



THE HOSPITAL FOR
SICK CHILDREN
Paediatric
Laboratory Medicine

555 University Avenue
Room 3416, Roy C. Hill Wing
Toronto, ON, M5G 1X8, Canada
Tel: 416-813-7200 x1
Fax: 416-813-7732
(CLIA # 99D1014032)

Genome Diagnostics

www.sickkids.ca/en/care-services/for-health-care-providers/lab-testing-services

Testing is provided for medical purposes only and results are not intended for forensic use. The laboratory is not a forensically accredited laboratory.

Referring Physician (required):

Name: _____

Facility/Ward/Clinic (required): _____

Address: _____

Phone: _____ Fax: _____

Email address: _____

Signature: _____

Copy Report To Another Healthcare Provider (all information is required):

Name: _____

Address: _____

Phone: _____ Fax: _____

Sample Information (required):

Date obtained (DD/MM/YYYY): _____ Referring

Laboratory reference #: _____

Blood in EDTA (purple top tube): min. 4 mL (0.5-3 mL for newborns)
 DNA: min. 10 ug in low TE buffer (Source: _____)
 * Unable to perform MLPA analysis on externally extracted DNA (contact lab)
 Direct CVS: min. 10 mg direct villi
 Cultured villi: 1 flask at 60-70% confluence and 1 flask at 80-90% confluence
 Cultured amniocytes: 1 flask at 60-70% confluence and 1 flask at 80-90% confluence
 Tissue (Source: _____)
 Other (Specify: _____)

Closed consent:
 (If checked, all remaining DNA will be discarded upon notification by the ordering physician that all DNA testing has been completed)

Laboratory Use:

Date (DD/MM/YYYY) | Time Received:

_____ - _____ | _____ h

Lab/Order #: _____

Specimen type, amt & # of tubes: _____

Comments:

Pedigree/Family No./Patient/Order No. _____ / _____

Patient Name:

Preferred Name (if different):

Date of Birth (DD/MM/YYYY):

Legal Sex: Male Female Non-binary/U/X

Sex Assigned at Birth (if different): Male Female Unassigned

Gender Identity: Male Female Non-binary/U/X

MRN:

Parent's Name:

Address:

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Provincial Health Card #:

Version:

Issuing Province:

Reason for Testing (required):

Diagnosis Carrier testing
 Familial mutation/variant analysis Prenatal testing
 Parental sample Variant re-assessment
 Other (Specify): _____

If expedited testing is requested, indicate reason:

Pregnancy (Gestational age (weeks)) _____
 Other (Specify): _____

Familial Mutation / Targeted Variant Analysis:

*If proband testing was performed elsewhere, a copy of the original report (all pages) is required. Send a positive control sample if available.

Gene & NM #: _____

Mutation/variant(s): _____

SickKids Laboratory/Order number: _____

SickKids Pedigree/Family number: _____

Name of proband: _____

Relationship to proband: _____

Name(s) & DOB of other submitted family members: _____

Clinical Diagnostics and Family History (required):

Draw or attach a pedigree and provide any relevant information below, including clinical and family history details, as this is important for accurate interpretation of results.

Ethnicity: _____

Ordering Checklist:

Specimen tube labeled with at least two identifiers
 Completed test requisition form
 Clinical information must be provided for all tests. Pages 4-5 must be completed for all tests. Testing will not proceed until these are provided.
 Proband's report and positive control (familial/targeted variant testing only)
 Completed billing form (page 6, if applicable)

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LIST OF TESTS AVAILABLE BY DISEASE

For prenatal testing and cases where a familial mutation/variant is known, include information on page 1

22q11 Deletion Syndrome

22q11 deletion/duplication analysis (external DNA not accepted)

Angelman Syndrome

Methylation and deletion/duplication analysis (external DNA not accepted)
 UPD15 analysis (please submit parental samples)

