



Donor 6739-PRS

Genetic Testing Summary

Fairfax Cryobank recommends reviewing this genetic testing summary with your healthcare provider to determine suitability.

Last Updated: 08/27/18

Donor Reported Ancestry: Polish, Portuguese, Filipino, Spanish

Jewish Ancestry: No

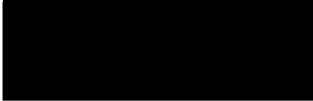
Genetic Test*	Result	Comments/Donor's Residual Risk**
Chromosome analysis (karyotype)	Normal male karyotype	No evidence of clinically significant chromosome abnormalities
Hemoglobin evaluation	Normal hemoglobin fractionation and MCV/MCH results	Reduced risk to be a carrier for sickle cell anemia, beta thalassemia, alpha thalassemia trait (aa/-- and a-/a-) and other hemoglobinopathies
Cystic Fibrosis (CF) carrier screening	Negative by genotyping of 97 mutations- in the CFTR gene	1/343
Spinal Muscular Atrophy (SMA) carrier screening	Negative for deletions of exon 7 in the SMN1 gene	1/632

*No single test can screen for all genetic disorders. A negative screening result significantly reduces, but cannot eliminate, the risk for these conditions in a pregnancy.

**Donor residual risk is the chance the donor is still a carrier after testing negative.



September 16, 2010



Test Results of: DONOR, 6739
 DOB: 09/22/1982 Age: 27.9 Y Sex: M
 Collected on: 09/09/2010
 Received on: 09/09/2010
 Reported on: 09/16/2010

Branch Number: CAB60
 Account Number: 04316522
 Specimen Number: 252-086-0889-0
 Specimen Type: Blood

Patient ID#:



Cystic Fibrosis Mutation Analysis

Patient Name: Donor# 6739,
Referring Physician: Madelyn Kahn, MD
Specimen #: 17195492
Patient ID: 17127871-17

Client #: 880107
Case #: 17337940

Pacific Reproductive Services
 444 De Haro Street
 Suite 222
 San Francisco CA 94107

RESULTS REVIEWED BY *[Signature]*

DOB: [REDACTED] Date Collected: 09/09/2010
 Sex: M Date Received: 09/10/2010
 SSN: Lab ID:
 Hospital ID:
 Specimen Type: **BLDPER**

Ethnicity: Asian, Caucasian, Hispanic

Indication: Carrier test / Gamete donor

RESULTS: Negative for the 97 mutations analyzed

DISCUSSED WITH:
 RECIPIENT DONOR (NA)
 OK TO FILE Y N
 DATE: 9/16/10

INTERPRETATION

This individual is negative for the mutations analyzed. This result reduces but does not eliminate the risk to be a CF carrier.

COMMENTS:

Mutation Detection Rates among Ethnic Groups		Detection rates are based on mutation frequencies in patients affected with cystic fibrosis. Among individuals with an atypical or mild presentation (e.g. congenital absence of the vas deferens, pancreatitis) detection rates may vary from those provided here.	
Ethnicity	Carrier risk reduction when no family history	Detection rate	References
African American	1/65 to 1/338	81%	Genet in Med 3:168, 2001
Ashkenazi Jewish	1/26 to 1/834	97%	Am J Hum Genet 51:951, 1994
Asian		Not Provided	Insufficient data
Caucasian	1/25 to 1/343	93%	Genet in Med 3:168, 2001; Genet in Med 4:90, 2002
Hispanic	1/46 to 1/205	78%	Genet in Med 3:168, 2001; www.dhs.ca.gov/pcfh/gdb/html/PDE/CFStudy.htm
Jewish, non-Ashkenazi		Varies by country of origin	Genet Testing 5:47, 2001. Genet Testing, 1:35, 1997
Other or Mixed Ethnicity		Not Provided	Detection rate not determined and varies with ethnicity

This interpretation is based on the clinical and family relationship information provided and the current understanding of the molecular genetics of this condition.

METHOD / LIMITATIONS:

DNA is isolated from the sample and tested for the 97 CF mutations listed. Regions of the *CFTR* gene are amplified enzymatically and subjected to a solution-phase multiplex allele-specific primer extension with subsequent hybridization to a bead



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Worcester, Massachusetts 01605
(800) 394-4493 • (508) 756-2886

Diagnosis Service Report

Patient
DONOR, 6739

Sex
M

Specimen Type
Whole Blood

Test Category
Carrier

Test Requested
SMA Evaluation

Requesting Physician

Report to
Labcorp V#31982 San Diego/Attn: Referrals

Address
13112 Evening Creek DR S

Suite 200

San Diego, CA 92128

Accession Number
[REDACTED]

Family Number/Kindred Number

Specimen Collection Date
09/09/2010

Accession Date
09/11/2010

Report Date
09/24/2010

Interpretation

This test detected a **normal** copy number of the *SMN1* gene and therefore this individual is unlikely to be a carrier for Spinal Muscular Atrophy (SMA).

Technical Results

SMN1: 2 copies
SMN2: 2 copies

Comments

Carrier Risk for Individuals with no family history of SMA⁹

	Carrier Detection Rate	Carrier Risk by Ethnicity	Residual Risk 2 SMN1 copies	Residual Risk 3 SMN1 copies
Caucasian	95%	1:35	1:632	1:3,500
Ashkenazi Jewish	90%	1:41	1:350	1:4,000
Asian	93%	1:53	1:628	1:5,000
African American	71%	1:66	1:121	1:3,000
Hispanic	91%	1:117	1:1,061	1:11,000

Mixed Ethnicity: If ethnicity is mixed or unknown, use the highest residual risk estimates.

