Date: May 24, 2022

DISCIPLINE: GENOMICS

Genetic Testing - Manitoba Panel

Date effective: Immediately

Background Information:

Over 100 different genetic variants leading to disease have been identified in different Manitoba populations. Testing for several of these variants is offered by the Molecular Diagnostics Laboratory. To consolidate laboratory testing and increase the number of clinically relevant variants available for Manitoba patients, a single test using next-generation sequencing technology was developed. This platform has been nicknamed the "Manitoba Panel". Subpanels from the full panel list have been created.

The Manitoba Panel screens for variants in 112 genes. Testing will be rolled out in three phases. The first phase of this rollout includes all variants previously assayed in-house and full gene sequencing of the *GJB2* gene. Phase II will include variant panels for different ethnic groups and phase III will include full gene sequencing for the *CFTR* gene and the *HBB* gene.

Phase I of the Manitoba Panel is now available and includes the following variants and subsets of variants listed below:

Gene-specific Targets:

Disorder	Gene	Variant(s) Analysed
Bowen-Conradi Syndrome	*EMG1*	c.257A>G; p.Asp86Gly
COFS	*ERCC6*	c.3715_3716delAA; p.Lys1239GlufsTer2
Lynch Syndrome	*MLH1*	c.2141G>A; p.Trp714Ter
Susceptibility to Type II Diabetes	*HNF1A*	c.955G>A; p.Gly319Ser
Sulfite Oxidase Deficiency	*SOUX*	c.1521_1524delTTGT; p.Cys508ArgfsTer109
Sideroblastic Anemia	*SLC25A38*	c.560G>A; p.Arg187Gln
Ritscher-Schinzel Syndrome	*WASHC5*	c.3335+2T>A
PRUNE1-related disorders	*PRUNE1*	c.521-2A>G
Hypohidrotic Ectodermal Dysplasia	*EDA1*	c.607C>T; p.Pro203Ser
Congenital Stationary Night Blindness	*CACNA1F*	c.3166dupC; p.Leu1056ProfsTer11
ARVC	*DSC2*	c.1660C>T; p.Gln554Ter
Sitosterolemia	*ABCG8*	c.320C>G; p.Ser107Ter
Hypophosphatasia	*ALPL*	c.571G>A; p.Glu191Lys & c.1001G>A; p.Gly334Asp
Ataxia Telangiectasia	*ATM*	c.6200C>A; p.Ala2067Asp & c.5932G>T; p.E1978Ter
Limb Girdle Muscular Dystrophy	*FKRP* *TRIM32*	c.826C>A; p.Leu276Ile c.1459G>A; p.Asp487Asn
Non-syndromic Hereditary Hearing Loss	*GJB2*	Full Gene Sequencing

BRCA Founders Panel*

Disorder	Gene	Variants Analysed
Hereditary Breast and Ovarian Cancer	*BRCA1*	c.68_69delAG; c.181T>G (p.Cys61Gly) ; c.1387_1390delinsGAAAG; c.4035del; c.4327C>T (p.Arg1443Ter); & c.5266dupC
	BR*CA2*	c.771_775del; c.5238dupT; c.5946delT; & c.7443delT

***NOTE:** *Test is only available as a full panel. Requests for individual targets will include screening for all listed variants.*

Ashkenazi Jewish Carrier Panel*

Disorder	Gene	Variants Analysed
Canavan Disease	*ASPA*	c.693C>A; c.854A>C; c.914C>A & c.433-2A>G
Familial Dysautonomia	*ELP1*	c.2087G>C; c.2204+6T>C
Fanconi Anemia Type C	*FANCC*	c.456+4A>T (IVS4+4A>T)
Tay Sachs Disease	*HEXA*	c.533G>A; c.805G>A; c.1073+1G>A; c.1274_1277dupTATC; c.1421+1G>C

***NOTE:** *Test is only available as a full panel. Requests for individual targets will include screening for all listed variants.*

Manitoba SCIDS Panel

Disorder	Gene	Variants Analysed
Severe Combined Immunodeficiency (SCID)	*ADA*	c.424C>T; p.Arg142Ter
	CD3D	c.202C>T p.Arg68Ter
	IKBKB	c.1292dupG; p.Gln432ProfsTer62
	ZAP70	c.1624-11G>A

Refer to the LIM for specimen requirements and other additional information.

Change in Test Procedure:

- Updated testing methodology for in-house variants observed in Manitoba populations.
- *BRCA1* and *BRCA2* targeted testing is offered only as a panel of variants.
- Ashkenazi Jewish Screening Panel includes additional variants: *ASPA*: c.914C>A & c.433-2A>G and *HEXA*: c.533G>A & c.1421+1G>C.

References/Resources:

- LIM: https://apps.sbgh.mb.ca/labmanual/test/findTestPrepare
- SH HSC Molecular Diagnostic Lab Test Requisition (R250-10-09)

Patient Impact and System Improvements

- Improved turnaround times (TAT)
- Improved *ASPA* and *HEXA* detection rate for Ashkenazi Jewish Carrier Screening Panel

For More Information Contact:

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