



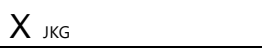
Product Information and Testing - Amended

Product Information

| | |
|-------------------------------|--|
| Product Name | iPS(Foreskin)-4 |
| Alias | iPS(foreskin) clone (#4) |
| Lot Number | WB0038 |
| Depositor | University of Wisconsin – Laboratory of Dr. James Thomson |
| Banked by | WiCell |
| Thaw Recommendation | Thaw 1 vial into 8 wells of a 6 well plate |
| Culture Platform | Feeder Independent |
| | Medium: mTeSR1 |
| | Matrix: Matrigel |
| Protocol | WiCell Feeder Independent Protocol |
| Passage Number | p19(4) These cells were cultured for 18 passages prior to freeze, at least 4 of them in mTeSR1/Matrigel. WiCell adds +1 to the passage number at freeze so that the number on the vial best represents the overall passage number of the cells at thaw. |
| Date Vialled | 16-July-2010 |
| Vial Label | WB0038 iPS(FORESKIN)-4 p19 DF 16JUL10 |
| 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 | Pass |
| Identity by STR | UW Molecular Diagnostics Laboratory | PowerPlex 1.2 System by Promega | Consistent with known profile | Pass |
| Sterility - Direct transfer method | Apptec | 30744 | Negative | Pass |
| Mycoplasma | Bionique | M250 | No contamination detected | Pass |
| Karyotype by G-banding | WiCell | SOP-CH-003 | Normal karyotype | Pass |
| Comprehensive Human Virus Panel | Charles River | ID 91/0 | Negative | Pass |

| Date of Lot Release | Quality Assurance Approval |
|---------------------|---|
| 29-September-2010 | <div style="text-align: right;">9/29/2017</div> <div style="text-align: center;">  X JKG JKG Quality Assurance Signed by: Gay, Jenna </div> |



Short Tandem Repeat Analysis*

Sample Report: 5021-STR

UW HLA#: 63628

Sample Date: 08/20/10

Received Date: 08/20/10

Requestor: WiCell Research Institute

Test Date: 08/24/10

File Name: 100824

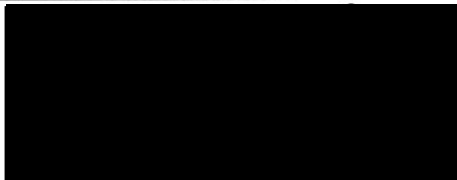
Report Date: 08/31/10

Sample Name: (label on tube) 5021-STR

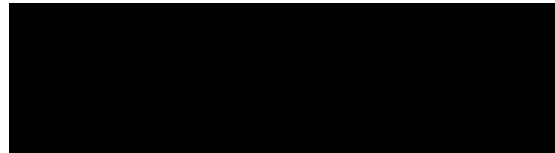
Description: WiCell Research Institute
provided genomic DNA
250.6 ug/mL; 260/280 = 1.95

| Locus | Repeat # | STR Genotype |
|------------|-----------|---|
| D16S539 | 5, 8-15 | Identifying information has been redacted to protect donor confidentiality. If more information is required, please, contact WiCell's Technical Support . |
| D7S820 | 6-14 | |
| D13S317 | 7-15 | |
| D5S818 | 7-15 | |
| CSF1PO | 6-15 | |
| TPOX | 6-13 | |
| Amelogenin | NA | |
| TH01 | 5-11 | |
| vWA | 11, 13-21 | |

Comments: Based on the DNA 5021-STR dated and received on 08/20/10 from WI Cell, this sample (UW HLA# 63628) matches exactly the STR profile of the human stem cell line iPS (foreskin) comprising 15 allelic polymorphisms across the 8 STR loci analyzed. No STR polymorphisms other than those corresponding to the human iPS (foreskin) 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. These results suggest that the 5021-STR DNA sample submitted corresponds to the iPS (foreskin) stem cell line and it was not contaminated with any other human stem cells or a significant amount of mouse feeder layer cells. Sensitivity limits for detection of STR polymorphisms unique to either this or other human stem cell lines is ~5%.


Date

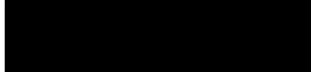
HLA/Molecular Diagnostics Laboratory


Date

HLA/Molecular Diagnostics Laboratory

* Testing to assess engraftment following bone marrow transplantation 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.

