



## Donor 6964

### Genetic Testing Summary

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

Last Updated: 04/24/2026

Donor Reported Ancestry: Italian, Irish

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
Expanded Genetic Disease Carrier Screening Panel attached- 549 diseases by gene sequencing.	<p>Carrier: Alpha-Thalassemia – Silent carrier (aa/a-) (HBA1/HBA2)</p> <p>Carrier: Cystic Fibrosis (CFTR)</p> <p>Carrier: Early Infantile Epileptic Encephalopathy, CAD-Related</p> <p>Negative for other genes sequenced.</p>	<p>Partner testing is recommended before using this donor.</p> <p>Carriers of Cystic Fibrosis may have mild respiratory or other CF-related symptoms. Please see results for further information. Genetic counseling can be considered.</p>

\*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.

**Patient Information**  
 Patient Name: Donor 6964  
  
 Date Of Birth: [REDACTED]  
 Gender: Male  
 Ethnicity: Northern European  
 Caucasian  
  
 Patient ID: [REDACTED]  
 Medical Record #: 6964-[REDACTED]  
 Collection Kit: [REDACTED]  
 Accession ID: N/A  
 Case File ID: [REDACTED]

**Test Information**  
 Ordering Physician: [REDACTED]  
  
 Clinic Information: Fairfax Cryobank  
  
 Phone: [REDACTED]  
 Report Date: 04/15/2024  
 Sample Collected: 03/26/2024  
 Sample Received: 03/27/2024  
 Sample Type: Blood

## CARRIER SCREENING REPORT

**ABOUT THIS SCREEN:** Horizon™ is a carrier screen for specific autosomal recessive and X-linked diseases. This information can help patients learn their risk of having a child with specific genetic conditions.

**ORDER SELECTED:** The Horizon Custom panel was ordered for this patient. Males are not screened for X-linked diseases

### FINAL RESULTS SUMMARY:



#### SILENT CARRIER for Alpha-Thalassemia (aa/a-)

Positive for the pathogenic alpha 3.7 deletion of the HBA2 gene. Depending on the carrier status of the individual's partner, this couple may be at increased risk to have a child with Hemoglobin H Disease. Carrier screening for this individual's partner is suggested.

#### CARRIER for Cystic Fibrosis

Positive for the pathogenic variant c.328G>C (p.D110H) in the CFTR gene. A small number of Cystic Fibrosis (CF) carriers may have mild respiratory or other CF-related symptoms. If this individual's partner is a carrier for Cystic Fibrosis, their chance to have a child with this condition is 1 in 4 (25%). Carrier screening for this individual's partner is suggested.

#### CARRIER for Early Infantile Epileptic Encephalopathy, CAD-Related

Positive for the likely pathogenic variant c.1865\_1874del (p.D622Afs\*8) in the CAD gene. If this individual's partner is a carrier for EARLY INFANTILE EPILEPTIC ENCEPHALOPATHY, CAD-RELATED, their chance to have a child with this condition may be as high as 1 in 4 (25%). Carrier screening for this individual's partner is suggested.

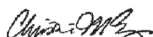
### Negative for 546 out of 549 diseases


No other pathogenic variants were detected in the genes that were screened. The patient's remaining carrier risk after the negative screening results is listed for each disease/gene on the Horizon website at <https://www.natera.com/panel-option/h-all/>. Please see the following pages of this report for a comprehensive list of all conditions included on this individual's screen.

Carrier screening is not diagnostic and may not detect all possible pathogenic variants in a given gene.


#### RECOMMENDATIONS

Individuals who would like to review their Horizon report with a Natera Laboratory Genetic Counselor may schedule a telephone genetic information session by calling 650-249-9090 or visiting [naterasession.com](http://naterasession.com). Clinicians with questions may contact Natera at 650-249-9090 or email [support@natera.com](mailto:support@natera.com). Individuals with positive results may wish to discuss these results with family members to allow them the option to be screened. Comprehensive genetic counseling to discuss the implications of these test results and possible associated reproductive risk is recommended.

  
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 Laboratory Director, Natera

## Patient Information

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

## Test Information

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/15/2024



# ALPHA-THALASSEMIA SILENT CARRIER

## Understanding Your Horizon Carrier Screen Results

### What is Alpha-Thalassemia?

Alpha-Thalassemia refers to a group of inherited blood disorders that reduce the amount of hemoglobin, the protein in red blood cells that carries oxygen to cells throughout the body. A person with one of the Alpha-Thalassemia diseases has lifelong anemia. Mild anemia can lead to tiredness, irritability, dizziness, lightheadedness and a rapid heartbeat. Severe anemia can be life threatening and may require routine blood transfusions. In some cases, affected individuals have been treated with stem cell transplantation from cord blood or bone marrow. Couples at risk of having an affected child may consider cord blood banking, as siblings have a higher chance of being a match for stem cell transplantation than a non-related individual. More information can be found at: <https://parentsguidecordblood.org/en>. Clinical trials involving potential new treatments for these conditions may be available (see [www.clinicaltrials.gov](http://www.clinicaltrials.gov)).

### What causes Alpha-Thalassemia?

Hemoglobin is made of both alpha globin and beta globin proteins. There are four HBA genes (also called alpha globin genes) that are responsible for making alpha globin. Alpha-Thalassemia occurs when three or more of these four alpha globin genes is missing or changed. The exact type of Alpha-Thalassemia a person has depends on how many of the alpha globin genes are not working. Hemoglobin H Disease (a-/-): three missing or changed alpha globin genes. A person who has three missing or changed alpha globin genes has Hemoglobin H Disease. Hemoglobin H Disease can be mild or severe. People with severe disease may have chronic anemia, liver disease, and bone changes. Some people with Hemoglobin H Disease require frequent blood transfusions and other treatments. Alpha-Thalassemia Major, also known as Hemoglobin Bart's Disease (-/-): four missing or changed alpha globin genes. This results in severe fatal anemia. Affected babies develop symptoms before birth and without treatment typically do not survive the newborn period. Fetal blood transfusions during pregnancy may allow survival until after birth, at which time either lifelong transfusions or a stem cell transplantation will be necessary. Mothers who are pregnant with a fetus with Alpha-Thalassemia major can develop health problems during pregnancy. Alpha-Thalassemia is inherited in an autosomal recessive manner. Children typically inherit four copies of each alpha globin gene, two copies from the mother and two copies from the father. This means that both parents must be carriers of one or more missing or changed alpha globin genes to have a child who is affected with Hemoglobin H Disease or Alpha-Thalassemia Major.

### What do my carrier results mean?

One missing or changed alpha globin gene was identified with your Horizon test. People with one missing or changed alpha globin gene are Alpha-Thalassemia silent carriers. People who are silent carriers for Alpha-Thalassemia usually have no health problems and have normal hemoglobin levels. Thalassemia can occur in people of any ethnicity. It is more common in people with Chinese, Southeast Asian, Indian, Middle Eastern, African, and Mediterranean ancestry.

If your partner is a carrier for Alpha-Thalassemia with two genes missing or changed on the same chromosome (in 'cis'), you would have a 1 in 4, or 25%, chance in each pregnancy of having a child with Hemoglobin H Disease. You are not at risk for having a baby with Alpha-Thalassemia Major. The majority of people of Asian ancestry who have two missing alpha globin genes have them on the same chromosome (in 'cis').

If your partner is a carrier for Alpha-Thalassemia with two genes missing or changed that are located on opposite chromosomes (in "trans), each of your children would have a 50% chance of being carriers of Alpha-Thalassemia (with two genes missing or changed on opposite chromosomes), but you are not at risk to have a child with either Hemoglobin H Disease or Alpha-Thalassemia Major. The majority of people of African-American ancestry who have two missing alpha-globin genes have them on opposite chromosomes.

If your partner is an Alpha-Thalassemia Silent Carrier (with one gene missing or changed), each of your children would have a 25% chance of being carriers of Alpha-Thalassemia (with two genes missing or changed on opposite chromosomes) and a 50% chance of being Alpha-Thalassemia Silent carriers. You would not be at risk to have a child with either Hemoglobin H Disease or Alpha-Thalassemia Major.

### What can I do next?

You may wish to speak with a local genetic counselor about your carrier test results. A genetic counselor in your area can be located on the National Society of Genetic Counselors website ([www.nsgc.org](http://www.nsgc.org)). Your siblings and other relatives are at increased risk to also have this mutation. You are encouraged to inform your family members of your test results as they may wish to consider being tested themselves. If you are pregnant, your partner can have carrier screening for Alpha-Thalassemia ordered by a health care professional. If your partner is not found to be a carrier for Alpha-Thalassemia, your risk of having a child with Hemoglobin H Disease is greatly reduced. Couples at risk of having a baby with Hemoglobin H Disease can opt to have prenatal diagnosis done through chorionic villus sampling (CVS) or amniocentesis during pregnancy or can choose to have the baby tested after birth. If you are not yet pregnant, your partner can have carrier screening for Alpha-Thalassemia ordered by a health care professional. If your partner is found to be a carrier for Alpha-Thalassemia (with two missing or non-working alpha globin genes on the same chromosome, in 'cis') you have several reproductive options to consider:

- Natural pregnancy with or without prenatal diagnostic testing of the fetus or testing the baby after birth for Hemoglobin H Disease
- Preimplantation genetic diagnosis (PGD) with in vitro fertilization (IVF) to test embryos for Hemoglobin H Disease
- Adoption or use of a sperm or egg donor who is not a carrier for Alpha-Thalassemia

### What resources are available?

- March of Dimes: <http://www.marchofdimes.org/baby/thalassemia.aspx>
- Cooley's Anemia Foundation: [www.thalassemia.org](http://www.thalassemia.org)
- Prenatal diagnosis done by CVS: <http://www.marchofdimes.org/chorionic-villus-sampling>.

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Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/15/2024

**CYSTIC FIBROSIS****Understanding Your Horizon Carrier Screen Results****What are Cystic Fibrosis and CFTR-Related Disorders?**

Cystic Fibrosis (CF) and CFTR-Related Disorders are inherited disorders that affect many different areas of the body including the lungs, digestive system, and fertility. CF and CFTR-Related Disorders do not affect intelligence. Signs and symptoms of CF start in early childhood and include delayed growth caused by problems in digestion and repeated lung infections that lead to permanent lung damage. Children and adults with CF usually have frequent hospitalizations because of lung infections. Over time, complications of CF can lead to lung transplants and early death. CFTR-Related Disorders cause less severe symptoms, and some only affect male fertility. There are treatments for CF that can lessen the severity of the symptoms; however, there is currently no cure. Clinical trials involving potential new treatments for this condition may be available (see [www.clinicaltrials.gov](http://www.clinicaltrials.gov)).

**What causes CF and CFTR-Related Disorders?**

CF and CFTR-Related Disorders are caused by a change, or mutation, in both copies of the CFTR gene pair. These mutations cause the genes to not work properly or not work at all. When both copies of this gene do not work correctly, mucus and other body fluids become thick and sticky. This causes problems with how the lungs, digestive system, and other body systems function and leads to the symptoms described above. CF and CFTR-Related Disorders are inherited in an autosomal recessive manner. This means that, in most cases, both parents must be carriers of a mutation in one copy of the CFTR gene to have a child with CF or CFTR-Related Disorders. People who are CF or CFTR-Related Disorders carriers do not have CF or CFTR-Related Disorders themselves. Usually a child inherits two copies of each gene, one copy from the mother and one copy from the father. If the mother and father are both carriers for CF and CFTR-Related Disorders, there is a 1 in 4, or 25%, chance in each pregnancy for both partners to pass on their CFTR gene mutations to the child, who will then have CF or CFTR-Related Disorders. Although most CFTR gene mutations cause classic CF, there are some specific CFTR mutations that cause less severe symptoms, and some only affect male fertility. It is sometimes, but not always, possible to determine whether a specific CFTR mutation causes classic CF or a milder form of the condition. A small number of CF carriers may have mild respiratory or other symptoms. If you have concerns about your own health or symptoms, we encourage you to discuss your results and health history with your health care provider. Individuals found to carry more than one mutation in the CFTR genes should discuss their risk for having an affected child, and any potential effects to their own health, with their health care provider.

**What can I do next?**

You may wish to speak with a local genetic counselor about your CF and CFTR-Related Disorders carrier test results. A genetic counselor in your region can be located on the National Society of Genetic Counselors website ([www.nsgc.org](http://www.nsgc.org)). Your siblings and other relatives are at increased risk to also have this mutation. You are encouraged to inform your family members of your test results as they may wish to consider being tested themselves. If you are pregnant, your partner can have carrier screening for CF and CFTR-Related Disorders ordered by a health care professional. If your partner is not found to be a carrier of CF and CFTR-Related Disorders, your risk of having a child with CF and CFTR-Related Disorders is greatly reduced. Couples at risk of having a baby with CF and CFTR-Related Disorders can opt to have prenatal diagnosis done through chorionic villus sampling (CVS) or amniocentesis during pregnancy or can choose to have the baby tested after birth for CF and CFTR-Related Disorders. Although CF is screened for as part of the Newborn Screening program in some US states, babies at 25% for this condition may need diagnostic testing in addition to newborn screening. If you are not yet pregnant, your partner can have CF and CFTR-Related Disorders carrier testing ordered by a health care professional. If your partner is found to be a carrier for CF and CFTR-Related Disorders, you have several reproductive options to consider:

- Natural pregnancy with or without prenatal diagnostic testing of the fetus or testing the baby after birth for CF
- Preimplantation genetic diagnosis (PGD) with in vitro fertilization (IVF) to test embryos for CF and CFTR-Related Disorders
- Adoption or use of a sperm or egg donor who is not a carrier for CF and CFTR-Related Disorders

**What resources are available?**

- Cystic Fibrosis Foundation: [www.cff.org](http://www.cff.org)
- Gene Reviews: Cystic Fibrosis: <https://www.ncbi.nlm.nih.gov/books/NBK1250/>
- Prenatal diagnosis done through CVS: <http://www.marchofdimes.org/chorionic-villus-sampling.aspx>
- Prenatal diagnosis done through Amniocentesis: <http://www.marchofdimes.org/amniocentesis.aspx>
- PGD with IVF: <http://www.natera.com/spectrum>

## Patient Information

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

## Test Information

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/15/2024



# EARLY INFANTILE EPILEPTIC ENCEPHALOPATHY, CAD-RELATED

## Understanding Your Horizon Carrier Screen Results

### What does being a carrier mean?

Your results show that you are a carrier of early infantile epileptic encephalopathy, CAD-related (EIEE50). A carrier of a genetic condition does not have the condition. Carriers also are not certain to have a child with the condition. We are all carriers of one or more genetic conditions. Your children are not at high risk for this condition unless your partner or donor is also a carrier of EIEE50. Further testing can be done to see if your partner or donor is a carrier.

### What is early infantile epileptic encephalopathy, CAD-related (EIEE50)?

EIEE50 mainly affects the brain and nervous system. It is a form of epilepsy (seizure disorder) that varies from person to person. Some people have more severe symptoms than others. Infants with EIEE50 usually have symptoms shortly after birth. Symptoms can include seizures, feeding problems, low muscle tone, and breathing problems.<sup>1,2</sup> Children with EIEE50 who survive infancy can have global developmental delay, seizures, low muscle tone, anemia, and abnormal movements.<sup>1,2</sup> Many people with this condition do not live a normal lifespan. There is currently no cure for this condition. Treatment is based on symptoms.

Clinical trials involving potential new treatments for this condition could be available (see [clinicaltrials.gov](https://clinicaltrials.gov)).

### What causes early infantile epileptic encephalopathy, CAD-related (EIEE50)?

EIEE50 is caused by changes, or variants, in the CAD gene. These changes make the gene not work properly. Genes are a set of instructions inside the cells of our bodies that tell our bodies how to grow and function. Everyone has two copies of the CAD gene. Carriers of EIEE50 have one working copy and one non-working copy of the gene. People with EIEE50 have no working copies of the gene.

EIEE50 is usually passed down, or inherited, from both genetic parents. We inherit one copy of the CAD gene from each of our genetic parents. When both genetic parents are carriers, each child has a 1 in 4 (25%) chance of inheriting two non-working genes and having EIEE50. Each child also has a 1 in 2 (50%) chance of being a carrier of EIEE50 and a 1 in 4 (25%) chance of inheriting two working copies of the gene. This type of inheritance is called autosomal recessive inheritance.

### Will my children have early infantile epileptic encephalopathy, CAD-related (EIEE50)?

If your partner or donor also has a non-working copy of the CAD gene, your children could have EIEE50. Each child you have together would have a 1 in 4 (25%) chance of having EIEE50. Each child you have together would also have a 3 in 4 (75%) chance of **not** having the condition.

If your partner or donor has CAD carrier screening and no variants are found, the chance that your children would have EIEE50 is very low. No further testing would usually be needed for you, your partner or donor, or your children related to EIEE50.

### What can I do next?

If you want to know if your children are at risk for EIEE50, your partner or donor would need to have CAD carrier screening. If you have questions about this testing, please ask your healthcare provider or use the resources below. Many people find it helpful to speak with a genetic counselor.

If your partner or donor is found to be a EIEE50 carrier, your children would be at risk for having EIEE50.

If you or your partner or surrogate are currently pregnant, tests called CVS (chorionic villus sampling) and amniocentesis can be done during pregnancy to find out if a baby has EIEE50. These tests both have a small risk of miscarriage. Babies can also be tested for EIEE50 after birth instead.

If you or your partner or surrogate are not yet pregnant, you could have these options:

- natural pregnancy with CVS or amniocentesis to test for EIEE50 during pregnancy;
- natural pregnancy and testing the baby after birth for EIEE50;
- preimplantation genetic testing (PGT-M) with in vitro fertilization (IVF) to test embryos for EIEE50;
- adoption; or
- use of a sperm or egg donor who had no variants found in CAD carrier screening.

### Where can I find more information?

- Epilepsy Foundation [epilepsy.com](https://www.epilepsy.com)
- CVS [marchofdimes.org/chorionic-villus-sampling](https://marchofdimes.org/chorionic-villus-sampling)
- Amniocentesis [marchofdimes.org/pregnancy/amniocentesis](https://marchofdimes.org/pregnancy/amniocentesis)
- PGT-M [natera.com/womens-health/spectrum-preimplantation-genetics](https://natera.com/womens-health/spectrum-preimplantation-genetics)

### What does this mean for my family?

You likely got (inherited) this non-working gene from one of your genetic parents. Your genetic siblings and other family members could also carry it. You should tell your family members about your test results so they can decide if they want carrier screening for EIEE50.

## References

1. Yarahmadi SG, Morovvati S. CAD gene and early infantile epileptic encephalopathy-50; three Iranian deceased patients and a novel mutation: case report. *BMC Pediatr* 22, 125 (2022). <https://doi.org/10.1186/s12887-022-03195-4>
2. Online Mendelian Inheritance in Man, OMIM. Johns Hopkins University, Baltimore, MD. Developmental and epileptic encephalopathy 50; EIEE50. MIM Number: 616457. Available from: <https://www.omim.org/entry/616457> Accessed January 2024

**Patient Information**

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/15/2024



**Patient Information**

Patient Name: Donor 6964

**Test Information**

Ordering Physician: [REDACTED]



Clinic Information: Fairfax Cryobank

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

Report Date: 04/15/2024

**DISEASES SCREENED**

Below is a list of all diseases screened and the result. Certain conditions have unique patient-specific numerical values, therefore, results for those conditions are formatted differently.