Ashkenazi Jewish Carrier Screening

Recurrent mutation analysis (7 diseases):
 Bloom syndrome, Canavan disease, Familial Dysautonomia, Fanconi Anemia Group C, Mucolipidosis Type IV, Niemann-Pick disease, Tay-Sachs disease

ETHNICITY (required):

Ashkenazic Sephardic French Canadian Cajun
 Non-Jewish Other _____

Autoinflammatory Disease *

Clinical information must be provided on pages 4 and 5

Autoinflammatory Diseases NGS panel
 (excludes Recurrent Fever panel genes)
 Recurrent Fever Syndrome NGS panel
 MEFV (FMF), MVK, NLRP12, NLRP3, TNFRSF1A
 Hemophagocytic Lymphohistiocytosis NGS panel
 Aicardi-Goutieres Syndrome NGS panel
 Deletion/duplication analysis

Becker Muscular Dystrophy

DMD deletion/duplication analysis (external DNA not accepted)
 DMD sequence analysis

Beckwith-Wiedemann Syndrome

IC1 and IC2 methylation† and 11p15 deletion/duplication analysis (external DNA not accepted)
 UPD11 analysis (parental sample required)
 CDKN1C sequence analysis
 † No methylation analysis on CVS samples

Bone Marrow Transplantation

Post-transplant monitoring

Cancer Related Tests

Li-Fraumeni Syndrome

TP53 sequence analysis
 TP53 deletion/duplication analysis (external DNA not accepted)

Rhabdoid Tumour Predisposition Syndrome

SMARCB1 sequence analysis
 SMARCB1 deletion/duplication analysis (external DNA not accepted)

Patient Name:

Preferred Name (if different):

Date of Birth (DD/MM/YYYY):

Legal Sex: Male Female Non-binary/U/X

Sex Assigned at Birth (if different): Male Female Unassigned

Gender Identity: Male Female Non-binary/U/X

MRN:

Parent's Name:

Address:

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Connective Tissue Disease *

Clinical information must be provided on pages 4 and 5

If more than one panel is requested, rationale must be provided on page 5.

Ehlers Danlos Syndrome panel
 Osteogenesis Imperfecta panel
 Osteopetrosis and Disorders of Increased Bone Density panel
 Bone Involvement panel
 Deletion/duplication analysis

Craniosynostosis

Apert Syndrome (FGFR2 recurrent mutations analysis)
 Crouzon Syndrome (FGFR2, FGFR3 recurrent mutation analysis)
 Pfeiffer Syndrome (FGFR1, FGFR2, FGFR3 recurrent mutation analysis)
 Saethre-Chotzen Syndrome (TWIST1 sequence analysis and FGFR3 recurrent mutation analysis)
 Non-Syndromic Craniosynostosis (FGFR3 recurrent mutation analysis)
 TWIST1 deletion/duplication analysis (external DNA not accepted)

Cystic Fibrosis and/or CFTR-Related Disorders **

Indication (provide additional clinical details on page 1 and/or pages 4-5):

Fetal echogenic bowel (ensure parental samples are linked to each other on both requisitions with at least two identifiers)
 Clinical diagnosis of cystic fibrosis
 CFTR-related disorders
 Male factor infertility: oligo/azoospermia C(B)AVD
 Family history of cystic fibrosis
 Positive newborn screen (ensure familial samples are linked to each other on all requisitions with at least two identifiers; send NSO report)

Tests (indication specific):

CFTR recurrent mutation analysis
 CFTR sequence analysis
 CFTR deletion/duplication analysis (external DNA not accepted)

Duchenne Muscular Dystrophy

DMD deletion/duplication analysis (external DNA not accepted)
 DMD sequence analysis
 DMD mRNA analysis (contact the laboratory before ordering)

Fabry Disease

GLA sequence analysis
 GLA deletion/duplication analysis (external DNA not accepted)
 GLA mRNA analysis (contact the laboratory before ordering)

Fragile X Syndrome & FMR1-related disorders

Fragile X syndrome
 Fragile X-associated primary ovarian insufficiency
 Fragile X-associated tremor ataxia syndrome (FXTAS)

Fragile X E Syndrome ***

AFF2 trinucleotide repeat analysis (See testing requirements)

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LIST OF TESTS AVAILABLE BY DISEASE

For prenatal testing and cases where a familial mutation/variant is known, include information on page 1

Hereditary Hearing Loss *

Clinical information must be provided on pages 4 and 5

When the Common and Non-Syndromic Hearing Loss Panel is requested, STRC dosage is tested.