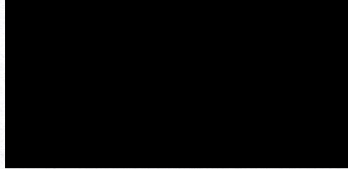
Test Facility:



This report is confidential. No part may be used for advertising or public announcement without written permission. Results apply only to the sample(s) tested.

Report Number
846151
Page 1 of 1

WiCell Research Institute



September 21, 2010
P.O. #:

STERILITY TEST REPORT

Sample Information: hES Cells
 1. iPS (Foreskin)-4-WB0038, #5021
 2. WA19-WB0039, #3050
 3. H9-hTnnTZ-pGZ-D2-WB0042, #3166

Date Received: August 31, 2010
Date in Test: September 03, 2010
Date Completed: September 17, 2010

Test Information: Test Codes: 30744, 30744A
 Immersion, USP / 21 CFR 610.12
 Procedure #: BS210WCR.201

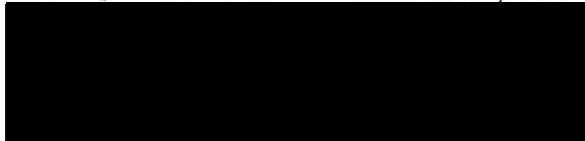
| TEST PARAMETERS | PRODUCT | |
|---------------------------|-------------------|-------------------|
| Approximate Volume Tested | 0.5 mL | 0.5 mL |
| Number Tested | 6 | 6 |
| Type of Media | SCD | FTM |
| Media Volume | 400 mL | 400 mL |
| Incubation Period | 14 Days | 14 Days |
| Incubation Temperature | 20 °C to 25 °C | 30 °C to 35 °C |
| RESULTS | 6 NEGATIVE | 6 NEGATIVE |

QA Reviewer _____ Date 09-21-10

Technical Reviewer _____ Date 09-21-10

Testing conducted in accordance with current Good Manufacturing Practices.





APPENDIX

Document ID #: DCF9002F
Title: QUALITY ASSURANCE REPORT - GMP
Effective Date: 03/12/10
Edition #: 01

QUALITY ASSURANCE REPORT - G M P

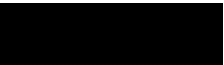

| <u>TEST PERFORMED</u> | <u>PROCEDURAL REFERENCE</u> | <u>TEST PERFORMED</u> | <u>PROCEDURAL REFERENCE</u> |
|---|-----------------------------|--------------------------------|-----------------------------|
| <input checked="" type="checkbox"/> M-250 | SOP's 3008, 3011, 3013 | <input type="checkbox"/> M-700 | SOP's 3008, 3009, 3010 |
| <input type="checkbox"/> M-300 | SOP's 3008, 3014 | <input type="checkbox"/> M-800 | SOP's 3008, 3011, 3016 |
| <input type="checkbox"/> M-350 | SOP's 3008, 3014, 3015 | | |

Bionique Sample ID #(s) 62006

This testing procedure was performed in compliance with the FDA's Current Good Manufacturing Practice (cGMP) standards (to the extent that the regulations pertain to the procedures performed) as specified in the Code of Federal Regulations, Title 21 Parts 210 and 211 [21 CFR 210 & 211]. All related records derived from the test procedures have been reviewed by the Quality Assurance Department. The individual's signature below verifies that the methods and procedures referenced above have been followed and that the Final Report accurately reflects the raw data generated during the course of the procedures. All records, including raw data and final reports are archived on site for a minimum of seven years.

The specified test's procedures determine the intervals at which samples are inspected. The medium used for testing must pass quality control mycoplasmal growth promotion testing and sterility testing. Traceability of all of the components used is assured and supporting documentation can be supplied upon request.

Quality Assurance Review Date: 8/27/10

Reviewed By  QA Assistant 

NOTE:

1. Prior to receipt at Bionique® Testing Laboratories, Inc., the stability of the test article is the responsibility of the company submitting the sample. Bionique Testing Laboratories Inc. will assume responsibility for sample stability following receipt and prior to being placed on test.
2. This test is for the detection of microbiological growth and does not require statistical validation.