**Autosomal Recessive**

**1**  
17-BETA HYDROXYSTEROID DEHYDROGENASE 3 DEFICIENCY (*HSD17B3*) **negative**

**3**  
3-BETA-HYDROXYSTEROID DEHYDROGENASE TYPE II DEFICIENCY (*HSD3B2*) **negative**  
3-HYDROXY-3-METHYLGLUTARYL-COENZYME A LYASE DEFICIENCY (*HMGL*) **negative**  
3-HYDROXYACYL-COA DEHYDROGENASE DEFICIENCY (*HADH*) **negative**  
3-METHYLCROTONYL-CoA CARBOXYLASE 2 DEFICIENCY (*MCCC2*) **negative**  
3-PHOSPHOGLYCERATE DEHYDROGENASE DEFICIENCY (*PHGDH*) **negative**

**5**  
5-ALPHA-REDUCTASE DEFICIENCY (*SRD5A2*) **negative**

**6**  
6-PYRUVYL-TETRAHYDROPTERIN SYNTHASE (PTPS) DEFICIENCY (*PTS*) **negative**

**A**  
ABCA4-RELATED CONDITIONS (*ABCA4*) **negative**  
ABETALIPOPROTEINEMIA (*MTPP*) **negative**  
ACHONDROGENESIS, TYPE 1B (*SLC26A2*) **negative**  
ACHROMATOPSIA, CNGB3-RELATED (*CNGB3*) **negative**  
ACRODERMATITIS ENTEROPATHICA (*SLC39A4*) **negative**  
ACTION MYOCLONUS-RENAL FAILURE (AMRF) SYNDROME (*SCARB2*) **negative**  
ACUTE INFANTILE LIVER FAILURE, TRMU-RELATED (*TRMU*) **negative**  
ACYL-COA OXIDASE I DEFICIENCY (*ACOX1*) **negative**  
AICARDI-GOUTIERES SYNDROME (*SAMHD1*) **negative**  
AICARDI-GOUTIERES SYNDROME, RNASEH2A-RELATED (*RNASEH2A*) **negative**  
AICARDI-GOUTIERES SYNDROME, RNASEH2B-RELATED (*RNASEH2B*) **negative**  
AICARDI-GOUTIERES SYNDROME, RNASEH2C-RELATED (*RNASEH2C*) **negative**  
AICARDI-GOUTIERES SYNDROME, TREX1-RELATED (*TREX1*) **negative**  
ALPHA-MANNOSIDOSIS (*MAN2B1*) **negative**  
ALPHA-THALASSEMIA (*HBA1/HBA2*) **see first page**  
ALPORT SYNDROME, COL4A3-RELATED (*COL4A3*) **negative**  
ALPORT SYNDROME, COL4A4-RELATED (*COL4A4*) **negative**  
ALSTROM SYNDROME (*ALMS1*) **negative**  
AMISH INFANTILE EPILEPSY SYNDROME (*ST3GAL5*) **negative**  
ANDERMANN SYNDROME (*SLC12A6*) **negative**  
ARGININE:GLYCINE AMIDINOTRANSFERASE DEFICIENCY (AGAT DEFICIENCY) (*GATM*) **negative**  
ARGININEMIA (*ARG1*) **negative**  
ARGININOSUCCINATE LYASE DEFICIENCY (*ASL*) **negative**  
AROMATASE DEFICIENCY (*CYP19A1*) **negative**  
ASPARAGINE SYNTHETASE DEFICIENCY (*ASNS*) **negative**  
ASPARTYLGLYCOSAMINURIA (*AGA*) **negative**  
ATAXIA WITH VITAMIN E DEFICIENCY (*TPA*) **negative**  
ATAXIA-TELANGIECTASIA (*ATM*) **negative**  
ATAXIA-TELANGIECTASIA-LIKE DISORDER 1 (*MRE11*) **negative**  
ATRANSFERRINEMIA (*TF*) **negative**  
AUTISM SPECTRUM, EPILEPSY AND ARTHROGRYPOSIS (*SLC35A3*) **negative**  
AUTOIMMUNE POLYGLANDULAR SYNDROME, TYPE 1 (*AIRE*) **negative**  
AUTOSOMAL RECESSIVE CONGENITAL ICHTHYOSIS (*ARCI*), SLC27A4-RELATED (*SLC27A4*) **negative**  
AUTOSOMAL RECESSIVE SPASTIC ATAXIA OF CHARLEVOIX-SAGUENAY (*SACS*) **negative**

**B**  
BARDET-BIEDL SYNDROME, ARL6-RELATED (*ARL6*) **negative**  
BARDET-BIEDL SYNDROME, BBS10-RELATED (*BBS10*) **negative**  
BARDET-BIEDL SYNDROME, BBS12-RELATED (*BBS12*) **negative**  
BARDET-BIEDL SYNDROME, BBS1-RELATED (*BBS1*) **negative**  
BARDET-BIEDL SYNDROME, BBS2-RELATED (*BBS2*) **negative**  
BARDET-BIEDL SYNDROME, BBS4-RELATED (*BBS4*) **negative**  
BARDET-BIEDL SYNDROME, BBS5-RELATED (*BBS5*) **negative**  
BARDET-BIEDL SYNDROME, BBS7-RELATED (*BBS7*) **negative**  
BARDET-BIEDL SYNDROME, BBS9-RELATED (*BBS9*) **negative**  
BARDET-BIEDL SYNDROME, TTC8-RELATED (*TTC8*) **negative**  
BARE LYMPHOCYTE SYNDROME, CIITA-RELATED (*CIITA*) **negative**  
BARTTER SYNDROME, BSND-RELATED (*BSND*) **negative**  
BARTTER SYNDROME, KCNJ1-RELATED (*KCNJ1*) **negative**  
BARTTER SYNDROME, SLC12A1-RELATED (*SLC12A1*) **negative**  
BATTEN DISEASE, CLN3-RELATED (*CLN3*) **negative**  
BETA-HEMOGLOBINOPATHIES (*HBB*) **negative**  
BETA-KETOTHIOLENE DEFICIENCY (*ACAT1*) **negative**  
BETA-MANNOSIDOSIS (*MANBA*) **negative**  
BETA-UREIDOPROPIONASE DEFICIENCY (*UPB1*) **negative**  
BILATERAL FRONTOPARIETAL POLYMICROGYRIA (*GPR56*) **negative**

BIOTINIDASE DEFICIENCY (*BTD*) **negative**  
BIOTIN-THIAMINE-RESPONSIVE BASAL GANGLIA DISEASE (BTBGD) (*SLC19A3*) **negative**  
BLOOM SYNDROME (*BLM*) **negative**  
BRITTLE CORNEA SYNDROME 1 (*ZNF469*) **negative**  
BRITTLE CORNEA SYNDROME 2 (*PRDM5*) **negative**

**C**  
CANAVAN DISEASE (*ASPA*) **negative**  
CARBAMOYL PHOSPHATE SYNTHETASE I DEFICIENCY (*CPS1*) **negative**  
CARNITINE DEFICIENCY (*SLC22A5*) **negative**  
CARNITINE PALMITOYLTRANSFERASE IA DEFICIENCY (*CPT1A*) **negative**  
CARNITINE PALMITOYLTRANSFERASE II DEFICIENCY (*CPT2*) **negative**  
CARNITINE-ACYLCARNITINE TRANSLOCASE DEFICIENCY (*SLC25A20*) **negative**  
CARPENTER SYNDROME (*RAB23*) **negative**  
CARTILAGE-HAIR HYPOPLASIA (*RMRP*) **negative**  
CATECHOLAMINERGIC POLYMORPHIC VENTRICULAR TACHYCARDIA (*CASQ2*) **negative**  
CD59-MEDIATED HEMOLYTIC ANEMIA (*CD59*) **negative**  
CEP152-RELATED MICROCEPHALY (*CEP152*) **negative**  
CEREBRAL DYSGENESIS, NEUROPATHY, ICHTHYOSIS, AND PALMOPLANTAR KERATODERMA (CEDNIK) SYNDROME (*SNAP29*) **negative**  
CEREBROTENDINOUS XANTHOMATOSIS (*CYP27A1*) **negative**  
CHARCOT-MARIE-TOOTH DISEASE, RECESSIVE INTERMEDIATE C (*PLEKHG5*) **negative**  
CHARCOT-MARIE-TOOTH-DISEASE, TYPE 4D (*NDRG1*) **negative**  
CHEDIAK-HIGASHI SYNDROME (*LYST*) **negative**  
CHOREOACANTHOCYTOSIS (*VPS13A*) **negative**  
CHRONIC GRANULOMATOUS DISEASE, CYBA-RELATED (*CYBA*) **negative**  
CHRONIC GRANULOMATOUS DISEASE, NCF2-RELATED (*NCF2*) **negative**  
CILIOPATHIES, RPGRIP1L-RELATED (*RPGRIP1L*) **negative**  
CITRIN DEFICIENCY (*SLC25A13*) **negative**  
CITRULLINEMIA, TYPE 1 (*ASS1*) **negative**  
CLN10 DISEASE (*CTSD*) **negative**  
COHEN SYNDROME (*VPS13B*) **negative**  
COL11A2-RELATED CONDITIONS (*COL11A2*) **negative**  
COMBINED MALONIC AND METHYLMALONIC ACIDURIA (*ACSF3*) **negative**  
COMBINED OXIDATIVE PHOSPHORYLATION DEFICIENCY 1 (*GFM1*) **negative**  
COMBINED OXIDATIVE PHOSPHORYLATION DEFICIENCY 3 (*TSFM*) **negative**  
COMBINED PITUITARY HORMONE DEFICIENCY 1 (*POU1F1*) **negative**  
COMBINED PITUITARY HORMONE DEFICIENCY-2 (*PROPI*) **negative**  
CONGENITAL ADRENAL HYPERPLASIA, 11-BETA-HYDROXYLASE DEFICIENCY (*CYP11B1*) **negative**  
CONGENITAL ADRENAL HYPERPLASIA, 17-ALPHA-HYDROXYLASE DEFICIENCY (*CYP17A1*) **negative**  
CONGENITAL ADRENAL HYPERPLASIA, 21-HYDROXYLASE DEFICIENCY (*CYP21A2*) **negative**  
CONGENITAL ADRENAL INSUFFICIENCY, CYP11A1-RELATED (*CYP11A1*) **negative**  
CONGENITAL AMEGAKARYOCYTIC THROMBOCYTOPENIA (*MPL*) **negative**  
CONGENITAL CHRONIC DIARRHEA (*DGAT1*) **negative**  
CONGENITAL DISORDER OF GLYCOSYLATION TYPE 1, ALG1-RELATED (*ALG1*) **negative**  
CONGENITAL DISORDER OF GLYCOSYLATION, TYPE 1A, PMM2-Related (*PMM2*) **negative**  
CONGENITAL DISORDER OF GLYCOSYLATION, TYPE 1B (*MPL*) **negative**  
CONGENITAL DISORDER OF GLYCOSYLATION, TYPE 1C (*ALG6*) **negative**  
CONGENITAL DYSERYTHROPOIETIC ANEMIA TYPE 2 (*SEC23B*) **negative**  
CONGENITAL FINNISH NEPHROSIS (*NPHS1*) **negative**  
CONGENITAL HYDROCEPHALUS 1 (*CCDC88C*) **negative**  
CONGENITAL HYPERINSULINISM, KCNJ11-Related (*KCNJ11*) **negative**  
CONGENITAL INSENSITIVITY TO PAIN WITH ANHIDROSIS (CIPA) (*NTRK1*) **negative**  
CONGENITAL MYASTHENIC SYNDROME, CHAT-RELATED (*CHAT*) **negative**  
CONGENITAL MYASTHENIC SYNDROME, CHRNE-RELATED (*CHRNE*) **negative**  
CONGENITAL MYASTHENIC SYNDROME, COLQ-RELATED (*COLQ*) **negative**  
CONGENITAL MYASTHENIC SYNDROME, DOK7-RELATED (*DOK7*) **negative**  
CONGENITAL MYASTHENIC SYNDROME, RAPSIN-RELATED (*RAPSN*) **negative**  
CONGENITAL NEPHROTIC SYNDROME, PLCE1-RELATED (*PLCE1*) **negative**  
CONGENITAL NEUTROPENIA, G6PC3-RELATED (*G6PC3*) **negative**  
CONGENITAL NEUTROPENIA, HAX1-RELATED (*HAX1*) **negative**  
CONGENITAL NEUTROPENIA, VPS45-RELATED (*VPS45*) **negative**  
CONGENITAL SECRETORY CHLORIDE DIARRHEA 1 (*SLC26A3*) **negative**  
CORNEAL DYSTROPHY AND PERCEPTIVE DEAFNESS (*SLC4A11*) **negative**  
CORTICOSTERONE METHYLOXIDASE DEFICIENCY (*CYP11B2*) **negative**  
COSTEFF SYNDROME ( 3-METHYLGLUTACONIC ACIDURIA, TYPE 3 ) (*OPA3*) **negative**  
CRB1-RELATED RETINAL DYSTROPHIES (*CRB1*) **negative**  
CYSTIC FIBROSIS (*CFTR*) **see first page**  
CYSTINOSIS (*CTNS*) **negative**  
CYTOCHROME C OXIDASE DEFICIENCY, PET100-RELATED (*PET100*) **negative**  
CYTOCHROME P450 OXIOREDUCTASE DEFICIENCY (*POR*) **negative**

**D**  
D-BIFUNCTIONAL PROTEIN DEFICIENCY (*HSD17B4*) **negative**

**Patient Information**

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/15/2024



**D**  
 DEAFNESS, AUTOSOMAL RECESSIVE 77 (LOXHD1) **negative**  
 DIHYDROPTERIDINE REDUCTASE (DHPR) DEFICIENCY (QDPR) **negative**  
 DONNAI-BARROW SYNDROME (LRP2) **negative**  
 DUBIN-JOHNSON SYNDROME (ABCC2) **negative**  
 DYSKERATOSIS CONGENITA SPECTRUM DISORDERS (TERT) **negative**  
 DYSKERATOSIS CONGENITA, RTEL1-RELATED (RTEL1) **negative**  
 DYSTROPHIC EPIDERMOLYSIS BULLOSA, COL7A1-Related (COL7A1) **negative**

**E**  
 EARLY INFANTILE EPILEPTIC ENCEPHALOPATHY, CAD-RELATED (CAD) **see first page**  
 EHLERS-DANLOS SYNDROME TYPE VI (PLOD1) **negative**  
 EHLERS-DANLOS SYNDROME, CLASSIC-LIKE, TNXB-RELATED (TNXB) **negative**  
 EHLERS-DANLOS SYNDROME, TYPE VII C (ADAMT52) **negative**  
 ELLIS-VAN CREVELD SYNDROME, EVC2-RELATED (EVC2) **negative**  
 ELLIS-VAN CREVELD SYNDROME, EVC-RELATED (EVC) **negative**  
 ENHANCED 5- CONE SYNDROME (NR2E3) **negative**  
 EPIMERASE DEFICIENCY (GALACTOSEMIA TYPE III) (GALE) **negative**  
 EPIPHYSEAL DYSPLASIA, MULTIPLE, 7/DESBUQUOIS DYSPLASIA 1 (CANT1) **negative**  
 ERCC6-RELATED DISORDERS (ERCC6) **negative**  
 ERCC8-RELATED DISORDERS (ERCC8) **negative**  
 ETHYLMALONIC ENCEPHALOPATHY (ETHE1) **negative**

**F**  
 FACTOR XI DEFICIENCY (F11) **negative**  
 FAMILIAL DYSAUTONOMIA (IKBKAP) **negative**  
 FAMILIAL HEMOPHAGOCYtic LYMPHOHISTIOCYTOSIS, PRF1-RELATED (PRF1) **negative**  
 FAMILIAL HEMOPHAGOCYtic LYMPHOHISTIOCYTOSIS, STX11-RELATED (STX11) **negative**  
 FAMILIAL HEMOPHAGOCYtic LYMPHOHISTIOCYTOSIS, STXBP2-RELATED (STXBP2) **negative**  
 FAMILIAL HEMOPHAGOCYtic LYMPHOHISTIOCYTOSIS, UNC13D-RELATED (UNC13D) **negative**  
 FAMILIAL HYPERCHOLESTEROLEMIA, LDLRAP1-RELATED (LDLRAP1) **negative**  
 FAMILIAL HYPERCHOLESTEROLEMIA, LDLR-RELATED (LDLR) **negative**  
 FAMILIAL HYPERINSULINISM, ABCC8-RELATED (ABCC8) **negative**  
 FAMILIAL NEPHROGENIC DIABETES INSIPIDUS, AQP2-RELATED (AQP2) **negative**  
 FANCONI ANEMIA, GROUP A (FANCA) **negative**  
 FANCONI ANEMIA, GROUP C (FANCC) **negative**  
 FANCONI ANEMIA, GROUP D2 (FANCD2) **negative**  
 FANCONI ANEMIA, GROUP E (FANCE) **negative**  
 FANCONI ANEMIA, GROUP F (FANCF) **negative**  
 FANCONI ANEMIA, GROUP G (FANCG) **negative**  
 FANCONI ANEMIA, GROUP I (FANCI) **negative**  
 FANCONI ANEMIA, GROUP J (BRIP1) **negative**  
 FANCONI ANEMIA, GROUP L (FANCL) **negative**  
 FARBER LIPOGRANULOMATOSIS (ASAH1) **negative**  
 FOVEAL HYPOPLASIA (SLC38A8) **negative**  
 FRASER SYNDROME 3, GRIP1-RELATED (GRIP1) **negative**  
 FRASER SYNDROME, FRAS1-RELATED (FRAS1) **negative**  
 FRASER SYNDROME, FREM2-RELATED (FREM2) **negative**  
 FRIEDREICH ATAXIA (FXN) **negative**  
 FRUCTOSE-1,6-BISPHOSPHATASE DEFICIENCY (FBP1) **negative**  
 FUCOSIDOSIS, FUCA1-RELATED (FUCA1) **negative**  
 FUMARASE DEFICIENCY (FH) **negative**

**G**  
 GABA-TRANSAMINASE DEFICIENCY (ABAT) **negative**  
 GALACTOKINASE DEFICIENCY ( GALACTOSEMIA, TYPE II) (GALK1) **negative**  
 GALACTOSEMIA (GALT) **negative**  
 GALACTOSIALIDOSIS (CTSA) **negative**  
 GAUCHER DISEASE (GBA) **negative**  
 GCH1-RELATED CONDITIONS (GCH1) **negative**  
 GDF5-RELATED CONDITIONS (GDF5) **negative**  
 GERODERMA OSTEODYSPLASTICA (GORAB) **negative**  
 GITELMAN SYNDROME (SLC12A3) **negative**  
 GLANZMANN THROMBASTHENIA (ITGB3) **negative**  
 GLUTARIC ACIDEMIA, TYPE 1 (GCDH) **negative**  
 GLUTARIC ACIDEMIA, TYPE 2A (ETFA) **negative**  
 GLUTARIC ACIDEMIA, TYPE 2B (ETFB) **negative**  
 GLUTARIC ACIDEMIA, TYPE 2C (ETFDH) **negative**  
 GLUTATHIONE SYNTHETASE DEFICIENCY (GSS) **negative**  
 GLYCINE ENCEPHALOPATHY, AMT-RELATED (AMT) **negative**  
 GLYCINE ENCEPHALOPATHY, GLDC-RELATED (GLDC) **negative**  
 GLYCOGEN STORAGE DISEASE TYPE 5 (McArdle Disease) (PYGM) **negative**  
 GLYCOGEN STORAGE DISEASE TYPE IXB (PHKB) **negative**  
 GLYCOGEN STORAGE DISEASE TYPE IXC (PHKG2) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 1a (G6PC) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 1b (SLC37A4) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 2 (POMPE DISEASE) (GAA) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 3 (AGL) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 4 (GBE1) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 7 (PFKM) **negative**

GRACILE SYNDROME (BCS1L) **negative**  
 GUANIDINOACETATE METHYLTRANSFERASE DEFICIENCY (GAMT) **negative**

**H**  
 HARLEQUIN ICHTHYOSIS (ABCA12) **negative**  
 HEME OXYGENASE 1 DEFICIENCY (HMOX1) **negative**  
 HEMOCHROMATOSIS TYPE 2A (HFE2) **negative**  
 HEMOCHROMATOSIS, TYPE 3, TFR2-Related (TFR2) **negative**  
 HEPATOCEREBRAL MITOCHONDRIAL DNA DEPLETION SYNDROME, MPV17-RELATED (MPV17) **negative**  
 HEREDITARY FRUCTOSE INTOLERANCE (ALDOB) **negative**  
 HEREDITARY HEMOCHROMATOSIS TYPE 2B (HAMP) **negative**  
 HEREDITARY SPASTIC PARAPARESIS, TYPE 49 (TECPR2) **negative**  
 HEREDITARY SPASTIC PARAPLEGIA, CYP7B1-RELATED (CYP7B1) **negative**  
 HERMANSKY-PUDLAK SYNDROME, AP3B1-RELATED (AP3B1) **negative**  
 HERMANSKY-PUDLAK SYNDROME, BLOC1S3-RELATED (BLOC1S3) **negative**  
 HERMANSKY-PUDLAK SYNDROME, BLOC1S6-RELATED (BLOC1S6) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS1-RELATED (HPS1) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS3-RELATED (HPS3) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS4-RELATED (HPS4) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS5-RELATED (HPS5) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS6-RELATED (HPS6) **negative**  
 HOLOCARBOXYLASE SYNTHETASE DEFICIENCY (HLC5) **negative**  
 HOMOCYSTINURIA AND MEGALOBlastic ANEMIA TYPE CBLG (MTR) **negative**  
 HOMOCYSTINURIA DUE TO DEFICIENCY OF MTHFR (MTHFR) **negative**  
 HOMOCYSTINURIA, CBS-RELATED (CBS) **negative**  
 HOMOCYSTINURIA, Type cblE (MTRR) **negative**  
 HYDROLETHALUS SYNDROME (HYLS1) **negative**  
 HYPER-IGM IMMUNODEFICIENCY (CD40) **negative**  
 HYPERORNITHINEMIA-HYPERAMMONEMIA-HOMOCITRULLINURIA ( HHH SYNDROME ) (SLC25A15) **negative**  
 HYPERPHOSPHATEMIC FAMILIAL TUMORAL CALCINOSIS, GALNT3-RELATED (GALNT3) **negative**  
 HYPOMYELINATING LEUKODYSTROPHY 12 (VPS11) **negative**  
 HYPOPHOSPHATASIA, ALPL-RELATED (ALPL) **negative**