- Common and Non-Syndromic Hearing Loss panel
- Usher Syndrome panel
- Stickler Syndrome panel
- Alport Syndrome
- Norrie Syndrome, Treacher Collins Syndrome, Waardenburg Syndrome
- Deletion/duplication analysis

Hereditary Hemorrhagic Telangiectasia

- ACVRL1 sequence analysis
- ENG sequence analysis
- ACVRL1 and ENG deletion/duplication analysis (external DNA not accepted)
- SMAD4 sequence analysis

Hereditary Spastic Paraparesis *

Clinical information must be provided on pages 4 and 5

- Comprehensive HSP (AR/AD/XL) panel including deletion/duplication analysis

Identity Testing

- Zygosity studies
- Maternal cell contamination studies (maternal sample required)

Neurofibromatosis type 1/Legius syndrome *

Clinical information must be provided on pages 4 and 5

- NF1 sequence analysis
- NF1 deletion/duplication analysis (external DNA not accepted)
- SPRED1 sequence analysis
- SPRED1 deletion/duplication analysis (external DNA not accepted)

Patient Name:

Preferred Name (if different):

Date of Birth (DD/MM/YYYY):

Legal Sex: Male Female Non-binary/U/X

Sex Assigned at Birth (if different): Male Female Unassigned

Gender Identity: Male Female Non-binary/U/X

MRN:

Parent's Name:

Address:

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Noonan Syndrome and RASopathies *

Clinical information must be provided on pages 4 and 5

- Noonan Syndrome and RASopathies panel
- Deletion/duplication analysis for SPRED1 only (external DNA not accepted)

Prader-Willi Syndrome

- Methylation and deletion/duplication analysis (external DNA not accepted)
- UPD15 analysis (parental samples required)

Renal Diseases

- Atypical Hemolytic Uremic Syndrome / Membranoproliferative Glomerulonephritis sequence analysis
- Focal Segmental Glomerulosclerosis sequence analysis

Russell-Silver Syndrome

- IC1 methylation and 11p15 deletion/duplication analysis (external DNA not accepted)
- UPD7 analysis (parental samples required)

Shwachman-Diamond Syndrome

- SBDS sequence analysis

Simpson-Golabi-Behmel Syndrome

- GPC3 sequence analysis and GPC3 and GPC4 deletion/duplication analysis (external DNA not accepted)

Skeletal Dysplasia

- Achondroplasia (FGFR3 recurrent mutation analysis)
- Hypochondroplasia (FGFR3 recurrent mutation analysis)
- Thanatophoric Dysplasia (FGFR3 recurrent mutation analysis)

Spinal and Bulbar Muscular Atrophy

- AR trinucleotide repeat analysis

Spinal Muscular Atrophy

- SMN1 and SMN2 deletion/duplication analysis (external DNA not accepted)

X-Inactivation Analysis

- Other (PRIORITY APPROVAL REQUIRED; CONTACT LABORATORY):

** For information on the testing algorithm for Cystic Fibrosis, visit <https://www.sickkids.ca/en/care-services/for-health-care-providers/lab-tests/244-Cystic-Fibrosis/> on our website