Document ID #: DCF9002F
Title: QUALITY ASSURANCE REPORT - GMP
Effective Date: 03/12/10
Edition #: 01

REFERENCES

Regulatory:

1. Department of Health and Human Services, Food and Drug Administration (USA) [FDA]. Code of Federal Regulations [CFR], Title 21 CFR Part 210, Current Good Manufacturing Practice in Manufacturing, Processing, Packing, or Holding of Drugs; General. FDA. Office of the Federal Register, National Archives and Records Department.
2. Department of Health and Human Services, Food and Drug Administration (USA) [FDA]. Code of Federal Regulations [CFR], Title 21 CFR Part 211, Current Good Manufacturing Practice for Finished Pharmaceuticals. FDA. Office of the Federal Register, National Archives and Records Department.
3. Department of Health and Human Services, Food and Drug Administration (USA) [FDA]. Points to Consider in the Characterization of Cell Lines Used to Produce Biologicals, Director, Center for Biologics Evaluation and Research, FDA. May, 1993. Docket No. 84N-0154.
4. Department of Health and Human Services, Food and Drug Administration (USA) [FDA]. Code of Federal Regulations [CFR], Title 21 CFR Part 610.30, General Biological Products Standards; Subpart D, Test for Mycoplasma. FDA. Office of the Federal Register, National Archives and Records Department.

General:

1. Barile MF, Kern J. Isolation of Mycoplasma arginini from commercial bovine sera and its implication in contaminated cell cultures. Proceedings of the Society for Experimental Biology and Medicine, Volume 138, Number 2, November 1971.
2. Chen, T.R. In situ detection of mycoplasma contamination in cell cultures by fluorescent Hoechst 33258 stain. Experimental Cell Research, 104: 255-262, 1977.
3. Carolyn K. Lincoln and Daniel J. Lundin. Mycoplasma Detection and Control. U. S. Fed. for Culture Collections Newsletter, Vol. 20, Number 4, 1990.
4. Fetal Bovine Serum; Proposed Guideline. National Committee For Clinical Laboratory Standards (NCCLS), Vol. 10, Number 6, 1990. (NCCLS publication M25-P).
5. McGarrity GJ, Sarama J, Vanaman V. Cell Culture Techniques. ASM News, Vol. 51, No. 4, 1985.
6. Tully JG, Razin S. Methods in Mycoplasma, Volumes I and II. Academic Press, N.Y., 1983.
7. Barile MF, Razin S, Tully JG, Whitcomb RF. The Mycoplasmas, Volumes 1-4. Academic Press, N.Y., 1979.
8. <http://www.bionique.com/> - Safe Cells Insights

MYCOPLASMA TESTING SERVICES

APPENDIX IV

Page 1 of 2

Document#: DCF3013D
Edition#: 10
Effective Date: 07/15/2003
Title: **M-250 FINAL REPORT SHEET**

M-250 FINAL REPORT

Direct Specimen Culture
Procedure 3008, 3011, 3013

TO: **WiCell QA**
WiCell Research Institute

BTL SAMPLE ID#: **62006** P.O.#: [REDACTED] DATE REC'D: **07/30/2010**

TEST/CONTROL ARTICLE:

iPS (Foreskin) -4-WB0038 #5021

LOT#: **NA**

DIRECT CULTURE SET-UP (DAY 0)

DATE: **07/30/2010**

INDICATOR CELL LINE (VERO)

SEE DNA FLUOROCHROME RECORD SHEET

DATE

| | | | | |
|-----------------------------|--------|---|---|--------------------------|
| THIOGLYCOLLATE BROTH | DAY 7 | + | ⊖ | <u>08/06/2010</u> |
| | DAY 28 | + | ⊖ | <u>08/27/2010</u> |
| BROTH-FORTIFIED COMMERCIAL | | | | |
| <u>0.5</u> mL SAMPLE | DAY 7 | + | ⊖ | <u>08/06/2010</u> |
| <u>6.0</u> mL BROTH | DAY 28 | + | ⊖ | <u>08/27/2010</u> |
| BROTH-MODIFIED HAYFLICK | | | | |
| <u>0.5</u> mL SAMPLE | DAY 7 | + | ⊖ | <u>08/06/2010</u> |
| <u>6.0</u> mL BROTH | DAY 28 | + | ⊖ | <u>08/27/2010</u> |
| BROTH-HEART INFUSION | | | | |
| <u>0.5</u> mL SAMPLE | DAY 7 | + | ⊖ | <u>08/06/2010</u> |
| <u>6.0</u> mL BROTH | DAY 28 | + | ⊖ | <u>08/27/2010</u> |