**I**  
 IMERSLUND-GRÄSBECK SYNDROME 2 (AMN) **negative**  
 IMMUNODEFICIENCY-CENTROMERIC INSTABILITY-FACIAL ANOMALIES (ICF) SYNDROME, DNMT3B-RELATED (DNMT3B) **negative**  
 IMMUNODEFICIENCY-CENTROMERIC INSTABILITY-FACIAL ANOMALIES (ICF) SYNDROME, ZBTB24-RELATED (ZBTB24) **negative**  
 INCLUSION BODY MYOPATHY 2 (GNE) **negative**  
 INFANTILE CEREBRAL AND CEREBELLAR ATROPHY (MED17) **negative**  
 INFANTILE NEPHRONOPHTHISIS (INVS) **negative**  
 INFANTILE NEUROAXONAL DYSTROPHY (PLA2G6) **negative**  
 ISOLATED ECTOPIA LENTIS (ADAMTSL4) **negative**  
 ISOLATED SULFITE OXIDASE DEFICIENCY (SUOX) **negative**  
 ISOLATED THYROID-STIMULATING HORMONE DEFICIENCY (TSHB) **negative**  
 ISOVALERIC ACIDEMIA (IVD) **negative**

**J**  
 JOHANSON-BLIZZARD SYNDROME (UBR1) **negative**  
 JOUBERT SYNDROME 2 / MECKEL SYNDROME 2 (TMEM216) **negative**  
 JOUBERT SYNDROME AND RELATED DISORDERS (JSRD), TMEM67-RELATED (TMEM67) **negative**  
 JOUBERT SYNDROME, AHI1-RELATED (AHI1) **negative**  
 JOUBERT SYNDROME, ARL13B-RELATED (ARL13B) **negative**  
 JOUBERT SYNDROME, B9D1-RELATED (B9D1) **negative**  
 JOUBERT SYNDROME, B9D2-RELATED (B9D2) **negative**  
 JOUBERT SYNDROME, C2CD3-RELATED/OROFACIODIGITAL SYNDROME 14 (C2CD3) **negative**  
 JOUBERT SYNDROME, CC2D2A-RELATED/COACH SYNDROME (CC2D2A) **negative**  
 JOUBERT SYNDROME, CEP104-RELATED (CEP104) **negative**  
 JOUBERT SYNDROME, CEP120-RELATED/SHORT-RIB THORACIC DYSPLASIA 13 WITH OR WITHOUT POLYDACTYLY (CEP120) **negative**  
 JOUBERT SYNDROME, CEP41-RELATED (CEP41) **negative**  
 JOUBERT SYNDROME, CPLANE1-RELATED / OROFACIODIGITAL SYNDROME 6 (CPLANE1) **negative**  
 JOUBERT SYNDROME, CSPP1-RELATED (CSPP1) **negative**  
 JOUBERT SYNDROME, INPP5E-RELATED (INPP5E) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, COL17A1-RELATED (COL17A1) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, ITGA6-RELATED (ITGA6) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, ITGB4-RELATED (ITGB4) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, LAMB3-RELATED (LAMB3) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, LAMC2-RELATED (LAMC2) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA/LARYNGOONYCHOCUTANEOUS SYNDROME, LAMA3-RELATED (LAMA3) **negative**

**K**  
 KRABBE DISEASE (GALC) **negative**

**L**  
 LAMELLAR ICHTHYOSIS, TYPE 1 (TGM1) **negative**

**Patient Information**

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/15/2024



**L**  
 LARON SYNDROME (GHR) **negative**  
 LEBER CONGENITAL AMAUROSIS 2 (RPE65) **negative**  
 LEBER CONGENITAL AMAUROSIS TYPE AIPL1 (AIPL1) **negative**  
 LEBER CONGENITAL AMAUROSIS TYPE GUCY2D (GUCY2D) **negative**  
 LEBER CONGENITAL AMAUROSIS TYPE TULP1 (TULP1) **negative**  
 LEBER CONGENITAL AMAUROSIS, IQCB1-RELATED/SENIOR-LOKEN SYNDROME 5 (IQCB1) **negative**  
 LEBER CONGENITAL AMAUROSIS, TYPE CEP290 (CEP290) **negative**  
 LEBER CONGENITAL AMAUROSIS, TYPE LCA5 (LCA5) **negative**  
 LEBER CONGENITAL AMAUROSIS, TYPE RDH12 (RDH12) **negative**  
 LEIGH SYNDROME, FRENCH-CANADIAN TYPE (LRPPRC) **negative**  
 LETHAL CONGENITAL CONTRACTURE SYNDROME 1 (GLE1) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER (EIF2B5) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER, EIF2B1-RELATED (EIF2B1) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER, EIF2B2-RELATED (EIF2B2) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER, EIF2B3-RELATED (EIF2B3) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER, EIF2B4-RELATED (EIF2B4) **negative**  
 LIG4 SYNDROME (LIG4) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY TYPE 8 (TRIM32) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2A (CAPN3) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2B (DYSF) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2C (SGCG) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2D (SGCA) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2E (SGCB) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2F (SGCD) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2I (FKRP) **negative**  
 LIPOAMIDE DEHYDROGENASE DEFICIENCY (DIHYDROLIPOAMIDE DEHYDROGENASE DEFICIENCY) (DLD) **negative**  
 LIPOID ADRENAL HYPERPLASIA (STAR) **negative**  
 LIPOPROTEIN LIPASE DEFICIENCY (LPL) **negative**  
 LONG CHAIN 3-HYDROXYACYL-COA DEHYDROGENASE DEFICIENCY (HADHA) **negative**  
 LRAT-RELATED CONDITIONS (LRAT) **negative**  
 LUNG DISEASE, IMMUNODEFICIENCY, AND CHROMOSOME BREAKAGE SYNDROME (LICS) (NSMCE3) **negative**  
 LYSINURIC PROTEIN INTOLERANCE (SLC7A7) **negative**

**M**  
 MALONYL-COA DECARBOXYLASE DEFICIENCY (MLYCD) **negative**  
 MAPLE SYRUP URINE DISEASE, TYPE 1A (BCKDHA) **negative**  
 MAPLE SYRUP URINE DISEASE, TYPE 1B (BCKDHB) **negative**  
 MAPLE SYRUP URINE DISEASE, TYPE 2 (DBT) **negative**  
 MCKUSICK-KAUFMAN SYNDROME (MKKS) **negative**  
 MECKEL SYNDROME 7/NEPHRONOPHTHISIS 3 (NPHP3) **negative**  
 MECKEL-GRUBER SYNDROME, TYPE 1 (MKS1) **negative**  
 MECR-RELATED NEUROLOGIC DISORDER (MECR) **negative**  
 MEDIUM CHAIN ACYL-CoA DEHYDROGENASE DEFICIENCY (ACADM) **negative**  
 MEDNIK SYNDROME (AP151) **negative**  
 MEGALENCEPHALIC LEUKOENCEPHALOPATHY WITH SUBCORTICAL CYSTS (MLC1) **negative**  
 MEROSIN-DEFICIENT MUSCULAR DYSTROPHY (LAMA2) **negative**  
 METABOLIC ENCEPHALOPATHY AND ARRHYTHMIAS, TANGO2-RELATED (TANGO2) **negative**  
 METACHROMATIC LEUKODYSTROPHY, ARSA-RELATED (ARSA) **negative**  
 METACHROMATIC LEUKODYSTROPHY, PSAP-RELATED (PSAP) **negative**  
 METHYLMALONIC ACIDEMIA AND HOMOCYSTINURIA TYPE CBLF (LMBRD1) **negative**  
 METHYLMALONIC ACIDEMIA, MCEE-RELATED (MCEE) **negative**  
 METHYLMALONIC ACIDURIA AND HOMOCYSTINURIA, TYPE CBLC (MMACHC) **negative**  
 METHYLMALONIC ACIDURIA AND HOMOCYSTINURIA, TYPE CblD (MMADHC) **negative**  
 METHYLMALONIC ACIDURIA, MMAA-RELATED (MMAA) **negative**  
 METHYLMALONIC ACIDURIA, MMAB-RELATED (MMAB) **negative**  
 METHYLMALONIC ACIDURIA, TYPE MUT(0) (MUT) **negative**  
 MEVALONIC KINASE DEFICIENCY (MVK) **negative**  
 MICROCEPHALIC OSTEODYSPLASTIC PRIMORDIAL DWARFISM TYPE II (PCNT) **negative**  
 MICROPHTHALMIA / ANOPHTHALMIA, VSX2-RELATED (VSX2) **negative**  
 MITOCHONDRIAL COMPLEX 1 DEFICIENCY, ACAD9-RELATED (ACAD9) **negative**  
 MITOCHONDRIAL COMPLEX 1 DEFICIENCY, NDUFAF5-RELATED (NDUFAF5) **negative**  
 MITOCHONDRIAL COMPLEX 1 DEFICIENCY, NDUFS6-RELATED (NDUFS6) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 1 (NDUFS4) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 10 (NDUFAF2) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 17 (NDUFAF6) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 19 (FOXRED1) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 3 (NDUFS7) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 4 (NDUFV1) **negative**  
 MITOCHONDRIAL COMPLEX IV DEFICIENCY, NUCLEAR TYPE 2, SCO2-RELATED (SCO2) **negative**  
 MITOCHONDRIAL COMPLEX IV DEFICIENCY, NUCLEAR TYPE 6 (COX15) **negative**  
 MITOCHONDRIAL DNA DEPLETION SYNDROME 2 (TK2) **negative**

**MITOCHONDRIAL DNA DEPLETION SYNDROME 3 (DGUOK) negative**  
**MITOCHONDRIAL MYOPATHY AND SIDEROBLASTIC ANEMIA (MLASA1) (PUS1) negative**  
**MITOCHONDRIAL TRIFUNCTIONAL PROTEIN DEFICIENCY, HADHB-RELATED (HADHB) negative**  
**MOLYBDENUM COFACTOR DEFICIENCY TYPE B (MOCOS2) negative**  
**MOLYBDENUM COFACTOR DEFICIENCY, TYPE A (MOCOS1) negative**  
**MUCOLIPIDOSIS II/III A (GNPTAB) negative**  
**MUCOLIPIDOSIS III GAMMA (GNPTG) negative**  
**MUCOLIPIDOSIS, TYPE IV (MCOLN1) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE I (HURLER SYNDROME) (IDUA) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE III A ( SANFILIPPO A ) (SGSH) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE III B ( SANFILIPPO B ) (NAGLU) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE III C ( SANFILIPPO C ) (HGSNAT) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE III D ( SANFILIPPO D ) (GNS) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE IV A (MORQUIO SYNDROME) (GALNS) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE IV B/GM1 GANGLIOSIDOSIS (GLB1) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE IX (HYAL1) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE VI ( MARTEAUX-LAMY ) (ARSB) negative**  
**MUCOPOLYSACCHARIDOSIS, TYPE VII (GUSB) negative**  
**MULIBREY NANISM (TRIM37) negative**  
**MULTIPLE PTERYGIUM SYNDROME, CHRNG-RELATED/ESCOBAR SYNDROME (CHRNG) negative**  
**MULTIPLE SULFATASE DEFICIENCY (SUMF1) negative**  
**MUSCLE-EYE-BRAIN DISEASE, POMGNT1-RELATED (POMGNT1) negative**  
**MUSCULAR DYSTROPHY-DYSTROGLYCANOPATHY (RYL1) negative**  
**MUSK-RELATED CONGENITAL MYASTHENIC SYNDROME (MUSK) negative**  
**MYONEUROGASTROINTESTINAL ENCEPHALOPATHY (MNGIE) (TYMP) negative**  
**MYOTONIA CONGENITA (CLCN1) negative**

**N**  
**N-ACETYLGLUTAMATE SYNTHASE DEFICIENCY (NAGS) negative**  
**NEMALINE MYOPATHY, NEB-RELATED (NEB) negative**  
**NEPHRONOPHTHISIS 1 (NPHP1) negative**  
**NEURONAL CEROID LIPOFUSCINOSIS, CLN5-RELATED (CLN5) negative**  
**NEURONAL CEROID LIPOFUSCINOSIS, CLN6-RELATED (CLN6) negative**  
**NEURONAL CEROID LIPOFUSCINOSIS, CLN8-RELATED (CLN8) negative**  
**NEURONAL CEROID LIPOFUSCINOSIS, MFSDB-RELATED (MFSDB) negative**  
**NEURONAL CEROID LIPOFUSCINOSIS, PPT1-RELATED (PPT1) negative**  
**NEURONAL CEROID LIPOFUSCINOSIS, TPP1-RELATED (TPP1) negative**  
**NGLY1-CONGENITAL DISORDER OF GLYCOSYLATION (NGLY1) negative**  
**NIEMANN-PICK DISEASE, TYPE C1 / D (NPC1) negative**  
**NIEMANN-PICK DISEASE, TYPE C2 (NPC2) negative**  
**NIEMANN-PICK DISEASE, TYPES A / B (SMPD1) negative**  
**NIJMEGEN BREAKAGE SYNDROME (NBN) negative**  
**NON-SYNDROMIC HEARING LOSS, GJB2-RELATED (GJB2) negative**  
**NON-SYNDROMIC HEARING LOSS, MYO15A-RELATED (MYO15A) negative**  
**NONSYNDROMIC HEARING LOSS, OTOA-RELATED (OTOA) negative**  
**NONSYNDROMIC HEARING LOSS, OTOF-RELATED (OTOF) negative**  
**NONSYNDROMIC HEARING LOSS, PJKV-RELATED (PJKV) negative**  
**NONSYNDROMIC HEARING LOSS, SYNE4-RELATED (SYNE4) negative**  
**NONSYNDROMIC HEARING LOSS, TMC1-RELATED (TMC1) negative**  
**NONSYNDROMIC HEARING LOSS, TMPRSS3-RELATED (TMPRSS3) negative**  
**NONSYNDROMIC INTELLECTUAL DISABILITY (CC2D1A) negative**  
**NORMOPHOSPHATEMIC TUMORAL CALCINOSIS (SAMD9) negative**

**O**  
**OCULOCUTANEOUS ALBINISM TYPE IV (SLC45A2) negative**  
**OCULOCUTANEOUS ALBINISM TYPE, III (TYRP1) negative**  
**OCULOCUTANEOUS ALBINISM, OCA2-RELATED (OCA2) negative**  
**OCULOCUTANEOUS ALBINISM, TYPES 1A AND 1B (TYR) negative**  
**ODONTO-ONYCHO-DERMAL DYSPLASIA / SCHOPF-SCHULZ-PASSARGE SYNDROME (WNT10A) negative**  
**OMENN SYNDROME, RAG2-RELATED (RAG2) negative**  
**ORNITHINE AMINOTRANSFERASE DEFICIENCY (OAT) negative**  
**OSTEOGENESIS IMPERFECTA TYPE VII (CRTAP) negative**  
**OSTEOGENESIS IMPERFECTA TYPE VIII (P3H1) negative**  
**OSTEOGENESIS IMPERFECTA TYPE XI (FKBP10) negative**  
**OSTEOGENESIS IMPERFECTA TYPE XIII (BMP1) negative**  
**OSTEOPETROSIS, INFANTILE MALIGNANT, TCIRG1-RELATED (TCIRG1) negative**  
**OSTEOPETROSIS, OSTM1-RELATED (OSTM1) negative**

**P**  
**PANTOTHENATE KINASE-ASSOCIATED NEURODEGENERATION (PANK2) negative**  
**PAPILLON LEFÈVRE SYNDROME (CTSC) negative**  
**PARKINSON DISEASE 15 (FBXO7) negative**  
**PENDRED SYNDROME (SLC26A4) negative**  
**PERLMAN SYNDROME (DIS3L2) negative**  
**PGM3-CONGENITAL DISORDER OF GLYCOSYLATION (PGM3) negative**  
**PHENYLKETONURIA (PAH) negative**  
**PIGN-CONGENITAL DISORDER OF GLYCOSYLATION (PIGN) negative**  
**PITUITARY HORMONE DEFICIENCY, COMBINED 3 (LHX3) negative**  
**POLG-RELATED DISORDERS (POLG) negative**

**Patient Information**

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date:

04/15/2024



**P**  
 POLYCYSTIC KIDNEY DISEASE, AUTOSOMAL RECESSIVE (*PKHD1*) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, EXOSC3-RELATED (*EXOSC3*) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, RARS2-RELATED (*RARS2*) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, TSEN2-RELATED (*TSEN2*) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, TSEN54-RELATED (*TSEN54*) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, TYPE 1A (*VRK1*) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, TYPE 2D (*SEPS5*) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, VPS53-RELATED (*VPS53*) **negative**  
 PRIMARY CILIARY DYSKINESIA, CCDC103-RELATED (*CCDC103*) **negative**  
 PRIMARY CILIARY DYSKINESIA, CCDC39-RELATED (*CCDC39*) **negative**  
 PRIMARY CILIARY DYSKINESIA, DNAH11-RELATED (*DNAH11*) **negative**  
 PRIMARY CILIARY DYSKINESIA, DNAH5-RELATED (*DNAH5*) **negative**  
 PRIMARY CILIARY DYSKINESIA, DNAI1-RELATED (*DNAI1*) **negative**  
 PRIMARY CILIARY DYSKINESIA, DNAI2-RELATED (*DNAI2*) **negative**  
 PRIMARY CONGENITAL GLAUCOMA/PETERS ANOMALY (*CYP1B1*) **negative**  
 PRIMARY HYPEROXALURIA, TYPE 1 (*AGXT*) **negative**  
 PRIMARY HYPEROXALURIA, TYPE 2 (*GRHPR*) **negative**  
 PRIMARY HYPEROXALURIA, TYPE 3 (*HOGA1*) **negative**  
 PRIMARY MICROCEPHALY 1, AUTOSOMAL RECESSIVE (*MCPH1*) **negative**  
 PROGRESSIVE EARLY-ONSET ENCEPHALOPATHY WITH BRAIN ATROPHY AND THIN CORPUS CALLOSUM (*TBCD*) **negative**  
 PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS, ABCB4-RELATED (*ABCB4*) **negative**  
 PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS, TYPE 1 (PFIC1) (*ATP8B1*) **negative**  
 PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS, TYPE 2 (ABCB11) **negative**  
 PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS, TYPE 4 (PFIC4) (*TJP2*) **negative**  
 PROGRESSIVE PSEUDORHEUMATOID DYSPLASIA (*CCN6*) **negative**  
 PROLIDASE DEFICIENCY (*PEPD*) **negative**  
 PROPIONIC ACIDEMIA, PCCA-RELATED (*PCCA*) **negative**  
 PROPIONIC ACIDEMIA, PCCB-RELATED (*PCCB*) **negative**  
 PSEUDOXANTHOMA ELASTICUM (*ABCC6*) **negative**  
 PTERIN-4 ALPHA-CARBINOLAMINE DEHYDRATASE (PCD) DEFICIENCY (*PCBD1*) **negative**  
 PYCNODYSOSTOSIS (*CTSK*) **negative**  
 PYRIDOXAL 5'-PHOSPHATE-DEPENDENT EPILEPSY (*PNPO*) **negative**  
 PYRIDOXINE-DEPENDENT EPILEPSY (*ALDH7A1*) **negative**  
 PYRUVATE CARBOXYLASE DEFICIENCY (*PC*) **negative**  
 PYRUVATE DEHYDROGENASE DEFICIENCY, PDHB-RELATED (*PDHB*) **negative**