*** For information on the testing requirement for Fragile X E, visit the Specimen Requirements section for Fragile X E Syndrome on our website:

www.sickkids.ca/en/care-services/for-health-care-providers/lab-tests/250-FRAXE

*Next-Generation Sequencing (NGS) testing will only be initiated if the clinical information sections (pages 4-5) are completed. For more information on our Next-Generation Sequencing (NGS) panels, including the list of genes tested, visit our website: www.sickkids.ca/en/care-services/for-health-care-providers/lab-testing-services

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DISEASE SPECIFIC FEATURES

Autoinflammatory Disorders (RFS/AID/HLH/AGS)

- Abnormal inflammatory response
- Fevers
- Arthritis
- Pulmonary complications
- Gastrointestinal irritation
- Hepatosplenomegaly
- Lymphadenopathy
- Hemophagocytosis
- Oral ulcers
- Rash, specify: _____
- Ocular inflammation specify: _____
- Edema (periorbital, optic disk)
- Vision loss
- Other: _____

Hearing Loss

- Age of onset: _____
- Sensorineural hearing loss
- Conductive hearing loss
- Mixed hearing loss
- Bilateral
- Syndromic
- Ear anomalies
- Eye anomalies
- White forelock
- Hirschsprung disease
- Other: _____
- Unilateral
- Non-syndromic
- Ear tags
- Renal anomalies
- Cardiac anomalies

Hereditary Spastic Paraparesis (HSP)

- Abnormal corpus callosum
- Cognitive impairment
- Ataxia
- Hyperreflexia
- Hypertonia
- Dystonia
- Extensor plantar reflex
- Other: _____
- Spasticity
- Seizures
- Hypotonia
- Dysarthria

The following investigations are required before molecular testing of HSP is undertaken:

- MRI – Brain and spinal cord
- Biochemical testing - Vitamin B12, vitamin E, very long chain fatty acids, lysosomal work-up, plasma amino acids and serum lipoprotein analysis (as appropriate)

Neurofibromatosis type 1 (NF1) / Legius Syndrome

- The patient meets the NIH criteria for a clinical diagnosis of NF1 (>2 of the clinical features below).
- Café-au-lait macules ≥6 CALS (#: _____)
- Neurofibromas, ≥ 2 or ≥ 1 Plexiform
- Freckling, axillary or inguinal
- Optic glioma
- ≥2 Lisch nodules (iris hamartomas)
- Osseous lesion (type: _____)
- First degree relative diagnosed with NF1 by above criteria
- Other: _____
- The patient does not meet the NIH diagnostic criteria for NF1.

Rationale for testing must be provided on page 5.

Noonan Syndrome and RASopathies

- Increased nuchal translucency
- Developmental delay
- Characteristic facies
- Broad or webbed neck
- Heart defect (specify: _____)
- Hypertrophic cardiomyopathy
- Short stature (%ile: _____)
- Pectus deformity
- Lymphatic dysplasias
- Characteristic hematological abnormality (specify: _____)
- Other RASopathy features (specify: _____)
- For postnatal patients: The patient must present with ≥ 2 of the above features for molecular testing to be undertaken.

Connective Tissue Disorders (CTD)

Ehlers Danlos Syndrome (EDS)

Indicate the suspected clinical diagnosis in the patient:

- Classic
- Vascular
- Kyphoscoliotic
- Other: _____

Note: Genetic testing is not offered for joint hypermobility alone. If testing is requested for joint hypermobility, provide rationale on page 5.

Check applicable CTD features below.

Osteopetrosis and Disorders of Increased Bone Density

Check applicable CTD features below.

CTD Related Clinical Features:

- Joint hypermobility: Beighton score: _____
- Arterial aneurysms, dissection or rupture
- Intestinal rupture
- Molluscoid pseudotumors
- Subcutaneous spheroids
- Loose/stretchable skin
- Smooth/velvety skin
- Widened atrophic scars

Osteogenesis Imperfecta (OI)

If the patient does not present with one of the test indications below, rationale for testing must be provided on page 5.

