Exome Requisition Form

The University of Chicago Genetic Services Laboratories
5841 South Maryland Avenue, Room G701/MC0077, Chicago, IL 60637
Toll Free: 888.824.3637 | Local: 773.834.0555 | Fax: 773.702.9130
ucgslabs@genetics.uchicago.edu | dnatesting.uchicago.edu | CLIA#: 14D0917593 | CAP#: 18827-49

Patient Information

Name: *Last* _____ *First* _____ **Date of Birth:** _____

Gender: ☐ Male ☐ Female **MRN:** _____

Ethnicity: ☐ Caucasian ☐ African-American ☐ Hispanic ☐ Asian ☐ Ashkenazi Jewish ☐ Other _____

Date Sample Drawn: _____ **Specimen Requirements:** 3-10cc blood in an EDTA (purple top) tube DNA samples are only accepted if the DNA extraction or isolation was performed at a CLIA-certified laboratory. Please see our website for other specimen requirements.

Ordering Physician Information

REPORTING RESULTS: Reports will only be faxed out. Please check the boxes below for those who should receive by fax.

☐ **Referring Physician:** _____ ☐ **Genetic Counselor:** _____

Phone: _____ Fax: _____ Phone: _____ Fax: _____

Email: _____ Email: _____

☐ **Referring Lab:** _____

Phone: _____ Fax: _____

Email: _____

Indication for Testing (REQUIRED)

☐ **Symptomatic:** _____ ICD-10: _____

In addition, the following must also be sent with samples for exome sequencing: detailed clinic notes, pedigree, results of prior genetic testing, and brain imaging reports.

Parental Samples

Parental samples are recommended. Send 3-10ccc in EDTA. Please label parental sample with full name and DOB.

MOTHER Date Sample Drawn: _____ ☐ Not Available ☐ To be sent later

Name: *Last* _____ *First* _____ **Date of Birth:** _____

MRN: _____ ☐ **Asymptomatic** ☐ **Symptomatic (attach summary of findings)**

FATHER Date Sample Drawn: _____ ☐ Not Available ☐ To be sent later

Name: *Last* _____ *First* _____ **Date of Birth:** _____

MRN: _____ ☐ **Asymptomatic** ☐ **Symptomatic (attach summary of findings)**

Test Requested (REQUIRED)

☐ Exome Sequencing (Proband only)
☐ Exome Sequencing (Trio) [parent samples required]
☐ STAT Exome Sequencing (Proband only)*
☐ STAT Exome Sequencing (Trio) [parent samples required]*

*Additional charges apply for STAT testing. Please contact UCGSL staff prior to ordering STAT exome testing.

Ordering Checklist

☐ Test Requisition Form *(required)*
☐ Completed Indication for Testing/ICD-10 study code *(required)*
☐ Completed Clinical Checklist *(required)*
☐ Completed Billing Information *(required)*
☐ Completed Exome Consent Form *(required)*
☐ Completed Research Consent Form *(recommended)*

Note: All samples should be shipped via overnight delivery at room temperature to the address at the top of this page. No weekend or holiday deliveries. Label each specimen with the patient's name, date of birth and date sample collected.

For Office Use Only

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Genetic Services
www.dnatesting.uchicago.edu

CLINICAL CHECKLIST - Requisition Form

REQUIRED

Please check all clinical features that apply, and use the additional space provided at the bottom of the form if needed

Perinatal History
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Abnormal prenatal development - please specify:_____
_____

Cognitive / Developmental
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Cognitive impairment (please provide details):_____
☐ Developmental regression
☐ Global developmental delay
☐ Mild ☐ Moderate ☐ Severe
☐ Motor delay
☐ Speech delay

Behavioral
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Autism spectrum disorder
☐ Behavioral / Psychiatric abnormality - please specify: _____

Neurological
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Seizures
☐ Movement abnormality – please specify:
☐ Ataxia
☐ Dystonia
☐ Chorea
☐ Other_____
☐ Encephalopathy
☐ Hypertonia
☐ Hypotonia (muscular)
☐ Spina bifida
☐ Additional findings:
_____