**R**  
 REFSUM DISEASE, PHYH-RELATED (*PHYH*) **negative**  
 RENAL TUBULAR ACIDOSIS AND DEAFNESS, ATP6V1B1-RELATED (*ATP6V1B1*) **negative**  
 RENAL TUBULAR ACIDOSIS, PROXIMAL, WITH OCULAR ABNORMALITIES AND MENTAL RETARDATION (*SLC4A4*) **negative**  
 RETINITIS PIGMENTOSA 25 (*EYS*) **negative**  
 RETINITIS PIGMENTOSA 26 (*CERKL*) **negative**  
 RETINITIS PIGMENTOSA 28 (*FAM161A*) **negative**  
 RETINITIS PIGMENTOSA 36 (*PRCD*) **negative**  
 RETINITIS PIGMENTOSA 59 (*DHDDS*) **negative**  
 RETINITIS PIGMENTOSA 62 (*MAK*) **negative**  
 RHIZOMELIC CHONDRODYSPLASIA PUNCTATA, TYPE 1 (*PEX7*) **negative**  
 RHIZOMELIC CHONDRODYSPLASIA PUNCTATA, TYPE 2 (*GNPAT*) **negative**  
 RHIZOMELIC CHONDRODYSPLASIA PUNCTATA, TYPE 3 (*AGPS*) **negative**  
 RLBP1-RELATED RETINOPATHY (*RLBP1*) **negative**  
 ROBERTS SYNDROME (*ESCO2*) **negative**  
 RYR1-RELATED CONDITIONS (*RYR1*) **negative**

**S**  
 SALLA DISEASE (*SLC17A5*) **negative**  
 SANDHOFF DISEASE (*HEXB*) **negative**  
 SCHIMKE IMMUNOSKELETAL DYSPLASIA (*SMARCAL1*) **negative**  
 SCHINDLER DISEASE (*NAGA*) **negative**  
 SEGAWA SYNDROME, TH-RELATED (*TH*) **negative**  
 SENIOR-LOKEN SYNDROME 4/NEPHRONOPHTHISIS 4 (*NPHP4*) **negative**  
 SEPIAPTERIN REDUCTASE DEFICIENCY (*SPR*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), CD3D-RELATED (*CD3D*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), CD3E-RELATED (*CD3E*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), FOXN1-RELATED (*FOXN1*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), IKBKB-RELATED (*IKBKB*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), IL7R-RELATED (*IL7R*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), JAK3-RELATED (*JAK3*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), PTPRC-RELATED (*PTPRC*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), RAG1-RELATED (*RAG1*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY, ADA-Related (*ADA*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY, TYPE ATHABASKAN (*DCLRE1C*) **negative**  
 SHORT-RIB THORACIC DYSPLASIA 3 WITH OR WITHOUT POLYDACTYLY (*DYNC2H1*) **negative**  
 SHWACHMAN-DIAMOND SYNDROME, SBDS-RELATED (*SBDS*) **negative**  
 SIALIDOSIS (*NEU1*) **negative**  
 SJÖGREN-LARSSON SYNDROME (*ALDH3A2*) **negative**  
 SMITH-LEMLI-OPITZ SYNDROME (*DHCR7*) **negative**  
 SPASTIC PARAPLEGIA, TYPE 15 (*ZFYVE26*) **negative**

SPASTIC TETRAPLEGIA, THIN CORPUS CALLOSUM, AND PROGRESSIVE MICROCEPHALY (SPATCCM) (*SLC1A4*) **negative**  
 SPG11-RELATED CONDITIONS (*SPG11*) **negative**  
 SPINAL MUSCULAR ATROPHY (*SMN1*) **negative** SMN1: Two copies; g.27134T>G: absent; the absence of the g.27134T>G variant decreases the chance to be a silent (2+0) carrier.  
 SPINAL MUSCULAR ATROPHY WITH RESPIRATORY DISTRESS TYPE 1 (*IGHMBP2*) **negative**  
 SPINOCEREBELLAR ATAXIA, AUTOSOMAL RECESSIVE 10 (*ANO10*) **negative**  
 SPINOCEREBELLAR ATAXIA, AUTOSOMAL RECESSIVE 12 (*WWOX*) **negative**  
 SPONDYLOCOSTAL DYSOSTOSIS 1 (*DLL3*) **negative**  
 SPONDYLOTHORACIC DYSOSTOSIS, MESP2-Related (*MESP2*) **negative**  
 STEEL SYNDROME (*COL27A1*) **negative**  
 STEROID-RESISTANT NEPHROTIC SYNDROME (*NPHS2*) **negative**  
 STUVE-WIEDEMANN SYNDROME (*LIFR*) **negative**  
 SURF1-RELATED CONDITIONS (*SURF1*) **negative**  
 SURFACTANT DYSFUNCTION, ABCA3-RELATED (*ABCA3*) **negative**

**T**  
 TAY-SACHS DISEASE (*HEXA*) **negative**  
 TBCE-RELATED CONDITIONS (*TBCE*) **negative**  
 THIAMINE-RESPONSIVE MEGALOBlastic ANEMIA SYNDROME (*SLC19A2*) **negative**  
 THYROID DYSHORMONOGENESIS 1 (*SLC5A5*) **negative**  
 THYROID DYSHORMONOGENESIS 2A (*TPO*) **negative**  
 THYROID DYSHORMONOGENESIS 3 (*TG*) **negative**  
 THYROID DYSHORMONOGENESIS 6 (*DUOX2*) **negative**  
 TRANSCOBALAMIN II DEFICIENCY (*TCN2*) **negative**  
 TRICHOHEPATOENTERIC SYNDROME, SKIC2-RELATED (*SKIC2*) **negative**  
 TRICHOHEPATOENTERIC SYNDROME, TTC37-RELATED (*TTC37*) **negative**  
 TRICHOIODYSTROPHY 1/XERODERMA PIGMENTOSUM, GROUP D (*ERCC2*) **negative**  
 TRIMETHYLAMINURIA (*FMO3*) **negative**  
 TRIPLE A SYNDROME (*AAA5*) **negative**  
 TSHR-RELATED CONDITIONS (*TSHR*) **negative**  
 TYROSINEMIA TYPE III (*HPD*) **negative**  
 TYROSINEMIA, TYPE 1 (*FAH*) **negative**  
 TYROSINEMIA, TYPE 2 (*TAT*) **negative**

**U**  
 USHER SYNDROME, TYPE 1B (*MYO7A*) **negative**  
 USHER SYNDROME, TYPE 1C (*USH1C*) **negative**  
 USHER SYNDROME, TYPE 1D (*CDH23*) **negative**  
 USHER SYNDROME, TYPE 1F (*PCDH15*) **negative**  
 USHER SYNDROME, TYPE 1J/DEAFNESS, AUTOSOMAL RECESSIVE, 48 (*CIB2*) **negative**  
 USHER SYNDROME, TYPE 2A (*USH2A*) **negative**  
 USHER SYNDROME, TYPE 2C (*ADGRV1*) **negative**  
 USHER SYNDROME, TYPE 3 (*CLRN1*) **negative**

**V**  
 VERY LONG-CHAIN ACYL-CoA DEHYDROGENASE DEFICIENCY (*ACADVL*) **negative**  
 VICI SYNDROME (*EPG5*) **negative**  
 VITAMIN D-DEPENDENT RICKETS, TYPE 1A (*CYP27B1*) **negative**  
 VITAMIN D-RESISTANT RICKETS TYPE 2A (*VDR*) **negative**  
 VLDLR-ASSOCIATED CEREBELLAR HYPOPLASIA (*VLDLR*) **negative**

**W**  
 WALKER-WARBURG SYNDROME, CRPPA-RELATED (*CRPPA*) **negative**  
 WALKER-WARBURG SYNDROME, FKTN-RELATED (*FKTN*) **negative**  
 WALKER-WARBURG SYNDROME, LARGE1-RELATED (*LARGE1*) **negative**  
 WALKER-WARBURG SYNDROME, POMT1-RELATED (*POMT1*) **negative**  
 WALKER-WARBURG SYNDROME, POMT2-RELATED (*POMT2*) **negative**  
 WARSAW BREAKAGE SYNDROME (*DDX11*) **negative**  
 WERNER SYNDROME (*WRN*) **negative**  
 WILSON DISEASE (*ATP7B*) **negative**  
 WOLCOTT-RALLISON SYNDROME (*EIF2AK3*) **negative**  
 WOLMAN DISEASE (*LIPA*) **negative**  
 WOODHOUSE-SAKATI SYNDROME (*DCAF17*) **negative**

**X**  
 XERODERMA PIGMENTOSUM VARIANT TYPE (*POLH*) **negative**  
 XERODERMA PIGMENTOSUM, GROUP A (*XPA*) **negative**  
 XERODERMA PIGMENTOSUM, GROUP C (*XPC*) **negative**

**Z**  
 ZELLWEGER SPECTRUM DISORDER, PEX13-RELATED (*PEX13*) **negative**  
 ZELLWEGER SPECTRUM DISORDER, PEX16-RELATED (*PEX16*) **negative**  
 ZELLWEGER SPECTRUM DISORDER, PEX5-RELATED (*PEX5*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX10-RELATED (*PEX10*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX12-RELATED (*PEX12*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX1-RELATED (*PEX1*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX26-RELATED (*PEX26*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX2-RELATED (*PEX2*) **negative**

**Patient Information**

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/15/2024



Z  
ZELLWEGER SPECTRUM DISORDERS, PEX6-RELATED (PEX6) **negative**

**Patient Information**

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/15/2024

**Testing Methodology, Limitations, and Comments:****Next-generation sequencing (NGS)**

Sequencing library prepared from genomic DNA isolated from a patient sample is enriched for targets of interest using standard hybridization capture protocols and PCR amplification (for targets specified below). NGS is then performed to achieve the standards of quality control metrics, including a minimum coverage of 99% of targeted regions at 20X sequencing depth. Sequencing data is aligned to human reference sequence, followed by deduplication, metric collection and variant calling (coding region +/- 20bp). Variants are then classified according to ACMGG/AMP standards of interpretation using publicly available databases including but not limited to ENSEMBL, HGMD Pro, ClinGen, ClinVar, 1000G, ESP and gnomAD. Variants predicted to be pathogenic or likely pathogenic for the specified diseases are reported. It should be noted that the data interpretation is based on our current understanding of the genes and variants at the time of reporting. Putative positive sequencing variants that do not meet internal quality standards or are within highly homologous regions are confirmed by Sanger sequencing or gene-specific long-range PCR as needed prior to reporting.

Copy Number Variant (CNV) analysis is limited to deletions involving two or more exons for all genes on the panel, in addition to specific known recurrent single-exon deletions. CNVs of small size may have reduced detection rate. This method does not detect gene inversions, single-exonic and sub-exonic deletions (unless otherwise specified), and duplications of all sizes (unless otherwise specified). Additionally, this method does not define the exact breakpoints of detected CNV events. Confirmation testing for copy number variation is performed by specific PCR, Multiplex Ligation-dependent Probe Amplification (MLPA), next generation sequencing, or other methodology.

This test may not detect certain variants due to local sequence characteristics, high/low genomic complexity, homologous sequence, or allele dropout (PCR-based assays). Variants within noncoding regions (promoter, 5'UTR, 3'UTR, deep intronic regions, unless otherwise specified), small deletions or insertions larger than 25bp, low-level mosaic variants, structural variants such as inversions, and/or balanced translocations may not be detected with this technology.

**SPECIAL NOTES**

For ABCC6, variants in exons 1-9 are not detected due to the presence of regions of high homology.

For CFTR, when the CFTR R117H variant is detected, reflex analysis of the polythymidine variations (5T, 7T and 9T) at the intron 9 branch/acceptor site of the CFTR gene will be performed.

For CYP21A2, targets were enriched using long-range PCR amplification, followed by next generation sequencing. Duplication analysis will only be performed and reported when c.955C>T (p.Q319\*) is detected. Sequencing and CNV analysis may have reduced sensitivity, if variants result from complex rearrangements, in trans with a gene deletion, or CYP21A2 gene duplication on one chromosome and deletion on the other chromosome. This analysis cannot detect sequencing variants located on the CYP21A2 duplicated copy.

For DDX11, only NM\_030653.3:c.1763 - 1G > C variant will be analyzed and reported.

For HBA1/HBA2, CNV analysis is offered to detect common deletions of -alpha3.7, -alpha4.2, --MED, --SEA, --FIL, --THAI, --alpha20.5, and/or HS-40.

For OTOA, variants in exons 20 - 28 are not analyzed due to high sequence homology.

For RPGRIP1L, variants in exon 23 are not detected due to assay limitation.

For SAMD9, only p.K1495E variant will be analyzed and reported.

**Friedreich Ataxia (FXN)**

The GAA repeat region of the FXN gene is assessed by trinucleotide PCR assay and capillary electrophoresis. Variances of +/-1 repeat for normal alleles and up to +/-3 repeats for premutation alleles may occur. For fully penetrant expanded alleles, the precise repeat size cannot be determined, therefore the approximate allele size is reported. Sequencing and copy number variants are analyzed by next-generation sequencing analysis.

**Friedreich Ataxia Repeat Categories**

Categories	GAA Repeat Sizes
Normal	<34
Premutation	34 - 65
Full	>65

**Patient Information**

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/15/2024

**Spinal Muscular Atrophy (SMN1)**

The total combined copy number of SMN1 and SMN2 exon 7 is quantified based on NGS read depth. The ratio of SMN1 to SMN2 is calculated based on the read depth of a single nucleotide that distinguishes these two genes in exon 7. In addition to copy number analysis, testing for the presence or absence of a single nucleotide polymorphism (g.27134T>G in intron 7 of SMN1) associated with the presence of a SMN1 duplication allele is performed using NGS.

Ethnicity	Two SMN1 copies carrier risk before g.27134T>G testing	Carrier risk after g.27134T>G testing	
		g.27134T>G ABSENT	g.27134T>G PRESENT
Caucasian	1 in 632	1 in 769	1 in 29
Ashkenazi Jewish	1 in 350	1 in 580	LIKELY CARRIER
Asian	1 in 628	1 in 702	LIKELY CARRIER
African-American	1 in 121	1 in 396	1 in 34
Hispanic	1 in 1061	1 in 1762	1 in 140

**Variant Classification**

Only pathogenic or likely pathogenic variants are reported. Other variants including benign variants, likely benign variants, variants of uncertain significance, or inconclusive variants identified during this analysis may be reported in certain circumstances. Our laboratory's variant classification criteria are based on the ACMG and internal guidelines and our current understanding of the specific genes. This interpretation may change over time as more information about a gene and/or variant becomes available. Natera and its lab partner(s) may reclassify variants at certain intervals but may not release updated reports without a specific request made to Natera by the ordering provider. Natera may disclose incidental findings if deemed clinically pertinent to the test performed.

**Negative Results**

A negative carrier screening result reduces the risk for a patient to be a carrier of a specific disease but does not completely rule out carrier status. Please visit <https://www.natera.com/panel-option/h-all/> for a table of carrier rates, detection rates, residual risks and promised variants/exons per gene. Carrier rates before and after testing vary by ethnicity and assume a negative family history for each disease screened and the absence of clinical symptoms in the patient. Any patient with a family history for a specific genetic disease will have a higher carrier risk prior to testing and, if the disease-causing mutation in their family is not included on the test, their carrier risk would remain unchanged. Genetic counseling is recommended for patients with a family history of genetic disease so that risk figures based on actual family history can be determined and discussed along with potential implications for reproduction. Horizon carrier screening has been developed to identify the reproductive risks for monogenic inherited conditions. Even when one or both members of a couple screen negative for pathogenic variants in a specific gene, the disease risk for their offspring is not zero. There is still a low risk for the condition in their offspring due to a number of different mechanisms that are not detected by Horizon including, but not limited to, pathogenic variant(s) in the tested gene or in a different gene not included on Horizon, pathogenic variant(s) in an upstream regulator, uniparental disomy, de novo mutation(s), or digenic or polygenic inheritance.

**Additional Comments**

These analyses generally provide highly accurate information regarding the patient's carrier status. Despite this high level of accuracy, it should be kept in mind that there are many potential sources of diagnostic error, including misidentification of samples, polymorphisms, or other rare genetic variants that interfere with analysis. Families should understand that rare diagnostic errors may occur for these reasons.

6964, DONOR ▲

DOB: [REDACTED] Age: [REDACTED] Specimen: [REDACTED] Collected: 03/26/2024 00:00  
 Sex: M Fasting: [REDACTED] Requisition: [REDACTED] Received: 03/27/2024 18:36  
 Phone: [REDACTED] Lab Reference ID: [REDACTED] Reported: 04/03/2024 17:05  
 Patient ID: 6964 [REDACTED] Report Status: FINAL / SEE REPORT

[REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]  
 [REDACTED]

▲ Hemoglobinopathy Evaluation

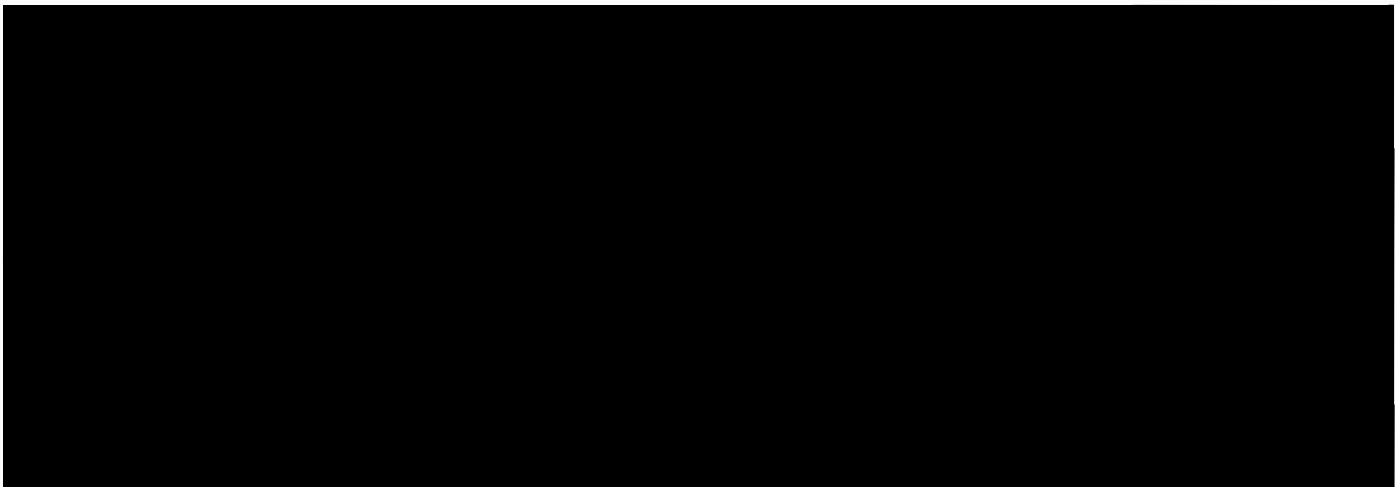
FINAL

Lab: AMD

Analyte	Value		
<b>Hemoglobinopathy Evaluation</b> <span style="float: right;">FINAL</span>			
Red Blood Cell Count	5.58	Reference Range: 4.20-5.80 Mill/uL	FINAL
HEMOGLOBIN	16.7	Reference Range: 13.2-17.1 g/dL	FINAL
<b>Hematocrit</b> <span style="float: right;">FINAL</span>			
<span style="color: red;">▲</span> Hematocrit	53.5 H	Reference Range: 38.5-50.0 %	FINAL
MCV	95.9	Reference Range: 80.0-100.0 fL	FINAL
MCH	29.9	Reference Range: 27.0-33.0 pg	FINAL
RDW	14.1	Reference Range: 11.0-15.0 %	FINAL
<b>Hemoglobinopathy Evaluation</b> <span style="float: right;">FINAL</span>			
Hemoglobin A	97.2	Reference Range: >96.0 %	FINAL
Hemoglobin F	0.0	Reference Range: <2.0 %	FINAL
Hemoglobin A2 (Quant)	2.8	Reference Range: 2.2-3.2 %	FINAL
<b>Interpretation</b> <span style="float: right;">FINAL</span>			

NORMAL PATTERN

There is a normal pattern of hemoglobins and normal levels of Hb A2 and Hb F are present. No variant hemoglobins are observed. This is consistent with A/A phenotype. If iron deficiency coexists with a mild/silent beta thalassemia trait Hb A2 may be in the normal range. Rare variant hemoglobins have no separation from hemoglobin A by capillary zone electrophoresis (CZE) or high-performance liquid chromatography (HPLC). If clinically indicated, Thalassemia and Hemoglobinopathy Comprehensive (TC 17365) should be considered.



