

555 University Avenue Room 3416, Roy C. Hill Wing 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

Parent's Name: Address:

MRN:

Patient Name:

Preferred Name (if different): Date of Birth (DD/MM/YYYY):

For Canada Only

Provincial Health Card #:

Version:

Issuing Province:

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

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

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

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):	Reason for Testing (required):
Name:	☐ Diagnosis ☐ Carrier testing
Facility/Ward/Clinic (<i>required</i>):	☐ Familial mutation/variant analysis ☐ Prenatal testing
Address:	☐ Parental sample ☐ Variant re-assessment
Phone:Fax:	Other (Specify):
Email address:	If expedited testing is requested, indicate reason:
Signature:	Pregnancy (Gestational age (weeks) Other (Specify):
Copy Report To Another Healthcare Provider (all information is required):	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.
Name:	Gene & NM #:
Address:	Mutation/variant(s):
Phone: Fax:	SickKids Laboratory/Order number:
Sample Information (required):	SickKids Pedigree/Family number:
Date obtained (DD/MM/YYYY):Referring	Name of proband:
Laboratory reference #:	Relationship to proband:
Blood in EDTA (purple top tube): min. 4 mL (0.5-3 mL for newborns)	Name(s) & DOB of other submitted family members:
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% confluency and 1 flask at 80-90% confluency	Clinical Diagnostics and Family History (required): Draw or attach a pedigree and provide any relevant information below,
☐ Cultured amniocytes: 1 flask at 60-70% confluency and 1 flask at 80-90% confluency ☐ Tissue (Source:)	including clinical and family history details, as this is important for accurate
Other (Specify:) Closed consent:	interpretation of results.
(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:	Ethnicity:
h	Ordering Checklist:
Lab/Order #:	Specimen tube labeled with at least two identifiers
Specimen type, amt & # of tubes:	Completed test requisition form
Comments:	Clinical information must be provided for all tests. Pages 4-5 must be completed for all tests. <u>Testing will not proceed until</u> these are
Pedigree/Family No./Patient/Order No/	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 mutations/variant is known, include information on page 1 22q11 Deletion Syndrome Connective Tissue Disease * Clinical information must be provided on pages 4 and 5 22q11 deletion/duplication analysis (external DNA not accepted) If more than one panel is requested, rationale must be provided on page 5. **Angelman Syndrome** ☐ Ehlers Danlos Syndrome panel Methylation and deletion/duplication analysis (external DNA not accepted) Osteogenesis Imperfecta panel UPD15 analysis (please submit parental samples) Osteopetrosis and Disorders of Increased Bone Density panel Bone Involvement panel **Ashkenazi Jewish Carrier Screening** ☐ Deletion/duplication analysis Recurrent mutation analysis (7 diseases): Craniosynostosis Bloom syndrome, Canavan disease, Familial Dysautonomia, Fanconi Apert Syndrome (FGFR2 recurrent mutations analysis) Anemia Group C, Mucolipidosis Type IV, Niemann-Pick disease, Tay-Crouzon Syndrome (FGFR2, FGFR3 recurrent mutation analysis) Sachs disease Pfeiffer Syndrome (FGFR1, FGFR2, FGFR3 recurrent mutation analysis) ETHNICITY (required): Saethre-Chotzen Syndrome (TWIST1 sequence analysis and FGFR3 ☐ Ashkenazic ☐ Sephardic ☐ French Canadian ☐ Cajun recurrent mutation analysis) ☐ Non-Jewish ☐ Other_ Non-Syndromic Craniosynostosis (FGFR3 recurrent mutation analysis) TWIST1 deletion/duplication analysis (external DNA not accepted) Autoinflammatory Disease * Clinical information must be provided on pages 4 and 5 Cystic Fibrosis and/or CFTR-Related Disorders ** ☐ Autoinflammatory Diseases NGS panel Indication (provide additional clinical details on page 1 and/or pages 4-5): (excludes Recurrent Fever panel genes) Fetal echogenic bowel (ensure parental samples are linked to each other Recurrent Fever Syndrome NGS panel on both requisitions with at least two identifiers) MEFV (FMF), MVK, NLRP12, NLRP3, TNFRSF1A Clinical diagnosis of cystic fibrosis CFTR-related disorders Hemophagocytic Lymphohistiocytosis NGS panel ☐ C(B)AVD Aicardi-Goutieres Syndrome NGS panel Family history of cystic fibrosis ☐ Deletion/duplication analysis Positive newborn screen (ensure familial samples are linked to each other on all requisitions with at least two identifiers; send NSO report) **Becker Muscular Dystrophy** DMD deletion/duplication analysis (external DNA not accepted) Tests (indication specific): ☐ DMD sequence analysis CFTR recurrent mutation analysis **Beckwith-Wiedemann Syndrome** CFTR sequence analysis CFTR deletion/duplication analysis (external DNA not accepted) ☐ IC1 and IC2 methylation and 11p15 deletion/duplication analysis (external DNA not accepted) **Duchenne Muscular Dystrophy** UPD11 analysis (parental sample required) ☐ DMD deletion/duplication analysis (external DNA not accepted) CDKN1C sequence analysis DMD sequence analysis † No methylation analysis on CVS samples ☐ DMD mRNA analysis (contact the laboratory before ordering) **Bone Marrow Transplantation Fabry Disease** Post-transplant monitoring ☐ GLA sequence analysis GLA deletion/duplication analysis (external DNA not accepted) **Cancer Related Tests** GLA mRNA analysis (contact the laboratory before ordering) Li-Fraumeni Syndrome TP53 sequence analysis Fragile X Syndrome & FMR1-related disorders TP53 deletion/duplication analysis (external DNA not accepted) ☐ Fragile X syndrome Fragile X-associated primary ovarian insufficiency **Rhabdoid Tumour Predisposition Syndrome** ☐ Fragile X-associated tremor ataxia syndrome (FXTAS) SMARCB1 sequence analysis SMARCB1 deletion/duplication analysis (external DNA not accepted) Fragile X E Syndrome *** AFF2 trinucleotide repeat analysis (See testing requirements) **Congenital Muscular Dystrophies** Sequence analysis panel: FKTN (FCMD), FKRP, POMGnT1, POMT1, POMT2