RESULTS REVIEWED BY: CP

DISCUSSED WITH:
RECIPIENT DONOR NA

OK TO FILE Y N

DATE: 10/8/10

It is our understanding that this sample was submitted for Carrier (asymptomatic) testing based on the information provided from the client.

This analysis identified at least two copies of the *SMN1* gene (**normal**). Normal individuals possess two or more copies of the *SMN1* gene, with at least one copy on each chromosome. Depending upon ethnic background, 70-95% of SMA carriers have only one copy of *SMN1*. The finding of two copies significantly reduces the risk that this individual is a carrier of SMA as defined in the table above. The remaining risk of being a carrier is due to point mutations or 2+0 genotype (2 copies of *SMN1* on one chromosome and zero copies the other chromosome), both of which are not detectible with this test.

It is important to note that 2% of individuals with SMA have a mutation that occurred de novo. Typically in these cases, only one parent is an SMA carrier.

Other testing available: Athena Diagnostics offers *SMN1* DNA sequencing. Please contact Athena Client Services at 800-394-4493 if you wish to consult with a laboratory director or genetic counselor regarding these results.

Limitations of analysis: This analysis cannot identify carrier status due to a 2+0 genotype or point mutations.

Background: Spinal Muscular Atrophy (SMA), characterized by progressive muscle weakness due to atrophy of the lower motor neurons in the spinal cord and brain stem, is the second most common lethal



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www.AthenaDiagnostics.com

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Additional Reports to:

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[REDACTED]

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[REDACTED]

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autosomal recessive disorder affecting 1 in every 6,000-10,000 live births.^{1,2,6,10,11} Of individuals with SMA, approximately 95% possess zero copies of the *SMN1* gene, while the remaining 5% possess one copy of the gene which harbors a sequence mutation.^{10,11}

The carrier frequency for SMA varies between 1 in 34 to 1 in 117 of individuals depending on ethnic background.^{2,3,6} Carriers are asymptomatic and typically possess a single copy of the *SMN1* gene. However, a minority of individuals are carriers due to point mutations or a 2+0 genotype (2 copies of the *SMN1* gene on one chromosome and 0 copies on the other chromosome).

Normal individuals possess at least two copies of the *SMN1* gene, typically one on each chromosome 5.²

SMN2 copy number relevance: SMA is caused by a critical reduction in the total amount of functional SMN protein. Typically 80-90% of SMN protein is derived from *SMN1* genes, while 10-20% is derived from a homologous gene, *SMN2*.⁵ Therefore, SMN protein expression is based primarily on *SMN1* gene copy number. Studies show, the phenotype of affected individuals may be modified by the presence of additional copies of *SMN2* genes. An increased number (≥ 3 copies) of *SMN2* genes may be associated with a less severe phenotype of SMA. Conversely, fewer copies of the *SMN2* (≤ 2) may be associated with a severe phenotype of SMA^{4,5,6}. Current literature indicates that in the context of a single *SMN1* copy number,

the *SMN2* result is not known to influence carrier status.

Methods

Direct testing of *SMN1* and *SMN2* copy number was performed by quantitative dosage analysis of genomic DNA. The quantitative dosage analysis examines exon 7 of each *SMN1* and *SMN2* gene as well as 21 control loci throughout the genome. This accuracy of dosage analysis, as performed here, is greater than 99% accurate.

All test results are reviewed, interpreted, and reported by ABMG certified Clinical Molecular Geneticists.

Abbreviations: SMA (Spinal Muscular Atrophy); SMN (survival motor neuron).

The SMA Evaluation test is covered by U.S. Patent No. 6,080,577.

References

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3. Cusin V, et al., (2003). Prevalence of *SMN1* deletion and



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5. Swoboda KJ, et al., (2005). Natural History of Denervation in SMA: Relation to Age, *SMN2* Copy Number, and Function. *Ann Neurology*, 57(5): 704-712.

6. <http://www.genetests.org> SMA GeneReview authored by Prior TW and Russman BS.

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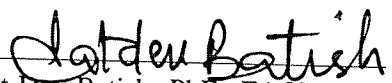
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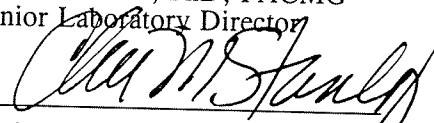
9. Lunn MR and Wang CH (2008). Spinal Muscular Atrophy. *Lancet*, 371: 2120-2133.


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***** FINAL REPORT ***** ver 1.0
This test was developed and its performance characteristics determined by Athena Diagnostics, Inc. It has not been cleared or approved by the U.S. Food and Drug Administration. The FDA has determined that such clearance or approval is not necessary. This test is used for clinical purposes and should not be regarded as investigational or for research only. Athena Diagnostics is licensed under the Clinical Laboratory Improvement Amendments of 1988 (CLIA) to perform high complexity clinical testing. Athena Diagnostics has performed assay validation studies and has developed its laboratory protocols and operating procedures in consultation with experts in the field and in accordance with the standards of the National Committee on Clinical Laboratory Standards (NCCLS).


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