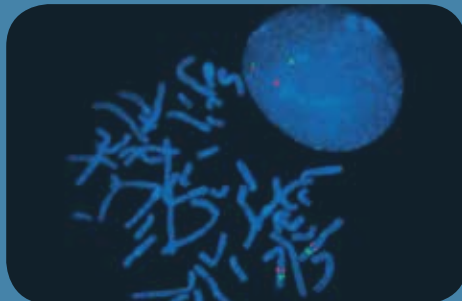




genetic testing

PATIENTS. ANSWERS. RESULTS.



ARUP LABORATORIES

As a nonprofit, academic institution of the University of Utah and its Department of Pathology, ARUP believes in collaborating, sharing knowledge, and contributing to laboratory science in ways that benefit our clients and their patients.

Our test menu is one of the broadest in the industry, encompassing more than 3,000 tests, including highly specialized and esoteric assays. We offer comprehensive testing in the areas of genetics, molecular oncology, pediatrics, and pain management, among others.

ARUP's clients include many of the nation's university teaching hospitals and children's hospitals, as well as multihospital groups, major commercial laboratories, and group purchasing organizations. We do not compete with our clients for physician office business, choosing instead to support clients' existing test menus by offering highly complex assays and accompanying consultative support so clients can provide exceptional patient care in their local communities.

Offering analytics, consulting, and decision support services, ARUP provides clients with the utilization management tools necessary to prosper in this time of value-based care. Our UM+ program helps clients control utilization, reduce costs, and improve patient care. In addition, ARUP is a worldwide leader in innovative laboratory research and development, led by the efforts of the ARUP Institute for Clinical and Experimental Pathology®.

ARUP's reputation for quality is supported by our ability to meet or exceed the requirements of multiple regulatory and accrediting agencies and organizations. ARUP participates in the CAP laboratory accreditation program and has CLIA certification through the Centers of Medicare and Medicaid Services. In December 2016, ARUP earned accreditation to the ISO 15189:2012 standard under CAP.

We believe in collaborating, sharing knowledge, and contributing to laboratory science in ways that provide the best value for the patient. Together, ARUP and its clients will improve patient care today and in the future.

patients. answers. results.®

A laboratory test is more than a number; it is a person, an answer, a diagnosis.®



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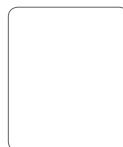
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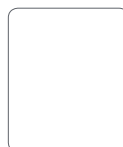
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NEW TESTS May hot line)

TEST #	TEST NAME/DESCRIPTION
3000142	Alpha Fetoprotein (Amniotic Fluid) with Reflex to Acetylcholinesterase and Fetal Hemoglobin
3000258	Genetic Carrier Screen, (CF, FXS, and SMA) with Reflex to Methylation
3000455	Ph-Like Acute Lymphocytic Leukemia (ALL) Panel by FISH

MATERNAL SERUM SCREENING

Maternal serum screening (MSS) testing at ARUP is offered to help identify pregnancies at increased risk for Down syndrome, trisomy 18, or open neural tube defects such as spina bifida. ARUP offers all MSS testing recommended by the American College of Obstetrics and Gynecology. Second trimester-only tests measure the levels of specific protein markers in maternal blood to predict

risk. First trimester-only and cross-trimester tests combine fetal ultrasound measurements* along with measurements of biochemical markers in maternal blood to predict risk.

* Sonographer providing NT measurement must be certified by NTQR (SMFM) or FMF. Please contact a genetic counselor at (800) 242-2787, ext. 2141, prior to sending first sample to ensure acceptability.