Brain (Structural Anomalies) - please also provide MRI / imaging reports
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Agenesis of corpus callosum
☐ Cortical dysplasia
☐ Cerebellar hypoplasia
☐ Dandy-Walker malformation
☐ Heterotopia
☐ Hydrocephalus
☐ Lissencephaly
☐ Polymicrogyria
☐ Pachygyria
☐ Other: _____

Craniofacial
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Cleft lip and/or palate
☐ Craniosynostosis
☐ Dysmorphic facies
Specify: _____
☐ Macrocephaly, HC: _____
☐ Microcephaly, HC: _____

Hearing/Vision
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Vision abnormality – please specify
_____
☐ Hearing impairment – please specify
_____
☐ Other: _____

Growth
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Failure to thrive
☐ Overgrowth
☐ Short stature
☐ Hemihypertrophy
☐ Other: _____

Gastrointestinal (GI)
☐ YES (see below) ☐ NO ☐ UNKNOWN
please specify:
_____

Cutaneous
☐ YES (see below) ☐ NO ☐ UNKNOWN
please specify:
_____

Cardiac
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Arrhythmia
☐ Heart malformation – please specify:
_____
☐ Other: _____

Hematologic/Immunologic
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Immunodeficiency
☐ Anemia/neutropenia/pancytopenia
☐ Other: _____

Musculoskeletal
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Congenital diaphragmatic hernia
☐ Digital abnormality – please specify:
(Poly / Oligo / Other: _____)
☐ Limb abnormality – please specify:
_____
☐ Limb joint contracture(s)
☐ Scoliosis
☐ Other: _____

Genitourinary
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Genital system abnormality - please specify: _____
☐ Kidney abnormality - please specify:
_____
☐ Other: _____

Family History
☐ YES (see below) ☐ NO ☐ UNKNOWN
☐ Parents with 2 or more miscarriages
☐ Other relatives with similar clinical history (please include detailed pedigree)

Please include any additional relevant clinical information here:

In addition to this checklist, the following must also be sent with samples for exome sequencing: detailed clinic notes, pedigree, results of prior genetic and metabolic testing, and brain imaging reports.

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BILLING OPTIONS

All samples received with incomplete billing information will delay processing time.
Test cancelled while "in progress" will be billed for the amount of work completed up to that point.
*Please forward all billing questions to: youtlaw@bsd.uchicago.edu or call (**773-834-8220**).*

Patient Name: *Last* _____ *First* _____ (MI): _____ Date of Birth: _____

1.) Institutional Billing *(Pre-payment is required for all samples referred from outside the US or Canada.)*

Billing Institution: _____ PO#: _____

Financial Contact: _____ Phone: _____ Fax: _____

Address: _____ City: _____ State: _____ Zip: _____

Email (required): _____

2.) Self-Pay

We accept all major credit cards, including Discover, Visa, Mastercard and AMEX. Please call our office (773-834-8220) for credit card processing.
Important notice: *We will not be responsible for refunding any "cost differential" that may occur as a result of a patient seeking any type of reimbursement.*

☐ Wire Transfer (Please include 'Genetics Services Laboratories' and invoice numbers to ensure proper receipt.)
Electronic funding information, as follows: The Northern Trust Bank **– (Physical Address)** 50 S. LaSalle Street, Chicago, IL 60675
ABA/Routing No.: 071000152, International SWIFT Code: CNORUS44, University of Chicago Wire Account No.: 28509

Amount $_____(USD) Date of Transfer: _____ Name of Institution: _____

☐ Check/Money Order **(Make check/money order payable to: *The University of Chicago Genetic Services*)** Amount Enclosed $_____
(Please note: All bank fees for returned checks will be added to the original charge of patient invoice)

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EXOME CONSENT FORM – The University of Chicago

The Division of Biological Sciences | University of Chicago Medical Center

REQUIRED

Patient Name :_____

Date of Birth: _____

Overview

The UCGS Exome Sequencing Test attempts to evaluate the protein-coding regions of the human genome, which represents approximately 20,000 genes. These regions of DNA are referred to as 'exome'. The exome accounts for approximately 2% of the genome and comprises the majority of DNA variations that cause human disease. Exome sequencing is a useful and powerful tool for diagnostic applications and has been utilized to identify mutations in disorders that are both genetically and phenotypically heterogeneous and to identify mutations in genes associated with Mendelian disorders. The purpose of this test is to identify the underlying molecular basis of the disorder in this patient's family.

