Thaw and Culture Details

Cell Line Name	**JHU232i**
WiCell Lot Number	**DB37035**
Provider	Johns Hopkins University – Laboratory of Dr. Lewis Becker
Banked By	Johns Hopkins University – Laboratory of Dr. Lewis Becker
Thaw and Culture Recommendations	WiCell recommends thawing 1 vial into 4 wells of a 6 well plate. WiCell recommends thawing using ROCK Inhibitor for best results.
Culture Platform	Feeder Independent
	Medium: E8
	Matrix: Vitronectin
Protocol	WiCell Feeder Independent E8 Medium Protocol
Passage Number	p15 These cells were cultured for 15 passages post reprogramming prior to freeze. Add +1 to the passage number to best represent the overall passage number of the cells at thaw.
Date Vialed	12-March-2015
Vial Label	P232 P15 3/12/15 1.0x10^6
Biosafety and Use Information	This cell line is of human origin. Appropriate biosafety precautions should be followed when working with these cells. The end user is responsible for ensuring that the cells are handled and stored in an appropriate manner. WiCell is not responsible for damages or injuries that may result from the use of these cells. Cells distributed by WiCell are intended for research purposes only and are not intended for use in humans.

Testing Performed by WiCell

Test Description	Test Provider	Test Method	Test Specification	Result
Karyotype by G-banding	WiCell	SOP-CH-003	Expected karyotype	See Report
	Results: 46,X,inv(Y)(q11.223q12),del(18)(q21.1q21.3)[2]/46,X,inv(Y)(q11.223q12)[18] ***Interpretation:*** This is an abnormal karyotype. An interstitial deletion in the long (q) arm of chromosome 18 is present in two of twenty cells examined. Loss of chromosome 18q is recurrently acquired in pluripotent stem cell cultures. No other clonal abnormalities were detected at the stated band level of resolution. There is a paracentric inversion of the Y chromosome in all cells examined. This inversion has been reported as a normal population variant.			
Post-Thaw Viable Cell Recovery	WiCell	SOP-CH-305	Recoverable attachment after passage	Pass
Identity by STR	UW Translational Research Initiatives in Pathology Laboratory	PowerPlex 16 HS System by Promega	Defines profile	Pass
Sterility	Steris	ST/07	Negative	Pass
Mycoplasma	WiCell	SOP-CH-044	Negative	Pass

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The material provided under this certificate has been subjected to the tests specified and the results and data described herein are accurate based on WiCell's reasonable knowledge and belief. Appropriate Biosafety Level practices and universal precautions should always be used with this material. For clarity, the foregoing is governed solely by WiCell's Terms and Conditions of Service, which can be found at http://www.wicell.org/privacyandterms.

Testing Reported by Provider

The Provider stated that some or all of the additional analyses listed below may have been performed for this cell line. For more information, publication and dbGaP links, where available, are provided on the cell line specific web page on the WiCell website.

- Embryoid bodies
- Infinium® Expanded Multi-Ethnic Genotyping Array (MEGA^{EX})

Approval Date	Quality Assurance Approval
14-July-2016	8/1/2019 X JKG JKG Quality Assurance Signed by: Gay, Jenna

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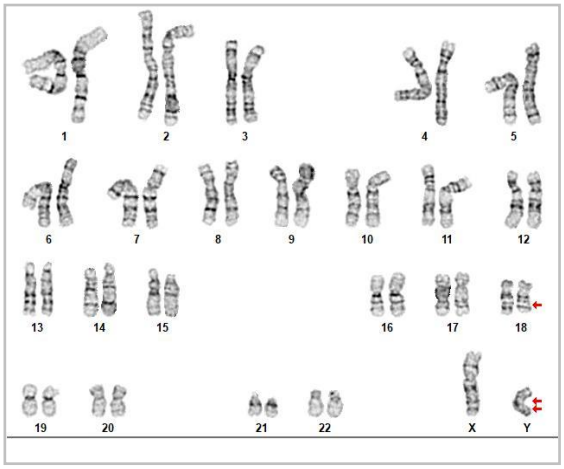
Chromosome Analysis Report: 076153