TEST #	TEST NAME/DESCRIPTION
Combined First- and Second-Trimester Screening	
3000146	Maternal Serum Screen Sequential, Specimen 1
3000148	Maternal Serum Screen Sequential, Specimen 2
3000147	Maternal Serum Screen Integrated, Specimen 1
3000149	Maternal Serum Screen Integrated, Specimen 2
First-Trimester Screening	
3000145	Maternal Serum Screen First Trimester

TEST #	TEST NAME/DESCRIPTION
Non-Invasive Prenatal Screening	
2007537	Non-Invasive Prenatal Testing for Fetal Aneuploidy
2010232	Non-Invasive Prenatal Testing for Fetal Aneuploidy with Microdeletions
2013142	Non-Invasive Prenatal Testing for Fetal Aneuploidy with 22q11.2 Microdeletion
Second-Trimester Screening	
3000144	Maternal Serum Screen AFP
3000143	Maternal Serum Screen Quad

BIOCHEMICAL GENETICS

The Biochemical Genetics Laboratory performs testing on a variety of biological specimens to aid in the identification of aminoacidopathies, organic acidemias, fatty acid oxidation disorders, and other inherited metabolic diseases. Early identification of a metabolic disorder may prevent death, as well as other serious health problems.

Available tests include amino acid quantitation, assessment

TEST #	TEST NAME/DESCRIPTION
0040033	Acylcarnitine, Quantitative Profile, Plasma
0081170	Acylglycine, Quantitative, Urine
2011415	Alpha-Iduronidase Enzyme Activity in Leukocytes
0080137	Amino Acids Quantitative, CSF
2009389	Amino Acids Quantitative by LC-MS/MS, Plasma
2009419	Amino Acids Quantitative by LC-MS/MS, Urine
2014314	Autism and Intellectual Disability Comprehensive Panel
2014312	Autism and Intellectual Disability Metabolic Panel
0093362	Biotinidase, Serum (with paired normal control)
0080068	Carnitine, Free and Total, Plasma
0081308	Carnitine, Free and Total, Urine
0080065	Carnitine, Free, Plasma
0081110	Carnitine Panel (Free and Total Carnitine, Acylcarnitine), Plasma or Serum
0080067	Carnitine, Total, Plasma
2002328	Creatine Disorders Panel, Plasma or Serum
2002333	Creatine Disorders Panel, Urine
0081106	Cystine Quantitative, Urine
0081105	Cystinuria Panel (Arginine, Cystine, Lysine, and Ornithine), Urine
0080351	Ehlers-Danlos Syndrome Type VI Screen, Urine
2013518	Fatty Acids Profile, Essential Serum and Plasma
0081296	Galactose-1-Phosphate in Red Blood Cells
0080125	Galactose-1-Phosphate Uridyltransferase, Whole Blood
0051175	Galactosemia Panel (Enzyme and DNA Testing for 7 Mutations and 2 Variants), Whole Blood
2014459	Gaucher Disease (GBA), Enzyme Activity in Leukocytes
2001510	Glutarylcarnitine Quantitative, Urine
2008129	Hexosaminidase A and Total Hexosaminidase in Plasma with Reflex to Hexosaminidase A and Total Hexosaminidase in Leukocytes

of organic acids, acylcarnitine profile, and various other assays to diagnose suspected inborn errors of metabolism or confirm abnormal newborn screen results.

Consultation with ARUP's genetic counselors or medical directors is available.