Chromosome Analysis, Blood

Order ID: [REDACTED]

Specimen Type: Blood

Clinical Indication: Donor screening

RESULT:  
NORMAL MALE KARYOTYPE

INTERPRETATION:  
Chromosome analysis revealed normal G-band patterns within the limits of standard cytogenetic analysis.

Please expect the results of any other concurrent study in a separate report.

NOMENCLATURE:  
46,XY

ASSAY INFORMATION:  
Method: G-Band (Digital Analysis:  
MetaSystems/Ikaros)  
Cells Counted: 20  
Band Level: 550  
Cells Analyzed: 5  
Cells Karyotyped: 3

This test does not address genetic disorders that cannot be detected by standard cytogenetic methods or rare events such as low level mosaicism or subtle rearrangements. A portion of the testing was performed at AMD2.

Colyn C. Cain, Ph.D., FACMG, Technical Director, Cytogenetics and Genomics, 703-802-7156

Electronic Signature: 4/3/2024 4:21 PM

For additional information, please refer to <http://education.questdiagnostics.com/faq/chromsblood> (This link is being provided for informational/educational purposes only).

Performing Sites

AMD Quest Diagnostics Nichols Institute, 14225 Newbrook Drive, Chantilly, VA 20151 Laboratory Director: Patrick W Mason, MD PhD

Key

Priority Out of Range Out of Range (PEND) Pending Result (PRE) Preliminary Result (FINAL) Final Result (RE) Reissued Result

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**Patient Information**

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Gender: Male

Patient ID: [REDACTED]

Medical Record #: 6964-[REDACTED]

Collection Kit: [REDACTED]

Accession ID: [REDACTED]

Case File ID: [REDACTED]

Ethnicity: Caucasian/Non-Hispanic White

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Phone: [REDACTED]

Report Date: 04/12/2026

Sample Collected: 03/26/2024

Sample Received: 03/27/2024

Sample Type: Blood

**CARRIER SCREENING REPORT**

**ABOUT THIS SCREEN:** Horizon™ is a carrier screen for specific autosomal recessive and X-linked diseases. This information can help patients learn their risk of having a child with specific genetic conditions.

**ORDER SELECTED:** The Horizon Custom panel was ordered for this patient. Males are not screened for X-linked diseases

**AMENDED FINAL RESULTS SUMMARY:****SILENT CARRIER for Alpha-Thalassemia (aa/a-)**

Positive for the pathogenic alpha 3.7 deletion of the HBA2 gene. Depending on the carrier status of the individual's partner, this couple may be at increased risk to have a child with Hemoglobin H Disease. Carrier screening for this individual's partner is suggested.

**CARRIER for Cystic Fibrosis**

Positive for the pathogenic variant c.328G>C (p.D110H) in the CFTR gene. A small number of Cystic Fibrosis (CF) carriers may have mild respiratory or other CF-related symptoms. If this individual's partner is a carrier for Cystic Fibrosis, their chance to have a child with this condition is 1 in 4 (25%). Carrier screening for this individual's partner is suggested.

**CARRIER for Early Infantile Epileptic Encephalopathy, CAD-Related**

Positive for the likely pathogenic variant c.1865\_1874del (p.D622Afs\*8) in the CAD gene. If this individual's partner is a carrier for EARLY INFANTILE EPILEPTIC ENCEPHALOPATHY, CAD-RELATED, their chance to have a child with this condition may be as high as 1 in 4 (25%). Carrier screening for this individual's partner is suggested.

**Negative for 546 out of 549 diseases**


No other pathogenic variants were detected in the genes that were screened. The patient's remaining carrier risk after the negative screening results is listed for each disease/gene on the Horizon website at <https://www.natera.com/panel-option/h-all/>. Please see the following pages of this report for a comprehensive list of all conditions included on this individual's screen.

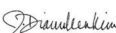
Carrier screening is not diagnostic and may not detect all possible pathogenic variants in a given gene.


**AMENDED REPORT 04/12/2026:** This report amends the original result reported on 04/15/2024 to include testing methodology for the GJB2 gene.


**RECOMMENDATIONS**

Individuals who would like to review their Horizon report with a Natera Laboratory Genetic Counselor may schedule a telephone genetic information session by calling 650-249-9090 or visiting [naterasession.com](https://www.naterasession.com). Clinicians with questions may contact Natera at 650-249-9090 or email [support@natera.com](mailto:support@natera.com). Individuals with positive results may wish to discuss these results with family members to allow them the option to be screened. Comprehensive genetic counseling to discuss the implications of these test results and possible associated reproductive risk is recommended.

  
Christine M. Eng, M.D.  
Medical Director, Baylor Genetics

  
J. Dianne Keen-Kim, Ph.D., FACMG  
Senior Laboratory Director, Natera

  
Linyan Meng, Ph.D. - LOC910  
Laboratory Director, Baylor Genetics

  
Yang Wang, Ph.D., FACMG  
Laboratory Director, Natera

**Patient Information**

Patient Name: Donor 6964

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

**Test Information**

Ordering Physician: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/12/2026



**Horizon™**  
Advanced carrier screening



## Patient Information

Patient Name: Donor 6964

## Test Information

Ordering Physician: [REDACTED]



Horizon™  
Advanced carrier screening

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/12/2026

## ALPHA-THALASSEMIA SILENT CARRIER

### Understanding Your Horizon Carrier Screen Results

#### What is Alpha-Thalassemia?

Alpha-Thalassemia refers to a group of inherited blood disorders that reduce the amount of hemoglobin, the protein in red blood cells that carries oxygen to cells throughout the body. A person with one of the Alpha-Thalassemia diseases has lifelong anemia. Mild anemia can lead to tiredness, irritability, dizziness, lightheadedness and a rapid heartbeat. Severe anemia can be life threatening and may require routine blood transfusions. In some cases, affected individuals have been treated with stem cell transplantation from cord blood or bone marrow. Couples at risk of having an affected child may consider cord blood banking, as siblings have a higher chance of being a match for stem cell transplantation than a non-related individual. More information can be found at: <https://parentsguidecordblood.org/en>. Clinical trials involving potential new treatments for these conditions may be available (see [www.clinicaltrials.gov](http://www.clinicaltrials.gov)).

#### What causes Alpha-Thalassemia?

Hemoglobin is made of both alpha globin and beta globin proteins. There are four HBA genes (also called alpha globin genes) that are responsible for making alpha globin. Alpha-Thalassemia occurs when three or more of these four alpha globin genes is missing or changed. The exact type of Alpha-Thalassemia a person has depends on how many of the alpha globin genes are not working. Hemoglobin H Disease (a-/-): three missing or changed alpha globin genes. A person who has three missing or changed alpha globin genes has Hemoglobin H Disease. Hemoglobin H Disease can be mild or severe. People with severe disease may have chronic anemia, liver disease, and bone changes. Some people with Hemoglobin H Disease require frequent blood transfusions and other treatments. Alpha-Thalassemia Major, also known as Hemoglobin Bart's Disease (-/-): four missing or changed alpha globin genes. This results in severe fatal anemia. Affected babies develop symptoms before birth and without treatment typically do not survive the newborn period. Fetal blood transfusions during pregnancy may allow survival until after birth, at which time either lifelong transfusions or a stem cell transplantation will be necessary. Mothers who are pregnant with a fetus with Alpha-Thalassemia major can develop health problems during pregnancy. Alpha-Thalassemia is inherited in an autosomal recessive manner. Children typically inherit four copies of each alpha globin gene, two copies from the mother and two copies from the father. This means that both parents must be carriers of one or more missing or changed alpha globin genes to have a child who is affected with Hemoglobin H Disease or Alpha-Thalassemia Major.

#### What do my carrier results mean?

One missing or changed alpha globin gene was identified with your Horizon test. People with one missing or changed alpha globin gene are Alpha-Thalassemia silent carriers. People who are silent carriers for Alpha-Thalassemia usually have no health problems and have normal hemoglobin levels. Thalassemia can occur in people of any ethnicity. It is more common in people with Chinese, Southeast Asian, Indian, Middle Eastern, African, and Mediterranean ancestry.

If your partner is a carrier for Alpha-Thalassemia with two genes missing or changed on the same chromosome (in 'cis'), you would have a 1 in 4, or 25%, chance in each pregnancy of having a child with Hemoglobin H Disease. You are not at risk for having a baby with Alpha-Thalassemia Major. The majority of people of Asian ancestry who have two missing alpha globin genes have them on the same chromosome (in 'cis').

If your partner is a carrier for Alpha-Thalassemia with two genes missing or changed that are located on opposite chromosomes (in "trans), each of your children would have a 50% chance of being carriers of Alpha-Thalassemia (with two genes missing or changed on opposite chromosomes), but you are not at risk to have a child with either Hemoglobin H Disease or Alpha-Thalassemia Major. The majority of people of African-American ancestry who have two missing alpha-globin genes have them on opposite chromosomes.

If your partner is an Alpha-Thalassemia Silent Carrier (with one gene missing or changed), each of your children would have a 25% chance of being carriers of Alpha-Thalassemia (with two genes missing or changed on opposite chromosomes) and a 50% chance of being Alpha-Thalassemia Silent carriers. You would not be at risk to have a child with either Hemoglobin H Disease or Alpha-Thalassemia Major.

#### What can I do next?

You may wish to speak with a local genetic counselor about your carrier test results. A genetic counselor in your area can be located on the National Society of Genetic Counselors website ([www.nsgc.org](http://www.nsgc.org)). Your siblings and other relatives are at increased risk to also have this mutation. You are encouraged to inform your family members of your test results as they may wish to consider being tested themselves. If you are pregnant, your partner can have carrier screening for Alpha-Thalassemia ordered by a health care professional. If your partner is not found to be a carrier for Alpha-Thalassemia, your risk of having a child with Hemoglobin H Disease is greatly reduced. Couples at risk of having a baby with Hemoglobin H Disease can opt to have prenatal diagnosis done through chorionic villus sampling (CVS) or amniocentesis during pregnancy or can choose to have the baby tested after birth. If you are not yet pregnant, your partner can have carrier screening for Alpha-Thalassemia ordered by a health care professional. If your partner is found to be a carrier for Alpha-Thalassemia (with two missing or non-working alpha globin genes on the same chromosome, in 'cis') you have several reproductive options to consider:

- Natural pregnancy with or without prenatal diagnostic testing of the fetus or testing the baby after birth for Hemoglobin H Disease
- Preimplantation genetic diagnosis (PGD) with in vitro fertilization (IVF) to test embryos for Hemoglobin H Disease
- Adoption or use of a sperm or egg donor who is not a carrier for Alpha-Thalassemia

#### What resources are available?

- March of Dimes: <http://www.marchofdimes.org/baby/thalassemia.aspx>
- Cooley's Anemia Foundation: [www.thalassemia.org](http://www.thalassemia.org)
- Prenatal diagnosis done by CVS: <http://www.marchofdimes.org/chorionic-villus-sampling>.

**Patient Information**

Patient Name: Donor 6964

Date Of Birth:

Case File ID:

**Test Information**

Ordering Physician:

Clinic Information:

Report Date:

[REDACTED]

Fairfax Cryobank

04/12/2026



**Horizon™**  
Advanced carrier screening



**Patient Information**

Patient Name: Donor 6964

**Test Information**

Ordering Physician: [REDACTED]

**Horizon™**  
Advanced carrier screening

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/12/2026

**CYSTIC FIBROSIS****Understanding Your Horizon Carrier Screen Results****What are Cystic Fibrosis and CFTR-Related Disorders?**

Cystic Fibrosis (CF) and CFTR-Related Disorders are inherited disorders that affect many different areas of the body including the lungs, digestive system, and fertility. CF and CFTR-Related Disorders do not affect intelligence. Signs and symptoms of CF start in early childhood and include delayed growth caused by problems in digestion and repeated lung infections that lead to permanent lung damage. Children and adults with CF usually have frequent hospitalizations because of lung infections. Over time, complications of CF can lead to lung transplants and early death. CFTR-Related Disorders cause less severe symptoms, and some only affect male fertility. There are treatments for CF that can lessen the severity of the symptoms; however, there is currently no cure. Clinical trials involving potential new treatments for this condition may be available (see [www.clinicaltrials.gov](http://www.clinicaltrials.gov)).

**What causes CF and CFTR-Related Disorders?**

CF and CFTR-Related Disorders are caused by a change, or mutation, in both copies of the CFTR gene pair. These mutations cause the genes to not work properly or not work at all. When both copies of this gene do not work correctly, mucus and other body fluids become thick and sticky. This causes problems with how the lungs, digestive system, and other body systems function and leads to the symptoms described above. CF and CFTR-Related Disorders are inherited in an autosomal recessive manner. This means that, in most cases, both parents must be carriers of a mutation in one copy of the CFTR gene to have a child with CF or CFTR-Related Disorders. People who are CF or CFTR-Related Disorders carriers do not have CF or CFTR-Related Disorders themselves. Usually a child inherits two copies of each gene, one copy from the mother and one copy from the father. If the mother and father are both carriers for CF and CFTR-Related Disorders, there is a 1 in 4, or 25%, chance in each pregnancy for both partners to pass on their CFTR gene mutations to the child, who will then have CF or CFTR-Related Disorders. Although most CFTR gene mutations cause classic CF, there are some specific CFTR mutations that cause less severe symptoms, and some only affect male fertility. It is sometimes, but not always, possible to determine whether a specific CFTR mutation causes classic CF or a milder form of the condition. A small number of CF carriers may have mild respiratory or other symptoms. If you have concerns about your own health or symptoms, we encourage you to discuss your results and health history with your health care provider. Individuals found to carry more than one mutation in the CFTR genes should discuss their risk for having an affected child, and any potential effects to their own health, with their health care provider.

**What can I do next?**

You may wish to speak with a local genetic counselor about your CF and CFTR-Related Disorders carrier test results. A genetic counselor in your region can be located on the National Society of Genetic Counselors website ([www.nsgc.org](http://www.nsgc.org)). Your siblings and other relatives are at increased risk to also have this mutation. You are encouraged to inform your family members of your test results as they may wish to consider being tested themselves. If you are pregnant, your partner can have carrier screening for CF and CFTR-Related Disorders ordered by a health care professional. If your partner is not found to be a carrier of CF and CFTR-Related Disorders, your risk of having a child with CF and CFTR-Related Disorders is greatly reduced. Couples at risk of having a baby with CF and CFTR-Related Disorders can opt to have prenatal diagnosis done through chorionic villus sampling (CVS) or amniocentesis during pregnancy or can choose to have the baby tested after birth for CF and CFTR-Related Disorders. Although CF is screened for as part of the Newborn Screening program in some US states, babies at 25% for this condition may need diagnostic testing in addition to newborn screening. If you are not yet pregnant, your partner can have CF and CFTR-Related Disorders carrier testing ordered by a health care professional. If your partner is found to be a carrier for CF and CFTR-Related Disorders, you have several reproductive options to consider:

- Natural pregnancy with or without prenatal diagnostic testing of the fetus or testing the baby after birth for CF
- Preimplantation genetic diagnosis (PGD) with in vitro fertilization (IVF) to test embryos for CF and CFTR-Related Disorders
- Adoption or use of a sperm or egg donor who is not a carrier for CF and CFTR-Related Disorders

**What resources are available?**

- Cystic Fibrosis Foundation: [www.cff.org](http://www.cff.org)
- Gene Reviews: Cystic Fibrosis: <https://www.ncbi.nlm.nih.gov/books/NBK1250/>
- Prenatal diagnosis done through CVS: <http://www.marchofdimes.org/chorionic-villus-sampling.aspx>
- Prenatal diagnosis done through Amniocentesis: <http://www.marchofdimes.org/amniocentesis.aspx>
- PGD with IVF: <http://www.natera.com/spectrum>

## Patient Information

Patient Name: Donor 6964

## Test Information

Ordering Physician: [REDACTED]



Horizon™  
Advanced carrier screening

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/12/2026

# EARLY INFANTILE EPILEPTIC ENCEPHALOPATHY, CAD-RELATED

## Understanding Your Horizon Carrier Screen Results

### What does being a carrier mean?

Your results show that you are a carrier of early infantile epileptic encephalopathy, CAD-related (EIEE50). A carrier of a genetic condition does not have the condition. Carriers also are not certain to have a child with the condition. We are all carriers of one or more genetic conditions. Your children are not at high risk for this condition unless your partner or donor is also a carrier of EIEE50. Further testing can be done to see if your partner or donor is a carrier.

### What is early infantile epileptic encephalopathy, CAD-related (EIEE50)?

EIEE50 mainly affects the brain and nervous system. It is a form of epilepsy (seizure disorder) that varies from person to person. Some people have more severe symptoms than others. Infants with EIEE50 usually have symptoms shortly after birth. Symptoms can include seizures, feeding problems, low muscle tone, and breathing problems.<sup>1,2</sup> Children with EIEE50 who survive infancy can have global developmental delay, seizures, low muscle tone, anemia, and abnormal movements.<sup>1,2</sup> Many people with this condition do not live a normal lifespan. There is currently no cure for this condition. Treatment is based on symptoms.

Clinical trials involving potential new treatments for this condition could be available (see [clinicaltrials.gov](https://clinicaltrials.gov)).

### What causes early infantile epileptic encephalopathy, CAD-related (EIEE50)?

EIEE50 is caused by changes, or variants, in the CAD gene. These changes make the gene not work properly. Genes are a set of instructions inside the cells of our bodies that tell our bodies how to grow and function. Everyone has two copies of the CAD gene. Carriers of EIEE50 have one working copy and one non-working copy of the gene. People with EIEE50 have no working copies of the gene.

EIEE50 is usually passed down, or inherited, from both genetic parents. We inherit one copy of the CAD gene from each of our genetic parents. When both genetic parents are carriers, each child has a 1 in 4 (25%) chance of inheriting two non-working genes and having EIEE50. Each child also has a 1 in 2 (50%) chance of being a carrier of EIEE50 and a 1 in 4 (25%) chance of inheriting two working copies of the gene. This type of inheritance is called autosomal recessive inheritance.

### Will my children have early infantile epileptic encephalopathy, CAD-related (EIEE50)?

If your partner or donor also has a non-working copy of the CAD gene, your children could have EIEE50. Each child you have together would have a 1 in 4 (25%) chance of having EIEE50. Each child you have together would also have a 3 in 4 (75%) chance of **not** having the condition.

If your partner or donor has CAD carrier screening and no variants are found, the chance that your children would have EIEE50 is very low. No further testing would usually be needed for you, your partner or donor, or your children related to EIEE50.

### What can I do next?

If you want to know if your children are at risk for EIEE50, your partner or donor would need to have CAD carrier screening. If you have questions about this testing, please ask your healthcare provider or use the resources below. Many people find it helpful to speak with a genetic counselor.

If your partner or donor is found to be a EIEE50 carrier, your children would be at risk for having EIEE50.

If you or your partner or surrogate are currently pregnant, tests called CVS (chorionic villus sampling) and amniocentesis can be done during pregnancy to find out if a baby has EIEE50. These tests both have a small risk of miscarriage. Babies can also be tested for EIEE50 after birth instead.

If you or your partner or surrogate are not yet pregnant, you could have these options:

- natural pregnancy with CVS or amniocentesis to test for EIEE50 during pregnancy;
- natural pregnancy and testing the baby after birth for EIEE50;
- preimplantation genetic testing (PGT-M) with in vitro fertilization (IVF) to test embryos for EIEE50;
- adoption; or
- use of a sperm or egg donor who had no variants found in CAD carrier screening.

### Where can I find more information?

- Epilepsy Foundation [epilepsy.com](https://www.epilepsy.com)
- CVS [marchofdimess.org/chorionic-villus-sampling](https://marchofdimess.org/chorionic-villus-sampling)
- Amniocentesis [marchofdimess.org/pregnancy/amniocentesis](https://marchofdimess.org/pregnancy/amniocentesis)
- PGT-M [natera.com/womens-health/spectrum-preimplantation-genetics](https://natera.com/womens-health/spectrum-preimplantation-genetics)

### What does this mean for my family?

You likely got (inherited) this non-working gene from one of your genetic parents. Your genetic siblings and other family members could also carry it. You should tell your family members about your test results so they can decide if they want carrier screening for EIEE50.