Accuracy

The studies performed are specific to the clinical features/suspected diagnosis indicated.

Accurate interpretation of test results may require an accurate report of the patient's family medical history, and that the reported family relationships are the true biological relationships.

There is always a small possibility of an error or failure in sample analysis; this is always a possibility with complex testing in any laboratory. Extensive measures are taken to avoid these errors.

The accuracy of genetic testing is limited by the methods employed, and sometimes by the nature of the condition for which testing is requested.

Limitations

Not all the exons in the genome are targeted and captured due to certain inherent characteristics of the genome. Approximately 90-95% of exons are targeted at a minimum depth of 30X in the diagnostic exome test. In addition, there is limited or no coverage in regions outside of the exome.

Certain types of mutations are not detectable by this test. This methodology will not detect low level mosaicism, copy number variation (i.e such as the deletion or duplication of an exon) and trinucleotide repeat expansions. Other types of rare genetic variation can interfere with this analysis.

Pathogenic variants may be present in a region of a gene not covered by this test. Absence of findings for any particular gene does not mean that there are no pathogenic variants present in that gene.

It is the responsibility of the referring physician, or a health care professional designated by the physician, to understand the limitations of the testing ordered, and to educate the patient regarding these limitations.

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Testing & Analysis Pipeline

Of the thousands of variants identified by exome sequencing, a list of variants in genes that could potentially be related to the phenotype in the patient is generated. Most variants identified will NOT undergo interpretation by a laboratory member. Only those variants identified as potentially relevant to the patient's condition are reviewed by a team of Board-Certified PhD geneticists, MD geneticists, and genetic counselors who will determine the likelihood of the variant being related to the disorder.

Parental Analysis

Biological parental samples are requested in order to facilitate the interpretation of results. Exome sequencing will be performed on parental samples. A separate parental report will not be issued.

Genetic studies of families can sometimes reveal that the true biological relationships are not consistent with the relationships reported in the family history (such as in cases of adoption or non-paternity). It is this laboratory's policy NOT to report these findings, except in rare circumstances in which the findings indicate a medical or reproductive risk for which intervention is possible. These decisions will be made by the laboratory directors in consultation with medical, counseling and legal professionals as well as medical professionals trained in ethics (moral questions) who will determine the most appropriate means of conveying the information.

What is Reported?

UCGS will report on genetic variants that have been reported to be pathogenic, predicted to be pathogenic, possibly pathogenic as well as unclassified variants in established genes for the clinical features/suspected condition indicated for the patient. In addition, truncating pathogenic variants and variants that have been previously reported to be pathogenic or possibly pathogenic in genes hypothesized to be related to the cause of the patient's phenotype will also be reported.

What is Not Reported?

- Benign sequence changes not associated with disease and are commonly identified in healthy people.
- Synonymous (silent) sequence changes not associated with a change in the amino acid sequence.
- Variations associated with increased or decreased risk to develop common disorders (like high blood pressure) or involved in drug metabolism. Variations that have been associated with an increased risk for diseases that might present at an advanced age (like Alzheimer's Disease) in which there is no treatment or preventative measures.
- Heterozygous unclassified variants associated with a recessive disorder unless a deleterious mutation or a second unclassified variant in the same gene is also detected.
- Pathogenic mutations and variants in genes with no current known association with disease.

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EXOME CONSENT FORM – The University of Chicago

The Division of Biological Sciences | University of Chicago Medical Center

REQUIRED

Carrier Status of Recessive Disorders for Reproductive Screening

Every individual is a carrier of anywhere from 0 to 10 mutations in genes known to cause significant human disease. Carriers are typically unaffected, but are at risk of transmitting these mutations to their future offspring. Recurrence risk for carrier parents of the same human disease is 25%. The UCGS Exome is not meant to be utilized as a comprehensive carrier test as an individual may be a carrier of type of mutation not screened for by this test or may be a carrier of a condition in which there was little or no coverage for. UCGS will report pathogenic variants in the following conditions: Bloom syndrome, Canavan disease, Cystic Fibrosis, Familial Dysautonomia, Fanconi Anemia type C, Gaucher disease type 1, Hb Beta Chain Related Hemoglobinopathy (Beta Thalassemia & Sickle Cell Disease, Tay Sachs disease, Mucolipidosis IV, Niemann Pick Type A

Please read the below statement carefully and initial the appropriate box. If neither box is checked, the lab will default to the YES/reporting option.