TEST #	TEST NAME/DESCRIPTION
2008125	Hexosaminidase A and Total Hexosaminidase, Leukocytes
2008121	Hexosaminidase A and Total Hexosaminidase, Plasma or Serum
2012259	Keratan Sulfate, Quantitative by LC-MS/MS, Urine
2005255	Methylmalonic Acid, Serum or Plasma (Metabolic Disorders)
0081352	Mucopolysaccharides Electrophoresis and Quantitation, Urine
0081357	Mucopolysaccharides, Quantitative, Urine
2007599	Mucopolysaccharidosis Type I, Total HS and NRE (Sensi-Pro) Quantitative, Serum or Plasma
2007488	Mucopolysaccharidosis Type I, Total HS and NRE (Sensi-Pro) Quantitative, Urine
2008775	Mucopolysaccharidosis Type II, Total HS and NRE (Sensi-Pro) Quantitative, Serum or Plasma
2009282	Mucopolysaccharidosis Type II, Total HS and NRE (Sensi-Pro) Quantitative, Urine
0092458	Orotic Acid and Orotidine, Urine
0098389	Organic Acids, Urine
0080336	Phenylalanine and Tyrosine, Plasma (monitoring only)
0080315	Phenylalanine Monitoring, Plasma (monitoring only)
2007406	Pipecolic Acid, Serum or Plasma
2008131	Pipecolic Acid, Urine
2014463	Pompe Disease (GAA), Enzyme Activity in Leukocytes
0080342	Pyridinoline and Deoxypyridinoline by HPLC, Urine
2013352	Pyridoxine-Dependent Epilepsy Panel, Serum or Plasma
2013355	Pyridoxine-Dependent Epilepsy Panel, Urine
2007401	Succinylacetone, Quantitative, Urine
0080355	Tyrosine, Plasma (monitoring only)
2004250	Very Long-Chain and Branched-Chain Fatty Acids Profile

CYTOGENETICS AND GENOMIC MICROARRAY

ARUP performs microarray, chromosome, and FISH analysis for both constitutional and cancer diagnoses. Patients with indications such as developmental delay, autism, recurrent fetal loss, and multiple congenital anomalies have the option of tests ranging from classic karyotype analysis, FISH studies for specific microdeletion/microduplication syndromes, or microarray.

TEST #	TEST NAME/DESCRIPTION
Constitutional/Postnatal Testing	
0040208	Aneuploidy Panel by FISH
2002289	Chromosome Analysis, Peripheral Blood
2005763	Chromosome Analysis, Peripheral Blood, with Reflex to Genomic Microarray
2002288	Chromosome Analysis, Products of Conception
2005762	Chromosome Analysis, Products of Conception, with Reflex to Genomic Microarray
2002287	Chromosome Analysis, Rule Out Mosaicism
2002286	Chromosome Analysis, Skin Biopsy
2002299	Chromosome FISH, Metaphase
2005749	Chromosome Analysis, Breakage, Ataxia Telangiectasia, Whole Blood
0097688	Chromosome Analysis, Breakage, Fanconi Anemia
2010795	Cytogenomic Molecular Inversion Probe Array, FFPE Tissue—Products of Conception
2003414	Cytogenomic SNP Microarray
2006267	Cytogenomic SNP Microarray Buccal Swab
2009353	Cytogenomic SNP Microarray, with Five-Cell ChromosomeStudy, Peripheral Blood
2005633	Genomic SNP Microarray, Products of Conception

Patients with confirmed or suspected cancer diagnoses have microarray, chromosome, and FISH analyses available to them. These studies may help determine the specific type of cancer present, predict disease course, determine a course of treatment, and enable physicians to monitor treatment effectiveness and look for residual disease post-treatment.

TEST #	TEST NAME/DESCRIPTION
Oncology	
2002292	Chromosome Analysis, Bone Marrow
2007130	Chromosome Analysis, Bone Marrow, with Reflex to Genomic Microarray
2002290	Chromosome Analysis, Leukemic Blood
2007131	Chromosome Analysis, Leukemic Blood with Reflex to Genomic Microarray
2002300	Chromosome Analysis, Lymph Node
2002296	Chromosome Analysis, Solid Tumor
2010229	Cytogenomic Molecular Inversion Probe Array, FFPE Tissue—Oncology
2006325	Cytogenomic SNP Microarray—Oncology
Prenatal Testing	
0040203	Chorionic Villus, FISH (aneuploidy panel)
2002293	Chromosome Analysis, Amniotic Fluid
2008367	Chromosome Analysis, Amniotic Fluid, with Reflex to Genomic Microarray
2002291	Chromosome Analysis, Chorionic Villus
2002288	Chromosome Analysis, Products of Conception
2005762	Chromosome Analysis, Products of Conception, with Reflex to Genomic Microarray
2011130	Chromosome FISH, Amniotic Fluid with Reflex to Chromosome Analysis or Genomic Microarray
2011131	Chromosome FISH, Chorionic Villus with Reflex to Chromosome Analysis or Genomic Microarray
2002297	Chromosome FISH, Prenatal (aneuploidy panel)
2002366	Cytogenomic SNP Microarray—Fetal

