

Thaw and Culture Details

Cell Line Name	HVRDi002-A				
WiCell Lot Number	WB65326				
Parent Material	HVRDi002-A- DB46576				
Provider	Brigham & Women's Hospital – Dr. Tracy Young-Pearse				
Banked By	WiCell				
Thaw and Culture Recommendations	WiCell recommends thawing 1 vial into 1 well of a 6 well plate. WiCell recommends thawing using ROCK Inhibitor for best results.				
Culture Platform	Feeder Dependent				
	Medium: hESC Medium (KOSR)				
	Matrix: MEF				
Protocol	WiCell Feeder Dependent Protocol				
Passage Number	p32 These cells were cultured for 31 passages after colony picking. WiCell adds +1 to the passage number to best represent the overall passage number of the cells at thaw.				
Date Vialed	16-May-2017				
Vial Label	HVRDi002-A p32 WB65326				
Biosafety and Use Information	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
Post-Thaw Viable Cell Recovery	WiCell	SOP-CH-305	 ≥ 15 Undifferentiated Colonies, ≤ 30% Differentiation and 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	Biotest Laboratories	ST/07	Negative	Pass
Mycoplasma	WiCell	SOP-QU-004	Negative	Pass
Karyotype by G-banding	WiCell	SOP-CH-003	Expected karyotype	Pass

©2017 WiCell Research Institute

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.

- Expression of MAP2, Tau and TuJ1, markers of upper (Cux1) and lower (Tbr1) layer cortical neurons and synaptic markers synaptophysin (SYP), PSD95 and VGLUT1 by immunostaining
- Embryoid body formation and in vitro differentiation to ectodermal, mesodermal, and endodermal lineage

Approval Date	Quality Assurance Approval
25-July-2017	9/28/2021 X_HEB Quality Assurance Signed by: Bruner, Haley

©2017 WiCell Research Institute



Short Tandem Repeat Analysis

Department of Pathology and Laboratory Medicine TRIP Laboratory (Molecular) http://www.pathology.wisc.edu/research/trip

Sample Report: 12569-STR Sample Name on Tube: 12569-STR 37.9 ng/μL, (A260/280=2.02) Sample Type: Cells Cell Count: ~2 million cells

Requestor: WiCell Research Institute Quality Department WiCell[®] info@wicell.org (888) 204-1782

Sample Date: N/A Receive Date: 07/03/17 Assay Date: 07/05/17 File Name: STR 170707 wmr Report Date: 07/11/17

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
TPOX	6-13	been redacted to
D8S1179	7-18	protect donor
vWA	10-22	confidentiality. If
Amelogenin	X,Y	more information
Penta_D	2.2, 3.2, 5, 7-17	is required,
CSF1PO	6-15	please, contact WiCell's Technical
D16S539	5, 8-15	Support.
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	

<u>Results:</u> Based on the 12569-STR cells submitted by WiCell QA dated and received on 07/03/17, this sample (Label on Tube: 12569-STR) defines the STR profile of the human stem cell line HVRDi002-A comprising 29 allelic polymorphisms across the 15 STR loci analyzed.

<u>Interpretation:</u> No STR polymorphisms other than those corresponding to the human HVRDi002-A 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 12569-STR sample submitted corresponds to the HVRDi002-A stem cell line and was not contaminated with any other human stem cells or a significant amount of mouse feeder layer cells.

<u>Sensitivity</u>: 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 07/12/17	X WMR	Digitally Signed on	07/12/17
		, PhD, Director / Co-Direct	or

TRIP Laboratory, Molecular

, 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 TRIP agrees to maintain the confidentiality of any information provided to it in connection with its performance of this STR analysis on the same conditions as set forth in paragraph 2 of WiCell's Terms and Conditions of Service (http://www.wicell.org/media.acux/1a429b84-2b54-44a4-8ad8-5c05db93dd8a).

Native Product Sterility Report



WiCell 504 S Rosa Rd, Rm 101 Madison, WI 53719			Т	SAMPLE #: DATE RECEIVED: TEST INITIATED: EST COMPLETED:	17062122 29-Jun-17 30-Jun-17 14-Jul-17		
SAMPLE NAME / DESCRIPTION:		JHU024i-DB40969 1 JHU044i-DB41057 1 JHU045i-DB41060 1 JHU204i-DB36815 1 JHU222i-DB36892 1 JHU236i-DB37047 1 HVRDi001-A-1-WB6 HVRDi002-A-WB653 UCSD236i-APP1-1-V UCSD237i-APP1-2-D					
UNIQUE IDENTIFIER		NA					
PRODUCT REGISTRATION:		Human iPS cells					
TEST RESULTS:	# Tested	# Positives (Growth) - Contro					
	10	0	2 Negatives				
TEST SUMMARY:	# Samples	Media Type	Volume (mL)	Incubation Temperature (° C)	Incubation Duration (Days)		
	10	TSB	40	20-25	14		
	10	FTG	40	30 - 35	14		
REFERENCE: METHOD VALIDATION / PD #: TEST METHODOLOGY:		Processed according to LAB-003: Sterility Test Procedure 000053 USP - Direct Transfer					

Native Product Sterility Report



COMMENTS: Sample # 17062122

lissand REVIEWED BY

DATE 17JULI

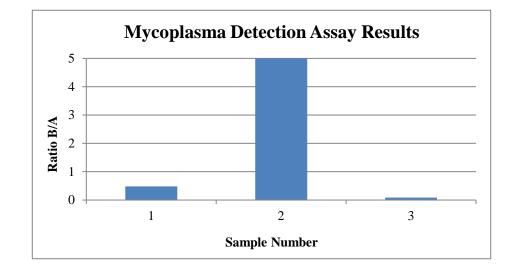
Specific test results may not be indicative of the characteristics of any other samples from the same lot or similar lots. This test report shall not be reproduced, except in full, without prior written approval. Liability is limited to the costs of the tests.



Mycoplasma Detection Assay Report Testing Performed by WiCell

Testing Performed by WiCell Lot Release Testing June 23, 2017 FORM SOP-QU-004.01 Version F Edition 02 Reported by: KR Reviewed by: JB BD Monolight 180

		Read	ing A	Α	Read	ling B	В	Ratio		
#	Sample Name	RLU1	RLU2	Ave	RLU1	RLU2	Ave	B/A	Result	Comments/Suggestions
1	HVRDi002-A-WB65326 12569	371	383	377	183	182	182.5	0.48	Negative	
2	Positive (+) Control	416	429	422.5	37466	37744	37605	89.01	Positive	
3	Negative (-) Control	672	698	685	60	62	61	0.09	Negative	





Date Reported: Monday, July 03, 2017 Cell Line Gender: Female Cell Line: HVRDi002-A-WB65326 12569 Reason for Testing: lot release testing Passage#: 35 . WiCell CDM Date of Sample: 6/26/2017 Investigator: Specimen: Human IPSC Results: 46,XX **Cell: 47** Slide: G02 Slide Type: Karyotype Total Counted: 20 1 Total Analyzed: 9 18 Total Karyogrammed: 5 Band Resolution: 475 - 575 当自 22

Interpretation:

This is a normal karyotype. No clonal abnormalities were detected at the stated band level of resolution.

Completed by: Reviewed and Interpreted by:

A signed copy of this report is available upon request.

Date:	Sent By:	Sent To:	QC Review By:
Butt	0cm Dy		

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 may not be relied upon by any other party without the prior written consent of the Director of the WiCell Cytogenetics Laboratory. The results of this assay are for research use only. If the results of this assay are to be used for any other purpose, contact the Director of the WiCell Cytogenetics Laboratory.

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.