Date Reported: Monday, April 29, 2019
Cell Line Sex: Male
Cell Line: JHU232i-DB37035 14518
Reason for Testing: lot release testing
Passage#: 16
Date of Sample: 4/17/2019
Investigator: [redacted] WiCell
Specimen: Human IPS
Results: 46,X,inv(Y)(q11.223q12),del(18)(q21.1q21.3)[2]/46,X,inv(Y)(q11.223q12)[18]



Cell: 13
Slide: G02
Slide Type: Karyotype

Total Counted: 20
Total Analyzed: 8
Total Karyogrammed: 4
Band Resolution: 425 - 500

Interpretation:

This is an abnormal karyotype. An interstitial deletion in the long (q) arm of chromosome 18 is present in two of twenty cells examined. Loss of chromosome 18q is recurrently acquired in pluripotent stem cell cultures. No other clonal abnormalities were detected at the stated band level of resolution.

There is a paracentric inversion of the Y chromosome in all cells examined. This inversion has been reported as a normal population variant.

Completed by: [redacted], CG(ASCP)
Reviewed and Interpreted by: [redacted] PhD, FACMG

Date:_____ **Sent By:**____ **Sent To:**_____ **QC Review By:** ____

Limitations: This assay allows for microscopic visualization of numerical and structural chromosome abnormalities. The size of structural abnormality that can be detected is >3-10Mb, dependent upon the G-band resolution obtained from this specimen. For the purposes of this report, band level is defined as the number of G-bands per haploid genome. It is documented here as "band level", i.e., the range of bands determined from the four karyograms in this assay. Detection of heterogeneity of clonal cell populations in this specimen (i.e.,mosaicism) is limited by the number of metaphase cells examined, documented here as "# of cells counted".

This assay was conducted solely for listed investigator/institution. The results of this assay are for research use only. Unless otherwise mutually agreed in writing, the services provided to you hereunder by WiCell Research Institute, Inc. ("WiCell") are governed solely by WiCell's Terms and Conditions of Service, found at www.wicell.org/privacyandterms. Any terms you may attach to a purchase order or other document that are inconsistent, add to, or conflict with WiCell's Terms and Conditions of Service are null and void and of no legal force or effect.

Short Tandem Repeat Analysis

TRIPath
HISTOLOGY - IHC - MOLECULAR - IMAGING
Department of Pathology and Laboratory Medicine
TRIP Laboratory (Molecular)
https://research.pathology.wisc.edu/trip-home/
(608) 265-9168

WiCell
Your Lab Partner
characterization@wicell.org
(608) 316-4145

Sample Report:
14518-STR
Sample Name on Tube: 14518-STR
75.3 ng/µL, (A260/280=1.87)
Sample Type: Cells
Cell Count: ~2 million cells

Requestor:
WiCell Research Institute
Quality Assurance Department

Receive Date: 04/22/19
Report Sent: 04/25/19
Assay Date: 04/23/19
File Name: STR 190424 wmr
Report Date: 04/25/19

STR Locus	STR Genotype Repeat #	STR Genotype
FGA	16–18,18.2,19,19.2,20,20.2,21,21.2,22, 22.2, 23, 23.2, 24, 24.2, 25, 25.2, 26–30, 31.2, 43.2, 44.2,45.2, 46.2	Identifying information has been redacted to protect donor confidentiality. If more information is required, please, contact WiCell's Technical Support.
TPOX	6-13	
D8S1179	7-18	
vWA	10-22	
Amelogenin	X,Y	
Penta_D	2.2, 3.2, 5, 7-17	
CSF1PO	6-15	
D16S539	5, 8-15	
D7S820	6-14	
D13S317	7-15	
D5S818	7-16	
Penta_E	5-24	
D18S51	8-10, 10.2, 11-13, 13.2, 14-27	
D21S11	24,24.2,25,25.2,26-28,28.2,29,29.2, 30, 30.2,31, 31.2,32,32.2,33,33.2, 34,34.2,35,35.2,36-38	
TH01	4-9,9.3,10-11,13.3	
D3S1358	12-20	

Results: Based on the 14518-STR cells submitted by WiCell QA dated and received on 04/22/19, this sample (Label on Tube: 14518-STR) defines the STR profile of the human stem cell line JHU232i comprising 27 allelic polymorphisms across the 15 STR loci analyzed.