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LIST OF TESTS AVAILABLE BY DISEASE			
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### 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 Stickler Syndrome panel Alport Syndrome Norrie Syndrome, Treacher Collins Syndrome, Waardenburg Syndrome Deletion/duplication analysis Hereditary Hemorrhagic Telangiectasia ACVRL1 sequence analysis ACVRL1 and ENG deletion/duplication analysis (external DNA not accepted) SMAD4 sequence analysis Hereditary Spastic Paraplegia * 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) SPRED1 deletion/duplication analysis (external DNA not accepted)	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) AR trinucleotide repeat analysis Spinal Muscular Atrophy SMN1 and SMN2 deletion/duplication analysis (external DNA not accepted) X-Inactivation Analysis Other (PRIOR APPROVAL REQUIRED; CONTACT LABORATORY):		

*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.sicl

** For information on the testing algorithm for Cystic Fibrosis, visit https://www.sickkids.ca/en/care-services/for-health-care-providers/lal
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:



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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: Connective Tissue Disorders (CTD)	Hearing Loss Age of onset: Sensorineural hearing loss Conductive hearing loss Mixed hearing loss Bilateral Syndromic Non-syndromic Ear anomalies Ear tags Eye anomalies Renal anomalies White forelock Cardiac anomalies Hirschsprung disease Other:	Hereditary Spastic Paraplegia (HSP) Abnormal corpus callosum Cognitive impairment Ataxia Spasticity Hyperreflexia Hypertonia Hypotonia	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.	
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 j 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	rationale for testing must be prov Fetal findings on anatomy ultrase Fractures with minimal or no trau other known disorders of bone m Vertebral fractures oint Dentinogenesis imperfecta Low ALP for age/gender (ALPL g not eligible for full panel) Check applicable CTD features bel Bone Involvement Check applicable CTD features belo	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 Fractures Bone deformity Blue/gray sclerae Thumb or wrist sign Club foot Scoliosis Marfanoid habitus Short stature Other:		
Draw or attach a pedigree and provide any relev	FAMILY HISTOR ant information below, including clinical and		curate interpretation of results.	

Ethnicity:

SickKids THE HOSPITAL FOR Toronto, ON, M5G 1X8, Canada SICK CHILDREN **Paediatric Laboratory Medicine**

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ADDITIONAL RELEVANT CLINICAL INFORMATION				
Previous Genetic Testing				
□ No				
Yes – Test Results:				
1579 MWW	GENERAL CLINICAI	L FEATURES		
Perinatal history	Craniofacial/Ophthalmalogic Abnormal face shape Blindness Cataracts Coloboma Optic atrophy Opthalmoplegia Ptosis Retinitis pigmentosa Oral cleft Other: Brain malformations/abnormal imaging Abnormality of the basal ganglia Agenesis of the corpus callosum Brain atrophy Cortical dysplasia Hemimegalencephaly Heterotopia Holoprosencephaly Hydrocephalus Lissencephaly Periventricular leukomalacia Other: Cardiac/congenital heart malformations ASD VSD Coarctation of aorta Hypoplastic left heart Tetralogy of Fallot Cardiomyopathy Arrhythmia/conduction defect	Gastroschisis/omphalocele Gastroschisis/omphalocele Gastrointestinal reflux Pyloric stenosis Tracheoesophageal fistula Hepatic failure Chronic intestinal pseudo-obstr. Hirschsprung disease Recurrent vomiting Chronic diarrhea Constipation Other: Genitourinary abnormalities Ambiguous genitalia Cryptorchidism Hypospadias Hydronephrosis Kidney malformation Renal agenesis Proximal renal tubulopathy Other: Endocrine Diabetes mellitus Type 1 Diabetes mellitus Type 2 Hypothyroidism Hypoparathyroidism Pheochromocytoma/paraganglioma	Neurological/Muscular	

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BILLING FORM

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Completion of Billing Form NOT required for patients with an Ontario Health Card Number.

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 requisition):	medical group (if different from			
Name:				
Address:				
City: Prov/State:				
Postal/Zip Code: Country:				
Contact Name:Contact Teleph				
Section 2: Complete to have Patient/Guardian billed directly:				
If electing to have patient/guardian billed: • Patient/Guardian billing information below must be con • Advise the patient/guardian to expect a bill from the Ge • The patient's valid credit card information must be prov • Unfortunately, personal checks are not accepted as a notal company. • In this case, the patient/guardian is solely response.	enome Diagnostics laboratory. vided. method of payment.			
Send bill to (check one):	☐ Guardian			
Method of Payment (check one):	☐ 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):	Additional Contact Information			
Name:	Patient's phone # with area code:			
Address:				
Apt. #:	-or-			
City: Prov/State:	Guardian's phone # with area code:			
Postal/Zip Code:Country:				



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LIST OF GENES BY TEST

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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, PLOD1, PRDM5, SLC39A13, SMAD3, TGFB2, TGFBR1, TNXB, TGFBR2, ZNF469

Osteogenesis Imperfecta panel (20 genes)

ALPL, BMP1, COL1A1, COL1A2, CRTAP, FKBP10, IFITM5, LRP5, MBTPS2, P3H1, PLOD2, 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, COL11A1, COL11A2, 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 Paraplegia (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, SELENOI, 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**