**Patient Information**

Patient Name: Donor 6964

**Test Information**

Ordering Physician: [REDACTED]

**Horizon™**  
Advanced carrier screening

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

Clinic Information: Fairfax Cryobank

Report Date: 04/12/2026

**References**

1. Yarahmadi SG, Morovvati S. CAD gene and early infantile epileptic encephalopathy-50; three Iranian deceased patients and a novel mutation: case report. *BMC Pediatr* 22, 125 (2022). <https://doi.org/10.1186/s12887-022-03195-4>
2. Online Mendelian Inheritance in Man, OMIM. Johns Hopkins University, Baltimore, MD. Developmental and epileptic encephalopathy 50; EIEE50. MIM Number: 616457. Available from: <https://www.omim.org/entry/616457> Accessed January 2024

**Patient Information**

Patient Name: Donor 6964

**Test Information**

Ordering Physician: [REDACTED]



Clinic Information: Fairfax Cryobank

Date Of Birth: [REDACTED]

Case File ID: [REDACTED]

Report Date: 04/12/2026

**DISEASES SCREENED**

Below is a list of all diseases screened and the result. Certain conditions have unique patient-specific numerical values, therefore, results for those conditions are formatted differently.

**Autosomal Recessive**

- 1**  
17-BETA HYDROXYSTEROID DEHYDROGENASE 3 DEFICIENCY (*HSD17B3*) **negative**
- 3**  
3-BETA-HYDROXYSTEROID DEHYDROGENASE TYPE II DEFICIENCY (*HSD3B2*) **negative**  
3-HYDROXY-3-METHYLGLUTARYL-COENZYME A LYASE DEFICIENCY (*HMGCL*) **negative**  
3-HYDROXYACYL-COA DEHYDROGENASE DEFICIENCY (*HADH*) **negative**  
3-METHYLCROTONYL-CoA CARBOXYLASE 2 DEFICIENCY (*MCCC2*) **negative**  
3-PHOSPHOGLYCERATE DEHYDROGENASE DEFICIENCY (*PHGDH*) **negative**
- 5**  
5-ALPHA-REDUCTASE DEFICIENCY (*SRD5A2*) **negative**
- 6**  
6-PYRUVOYL-TETRAHYDROPTERIN SYNTHASE ( *PTPS* ) DEFICIENCY (*PTS*) **negative**
- A**  
ABCA4-RELATED CONDITIONS (*ABCA4*) **negative**  
ABETALIPOPROTEINEMIA (*MTPP*) **negative**  
ACHONDROGENESIS, TYPE 1B (*SLC26A2*) **negative**  
ACHROMATOPSIA, CNGB3-RELATED (*CNGB3*) **negative**  
ACRODERMATITIS ENTEROPATHICA (*SLC39A4*) **negative**  
ACTION MYOCLONUS-RENAL FAILURE (AMRF) SYNDROME (*SCARB2*) **negative**  
ACUTE INFANTILE LIVER FAILURE, TRMU-RELATED (*TRMU*) **negative**  
ACYL-COA OXIDASE I DEFICIENCY (*ACOX1*) **negative**  
AICARDI-GOUTIERES SYNDROME (*SAMHD1*) **negative**  
AICARDI-GOUTIERES SYNDROME, RNASEH2A-RELATED (*RNASEH2A*) **negative**  
AICARDI-GOUTIERES SYNDROME, RNASEH2B-RELATED (*RNASEH2B*) **negative**  
AICARDI-GOUTIERES SYNDROME, RNASEH2C-RELATED (*RNASEH2C*) **negative**  
AICARDI-GOUTIERES SYNDROME, TREX1-RELATED (*TREX1*) **negative**  
ALPHA-MANNOSIDOSIS (*MAN2B1*) **negative**  
ALPHA-THALASSEMIA (*HBA1/HBA2*) **see first page**  
ALPORT SYNDROME, COL4A3-RELATED (*COL4A3*) **negative**  
ALPORT SYNDROME, COL4A4-RELATED (*COL4A4*) **negative**  
ALSTROM SYNDROME (*ALMS1*) **negative**  
AMISH INFANTILE EPILEPSY SYNDROME (*ST3GAL5*) **negative**  
ANDERMANN SYNDROME (*SLC12A6*) **negative**  
ARGININE:GLYCINE AMIDINOTRANSFERASE DEFICIENCY (AGAT DEFICIENCY) (*GATM*) **negative**  
ARGININEMIA (*ARG1*) **negative**  
ARGININOSUCCINATE LYASE DEFICIENCY (*ASL*) **negative**  
AROMATASE DEFICIENCY (*CYP19A1*) **negative**  
ASPARAGINE SYNTHETASE DEFICIENCY (*ASNS*) **negative**  
ASPARTYLGLYCOSAMINURIA (AGA) **negative**  
ATAXIA WITH VITAMIN E DEFICIENCY (*TTPA*) **negative**  
ATAXIA-TELANGIECTASIA (*ATM*) **negative**  
ATAXIA-TELANGIECTASIA-LIKE DISORDER 1 (*MRE11*) **negative**  
ATRAINFERRINEMIA (*TF*) **negative**  
AUTISM SPECTRUM, EPILEPSY AND ARTHROGRYPOSIS (*SLC35A3*) **negative**  
AUTOIMMUNE POLYGLANDULAR SYNDROME, TYPE 1 (*AIRE*) **negative**  
AUTOSOMAL RECESSIVE CONGENITAL ICHTHYOSIS (*ARCI*), SLC27A4-RELATED (*SLC27A4*) **negative**  
AUTOSOMAL RECESSIVE SPASTIC ATAXIA OF CHARLEVOIX-SAGUENAY (*SACS*) **negative**
- B**  
BARDET-BIEDL SYNDROME, ARL6-RELATED (*ARL6*) **negative**
- BARDET-BIEDL SYNDROME, BBS10-RELATED (*BBS10*) **negative**  
BARDET-BIEDL SYNDROME, BBS12-RELATED (*BBS12*) **negative**  
BARDET-BIEDL SYNDROME, BBS1-RELATED (*BBS1*) **negative**  
BARDET-BIEDL SYNDROME, BBS2-RELATED (*BBS2*) **negative**  
BARDET-BIEDL SYNDROME, BBS4-RELATED (*BBS4*) **negative**  
BARDET-BIEDL SYNDROME, BBS5-RELATED (*BBS5*) **negative**  
BARDET-BIEDL SYNDROME, BBS7-RELATED (*BBS7*) **negative**  
BARDET-BIEDL SYNDROME, BBS9-RELATED (*BBS9*) **negative**  
BARDET-BIEDL SYNDROME, TTC8-RELATED (*TTC8*) **negative**  
BARE LYMPHOCYTE SYNDROME, CIITA-RELATED (*CIITA*) **negative**  
BARTTER SYNDROME, BSND-RELATED (*BSND*) **negative**  
BARTTER SYNDROME, KCNJ1-RELATED (*KCNJ1*) **negative**  
BARTTER SYNDROME, SLC12A1-RELATED (*SLC12A1*) **negative**  
BATTEN DISEASE, CLN3-RELATED (*CLN3*) **negative**  
BETA-HEMOGLOBINOPATHIES (*HBB*) **negative**  
BETA-KETOHLIOLASE DEFICIENCY (*ACAT1*) **negative**  
BETA-MANNOSIDOSIS (*MANBA*) **negative**  
BETA-UREIDOPROPIONASE DEFICIENCY (*UPB1*) **negative**  
BILATERAL FRONTOPARIETAL POLYMICROGYRIA (*GPR56*) **negative**  
BIOTINIDASE DEFICIENCY (*BTD*) **negative**  
BIOTIN-THIAMINE-RESPONSIVE BASAL GANGLIA DISEASE (BTBGD) (*SLC19A3*) **negative**  
BLOOM SYNDROME (*BLM*) **negative**  
BRITTLE CORNEA SYNDROME 1 (*ZNF469*) **negative**  
BRITTLE CORNEA SYNDROME 2 (*PRDM5*) **negative**
- C**  
CANAVAN DISEASE (*ASPA*) **negative**  
CARBAMOYL PHOSPHATE SYNTHETASE I DEFICIENCY (*CPS1*) **negative**  
CARNITINE DEFICIENCY (*SLC22A5*) **negative**  
CARNITINE PALMITOYLTRANSFERASE IA DEFICIENCY (*CPT1A*) **negative**  
CARNITINE PALMITOYLTRANSFERASE II DEFICIENCY (*CPT2*) **negative**  
CARNITINE-ACYLCARNITINE TRANSLOCASE DEFICIENCY (*SLC25A20*) **negative**  
CARPENTER SYNDROME (*RAB23*) **negative**  
CARTILAGE-HAIR HYPOPLASIA (*RMRP*) **negative**  
CATECHOLAMINERGIC POLYMORPHIC VENTRICULAR TACHYCARDIA (*CASQ2*) **negative**  
CD59-MEDIATED HEMOLYTIC ANEMIA (*CD59*) **negative**  
CEP152-RELATED MICROCEPHALY (*CEP152*) **negative**  
CEREBRAL DYSGENESIS, NEUROPATHY, ICHTHYOSIS, AND PALMOPLANTAR KERATODERMA (CEDNIK) SYNDROME (*SNAP29*) **negative**  
CEREBROTENDINOUS XANTHOMATOSIS (*CYP27A1*) **negative**  
CHARCOT-MARIE-TOOTH DISEASE, RECESSIVE INTERMEDIATE C (*PLEKHG5*) **negative**  
CHARCOT-MARIE-TOOTH-DISEASE, TYPE 4D (*NDRG1*) **negative**  
CHEDIAK-HIGASHI SYNDROME (*LYST*) **negative**  
CHOREOACANTHOCYTOSIS (*VPS13A*) **negative**  
CHRONIC GRANULOMATOUS DISEASE, CYBA-RELATED (*CYBA*) **negative**  
CHRONIC GRANULOMATOUS DISEASE, NCF2-RELATED (*NCF2*) **negative**  
CILIOPATHIES, RPGRIP1L-RELATED (*RPGRIP1L*) **negative**  
CITRIN DEFICIENCY (*SLC25A13*) **negative**  
CITRULLINEMIA, TYPE 1 (*ASS1*) **negative**  
CLN10 DISEASE (*CTSD*) **negative**  
COHEN SYNDROME (*VPS13B*) **negative**  
COL11A2-RELATED CONDITIONS (*COL11A2*) **negative**  
COMBINED MALONIC AND METHYLMALONIC ACIDURIA (*ACSF3*) **negative**  
COMBINED OXIDATIVE PHOSPHORYLATION DEFICIENCY 1 (*GFM1*) **negative**  
COMBINED OXIDATIVE PHOSPHORYLATION DEFICIENCY 3 (*TFSM*) **negative**



**Patient Information**

Patient Name: Donor 6964

**Test Information**

Ordering Physician: [REDACTED]

**Horizon™**  
Advanced carrier screening

Date Of Birth: [REDACTED]

Clinic Information: Fairfax Cryobank

Case File ID: [REDACTED]

Report Date: 04/12/2026

**C**

COMBINED PITUITARY HORMONE DEFICIENCY 1 (*POU1F1*) **negative**  
 COMBINED PITUITARY HORMONE DEFICIENCY-2 (*PROP1*) **negative**  
 CONGENITAL ADRENAL HYPERPLASIA, 11-BETA-HYDROXYLASE DEFICIENCY (*CYP11B1*) **negative**  
 CONGENITAL ADRENAL HYPERPLASIA, 17-ALPHA-HYDROXYLASE DEFICIENCY (*CYP17A1*) **negative**  
 CONGENITAL ADRENAL HYPERPLASIA, 21-HYDROXYLASE DEFICIENCY (*CYP21A2*) **negative**  
 CONGENITAL ADRENAL INSUFFICIENCY, CYP11A1-RELATED (*CYP11A1*) **negative**  
 CONGENITAL AMEGAKARYOCYTIC THROMBOCYTOPENIA (*MPL*) **negative**  
 CONGENITAL CHRONIC DIARRHEA (*DGAT1*) **negative**  
 CONGENITAL DISORDER OF GLYCOSYLATION TYPE 1, ALG1-RELATED (*ALG1*) **negative**  
 CONGENITAL DISORDER OF GLYCOSYLATION, TYPE 1A, PMM2-Related (*PMM2*) **negative**  
 CONGENITAL DISORDER OF GLYCOSYLATION, TYPE 1B (*MPL*) **negative**  
 CONGENITAL DISORDER OF GLYCOSYLATION, TYPE 1C (*ALG6*) **negative**  
 CONGENITAL DYSERYTHROPOIETIC ANEMIA TYPE 2 (*SEC23B*) **negative**  
 CONGENITAL FINNISH NEPHROSIS (*NPHS1*) **negative**  
 CONGENITAL HYDROCEPHALUS 1 (*CCDC88C*) **negative**  
 CONGENITAL HYPERINSULINISM, KCNJ11-Related (*KCNJ11*) **negative**  
 CONGENITAL INSENSITIVITY TO PAIN WITH ANHIDROSIS (CIPA) (*NTRK1*) **negative**  
 CONGENITAL MYASTHENIC SYNDROME, CHAT-RELATED (*CHAT*) **negative**  
 CONGENITAL MYASTHENIC SYNDROME, CHRNE-RELATED (*CHRNE*) **negative**  
 CONGENITAL MYASTHENIC SYNDROME, COLQ-RELATED (*COLQ*) **negative**  
 CONGENITAL MYASTHENIC SYNDROME, DOK7-RELATED (*DOK7*) **negative**  
 CONGENITAL MYASTHENIC SYNDROME, RAPSN-RELATED (*RAPSN*) **negative**  
 CONGENITAL NEPHROTIC SYNDROME, PLCE1-RELATED (*PLCE1*) **negative**  
 CONGENITAL NEUTROPENIA, G6PC3-RELATED (*G6PC3*) **negative**  
 CONGENITAL NEUTROPENIA, HAX1-RELATED (*HAX1*) **negative**  
 CONGENITAL NEUTROPENIA, VPS45-RELATED (*VPS45*) **negative**  
 CONGENITAL SECRETORY CHLORIDE DIARRHEA 1 (*SLC26A3*) **negative**  
 CORNEAL DYSTROPHY AND PERCEPTIVE DEAFNESS (*SLC4A11*) **negative**  
 CORTICOSTERONE METHYLOXIDASE DEFICIENCY (*CYP11B2*) **negative**  
 COSTEFF SYNDROME (3-METHYLG LUTACONIC ACIDURIA, TYPE 3) (*OPA3*) **negative**  
 CRB1-RELATED RETINAL DYSTROPHIES (*CRB1*) **negative**  
 CYSTIC FIBROSIS (*CFTR*) **see first page**  
 CYSTINOSIS (*CTNS*) **negative**  
 CYTOCHROME C OXIDASE DEFICIENCY, PET100-RELATED (*PET100*) **negative**  
 CYTOCHROME P450 OXIDOREDUCTASE DEFICIENCY (*POR*) **negative**

**D**

D-BIFUNCTIONAL PROTEIN DEFICIENCY (*HSD17B4*) **negative**  
 DEAFNESS, AUTOSOMAL RECESSIVE 77 (*LOXHD1*) **negative**  
 DIHYDROPTERIDINE REDUCTASE (DHPR) DEFICIENCY (*QDPR*) **negative**  
 DONNAI-BARROW SYNDROME (*LRP2*) **negative**  
 DUBIN-JOHNSON SYNDROME (*ABCC2*) **negative**  
 DYSKERATOSIS CONGENITA SPECTRUM DISORDERS (*TERT*) **negative**  
 DYSKERATOSIS CONGENITA, RTEL1-RELATED (*RTEL1*) **negative**  
 DYSTROPHIC EPIDERMOLYSIS BULLOSA, COL7A1-Related (*COL7A1*) **negative**

**E**

EARLY INFANTILE EPILEPTIC ENCEPHALOPATHY, CAD-RELATED (*CAD*) **see first page**  
 EHLERS-DANLOS SYNDROME TYPE VI (*PLOD1*) **negative**  
 EHLERS-DANLOS SYNDROME, CLASSIC-LIKE, TNXB-RELATED (*TNXB*) **negative**  
 EHLERS-DANLOS SYNDROME, TYPE VII C (*ADAMTS2*) **negative**  
 ELLIS-VAN CREVELD SYNDROME, EVC2-RELATED (*EVC2*) **negative**  
 ELLIS-VAN CREVELD SYNDROME, EVC-RELATED (*EVC*) **negative**  
 ENHANCED S-CONE SYNDROME (*NR2E3*) **negative**  
 EPIMERASE DEFICIENCY (GALACTOSEMIA TYPE III) (*GALE*) **negative**  
 EPIPHYSEAL DYSPLASIA, MULTIPLE, 7/DESBUIQUOIS DYSPLASIA 1 (*CANT1*) **negative**  
 ERCC6-RELATED DISORDERS (*ERCC6*) **negative**  
 ERCC8-RELATED DISORDERS (*ERCC8*) **negative**  
 ETHYLMALONIC ENCEPHALOPATHY (*ETHE1*) **negative**

**F**

FACTOR XI DEFICIENCY (*F11*) **negative**

FAMILIAL DYSAUTONOMIA (*IKBKAP*) **negative**  
 FAMILIAL HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS, PRF1-RELATED (*PRF1*) **negative**  
 FAMILIAL HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS, STX11-RELATED (*STX11*) **negative**  
 FAMILIAL HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS, STXBP2-RELATED (*STXBP2*) **negative**  
 FAMILIAL HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS, UNC13D-RELATED (*UNC13D*) **negative**  
 FAMILIAL HYPERCHOLESTEROLEMIA, LDLRAP1-RELATED (*LDLRAP1*) **negative**  
 FAMILIAL HYPERCHOLESTEROLEMIA, LDLR-RELATED (*LDLR*) **negative**  
 FAMILIAL HYPERINSULINISM, ABCC8-RELATED (*ABCC8*) **negative**  
 FAMILIAL NEPHROGENIC DIABETES INSIPIDUS, AQP2-RELATED (*AQP2*) **negative**  
 FANCONI ANEMIA, GROUP A (*FANCA*) **negative**  
 FANCONI ANEMIA, GROUP C (*FANCC*) **negative**  
 FANCONI ANEMIA, GROUP D2 (*FANCD2*) **negative**  
 FANCONI ANEMIA, GROUP E (*FANCE*) **negative**  
 FANCONI ANEMIA, GROUP F (*FANCF*) **negative**  
 FANCONI ANEMIA, GROUP G (*FANCG*) **negative**  
 FANCONI ANEMIA, GROUP I (*FANCI*) **negative**  
 FANCONI ANEMIA, GROUP J (*BRIP1*) **negative**  
 FANCONI ANEMIA, GROUP L (*FANCL*) **negative**  
 FARBER LIPOGRANULOMATOSIS (*ASAH1*) **negative**  
 FOVEAL HYPOPLASIA (*SLC38A8*) **negative**  
 FRASER SYNDROME 3, GRIP1-RELATED (*GRIP1*) **negative**  
 FRASER SYNDROME, FRAS1-RELATED (*FRAS1*) **negative**  
 FRASER SYNDROME, FREM2-RELATED (*FREM2*) **negative**  
 FRIEDREICH ATAXIA (*FXN*) **negative**  
 FRUCTOSE-1,6-BISPHOSPHATASE DEFICIENCY (*FBP1*) **negative**  
 FUCOSIDOSIS, FUCA1-RELATED (*FUCA1*) **negative**  
 FUMARASE DEFICIENCY (*FH*) **negative**