Interpretation: No STR polymorphisms other than those corresponding to the human JHU232i stem cell line were detected and the concentration of DNA required to achieve an acceptable STR genotype (signal/ noise) was equivalent to that required for the standard procedure (~1 ng/amplification reaction) from human genomic DNA. This result suggests that the 14518-STR sample submitted corresponds to the JHU232i stem cell line and was not contaminated with any other human stem cells or a significant amount of mouse feeder layer cells.

Sensitivity: Sensitivity limits for detection of STR polymorphisms unique to either this or other human stem cell lines is ~2-5%.

X *RMB* **Digitally Signed on 04/25/19**

[redacted] *BA*
TRIP Laboratory, Molecular

X *WMR* **Digitally Signed on 04/25/19**

[redacted], *PhD, Director / Co-Director*
UWHC Molecular Diagnostics Laboratory / UWSMPH TRIP Laboratory

Testing was accomplished by analysis of human genetic polymorphisms at STR loci. This methodology has not yet been approved by the FDA and is for investigational use only.
Acknowledge TRIP in your publications, posters & presentations. For details, see: *http://www.pathology.wisc.edu/research/trip/acknowledging*
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Native Product Sterility Report

STERIS

SAMPLE #:	19070830
DATE RECEIVED:	11-Jul-19
TEST INITIATED:	17-Jul-19
TEST COMPLETED:	31-Jul-19

WiCell
504 S Rosa Road, Rm 101
Madison, WI 53719

SAMPLE NAME / DESCRIPTION:

SCRP2503i DB42072 14868
SCRP2506i DB42076 14869
SCRP2409i DB42066 14870
SCRP2411i DB42069 14871
JHU229i DB37022 14872
JHU232i DB37035 14873
JHU242i DB37058 14874
JHU246i DB37106 14875
JHU251i DB37118 14876
JHU253i DB37125 14877
WC047i-17097-01-36 WB67236 14878
LUEL8679i-4 WB67230 14879
MCW107i-40000886 WB67227 14880
hIPSC-Tri21-c2-4 WB67228 14881
hIPSC-Tri21-c2-4 WB67229 14882
SCRP2106i DB42037 14883
SCRP2211i DB42051 14884
MCW104i-U2175 WB67231 14885
MCW113i-U7145 WB67243 14886
STAN217i-496C2 DB35538 14887

UNIQUE IDENTIFIER: NA

TEST RESULTS:

# Tested	# Positives (Growth)	- Control
20	0	2 Negatives

TEST SUMMARY:

# Samples	Media Type	Volume (mL)	Incubation Temperature (° C)	Incubation Duration (Days)
20	TSB	40	20-25	14
20	FTG	40	30-35	14

REFERENCE: Processed according to LAB-003: Sterility Test Procedure
PD #: 000053
TEST METHODOLOGY: USP - Direct Transfer

Native Product Sterility Report

STERIS

COMMENTS: Sample # 19070830

REVIEWED BY _____ DATE 31 Jul 19

Specific test results may not be indicative of the characteristics of any other samples from the same lot or similar lots. This test report shall not be reproduced, except in full, without prior written approval. Liability is limited to the costs of the tests.Results applied to samples as received.

Mycoplasma Assay Report

PCR-based assay performed by WiCell

Lot Release Testing

16Apr19

FORM SOP-CH-044.03
Version B Edition 01

#	Sample Name	Result	Comments/Suggestions
1	JHU232i-DB37035 14518	Negative	Band was not seen at 270bp, indicating the absence of mycoplasma.
2	Positive (+) Control	Positive	
3	Negative (-) Control	Negative	

Reported by: Sondra Minter, Cell Culture Specialist
Reviewed by: Katie Remondini, Cell Culture Specialist
Date:_____ Sent By:____ Sent To_____

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A gel image is available upon request.