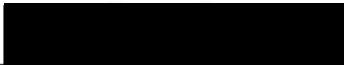

(See Reverse)

Document#: DCF3013D
 Edition#: 10
 Effective Date: 07/15/2003
 Title: M-250 FINAL REPORT SHEET

| SAMPLE ID#: | 62006 | AEROBIC | MICROAEROPHILIC | DATE |
|---|--------|-------------------------|-----------------|-------------------|
| AGAR PLATES-FORTIFIED COMMERCIAL | DAY 7 | + ⊖ | + ⊖ | <u>08/06/2010</u> |
| | DAY 14 | + ⊖ | + ⊖ | <u>08/13/2010</u> |
| | DAY 21 | + ⊖ | + ⊖ | <u>08/20/2010</u> |
| AGAR PLATES-MODIFIED HAYFLICK | DAY 7 | + ⊖ | + ⊖ | <u>08/06/2010</u> |
| | DAY 14 | + ⊖ | + ⊖ | <u>08/13/2010</u> |
| | DAY 21 | + ⊖ | + ⊖ | <u>08/20/2010</u> |
| AGAR PLATES-HEART INFUSION | DAY 7 | + ⊖ | + ⊖ | <u>08/06/2010</u> |
| | DAY 14 | + ⊖ | + ⊖ | <u>08/13/2010</u> |
| | DAY 21 | + ⊖ | + ⊖ | <u>08/20/2010</u> |
| <u>BROTH SUBCULTURES (DAY 7)</u> | | DATE: <u>08/06/2010</u> | | |
| AGAR PLATES-FORTIFIED COMMERCIAL | DAY 7 | + ⊖ | + ⊖ | <u>08/13/2010</u> |
| | DAY 14 | + ⊖ | + ⊖ | <u>08/20/2010</u> |
| | DAY 21 | + ⊖ | + ⊖ | <u>08/27/2010</u> |
| AGAR PLATES-MODIFIED HAYFLICK | DAY 7 | + ⊖ | + ⊖ | <u>08/13/2010</u> |
| | DAY 14 | + ⊖ | + ⊖ | <u>08/20/2010</u> |
| | DAY 21 | + ⊖ | + ⊖ | <u>08/27/2010</u> |
| AGAR PLATES-HEART INFUSION | DAY 7 | + ⊖ | + ⊖ | <u>08/13/2010</u> |
| | DAY 14 | + ⊖ | + ⊖ | <u>08/20/2010</u> |
| | DAY 21 | + ⊖ | + ⊖ | <u>08/27/2010</u> |

RESULTS: No detectable mycoplasmal contamination

8/27/10
Date


Laboratory Director
 Ph.D.

M-250 Procedural Summary: The objective of this test is to ascertain whether or not detectable mycoplasmas are present in an in vitro cell culture sample, be it a primary culture, hybridoma, master seed stock or cell line. This procedure combines an indirect DNA staining approach to detect non-cultivable mycoplasmas with a direct culture methodology utilizing three different mycoplasma media formulations. The indirect approach involves the inoculation of the sample into a mycoplasma-free VERO (ATCC) indicator cell line and performing a DNA fluorochrome assay after 72-120 hours of incubation. The direct culture aspect of the test utilizes three different mycoplasma media including both broth and agar formulations. The sample is inoculated into each of the 3 broth formulations and also onto duplicate plates (0.1 mL/plate) for each of the 3 agar formulations. Subculture from broth to fresh agar plates is carried out after 7 days incubation. Agar plates are incubated aerobically and microaerophilically in order to detect any colony forming units morphologically indicative of mycoplasma contamination. Issuance of the final report with signature of the Laboratory Director signifies that the required controls were performed concurrently with the test sample(s) as detailed in the referenced SOPs and that all test conditions have been found to meet the required acceptance criteria for a valid test, including the appropriate results for the positive and negative controls.