**G**

GABA-TRANSAMINASE DEFICIENCY (*ABAT*) **negative**  
 GALACTOKINASE DEFICIENCY (GALACTOSEMIA, TYPE II) (*GALK1*) **negative**  
 GALACTOSEMIA (*GALT*) **negative**  
 GALACTOSIALIDOSIS (*CTSA*) **negative**  
 GAUCHER DISEASE (*GBA*) **negative**  
 GCH1-RELATED CONDITIONS (*GCH1*) **negative**  
 GDF5-RELATED CONDITIONS (*GDF5*) **negative**  
 GERODERMA OSTEODYSPLASTICA (*GORAB*) **negative**  
 GITELMAN SYNDROME (*SLC12A3*) **negative**  
 GLANZMANN THROMBASTHENIA (*ITGB3*) **negative**  
 GLUTARIC ACIDEMIA, TYPE 1 (*GCDH*) **negative**  
 GLUTARIC ACIDEMIA, TYPE 2A (*ETFA*) **negative**  
 GLUTARIC ACIDEMIA, TYPE 2B (*ETFB*) **negative**  
 GLUTARIC ACIDEMIA, TYPE 2C (*ETFDH*) **negative**  
 GLUTATHIONE SYNTHETASE DEFICIENCY (*GSS*) **negative**  
 GLYCINE ENCEPHALOPATHY, AMT-RELATED (*AMT*) **negative**  
 GLYCINE ENCEPHALOPATHY, GLDC-RELATED (*GLDC*) **negative**  
 GLYCOGEN STORAGE DISEASE TYPE 5 (McArdle Disease) (*PYGM*) **negative**  
 GLYCOGEN STORAGE DISEASE TYPE IXB (*PHKB*) **negative**  
 GLYCOGEN STORAGE DISEASE TYPE IXC (*PHKG2*) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 1a (*G6PC*) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 1b (*SLC37A4*) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 2 (POMPE DISEASE) (*GAA*) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 3 (*AGL*) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 4 (*GBE1*) **negative**  
 GLYCOGEN STORAGE DISEASE, TYPE 7 (*PFKM*) **negative**  
 GRACILE SYNDROME (*BCS1L*) **negative**  
 GUANIDINOACETATE METHYLTRANSFERASE DEFICIENCY (*GAMT*) **negative**

**H**

HARLEQUIN ICHTHYOSIS (*ABCA12*) **negative**  
 HEME OXYGENASE 1 DEFICIENCY (*HMOX1*) **negative**  
 HEMOCHROMATOSIS TYPE 2A (*HFE2*) **negative**  
 HEMOCHROMATOSIS, TYPE 3, TFR2-Related (*TFR2*) **negative**  
 HEPATOCEREBRAL MITOCHONDRIAL DNA DEPLETION SYNDROME, MPV17-RELATED (*MPV17*) **negative**



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Ordering Physician: [REDACTED]



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**H**

HEREDITARY FRUCTOSE INTOLERANCE (*ALDOB*) **negative**  
 HEREDITARY HEMOCHROMATOSIS TYPE 2B (*HAMP*) **negative**  
 HEREDITARY SPASTIC PARAPARESIS, TYPE 49 (*TECPR2*) **negative**  
 HEREDITARY SPASTIC PARAPLEGIA, CYP7B1-RELATED (*CYP7B1*) **negative**  
 HERMANSKY-PUDLAK SYNDROME, AP3B1-RELATED (*AP3B1*) **negative**  
 HERMANSKY-PUDLAK SYNDROME, BLOC153-RELATED (*BLOC153*) **negative**  
 HERMANSKY-PUDLAK SYNDROME, BLOC156-RELATED (*BLOC156*) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS1-RELATED (*HPS1*) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS3-RELATED (*HPS3*) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS4-RELATED (*HPS4*) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS5-RELATED (*HPS5*) **negative**  
 HERMANSKY-PUDLAK SYNDROME, HPS6-RELATED (*HPS6*) **negative**  
 HOLOCARBOXYLASE SYNTHETASE DEFICIENCY (*HLCS*) **negative**  
 HOMOCYSTINURIA AND MEGALOBLASTIC ANEMIA TYPE CBLG (*MTR*) **negative**  
 HOMOCYSTINURIA DUE TO DEFICIENCY OF MTHFR (*MTHFR*) **negative**  
 HOMOCYSTINURIA, CBS-RELATED (*CBS*) **negative**  
 HOMOCYSTINURIA, Type cblE (*MTRR*) **negative**  
 HYDROLETHALUS SYNDROME (*HYLS1*) **negative**  
 HYPER-IGM IMMUNODEFICIENCY (*CD40*) **negative**  
 HYPERORNITHINEMIA-HYPERAMMONEMIA-HOMOCITRULLINURIA ( HHH SYNDROME ) (*SLC25A15*) **negative**  
 HYPERPHOSPHATEMIC FAMILIAL TUMORAL CALCINOSIS, GALNT3-RELATED (*GALNT3*) **negative**  
 HYPOMYELINATING LEUKODYSTROPHY 12 (*VPS11*) **negative**  
 HYPOPHOSPHATASIA, ALPL-RELATED (*ALPL*) **negative**

**I**

IMERSLUND-GRASBECK SYNDROME 2 (*AMN*) **negative**  
 IMMUNODEFICIENCY-CENTROMERIC INSTABILITY-FACIAL ANOMALIES (ICF) SYNDROME, DNMT3B-RELATED (*DNMT3B*) **negative**  
 IMMUNODEFICIENCY-CENTROMERIC INSTABILITY-FACIAL ANOMALIES (ICF) SYNDROME, ZBTB24-RELATED (*ZBTB24*) **negative**  
 INCLUSION BODY MYOPATHY 2 (*GNE*) **negative**  
 INFANTILE CEREBRAL AND CEREBELLAR ATROPHY (*MED17*) **negative**  
 INFANTILE NEPHRONOPHTHISIS (*INVS*) **negative**  
 INFANTILE NEUROAXONAL DYSTROPHY (*PLA2G6*) **negative**  
 ISOLATED ECTOPIA LENTIS (*ADAMTSL4*) **negative**  
 ISOLATED SULFITE OXIDASE DEFICIENCY (*SUOX*) **negative**  
 ISOLATED THYROID-STIMULATING HORMONE DEFICIENCY (*TSHB*) **negative**  
 ISOVALERIC ACIDEMIA (*IVD*) **negative**

**J**

JOHANSON-BLIZZARD SYNDROME (*UBR1*) **negative**  
 JOUBERT SYNDROME 2 / MECKEL SYNDROME 2 (*TMEM216*) **negative**  
 JOUBERT SYNDROME AND RELATED DISORDERS (JSRD), TMEM67-RELATED (*TMEM67*) **negative**  
 JOUBERT SYNDROME, AHI1-RELATED (*AHI1*) **negative**  
 JOUBERT SYNDROME, ARL13B-RELATED (*ARL13B*) **negative**  
 JOUBERT SYNDROME, B9D1-RELATED (*B9D1*) **negative**  
 JOUBERT SYNDROME, B9D2-RELATED (*B9D2*) **negative**  
 JOUBERT SYNDROME, C2CD3-RELATED/OROFACIODIGITAL SYNDROME 14 (*C2CD3*) **negative**  
 JOUBERT SYNDROME, CC2D2A-RELATED/COACH SYNDROME (*CC2D2A*) **negative**  
 JOUBERT SYNDROME, CEP104-RELATED (*CEP104*) **negative**  
 JOUBERT SYNDROME, CEP120-RELATED/SHORT-RIB THORACIC DYSPLASIA 13 WITH OR WITHOUT POLYDACTYLY (*CEP120*) **negative**  
 JOUBERT SYNDROME, CEP41-RELATED (*CEP41*) **negative**  
 JOUBERT SYNDROME, CPLANE1-RELATED / OROFACIODIGITAL SYNDROME 6 (*CPLANE1*) **negative**  
 JOUBERT SYNDROME, CSPP1-RELATED (*CSPP1*) **negative**  
 JOUBERT SYNDROME, INPP5E-RELATED (*INPP5E*) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, COL17A1-RELATED (*COL17A1*) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, ITGA6-RELATED (*ITGA6*) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, ITGB4-RELATED (*ITGB4*) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, LAMB3-RELATED (*LAMB3*) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA, LAMC2-RELATED (*LAMC2*) **negative**  
 JUNCTIONAL EPIDERMOLYSIS BULLOSA/LARYNGOONYCHOCUTANEOUS SYNDROME, LAMA3-RELATED (*LAMA3*) **negative**

**K**

KRABBE DISEASE (*GALC*) **negative**

**L**

LAMELLAR ICHTHYOSIS, TYPE 1 (*TGM1*) **negative**  
 LARON SYNDROME (*GHR*) **negative**  
 LEBER CONGENITAL AMAUROSIS 2 (*RPE65*) **negative**  
 LEBER CONGENITAL AMAUROSIS TYPE AIPL1 (*AIPL1*) **negative**  
 LEBER CONGENITAL AMAUROSIS TYPE GUCY2D (*GUCY2D*) **negative**  
 LEBER CONGENITAL AMAUROSIS TYPE TULP1 (*TULP1*) **negative**  
 LEBER CONGENITAL AMAUROSIS, IQCB1-RELATED/SENIOR-LOKEN SYNDROME 5 (*IQCB1*) **negative**  
 LEBER CONGENITAL AMAUROSIS, TYPE CEP290 (*CEP290*) **negative**  
 LEBER CONGENITAL AMAUROSIS, TYPE LCA5 (*LCA5*) **negative**  
 LEBER CONGENITAL AMAUROSIS, TYPE RDH12 (*RDH12*) **negative**  
 LEIGH SYNDROME, FRENCH-CANADIAN TYPE (*LRPPRC*) **negative**  
 LETHAL CONGENITAL CONTRACTURE SYNDROME 1 (*GLE1*) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER (*EIF2B5*) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER, EIF2B1-RELATED (*EIF2B1*) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER, EIF2B2-RELATED (*EIF2B2*) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER, EIF2B3-RELATED (*EIF2B3*) **negative**  
 LEUKOENCEPHALOPATHY WITH VANISHING WHITE MATTER, EIF2B4-RELATED (*EIF2B4*) **negative**  
 LIG4 SYNDROME (*LIG4*) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY TYPE 8 (*TRIM32*) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2A (*CAPN3*) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2B (*DYSF*) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2C (*SGCG*) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2D (*SGCA*) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2E (*SGCB*) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2F (*SGCD*) **negative**  
 LIMB-GIRDLE MUSCULAR DYSTROPHY, TYPE 2I (*FKRP*) **negative**  
 LIPOAMIDE DEHYDROGENASE DEFICIENCY (DIHYDROLIPOAMIDE DEHYDROGENASE DEFICIENCY) (*DLD*) **negative**  
 LIPOID ADRENAL HYPERPLASIA (*STAR*) **negative**  
 LIPOPROTEIN LIPASE DEFICIENCY (*LPL*) **negative**  
 LONG CHAIN 3-HYDROXYACYL-CoA DEHYDROGENASE DEFICIENCY (*HADHA*) **negative**  
 LRAT-RELATED CONDITIONS (*LRAT*) **negative**  
 LUNG DISEASE, IMMUNODEFICIENCY, AND CHROMOSOME BREAKAGE SYNDROME (LICS) (*NSMCE3*) **negative**  
 LYSINURIC PROTEIN INTOLERANCE (*SLC7A7*) **negative**

**M**

MALONYL-CoA DECARBOXYLASE DEFICIENCY (*MLYCD*) **negative**  
 MAPLE SYRUP URINE DISEASE, TYPE 1A (*BCKDHA*) **negative**  
 MAPLE SYRUP URINE DISEASE, TYPE 1B (*BCKDHB*) **negative**  
 MAPLE SYRUP URINE DISEASE, TYPE 2 (*DBT*) **negative**  
 MCKUSICK-KAUFMAN SYNDROME (*MKKS*) **negative**  
 MECKEL SYNDROME 7/NEPHRONOPHTHISIS 3 (*NPHP3*) **negative**  
 MECKEL-GRUBER SYNDROME, TYPE 1 (*MKS1*) **negative**  
 MECR-RELATED NEUROLOGIC DISORDER (*MECR*) **negative**  
 MEDIUM CHAIN ACYL-CoA DEHYDROGENASE DEFICIENCY (*ACADM*) **negative**  
 MEDNIK SYNDROME (*AP1S1*) **negative**  
 MEGALENCEPHALIC LEUKOENCEPHALOPATHY WITH SUBCORTICAL CYSTS (*MLC1*) **negative**  
 MEROSIN-DEFICIENT MUSCULAR DYSTROPHY (*LAMA2*) **negative**  
 METABOLIC ENCEPHALOPATHY AND ARRHYTHMIAS, TANGO2-RELATED (*TANGO2*) **negative**  
 METACHROMATIC LEUKODYSTROPHY, ARSA-RELATED (*ARSA*) **negative**  
 METACHROMATIC LEUKODYSTROPHY, PSAP-RELATED (*PSAP*) **negative**  
 METHYLMALONIC ACIDEMIA AND HOMOCYSTINURIA TYPE CBLF (*LMBRD1*) **negative**  
 METHYLMALONIC ACIDEMIA, MCEE-RELATED (*MCEE*) **negative**  
 METHYLMALONIC ACIDURIA AND HOMOCYSTINURIA, TYPE CBLF (*MMACHC*) **negative**  
 METHYLMALONIC ACIDURIA AND HOMOCYSTINURIA, TYPE CblD (*MMADHC*) **negative**



**Patient Information**

Patient Name: Donor 6964

**Test Information**

Ordering Physician: [REDACTED]



Clinic Information: Fairfax Cryobank

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**M**

METHYLMALONIC ACIDURIA, MMAA-RELATED (MMAA) **negative**  
 METHYLMALONIC ACIDURIA, MMAB-RELATED (MMAB) **negative**  
 METHYLMALONIC ACIDURIA, TYPE MUT (0) (MUT) **negative**  
 MEVALONIC KINASE DEFICIENCY (MVK) **negative**  
 MICROCEPHALIC OSTEODYSPLASTIC PRIMORDIAL DWARFISM TYPE II (PCNT) **negative**  
 MICROPHthalmIA / ANOPHTHALMIA, VSX2-RELATED (VSX2) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, ACAD9-RELATED (ACAD9) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NDUFAF5-RELATED (NDUFAF5) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NDUFS6-RELATED (NDUFS6) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 1 (NDUFS4) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 10 (NDUFAF2) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 17 (NDUFAF6) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 19 (FOXRED1) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 3 (NDUFS7) **negative**  
 MITOCHONDRIAL COMPLEX I DEFICIENCY, NUCLEAR TYPE 4 (NDUFV1) **negative**  
 MITOCHONDRIAL COMPLEX IV DEFICIENCY, NUCLEAR TYPE 2, SCO2-RELATED (SCO2) **negative**  
 MITOCHONDRIAL COMPLEX IV DEFICIENCY, NUCLEAR TYPE 6 (COX15) **negative**  
 MITOCHONDRIAL DNA DEPLETION SYNDROME 2 (TK2) **negative**  
 MITOCHONDRIAL DNA DEPLETION SYNDROME 3 (DGUOK) **negative**  
 MITOCHONDRIAL MYOPATHY AND SIDERBLASTIC ANEMIA (MLASA1) (PUS1) **negative**  
 MITOCHONDRIAL TRIFUNCTIONAL PROTEIN DEFICIENCY, HADHB-RELATED (HADHB) **negative**  
 MOLYBDENUM COFACTOR DEFICIENCY TYPE B (MOCS2) **negative**  
 MOLYBDENUM COFACTOR DEFICIENCY, TYPE A (MOCS1) **negative**  
 MUCOLIPIDOSIS II/III A (GNPTAB) **negative**  
 MUCOLIPIDOSIS III GAMMA (GNPTG) **negative**  
 MUCOLIPIDOSIS, TYPE IV (MCOLN1) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE I (HURLER SYNDROME) (IDUA) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE III A (SANFILIPPO A) (SGSH) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE III B (SANFILIPPO B) (NAGLU) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE III C (SANFILIPPO C) (HGSNAT) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE III D (SANFILIPPO D) (GNS) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE IV A (MORQUIO SYNDROME) (GALNS) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE IV B/GM1 GANGLIOSIDOSIS (GLB1) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE IX (HYAL1) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE VI (MAROTEAUX-LAMY) (ARSB) **negative**  
 MUCOPOLYSACCHARIDOSIS, TYPE VII (GUSB) **negative**  
 MULIBREY NANISM (TRIM37) **negative**  
 MULTIPLE PTERYGIUM SYNDROME, CHRNG-RELATED/ESCOBAR SYNDROME (CHRNG) **negative**  
 MULTIPLE SULFATASE DEFICIENCY (SUMF1) **negative**  
 MUSCLE-EYE-BRAIN DISEASE, POMGNT1-RELATED (POMGNT1) **negative**  
 MUSCULAR DYSTROPHY-DYSTROGLYCANOPATHY (RXYLT1) **negative**  
 MUSK-RELATED CONGENITAL MYASTHENIC SYNDROME (MUSK) **negative**  
 MYONEUROGASTROINTESTINAL ENCEPHALOPATHY (MNGIE) (TYMP) **negative**  
 MYOTONIA CONGENITA (CLCN1) **negative**

**N**

N-ACETYLGlutamate Synthase Deficiency (NAGS) **negative**  
 NEMALINE MYOPATHY, NEB-RELATED (NEB) **negative**  
 NEPHRONOPHTHISIS 1 (NPHP1) **negative**  
 NEURONAL CEROID LIPOFUSCINOSIS, CLN5-RELATED (CLN5) **negative**  
 NEURONAL CEROID LIPOFUSCINOSIS, CLN6-RELATED (CLN6) **negative**  
 NEURONAL CEROID LIPOFUSCINOSIS, CLN8-RELATED (CLN8) **negative**  
 NEURONAL CEROID LIPOFUSCINOSIS, MFSD8-RELATED (MFSD8) **negative**  
 NEURONAL CEROID LIPOFUSCINOSIS, PPT1-RELATED (PPT1) **negative**  
 NEURONAL CEROID LIPOFUSCINOSIS, TPP1-RELATED (TPP1) **negative**  
 NGLY1-CONGENITAL DISORDER OF GLYCOSYLATION (NGLY1) **negative**  
 NIEMANN-PICK DISEASE, TYPE C1 / D (NPC1) **negative**  
 NIEMANN-PICK DISEASE, TYPE C2 (NPC2) **negative**  
 NIEMANN-PICK DISEASE, TYPES A / B (SMPD1) **negative**  
 NIJMEGEN BREAKAGE SYNDROME (NBN) **negative**  
 NON-SYNDROMIC HEARING LOSS, GJB2-RELATED (GJB2) **negative**  
 NON-SYNDROMIC HEARING LOSS, MYO15A-RELATED (MYO15A) **negative**  
 NONSYNDROMIC HEARING LOSS, OTOA-RELATED (OTOA) **negative**

NONSYNDROMIC HEARING LOSS, OTOF-RELATED (OTOF) **negative**  
 NONSYNDROMIC HEARING LOSS, PJKV-RELATED (PJKV) **negative**  
 NONSYNDROMIC HEARING LOSS, SYNE4-RELATED (SYNE4) **negative**  
 NONSYNDROMIC HEARING LOSS, TMC1-RELATED (TMC1) **negative**  
 NONSYNDROMIC HEARING LOSS, TMPRSS3-RELATED (TMPRSS3) **negative**  
 NONSYNDROMIC INTELLECTUAL DISABILITY (CC2D1A) **negative**  
 NORMOPHOSPHATEMIC TUMORAL CALCINOSIS (SAMD9) **negative**

**O**

OCULOCUTANEOUS ALBINISM TYPE III (TYRP1) **negative**  
 OCULOCUTANEOUS ALBINISM TYPE IV (SLC45A2) **negative**  
 OCULOCUTANEOUS ALBINISM, OCA2-RELATED (OCA2) **negative**  
 OCULOCUTANEOUS ALBINISM, TYPES 1A AND 1B (TYR) **negative**  
 ODONTO-ONYCHO-DERMAL DYSPLASIA / SCHOPF-SCHULZ-PASSARGE SYNDROME (WNT10A) **negative**  
 OMENN SYNDROME, RAG2-RELATED (RAG2) **negative**  
 ORNITHINE AMINOTRANSFERASE DEFICIENCY (OAT) **negative**  
 OSTEOGENESIS IMPERFECTA TYPE VII (CRTAP) **negative**  
 OSTEOGENESIS IMPERFECTA TYPE VIII (P3H1) **negative**  
 OSTEOGENESIS IMPERFECTA TYPE XI (FKBP10) **negative**  
 OSTEOGENESIS IMPERFECTA TYPE XIII (BMP1) **negative**  
 OSTEOPECTOSIS, INFANTILE MALIGNANT, TCIRG1-RELATED (TCIRG1) **negative**  
 OSTEOPECTOSIS, OSTM1-RELATED (OSTM1) **negative**