- Fetal findings on anatomy ultrasound consistent with OI.
- Fractures with minimal or no trauma in the absence of other known disorders of bone metabolism.
- Vertebral fractures
- Dentinogenesis imperfecta
- Low ALP for age/gender (ALPL gene analysis only will be performed – not eligible for full panel)

Check applicable CTD features below.

Bone Involvement

Check applicable CTD features below.

- Recurrent spontaneous tendon rupture
- Easy bruising
- Myopia
- Lens dislocation
- Blue/gray sclerae
- Thumb or wrist sign
- Club foot
- Scoliosis
- Marfanoid habitus
- Short stature
- Shortened long bones

- Recurrent pneumothoraces
- Joint subluxations/dislocations
- Fractures
- Bone deformity
- Wormian bones
- Increased bone mineral density
- Diaphyseal sclerosis
- Hearing loss
- Osteosclerosis
- Other: _____

FAMILY HISTORY (Required)

Draw or attach a pedigree and provide any relevant information below, including clinical and family history details, as this is important for accurate interpretation of results.

Ethnicity: _____

Genome Diagnostics

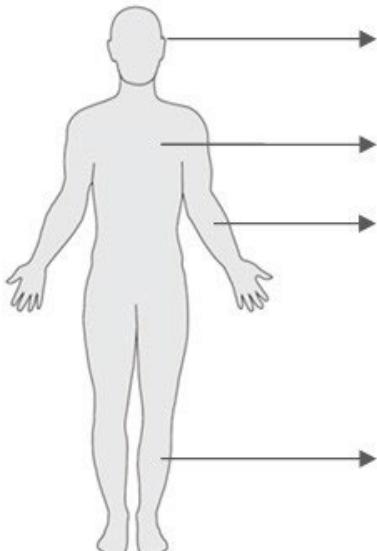
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ADDITIONAL RELEVANT CLINICAL INFORMATION

