Sigma	D8537	Without Ca ²⁺ and Mg ²⁺
ELISA, insulin, human	Alpco	80-INSHU-E01.1	For human insulin measurement
Fatty acid-free BSA	Proliant	68700	Medium supplement
Fixation and Permeabilization Solution Kit	BD Sciences	554714	Fix/Perm and 10x Perm/Wash solutions included
Gentle Cell Dissociation Reagent	STEMCELL Technologies	7174	For clump passaging hPSCs during maintenance culture
Glucagon antibody	Sigma	G2654	1:400 in whole mount immunofluorescence
GLUT1 antibody	Thermo Fisher Scientific	PA1-37782	1:200 in whole mount immunofluorescence
GlutaMAX-I (100x)	Gibco	35050061	L-glutamine supplement
Glycerol	Thermo Fisher Scientific	G33-4	For tissue clearing and mounting
GSi XX	Sigma Millipore	565789	Notch inhibitor
Heparin	Sigma	H3149	Medium supplement
ITS-X (100x)	Thermo Fisher Scientific	51500056	Insulin-Transferrin-Selenium-Ethanolamine; medium supplement
LDN193189	STEMCELL Technologies	72147	BMP antagonist
MAFA antibody	Abcam	ab26405	1:200 in whole mount immunofluorescence
Matrigel, hESC-qualified	Thermo Fisher Scientific	08-774-552	Extracellular matrix for vessel surface coating
MCDB131 medium	Life technologies	10372019	Base medium
mTeSR1 Complete Kit	STEMCELL Technologies	85850	stem cell medium and 5x supplement included
N-Cys (N-acetyl cysteine)	Sigma	A9165	Antioxidant
NaHCO ₃	Sigma	S6297	Medium supplement
NEUROD1 antibody	R&D Systems	AF2746	1:20 in whole mount immunofluorescence
NKX6.1 antibody	DSHB	F55A12-c	1:50 in whole mount immunofluorescence

Pancreatic polypeptide antibody	R&D Systems	AF6297	1:200 in whole mount immunofluorescence
PBS	Sigma	D8662	With Ca ²⁺ and Mg ²⁺
PDX1 antibody	Abcam	ab47267	1:200 in whole mount immunofluorescence
PE Mouse anti-Human GCG (mouse IgG1k)	BD Sciences	565860	1:2,000 in flow cytometry; used for assaying Stage 7 cells
PE Mouse anti-Human NKX6.1 (mouse IgG1k)	BD Sciences	563023	1:250 in flow cytometry
PE Mouse anti-Human PDX1 (mouse IgG1k)	BD Sciences	562161	1:200 in flow cytometry; used for assaying Stage 4 cells
PE Mouse IgG1k Isotype Control	BD Sciences	554680	1:2,000 in flow cytometry
PE Mouse-Human Chromogranin A (CHGA, mouse IgG1k)	BD Sciences	564563	1:200 in flow cytometry
R428	Cayman Chemicals	21523	AXL tyrosine kinase inhibitor
Retinoid acid, all-trans	Sigma	R2625	Light-sensitive
RIPA lysis buffer, 10x	Sigma	20-188	For hormone extraction
SANT-1	Sigma	S4572	SHH inhibitor
SLC18A1 antibody	Sigma	HPA063797	1:200 in whole mount immunofluorescence
Somatostatin antibody	Sigma	HPA019472	1:100 in whole mount immunofluorescence
STEMdiff Pancreatic Progenitor Kit	STEMCELL Technologies	05120	Basal media and supplements included
Synaptophysin antibody	Novus	NB120-16659	1:25 in whole mount immunofluorescence
Triton X-100	Sigma	X100	For permeabilization
Trolox	Sigma Millipore	648471	Vitamin E analog
TrypLE Enzyme Express	Life technologies	12604-021	cell dissociation enzyme reagent for single cell passaging hPSCs
Trypsin1/2/3 antibody	R&D Systems	AF3586	1:25 in whole mount immunofluorescence
Y-27632	STEMCELL Technologies	72304	ROCK inhibitor
Zinc sulfate	Sigma	Z0251	Medium supplement