Initial

☐ YES, please report carrier status. By checking this box, I choose to receive information regarding carrier status

☐ NO, please do NOT report carrier status. By checking this box, I choose NOT to receive information regarding carrier status

Secondary Findings

The American College of Medical Genetics and Genomics (ACMG) recommends a minimal list of secondary findings to report from clinical sequencing. All of the included disorders are rare and were selected because preventative measures and/or treatments are available. Many individuals with pathogenic variants in these conditions might be asymptomatic for long periods of time. UCGS will report pathogenic variants in 59 genes as recommended by the ACMG. For further information please refer to the ACMG Recommendations for reporting of secondary findings in clinical exome and genome sequencing, 2016

Request to Opt-out of Receiving Secondary Findings as Recommended by ACMG

UCGS is giving patients the option of opting out of receiving the above secondary findings recommended by ACMG.
Please read the below statements carefully. Only sign and date the below if you wish to opt out of receiving unrelated secondary findings as recommended by ACMG

I choose NOT to receive information about secondary findings in the 59 genes recommended by ACMG.
Patient or Legally Authorized Representative:

_____

Date: _____

If Legally Authorized Representative please describe relationship to individual:

_____

Implication of Results

Because the implications of genetic testing results can be complex, involving both medical and emotional and social issues, results will only be reported through the referring physician or a professional designated by the physician, such as a genetic counselor. The issues associated with some types of genetic testing are particularly sensitive. Therefore, the laboratory reserves the right to provide testing only if genetic counseling can be provided.

Confidentiality

Results and patient information are confidential and will only be released to the referring physician, unless written consent for further distribution is provided or the laboratory directors are required by law to release this information. For patients within The University of Chicago affiliated centers, policy may require that reports are provided to the medical records department.

Consent For Exome Sequencing

Signature of Parent/Guardian/
Legally Authorized Representative:

_____

Date: _____

If Legally Authorized Representative please describe relationship to individual:

_____

Referring Clinician

By signing this consent form, the referring clinician 1) indicates that this consent form has been reviewed with the patient and/or the patient's parent or guardian, and 2) accepts responsibility for pre- and post- test genetic counseling.

Signature of Referring Clinician:

_____

Date: _____

CONSENT/AUTHORIZATION BY SUBJECT FOR PARTICIPATION IN A RESEARCH PROTOCOL FOR THE BETTER UNDERSTANDING OF THEIR GENETIC CONDITION

Protocol Number: 11-0151

Name of Subject :_____

Date of Birth: _____

STUDY TITLE: Molecular Genetic Studies of Rare Orphan Genetic Disease

Research Team: Soma Das, Ph.D.
5841 S. Maryland Ave. Room L-155 MC 0077, Chicago, IL 60637
773-834-0555

You are being asked to allow your child to participate in a research study that may help us learn more about the genetic condition for which you are being tested. This consent form describes the study, the risks and benefits of participation, as well as how your confidentiality will be maintained. Please take your time to contact us with questions and feel comfortable making a decision whether to participate or not. If you decide to participate in this study, please sign this form**. Throughout this consent form, "you" will refer to you or your child, as appropriate.**

WHY IS THIS STUDY BEING DONE?

You have already consented to clinical genetic testing. We are asking you to also participate in further studies. The purpose of these studies is to learn more about the genetic cause of diseases tested for in our lab, gather more information about these disorders, and experiment with new methods that may be better for testing.

WHAT IS INVOLVED IN THE STUDY?

During this study, Dr. Das and her team will collect information about you for this research. We may contact your doctor to request additional Protected Health Information (PHI), which consists of any health information related to your diagnosis (such as date of birth, medical record number, primary diagnosis, clinical features, relevant and family history, outcome). The data collected will be used to develop a database of patients being tested for genetic diseases and will be kept for the duration of the database. This study will look at how often different genetic mutations happen and clinical information related to the mutation.