Previous Genetic Testing

No
 Yes – Test Results: _____



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GENERAL CLINICAL FEATURES			
Perinatal history <p><input type="checkbox"/> Premature birth <input type="checkbox"/> IUGR <input type="checkbox"/> Oligohydramnios <input type="checkbox"/> Polyhydramnios <input type="checkbox"/> Other: _____</p> Growth <p><input type="checkbox"/> Failure to thrive <input type="checkbox"/> Growth retardation/short stature <input type="checkbox"/> Overgrowth <input type="checkbox"/> Macrocephaly <input type="checkbox"/> Microcephaly <input type="checkbox"/> Other: _____</p> Physical/cognitive development <p><input type="checkbox"/> Delayed fine motor development <input type="checkbox"/> Delayed gross motor development <input type="checkbox"/> Delayed speech and language <input type="checkbox"/> Autistic behavior <input type="checkbox"/> Intellectual disability <input type="checkbox"/> Developmental regression <input type="checkbox"/> Other: _____</p> Behavioral <p><input type="checkbox"/> Autistic features <input type="checkbox"/> Obsessive-compulsive disorder <input type="checkbox"/> Other psychiatric symptoms <input type="checkbox"/> Other: _____</p> Cancer/Malignancy <p><input type="checkbox"/> Age of onset: _____ <input type="checkbox"/> Tumor type: _____ <input type="checkbox"/> Location(s): _____</p>	Craniofacial/Ophthalmologic <p><input type="checkbox"/> Abnormal face shape <input type="checkbox"/> Blindness <input type="checkbox"/> Cataracts <input type="checkbox"/> Coloboma <input type="checkbox"/> Optic atrophy <input type="checkbox"/> Ophthalmoplegia <input type="checkbox"/> Ptosis <input type="checkbox"/> Retinitis pigmentosa <input type="checkbox"/> Oral cleft <input type="checkbox"/> Other: _____</p> Brain malformations/abnormal imaging <p><input type="checkbox"/> Abnormality of the basal ganglia <input type="checkbox"/> Agenesis of the corpus callosum <input type="checkbox"/> Brain atrophy <input type="checkbox"/> Cortical dysplasia <input type="checkbox"/> Hemimegalencephaly <input type="checkbox"/> Heterotopia <input type="checkbox"/> Holoprosencephaly <input type="checkbox"/> Hydrocephalus <input type="checkbox"/> Lissencephaly <input type="checkbox"/> Periventricular leukomalacia <input type="checkbox"/> Other: _____</p> Cardiac/congenital heart malformations <p><input type="checkbox"/> ASD <input type="checkbox"/> VSD <input type="checkbox"/> Coarctation of aorta <input type="checkbox"/> Hypoplastic left heart <input type="checkbox"/> Tetralogy of Fallot <input type="checkbox"/> Cardiomyopathy <input type="checkbox"/> Arrhythmia/conduction defect <input type="checkbox"/> Other: _____</p>	Gastrointestinal <p><input type="checkbox"/> Gastroschisis/omphalocele <input type="checkbox"/> Gastrointestinal reflux <input type="checkbox"/> Pyloric stenosis <input type="checkbox"/> Tracheoesophageal fistula <input type="checkbox"/> Hepatic failure <input type="checkbox"/> Chronic intestinal pseudo-obstr. <input type="checkbox"/> Hirschsprung disease <input type="checkbox"/> Recurrent vomiting <input type="checkbox"/> Chronic diarrhea <input type="checkbox"/> Constipation <input type="checkbox"/> Other: _____</p> Genitourinary abnormalities <p><input type="checkbox"/> Ambiguous genitalia <input type="checkbox"/> Cryptorchidism <input type="checkbox"/> Hypospadias <input type="checkbox"/> Hydronephrosis <input type="checkbox"/> Kidney malformation <input type="checkbox"/> Renal agenesis <input type="checkbox"/> Proximal renal tubulopathy <input type="checkbox"/> Other: _____</p> Endocrine <p><input type="checkbox"/> Diabetes mellitus Type 1 <input type="checkbox"/> Diabetes mellitus Type 2 <input type="checkbox"/> Hypothyroidism <input type="checkbox"/> Hypoparathyroidism <input type="checkbox"/> Pheochromocytoma/paraganglioma <input type="checkbox"/> Other: _____</p>	Neurological/Muscular <p><input type="checkbox"/> Ataxia <input type="checkbox"/> Hypotonia <input type="checkbox"/> Chorea <input type="checkbox"/> Hypertonia <input type="checkbox"/> Dystonia <input type="checkbox"/> Spasticity <input type="checkbox"/> Exercise intolerance/ easy fatigue <input type="checkbox"/> Headache/migraine <input type="checkbox"/> Muscle weakness <input type="checkbox"/> Seizures (type: _____) <input type="checkbox"/> Stroke/stroke-like episodes <input type="checkbox"/> Other: _____</p> Skeletal/Limb abnormalities <p><input type="checkbox"/> Contractures <input type="checkbox"/> Club foot <input type="checkbox"/> Polydactyly <input type="checkbox"/> Syndactyly <input type="checkbox"/> Vertebral anomaly <input type="checkbox"/> Scoliosis <input type="checkbox"/> Other: _____</p> Skin/Hair <p><input type="checkbox"/> Abnormality of the hair pattern, quantity <input type="checkbox"/> Abnormal nail growth <input type="checkbox"/> Abnormal pigmentation <input type="checkbox"/> Café-au-lait macules <input type="checkbox"/> Neoplasms of the skin <input type="checkbox"/> Neurofibromas <input type="checkbox"/> Blistering <input type="checkbox"/> Ichthyosis <input type="checkbox"/> Other: _____</p>



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BILLING FORM

The hospital, referring laboratory, referring physician, or a patient/guardian will be billed for the services rendered, upon direction from the referring physician.

- Invoices are sent upon completion of each test/service.
- Invoices are itemized and include the date of service, patient name, CPT code, test name and charge.
- Contact SickKids' Genome Diagnostics Laboratory at 416-813-7200 x1 with billing inquiries.