Document ID #: DCF3008A
Title: DNA FLUOROCHROME ASSAY RESULTS
Effective Date: 3/24/10
Edition #: 07

DNA-FLUOROCHROME ASSAY RESULTS

Procedures 3008, 3009, 3011

Sample ID # 62006 M-250 Date Rec'd: 07/30/2010 P.O. #

Indicator Cells Inoculated: Date/Initials: 7/30/10 / JA

Fixation: Date/Initials: 8/3/10 / HS

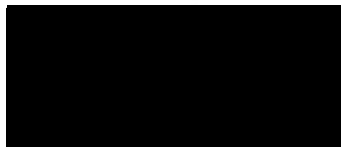
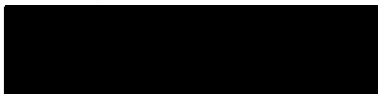
Staining: Date/Initials: 8/3/10 / HS

TEST/CONTROL ARTICLE:

iPS(Foreskin)-4-WB0038 #5021

LOT# NA

WiCell QA
WiCell Research Institute



DNA FLUOROCHROME ASSAY RESULTS:

NEGATIVE: A reaction with staining limited to the nuclear region, which indicates no mycoplasmal contamination.

POSITIVE: A significant amount of extranuclear staining which strongly suggests mycoplasmal contamination.

INCONCLUSIVE:

 A significant amount of extranuclear staining consistent with low - level mycoplasmal contamination or nuclear degeneration.

 A significant amount of extranuclear staining consistent with bacterial, fungal or other microbial contaminant or viral CPE. Morphology not consistent for mycoplasmal contamination.

COMMENTS:

Date: 8/3/10 Results Read by: HS Date of Review: 8/3/10 Reviewed by: SLA

Report Date: August 09, 2010

Case Details:

Cell Line: *iPS(Foreskin)-4-WB0038 (5021)*

Passage #: 20

Date Completed: 8/9/2010

Cell Line Gender: Male

Investigator: Wisconsin International Stem Cell Bank

Specimen: *iPSC on Matrigel*

Date of Sample: 7/30/2010

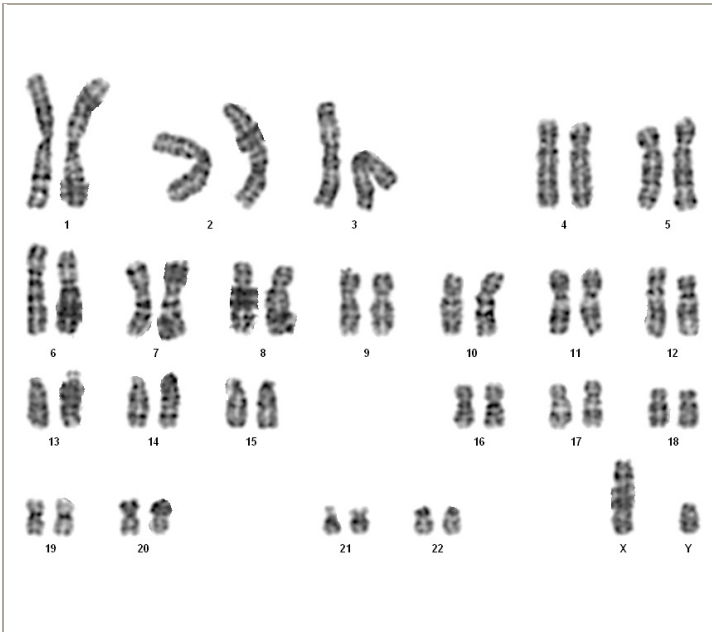
Tests, Reason for: WB testing

Results: 46,XY

Completed by [REDACTED] CG(ASCP), on 8/9/2010

Reviewed and interpreted by [REDACTED] PhD, FACMG, on 8/9/2010

Interpretation: No clonal abnormalities were detected at the stated band level of resolution.



Cell: S01-03

Slide: 2-12

Slide Type: Karyotyping

of Cells Counted: 20

of Cells Karyotyped: 4

of Cells Analyzed: 8

Band Level: 375-425

Results Transmitted by Fax / Email / Post

Sent By: _____

QC Review By: _____

Date: _____

Sent To: _____

Results Recorded: _____

Sponsor: WiCell Research Institute

Accession #: 2010-035416

Diagnostic Summary Report

[Redacted]

Received: 30 Jul 2010
Approved: 17 Aug 2010, 12:14
(Supersedes results approved 05 Aug 2010, 10:03)
Bill Method: PO# [Redacted]
Test Specimen: Human

Table with 7 columns: Sample Set, Service (# Tested), Profile, Assay, Tested, +, +/-, ?. Row 1: #1, Infectious Disease PCR (4), All Results Negative.