When our lab is researching new genes or testing methods that are related to your diagnosis, we may include your sample, with others from similar patients in a small study before offering this new test. This data will help in directing doctors about the likelihood of a positive or negative test result in their patient. We may also use your sample to set up new methods that will improve the clinical testing in our laboratory. Your clinical information and sample, without any identifiers, may also be shared with other researchers that are interested in this specific condition.

HOW LONG WILL I BE IN THE STUDY?

Once enrolled, you will likely remain in this study as long as your DNA sample remains in our laboratory. If you want your sample, to be removed from the study at any time, please contact us, and the sample will not be used for further studies. Existing results will remain in our database until the study ends.

WHAT ARE THE RISKS OF THE STUDY?

There are no known added risks of the research. No additional information will be obtained from you, as all of the information has already been collected as part of clinical genetic testing or evaluation by your doctor.

ARE THERE ANY BENEFITS TO TAKING PART IN THE STUDY?

If you agree to take part in this study, there may be direct medical benefit to your family. We may identify a cause for the genetic disease in your family. If a mutation is identified in your DNA, through our testing, your referring doctor will be notified and will receive a clinical report. Our study may also be helpful in finding the genetic causes of disease and will benefit doctors and patients as a group.

WHAT OTHER OPTIONS ARE THERE?

You may choose not to participate.

WHAT ARE THE COSTS?

There will be no additional costs to you or your insurance company resulting from this research study. However, you or your insurance company will be responsible for costs related to your usual medical care.

WILL I BE PAID FOR MY PARTICIPATION?

You and your child will not be paid to participate.

WHAT ABOUT PRIVACY?

Study records that identify you will be kept private. All of your personal information will be entered into a password-protected database to prevent access to non-authorized personnel. If your data is shared with other researchers, all patient identifiers will be removed. Data from this study may be used in medical journals or presentations. If results from this study or related studies are made public in a medical journal, individual patients will not be identified. If we wish to use a patient's identity in a medical journal, we will ask for your permission at that time.

As part of the study, Dr. Das and her team will report any positive results of further testing to your referring doctor and/or genetic counselor. Dr. Das may also share these results, without your name or date of birth, with other researchers.

People from the University of Chicago, including the Institutional Review Board (IRB), a committee that oversees research at the University of Chicago, may also view the records of the research. If health information is shared outside the University of Chicago, the same laws that the University of Chicago must obey may not protect your health information. Dr. Das does not have to give you any results that are not are not important to your health or your family's health at that time.

This consent form will be kept by the research team for at least six years. The study results will be kept in your child's research record and be used by the research team indefinitely. When the study ends, your personal information will be removed from all results. Any information shared with your doctor may be included in your medical record and kept forever.

WHAT ARE MY RIGHTS AS A PARTICIPANT?

Taking part in this study is optional. You may choose not to participate at any time during the study. Choosing not to participate or leaving the study will not affect your clinical testing at the University of Chicago.

If you choose to leave the study and you do not want any of your future health information to be used, you must inform Dr. Das in writing at the address on the first page. Dr. Das may still use your information that was collected before your written notice. You will be given a signed copy of this form. This consent form does not have an expiration date.

WHO DO I CALL IF I HAVE QUESTIONS OR PROBLEMS?

If you have further questions about the study, please call 773-834-0555.

If you have any questions about your rights in this research study you may contact the IRB, which protects participants in research projects. You may reach the Committee office between 8:30 am and 5:00 pm, Monday through Friday, by calling (773) 702-6505 or by writing: IRB, University of Chicago, 5751 S. Woodlawn Ave., McGiffert Hall, Chicago, Illinois 60637.

Consent

I have received information about this research project and the procedures. No guarantee has been given about possible results. I will receive a signed copy of this consent form for my records.

I give my permission to participate in the above research project.

Signature of Subject:_____

Date: _____

I give my permission for my child/relative/the person I represent to participate in the above research project.

Signature of Parent / Legal Guardian / Legally Authorized Representative:

_____

Date: _____