How to complete the Billing Form:

- Referring Physician completes the appropriate section below to specify billing method.
- Send requisition and completed "Billing Form" with specimen.

Section 1: Complete to have the Healthcare Provider billed:

Referring Laboratory's Reference #: _____

Billing address of hospital, referring laboratory, clinic, referring physician, or medical group (if different from requisition):

Name: _____

Address: _____

City: _____ Prov/State: _____

Postal/Zip Code: _____ Country: _____

Contact Name: _____ Contact Telephone #: _____

Section 2: Complete to have Patient/Guardian billed directly:

If electing to have patient/guardian billed:

- Patient/Guardian billing information below must be complete; otherwise, the healthcare provider will be billed.
- Advise the patient/guardian to expect a bill from the Genome Diagnostics laboratory.
- The patient's valid credit card information must be provided.
- Unfortunately, personal checks are not accepted as a method of payment.
- ***In this case, the patient/guardian is solely responsible for the charges.***

Send bill to (check one): Patient Guardian

Method of Payment (check one): American Express MasterCard Visa

Name as it appears on credit card: _____

Credit card #: _____ CVS #: _____

Expiry date on credit card: _____

Signature of credit card holder (Required): _____

Mailing Address of Patient/Guardian (if different from requisition):

Name: _____

Address: _____

_____ Apt. #: _____

City: _____ Prov/State: _____

Postal/Zip Code: _____ Country: _____

Additional Contact Information

Patient's phone # with area code: _____

-or-

Guardian's phone # with area code: _____



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Patient Name:

Preferred Name (if different):

Date of Birth (DD/MM/YYYY):

Legal Sex: Male Female Non-binary/U/X

Sex Assigned at Birth (if different): Male Female Unassigned

Gender Identity: Male Female Non-binary/U/X

MRN:

Parent's Name:

Address:

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LIST OF GENES BY TEST

Autoinflammatory Diseases (sequencing and dosage available)

Recurrent Fever Syndromes panel (5 genes)

MEFV, MVK, NLRP12, NLRP3, TNFRSF1A

Autoinflammatory Diseases panel (25 genes)

ARPC1B, CARD14, CDC42, CECR1 (ADA2), COPA, ELANE, IL1RN, IL36RN, LACC1, LPIN2, NLRC4, NOD2, OTULIN, PLCG2, POMP, PSMB8, PSTPIP1, RAB27A, RBCK1, RIPK1, SH3BP2, SLC29A3, TMEM173 (STING1), TNFAIP3, TRNT1

Hemophagocytic Lymphohistiocytosis panel (16 genes)

AP3B1, BLOC1S6, CD27, ITK, LYST, NLRC4, PRF1, CD70, RAB27A, SH2D1A, SLC7A7, STX11, STXBP2, UNC13D, XIAP, MAGT1

Aicardi-Goutières Syndrome panel (7 genes)

ADAR, IFIH1, RNASEH2A, RNASEH2B, RNASEH2C, SAMHD1, TREX1

Connective Tissue Disease (sequencing and dosage available)

Ehlers Danlos Syndrome panel (22 genes)

ACTA2, ADAMTS2, ATP7A, B4GALT7 (**no dosage**), CHST14, COL3A1, COL5A1, COL5A2, COL1A1, COL1A2, DSE, FBN2, FKBP14, PLD1, PRDM5, SLC39A13, SMAD3, TGFBR2, TGFBR1, TNXB, TGFBR2, ZNF469

Osteogenesis Imperfecta panel (20 genes)

ALPL, BMP1, COL1A1, COL1A2, CRTAP, FKBP10, IFITM5, LRP5, MBTPS2, P3H1, PLD1, PLS3, PPIB, SERPINF1, SERPINH1, SP7, SPARC, TMEM38B, WNT1, XYLT2

