

## Certificate of Analysis

#### NIGMS Human Genetic Cell Repository

Human induced Pluripotent Stem Cell (iPSC) Line: GM 26107\*C

Diagnosis	Apparently Healthy		
Parental cell line mutation			
Parental cell type, cell line ID	LCL, GM24631*B		
Gender	Male		
Reprogramming method	Episomal vectors containing OCT3/4 with shp53, SOX2, KLF4, LMYC and LIN28A		
Passage number at freeze	P15		
Culture media	DMEM/F12 + 20% KOSR + 10 ng/ml bFGF		
Feeder or Matrix substrate	CF1 MEFs on 0.1% Gelatin		
Recommended passage method and split ratio	TrypLE Express; 1:6 every 5-7 days;		
iPSC line establishment publication(s)	Reprogrammed at Coriell		

### The following testing specifications have been met for this product lot:

Test Description	Test Method	Test Specification	Result
Post-Thaw Cell Viability	Colony doubling	Colony formation and diameter doubling within 5 days	Pass
Sterility	Growth on agar and broth	Negative	Pass
Mycoplasma	qRT-PCR Negative		Pass
Alkaline Phosphatase Staining	Cell staining >80% cells with positive staining		Pass
Identity Match	STR (THO-1, D22S417, D10S526, vWA31, D5S592, and FES/FPS)  Match parental cell line		Pass
Genomic Integration of Episomal Plasmid	Genomic PCR using plasmid specific primers and endogenous FBXO1 control  No plasmid specific sequence amplified using 100 ng gDNA template		Pass*
Detection of Sendai Virus Genome and Transgene	qRT-PCR using SEV specific primers  No detection of SEV genome or transgenes		N/A
Surface Antigen Expression of Stem Cell Markers	Immunostaining and flow cytometric detection >80% expression of SSEA4		Pass
Differentiation Potential	Embryoid body (EB) formation and gene expression  Minimum of 1 gene per germ layer expressed 2 fold or higher		Pass
Cytogenomics	G-banding, Affymetrix Human SNP Array 6.0 46,XY[24].arr(1-22)x2,(X,Y)x1		Pass

\*Note: Detection of exogenous LIN28 expression

Jenifer George	09/28/2017	Christine Grandizio 1	0/12/2017
Technician, Stem Cell Laboratory	Date	Team Leader, Stem Cell Laborator	ry Date

Disclaimer: iPSC lines distributed by Coriell Institute for Medical Research may differ from one passage or expansion to another.

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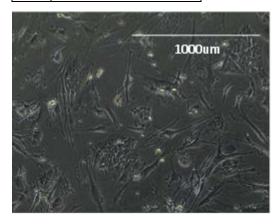


## **Post-Thaw Cell Viability**

One distribution lot vial of the cell line was thawed and placed in culture. Cultures were observed daily. Colonies were photographed upon first appearance, then 4 days later. Colonies must double in diameter within 5 days. The area for 5 colonies was measured using CellSens software on the Olympus IX50 microscope at 40x magnification. The average area is reported here.

Day	Average area (µm²)		
1	24836		
5	104824		

Colony area increased by 4 fold.



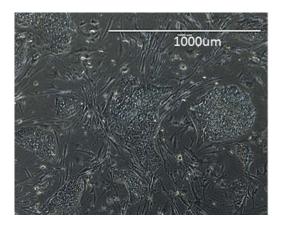


Figure 1A. Colonies post thaw (Day 1)

Figure 1B. Colonies 4 days after first observation (Day 5)

## **Alkaline Phosphatase Staining**

Cells were stained using the StemTAG<sup>™</sup> Alkaline Phosphatase Staining Kit from CellBiolabs, Inc.