**P**

PANTOTHENATE KINASE-ASSOCIATED NEURODEGENERATION (PANK2) **negative**  
 PAPILLON LEFEVRE SYNDROME (CTSC) **negative**  
 PARKINSON DISEASE 15 (FBXO7) **negative**  
 PENDRED SYNDROME (SLC26A4) **negative**  
 PERLMAN SYNDROME (DIS3L2) **negative**  
 PGM3-CONGENITAL DISORDER OF GLYCOSYLATION (PGM3) **negative**  
 PHENYLKETONURIA (PAH) **negative**  
 PIGN-CONGENITAL DISORDER OF GLYCOSYLATION (PIGN) **negative**  
 PITUITARY HORMONE DEFICIENCY, COMBINED 3 (LHX3) **negative**  
 POLG-RELATED DISORDERS (POLG) **negative**  
 POLYCYSTIC KIDNEY DISEASE, AUTOSOMAL RECESSIVE (PKHD1) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, EXOSC3-RELATED (EXOSC3) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, RARS2-RELATED (RARS2) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, TSEN2-RELATED (TSEN2) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, TSEN54-RELATED (TSEN54) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, TYPE 1A (VRK1) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, TYPE 2D (SEPSECS) **negative**  
 PONTOCEREBELLAR HYPOPLASIA, VPS53-RELATED (VPS53) **negative**  
 PRIMARY CILIARY DYSKINESIA, CCDC103-RELATED (CCDC103) **negative**  
 PRIMARY CILIARY DYSKINESIA, CCDC39-RELATED (CCDC39) **negative**  
 PRIMARY CILIARY DYSKINESIA, DNAH11-RELATED (DNAH11) **negative**  
 PRIMARY CILIARY DYSKINESIA, DNAH5-RELATED (DNAH5) **negative**  
 PRIMARY CILIARY DYSKINESIA, DNAI1-RELATED (DNAI1) **negative**  
 PRIMARY CILIARY DYSKINESIA, DNAI2-RELATED (DNAI2) **negative**  
 PRIMARY CONGENITAL GLAUCOMA/PETERS ANOMALY (CYP1B1) **negative**  
 PRIMARY HYPEROXALURIA, TYPE 1 (AGXT) **negative**  
 PRIMARY HYPEROXALURIA, TYPE 2 (GRHPR) **negative**  
 PRIMARY HYPEROXALURIA, TYPE 3 (HOGA1) **negative**  
 PRIMARY MICROCEPHALY 1, AUTOSOMAL RECESSIVE (MCPH1) **negative**  
 PROGRESSIVE EARLY-ONSET ENCEPHALOPATHY WITH BRAIN ATROPHY AND THIN CORPUS CALLOSUM (TBCE) **negative**  
 PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS, ABCB4-RELATED (ABCB4) **negative**  
 PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS, TYPE 1 (PFIC1) (ATP8B1) **negative**  
 PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS, TYPE 2 (ABCB11) **negative**  
 PROGRESSIVE FAMILIAL INTRAHEPATIC CHOLESTASIS, TYPE 4 (PFIC4) (TJP2) **negative**  
 PROGRESSIVE PSEUDORHEUMATOID DYSPLASIA (CCN6) **negative**  
 PROLIDASE DEFICIENCY (PEPD) **negative**  
 PROPIONIC ACIDEMIA, PCCA-RELATED (PCCA) **negative**  
 PROPIONIC ACIDEMIA, PCCB-RELATED (PCCB) **negative**  
 PSEUDOXANTHOMA ELASTICUM (ABCC6) **negative**



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**P**

PTERIN-4 ALPHA-CARBINOLAMINE DEHYDRATASE (PCD) DEFICIENCY (*PCBD1*) **negative**  
 PYCNODYSTOSIS (*CTSK*) **negative**  
 PYRIDOXAL 5'-PHOSPHATE-DEPENDENT EPILEPSY (*PNPO*) **negative**  
 PYRIDOXINE-DEPENDENT EPILEPSY (*ALDH7A1*) **negative**  
 PYRUVATE CARBOXYLASE DEFICIENCY (*PC*) **negative**  
 PYRUVATE DEHYDROGENASE DEFICIENCY, PDHB-RELATED (*PDHB*) **negative**

**R**

REFSUM DISEASE, PHYH-RELATED (*PHYH*) **negative**  
 RENAL TUBULAR ACIDOSIS AND DEAFNESS, ATP6V1B1-RELATED (*ATP6V1B1*) **negative**  
 RENAL TUBULAR ACIDOSIS, PROXIMAL, WITH OCULAR ABNORMALITIES AND MENTAL  
 RETARDATION (*SLC4A4*) **negative**  
 RETINITIS PIGMENTOSA 25 (*EYS*) **negative**  
 RETINITIS PIGMENTOSA 26 (*CERKL*) **negative**  
 RETINITIS PIGMENTOSA 28 (*FAM161A*) **negative**  
 RETINITIS PIGMENTOSA 36 (*PRCD*) **negative**  
 RETINITIS PIGMENTOSA 59 (*DHDDS*) **negative**  
 RETINITIS PIGMENTOSA 62 (*MAK*) **negative**  
 RHIZOMELIC CHONDRODYSPLASIA PUNCTATA, TYPE 1 (*PEX7*) **negative**  
 RHIZOMELIC CHONDRODYSPLASIA PUNCTATA, TYPE 2 (*GNPAT*) **negative**  
 RHIZOMELIC CHONDRODYSPLASIA PUNCTATA, TYPE 3 (*AGPS*) **negative**  
 RLB1-RELATED RETINOPATHY (*RLB1*) **negative**  
 ROBERTS SYNDROME (*ESCO2*) **negative**  
 RYR1-RELATED CONDITIONS (*RYR1*) **negative**

**S**

SALLA DISEASE (*SLC17A5*) **negative**  
 SANDHOFF DISEASE (*HEXB*) **negative**  
 SCHIMKE IMMUNOSKELETAL DYSPLASIA (*SMARCA1*) **negative**  
 SCHINDLER DISEASE (*NAGA*) **negative**  
 SEGAWA SYNDROME, TH-RELATED (*TH*) **negative**  
 SENIOR-LOKEN SYNDROME 4/NEPHRONOPHTHISIS 4 (*NPHP4*) **negative**  
 SEPIAPTERIN REDUCTASE DEFICIENCY (*SPR*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), CD3D-RELATED (*CD3D*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), CD3E-RELATED (*CD3E*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), FOXP1-RELATED (*FOXP1*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), IKKB-RELATED (*IKKB*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), IL7R-RELATED (*IL7R*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), JAK3-RELATED (*JAK3*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), PTPRC-RELATED (*PTPRC*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY (SCID), RAG1-RELATED (*RAG1*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY, ADA-Related (*ADA*) **negative**  
 SEVERE COMBINED IMMUNODEFICIENCY, TYPE ATHABASKAN (*DCLRE1C*) **negative**  
 SHORT-RIB THORACIC DYSPLASIA 3 WITH OR WITHOUT POLYDACTYLY  
 (*DYNC2H1*) **negative**  
 SHWACHMAN-DIAMOND SYNDROME, SBDS-RELATED (*SBDS*) **negative**  
 SIALIDOSIS (*NEU1*) **negative**  
 SJOGREN-LARSSON SYNDROME (*ALDH3A2*) **negative**  
 SMITH-LEMLI-OPITZ SYNDROME (*DHCR7*) **negative**  
 SPASTIC PARAPLEGIA, TYPE 15 (*ZFYVE26*) **negative**  
 SPASTIC TETRAPLEGIA, THIN CORPUS CALLOSUM, AND PROGRESSIVE MICROCEPHALY  
 (*SPATCCM*) (*SLC1A4*) **negative**  
 SPG11-RELATED CONDITIONS (*SPG11*) **negative**  
 SPINAL MUSCULAR ATROPHY (*SMN1*) **negative** *SMN1: Two copies; g.27134T>G: absent; the  
 absence of the g.27134T>G variant decreases the chance to be a silent (2+0) carrier.*  
 SPINAL MUSCULAR ATROPHY WITH RESPIRATORY DISTRESS TYPE 1 (*IGHMBP2*) **negative**  
 SPINOCEREBELLAR ATAXIA, AUTOSOMAL RECESSIVE 10 (*ANO10*) **negative**  
 SPINOCEREBELLAR ATAXIA, AUTOSOMAL RECESSIVE 12 (*WWOX*) **negative**  
 SPONDYLOCOSTAL DYSOSTOSIS 1 (*DLL3*) **negative**  
 SPONDYLOTHORACIC DYSOSTOSIS, MESP2-Related (*MESP2*) **negative**  
 STEEL SYNDROME (*COL27A1*) **negative**  
 STEROID-RESISTANT NEPHROTIC SYNDROME (*NPHS2*) **negative**  
 STUVE-WIEDEMANN SYNDROME (*LIFR*) **negative**  
 SURF1-RELATED CONDITIONS (*SURF1*) **negative**

SURFACTANT DYSFUNCTION, ABCA3-RELATED (*ABCA3*) **negative****T**

TAY-SACHS DISEASE (*HEXA*) **negative**  
 TBCE-RELATED CONDITIONS (*TBCE*) **negative**  
 THIAMINE-RESPONSIVE MEGALOBlastic ANEMIA SYNDROME (*SLC19A2*) **negative**  
 THYROID DYSHORMONOGENESIS 1 (*SLC5A5*) **negative**  
 THYROID DYSHORMONOGENESIS 2A (*TPO*) **negative**  
 THYROID DYSHORMONOGENESIS 3 (*TG*) **negative**  
 THYROID DYSHORMONOGENESIS 6 (*DUOX2*) **negative**  
 TRANSCOBALAMIN II DEFICIENCY (*TCN2*) **negative**  
 TRICHOHEPATOENTERIC SYNDROME, SKIC2-RELATED (*SKIC2*) **negative**  
 TRICHOHEPATOENTERIC SYNDROME, TTC37-RELATED (*TTC37*) **negative**  
 TRICHOthiodystrophy 1/XERODERMA PIGMENTOSUM, GROUP D (*ERCC2*) **negative**  
 TRIMETHYLAMINURIA (*FMO3*) **negative**  
 TRIPLE A SYNDROME (*AAAS*) **negative**  
 TSHR-RELATED CONDITIONS (*TSHR*) **negative**  
 TYROSINEMIA TYPE III (*HPD*) **negative**  
 TYROSINEMIA, TYPE 1 (*FAH*) **negative**  
 TYROSINEMIA, TYPE 2 (*TAT*) **negative**

**U**

USHER SYNDROME, TYPE 1B (*MYO7A*) **negative**  
 USHER SYNDROME, TYPE 1C (*USH1C*) **negative**  
 USHER SYNDROME, TYPE 1D (*CDH23*) **negative**  
 USHER SYNDROME, TYPE 1F (*PCDH15*) **negative**  
 USHER SYNDROME, TYPE 1J/DEAFNESS, AUTOSOMAL RECESSIVE, 48 (*CIB2*) **negative**  
 USHER SYNDROME, TYPE 2A (*USH2A*) **negative**  
 USHER SYNDROME, TYPE 2C (*ADGRV1*) **negative**  
 USHER SYNDROME, TYPE 3 (*CLRN1*) **negative**

**V**

VERY LONG-CHAIN ACYL-CoA DEHYDROGENASE DEFICIENCY (*ACADVL*) **negative**  
 VICI SYNDROME (*EPG5*) **negative**  
 VITAMIN D-DEPENDENT RICKETS, TYPE 1A (*CYP27B1*) **negative**  
 VITAMIN D-RESISTANT RICKETS TYPE 2A (*VDR*) **negative**  
 VLDL-ASSOCIATED CEREBELLAR HYPOPLASIA (*VLDLR*) **negative**

**W**

WALKER-WARBURG SYNDROME, CRPPA-RELATED (*CRPPA*) **negative**  
 WALKER-WARBURG SYNDROME, FKTN-RELATED (*FKTN*) **negative**  
 WALKER-WARBURG SYNDROME, LARGE1-RELATED (*LARGE1*) **negative**  
 WALKER-WARBURG SYNDROME, POMT1-RELATED (*POMT1*) **negative**  
 WALKER-WARBURG SYNDROME, POMT2-RELATED (*POMT2*) **negative**  
 WARSAW BREAKAGE SYNDROME (*DDX11*) **negative**  
 WERNER SYNDROME (*WRN*) **negative**  
 WILSON DISEASE (*ATP7B*) **negative**  
 WOLCOTT-RALLISON SYNDROME (*EIF2AK3*) **negative**  
 WOLMAN DISEASE (*LIPA*) **negative**  
 WOODHOUSE-SAKATI SYNDROME (*DCAF17*) **negative**

**X**

XERODERMA PIGMENTOSUM VARIANT TYPE (*POLH*) **negative**  
 XERODERMA PIGMENTOSUM, GROUP A (*XPA*) **negative**  
 XERODERMA PIGMENTOSUM, GROUP C (*XPC*) **negative**

**Z**

ZELLWEGER SPECTRUM DISORDER, PEX13-RELATED (*PEX13*) **negative**  
 ZELLWEGER SPECTRUM DISORDER, PEX16-RELATED (*PEX16*) **negative**  
 ZELLWEGER SPECTRUM DISORDER, PEX5-RELATED (*PEX5*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX10-RELATED (*PEX10*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX12-RELATED (*PEX12*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX1-RELATED (*PEX1*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX26-RELATED (*PEX26*) **negative**  
 ZELLWEGER SPECTRUM DISORDERS, PEX2-RELATED (*PEX2*) **negative**

**Patient Information**

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**Z**  
ZELLWEGER SPECTRUM DISORDERS, PEX6-RELATED (PEX6) **negative**



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**Testing Methodology, Limitations, and Comments:****Next-generation sequencing (NGS)**

Sequencing library prepared from genomic DNA isolated from a patient sample is enriched for targets of interest using standard hybridization capture protocols and PCR amplification (for targets specified below). NGS is then performed to achieve the standards of quality control metrics, including a minimum coverage of 99% of targeted regions at 20X sequencing depth. Sequencing data is aligned to human reference sequence, followed by deduplication, metric collection and variant calling (coding region +/- 20bp). Variants are then classified according to ACMGG/AMP standards of interpretation using publicly available databases including but not limited to ENSEMBL, HGMD Pro, ClinGen, ClinVar, 1000G, ESP and gnomAD. Variants predicted to be pathogenic or likely pathogenic for the specified diseases are reported. It should be noted that the data interpretation is based on our current understanding of the genes and variants at the time of reporting. Putative positive sequencing variants that do not meet internal quality standards or are within highly homologous regions are confirmed by Sanger sequencing or gene-specific long-range PCR as needed prior to reporting.

Copy Number Variant (CNV) analysis is limited to deletions involving two or more exons for all genes on the panel, in addition to specific known recurrent single-exon deletions. CNVs of small size may have reduced detection rate. This method does not detect gene inversions, single-exonic and sub-exonic deletions (unless otherwise specified), and duplications of all sizes (unless otherwise specified). Additionally, this method does not define the exact breakpoints of detected CNV events. Confirmation testing for copy number variation is performed by specific PCR, Multiplex Ligation-dependent Probe Amplification (MLPA), next generation sequencing, or other methodology.

This test may not detect certain variants due to local sequence characteristics, high/low genomic complexity, homologous sequence, or allele dropout (PCR-based assays). Variants within noncoding regions (promoter, 5'UTR, 3'UTR, deep intronic regions, unless otherwise specified), small deletions or insertions larger than 25bp, low-level mosaic variants, structural variants such as inversions, and/or balanced translocations may not be detected with this technology.

**SPECIAL NOTES**

For ABCC6, sequencing variants in exons 1-7 are not detected due to the presence of regions of high homology.

For CFTR, when the CFTR R117H variant is detected, reflex analysis of the polythymidine variations (5T, 7T and 9T) at the intron 9 branch/acceptor site of the CFTR gene will be performed. Multi-exon duplication analysis is included.

For CYP21A2, targets were enriched using long-range PCR amplification, followed by next generation sequencing. Duplication analysis will only be performed and reported when c.955C>T (p.Q319\*) is detected. Sequencing and CNV analysis may have reduced sensitivity, if variants result from complex rearrangements, in trans with a gene deletion, or CYP21A2 gene duplication on one chromosome and deletion on the other chromosome. This analysis cannot detect sequencing variants located on the CYP21A2 duplicated copy.

For DDX11, sequencing variants in exons 7-11 and CNV for the entire gene are not analyzed due to high sequence homology.

For GJB2, CNV analysis of upstream deletions of GJB6-CRYL1 critical region is included.

For HBA1/HBA2, CNV analysis is offered to detect common deletions of -alpha3.7, -alpha4.2, --MED, --SEA, --FIL, --THAI, --alpha20.5, and/or HS-40. Sequencing and CNV analysis may have reduced sensitivity due to high sequence homology.

For OTOA, sequencing variants in exons 25-29 and CNV in exons 21-29 are not analyzed due to high sequence homology.

For RPGRIP1L, variants in exon 23 are not detected due to assay limitation.

For SAMD9, only p.K1495E variant will be analyzed and reported.

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**Friedreich Ataxia (FXN)**

The GAA repeat region of the FXN gene is assessed by trinucleotide PCR assay and capillary electrophoresis. Variances of +/-1 repeat for normal alleles and up to +/-3 repeats for premutation alleles may occur. For fully penetrant expanded alleles, the precise repeat size cannot be determined, therefore the approximate allele size is reported. Sequencing and copy number variants are analyzed by next-generation sequencing analysis.

**Friedreich Ataxia Repeat Categories**

Categories	GAA Repeat Sizes
Normal	<34
Premutation	34 - 65
Full	>65

**Spinal Muscular Atrophy (SMN1)**

The total combined copy number of SMN1 and SMN2 exon 7 is quantified based on NGS read depth. The ratio of SMN1 to SMN2 is calculated based on the read depth of a single nucleotide that distinguishes these two genes in exon 7. In addition to copy number analysis, testing for the presence or absence of a single nucleotide polymorphism (g.27134T>G in intron 7 of SMN1) associated with the presence of a SMN1 duplication allele is performed using NGS.

Ethnicity	Two SMN1 copies carrier risk before g.27134T>G testing	Carrier risk after g.27134T>G testing	
		g.27134T>G ABSENT	g.27134T>G PRESENT
Caucasian	1 in 632	1 in 769	1 in 29
Ashkenazi Jewish	1 in 350	1 in 580	LIKELY CARRIER
Asian	1 in 628	1 in 702	LIKELY CARRIER
African-American	1 in 121	1 in 396	1 in 34
Hispanic	1 in 1061	1 in 1762	1 in 140

**Variant Classification**

Only pathogenic or likely pathogenic variants are reported. Other variants including benign variants, likely benign variants, variants of uncertain significance, or inconclusive variants identified during this analysis may be reported in certain circumstances. Our laboratory's variant classification criteria are based on the ACMG and internal guidelines and our current understanding of the specific genes. This interpretation may change over time as more information about a gene and/or variant becomes available. Natera and its lab partner(s) may reclassify variants at certain intervals but may not release updated reports without a specific request made to Natera by the ordering provider. Natera may disclose incidental findings if deemed clinically pertinent to the test performed.

**Negative Results**

A negative carrier screening result reduces the risk for a patient to be a carrier of a specific disease but does not completely rule out carrier status. Please visit <https://www.natera.com/panel-option/h-all/> for a table of carrier rates, detection rates, residual risks and promised variants/exons per gene. Carrier rates before and after testing vary by ethnicity and assume a negative family history for each disease screened and the absence of clinical symptoms in the patient. Any patient with a family history for a specific genetic disease will have a higher carrier risk prior to testing and, if the disease-causing mutation in their family is not included on the test, their carrier risk would remain unchanged. Genetic counseling is recommended for patients with a family history of genetic disease so that risk figures based on actual family history can be determined and discussed along with potential implications for reproduction. Horizon carrier screening has been developed to identify the reproductive risks for monogenic inherited conditions. Even when one or both members of a couple screen negative for pathogenic variants in a specific gene, the disease risk for their offspring is not zero. There is still a low risk for the condition in their offspring due to a number of different mechanisms that are not detected by Horizon including, but not limited to, pathogenic variant(s) in the tested gene or in a different gene not included on Horizon, pathogenic variant(s) in an upstream regulator, uniparental disomy, de novo mutation(s), or digenic or polygenic inheritance.

**Additional Comments**

These analyses generally provide highly accurate information regarding the patient's carrier status. Despite this high level of accuracy, it should be kept in mind that there are many potential sources of diagnostic error, including misidentification of samples, polymorphisms, or other rare genetic variants that interfere with analysis. Families should understand that rare diagnostic errors may occur for these reasons.