Osteopetrosis and Disorders of Increased Bone Density panel (10 genes)

CA2, CLCN7, LRP5, OSTM1, PLEKHM1, SNX10, TCIRG1, TNFRSF11A, TNFRSF11B, TNFSF11

Bone Involvement panel (40 genes)

ARSL, CBS, COL1A1, COL1A2, COL2A1, COL9A1, COL9A2, COL9A3, COMP, DDR2, DYM, EBP, EIF2AK3, FBN1, FBN2, FGFR3, FLNB, HSPG2, IFT122, IFT43, IFT80, LBR, LIFR, MATN3, NEK1, NKX3-2, NSDHL, PEX7, PTH1R, SHOX, SLC26A2, SLC35D1, SLC39A13, SOX9, TRAPPC2, TRIP11, TRPV4, TTC21B, WDR19, WDR35

Hereditary Hearing Loss (sequencing and dosage available)

Common and Non-Syndromic Hearing Loss panel (61 genes)

ACTG1, ADGRV1, CDH23, CHD7, CIB2, CLDN14, COCH, DFNA5, DFNB59, DIAPH1, ESPN, ESRRB, EYA1, EYA4, GJB2, GJB6, GIPC3, GPSM2, GRHL2, GRXCR1, HGF, ILDR1, KCNQ1, KCNQ4, KCNE1, LHFPL5, LOXHD1, LRTOMT, MARVELD2, MYH14, MYH9, MYO15A, MYO3A, MYO6, MYO7A, OTOA, OTOF, OTOG, OTOGL, PCDH15, PDZD7, POU3F4, POU4F3, PRPS1, PTPRQ, RDX, SERPINB6, SIX1, SLC17A8, SLC26A4, SMPX, STRC, TECTA, TMC1, TMIE, TMPRSS3, TPRN, TRIOBP, USH2A, WFS1 WHRN

Usher Syndrome panel (11 genes)

ADGRV1, CDH23, CIB2, CLRN1, MYO7A, PCDH15, PDZD7, USH1C, USH1G, USH2A, WHRN

Stickler Syndrome panel (5 genes)

COL11A1, COL11A2, COL2A1, COL9A1, COL9A2

Alport Syndrome panel (3 genes)

COL4A3, COL4A4, COL4A5

Syndromic Hearing Loss - Treacher Collins syndrome, Waardenburg syndrome, Norrie syndrome panel (7 genes)

EDN3, EDNRB, MITF, NDP, PAX3, SOX10, TCOF1

Hereditary Spastic Paraparesis (sequencing and dosage available)

Comprehensive HSP (AR/AD/XL) panel (67 genes)

ABCD1, ADAR, ALDH18A1, ALS2, AP4B1, AP4E1, AP4M1, AP4S1, AP5Z1, ATL1, ATP13A2, B4GALNT1, BSCL2, C19orf12, CAPN1, CPT1C, CYP2U1, CYP7B1, DDHD1, DDHD2, ERLIN1, ERLIN2, FA2H, FAR1, FARS2, GBA2, HACE1, HPDL, HSPD1, IBA57, IFIH1, KIDINS220, KIF1A, KIF1C, KIF5A, L1CAM, MAG, MTRFR, NIPA1, NT5C2, PCYT2, PLP1, PNPLA6, POLG, POLR3A, POLR3B, REEP1, REEP2, RNF170, RTN2, SACS, SELENO1, SETX, SLC16A2, SPART, SPAST, SPG11, SPG21, SPG7, TECPR2, TFG, TUBB4A, UBAP1, UCHL1, VPS13D, WASHC5, ZFYVE26

Noonan Syndrome (sequencing only) (15 genes)

BRAF, CBL, HRAS, KRAS, LZTR1, MAP2K1, MAP2K2, NRAS, PTPN11, RAF1, RIT1, SHOC2, SOS1, SOS2, SPRED1-**Dosage ONLY for SPRED1**