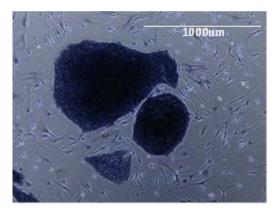


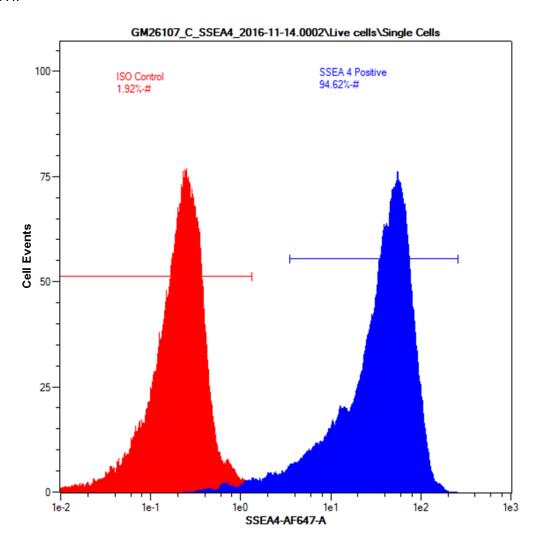
Figure 2. iPSC colonies showing alkaline phosphatase activity

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## **Surface Antigen Expression of Stem Cell Markers**

Undifferentiated cells are stained for stage specific embryonic antigen 4 (SSEA4) which is expressed on the surface of undifferentiated human pluripotent stem cells. Cells were analyzed using the MACSQuant Flow Cytometer by Miltyeni Biotec. More than 80% of cells should stain with antibodies specific for SSEA4.

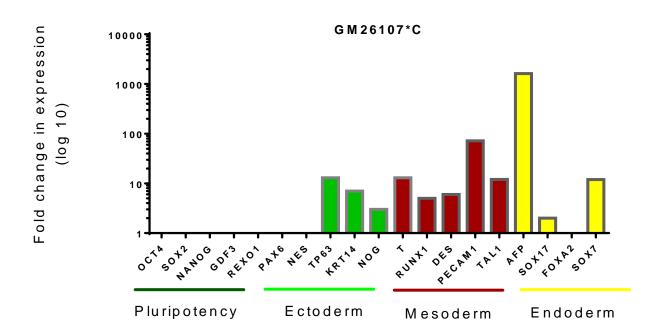


**Figure 3.** Representative histogram of SSEA4 positive population showing an overlay of isotype stained control (red) and SSEA4 positive population (blue)



#### **Differentiation Potential**

Cells are differentiated by embryoid body (EB) formation to assess pluripotency. RNA is extracted and gene expression is measured by quantitative RT-PCR. Ct values are adjusted to the endogenous housekeeping gene GAPDH. Relative gene expression is shown as the fold difference in expression compared to undifferentiated cells. Expression of at least one gene per germ layer should increase by 2 fold or higher.



Gene	Fold change	Gene	Fold change	Gene	Fold change	Gene	Fold change
OCT4	0	PAX6	0	Т	13	AFP	1620
SOX2	0	NES	0	RUNX1	5	SOX17	2
NANOG	0	TP63	13	DES	6	FOXA2	1
GDF3	0	KRT14	7	PECAM1	72	SOX7	12
REXO1	0	NOG	3	TAL1	12		

Figure 4. Fold change in expression of pluripotency genes and tri-lineage specific genes

Note: Negative values are set as 0. Calculations are performed using the  $2^{-\Delta\Delta CT}$  method. (*Livak KJ, Schmittgen TD. Methods. 2001 Dec;25(4):402-8.PMID:11846609*)

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# Cytogenomics

Microarray	Affymetrix Human SNP Array 6.0
Cytogenetic Banding Technique	G-banding
Passage at Analysis	P17
Metaphase Cells Counted	25
Metaphase Cells Analyzed	25
Metaphase Cells Karyotyped	5
Short ISCN	46,XY[24].arr(1-22)x2,(X,Y)x1

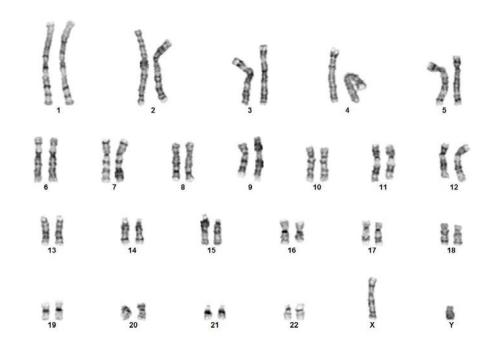


Figure 5. G-banding karyogram