+ = Positive, +/- = Equivocal, ? = Indeterminate

Service Approvals

Table with 3 columns: Service, Approved By*, Date. Row 1: Infectious Disease PCR, [Redacted], 17 Aug 2010, 12:14 (Supersedes results approved 05 Aug 2010, 10:03)

To assure the SPF status of your research animal colonies, it is essential that you understand the sources, pathobiology, diagnosis and control of pathogens and other adventitious infectious agents that may cause research interference. We have summarized this important information in infectious agent Technical Sheets, which you can view by visiting http://www.criver.com/info/disease_sheets.

*This report has been electronically signed by laboratory personnel. The name of the individual who approved these results appears in the header of this service report. All services are performed in accordance with and subject to General Terms and Conditions of Sale found in the Charles River Laboratories-Research Models and Services catalogue and on the back of invoices.

Sponsor: WiCell Research Institute

Accession #: 2010-035416

Product: Not Indicated

Test Specimen: Human

Received: 30 Jul 2010

Molecular Diagnostics Infectious Disease PCR Results Report

Department Review: Approved by [redacted] 17 Aug 2010, 12:14* (Supersedes results approved 05 Aug 2010, 10:03)

Human Comprehensive Viral PCR Panel

| Sample #: Code : | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> |
|----------------------------|-----------------------|---------------------|---------------------|-----------------------|
| | IPS (Foreskin)-3-W | IPS (IMR90)-2-MC | IPS (IMR90)-3-MC | IPS (Foreskin)-4-W |
| John Cunningham virus | - | - | - | - |
| BK virus | - | - | - | - |
| Herpesvirus type 6 | - | - | - | - |
| Herpesvirus type 7 | - | - | - | - |
| Herpesvirus type 8 | - | - | - | - |
| Parvovirus B19 | - | - | - | - |
| Epstein-Barr Virus | - | - | - | - |
| Hepatitis A virus | - | - | - | - |
| Hepatitis B virus | - | - | - | - |
| Hepatitis C virus | - | - | - | - |
| HPV-16 | - | - | - | - |
| HPV-18 | - | - | - | - |
| Human T-lymphotropic virus | - | - | - | - |
| Human cytomegalovirus | - | - | - | - |
| HIV-1 | - | - | - | - |
| HIV-2 | - | - | - | - |
| Adeno-associated virus | - | - | - | - |
| Human Foamy Virus | - | - | - | - |
| LCMV PCR | - | - | - | - |
| Hantavirus Hantaan PCR | - | - | - | - |
| Hantavirus Seoul PCR | - | - | - | - |
| Mycoplasma Genus PCR | - | - | - | - |
| DNA Spike | PASS | PASS | PASS | PASS |
| RNA Spike | PASS | PASS | PASS | PASS |
| NRC | PASS | PASS | PASS | PASS |

Remarks: - = Negative; I = Inhibition, +/- = Equivocal; + = Positive.

Sample Suitability/Detection of PCR Inhibition:

Sample DNA or RNA is spiked with a low-copy number of a exogenous DNA or RNA template respectively. A spike template-specific PCR assay is used to test for the spike template for the purpose of determining the presence of PCR inhibitors. The RNA spike control is also used to evaluate the reverse-transcription of RNA. Amplification of spike template indicates that there is no detectable inhibition and the assay is valid.

NRC:

The nucleic acid recovery control (NRC) is used to evaluate the recovery of DNA/RNA from the nucleic acid isolation process. The test article is spiked with a low-copy number of DNA/RNA template prior to nucleic acid isolation. A template-specific PCR assay is used to detect the DNA/RNA spike.

*This report has been electronically signed by laboratory personnel. The name of the individual who approved these results appears in the header of this service report.

Sponsor: WiCell Research Institute

Accession #: 2010-035416

Product: Not Indicated

Test Specimen: Human

Received: 30 Jul 2010

Sample Descriptions

Total sample count = 4

| Sample # | Sample Code | Sample Info | Strain | Age | Sex |
|-----------------------|------------------------------|----------------------------|--------|-----|-----|
| Sample Set # 1 | | Type: Not Indicated | | | |
| 1 | IPS (Foreskin)-3-WB0002 8447 | | | | |
| 2 | IPS (IMR90)-2-MCB-01 6731 | | | | |
| 3 | IPS (IMR90)-3-MCB-01 3720 | | | | |
| 4 | IPS (Foreskin)-4-WB0038 3164 | | | | |