CONSTITUTIONAL FISH PROBES		
Suspected Diagnosis	Probe Target	Gene(s)/Unique Sequence
Aneuploidy, Common (ARUP test code 0040208)	13/18/21/X/Y	
Microdeletion Syndromes—order test 2002299		
4p-	4p16.3	<i>WHSC1</i>
5p-	5p15.2	D5S23-D5S721
15q11.2-13 duplication	15q11.2-13	D15S11, D15S10
22qter deletion	22q13.3	22qtel (<i>SHANK3</i>)
Angelman	15q11.2-13	D15S10
Cri-du-chat	5p15.2	D5S23-D5S721
DiGeorge	22q11.2	<i>TUPLE-1 (HIRA)</i>
Kallmann	Xp22.3	<i>KAL1</i>
Male detection (SRY)	Yp11.3	<i>SRY</i>
Miller-Dieker (Lissencephaly)	17p13.3	<i>LIST1</i>
Phelan McDermid	22q13.3	22qtel (<i>SHANK3</i>)
Prader-Willi	15q11.2-13	D15S10
SHOX	Xp22.3	<i>SHOX</i>
Smith-Magenis	17p11.2	<i>SHMT1-TOP3-FL11-LLGL1</i>
SRY	Yp11.3	<i>SRY</i>
Steroid sulfatase deficiency (STS, X-linked ichthyosis)	Xp22.3	<i>STS</i>
Velocardiofacial (VCF)	22q11.2	<i>TUPLE-1 (HIRA)</i>
Williams (Elastin)	7q11.23	<i>ELN-LIMK1-D7S613</i>
Wolf-Hirschhorn	4p16.3	<i>WHSC1</i>
Miscellaneous (Please contact the lab prior to ordering)—order test 2002299 or 2002298		
Suspected Diagnosis	Probe Target	Gene(s)/Unique Sequence
Acrocentric p-arm		NOR regions of all acrocentric chromosomes
X centromere	Xcen	DXZ1
X inactivation locus	Xq13	<i>XIST</i>
Y centromere	Ycen	DYZ3
Yp11.3	Yp11.3	<i>SRY</i>
Yq12	Yq12	DYZ1-YsatIII

ONCOLOGY FISH TESTING SERVICES		TEST #	TEST NAME/DESCRIPTION	TEST #	TEST NAME/DESCRIPTION
Testing provided by the ARUP Cyto genetics Laboratory		Testing provided by the ARUP Immunohistochemistry Laboratory on Paraffin-Embedded Tissue			
2002298	Chromosome FISH, Interphase	2008604	1p/19q Deletion by FISH	2006102	ALK Gene Rearrangements by FISH, Lung
2002294	Multiple Myeloma Panel by FISH	2010107	BCL6 (3q27) Gene Rearrangement by FISH	2007223	DDIT3 (CHOP) (12q13) Gene Rearrangement by FISH
2002295	Chromosome FISH, CLL Panel	2008605	EGFR Gene Amplification by FISH	2008603	ERBB2 (HER-2/neu) Gene Amplification by FISH
2002360	Myeloproliferative Disorders Panel by FISH	2007225	EWSR1 (22q12) Gene Rearrangement by FISH	2001497	FOXO1 (FKHR) (13q14) Gene Rearrangement by FISH
2002363	PML-RARA Translocation by FISH	2001536	IGH-BCL2 Fusion, t(14;18) by FISH for Detection in Follicular Lymphoma	2007226	IGH-CCND1 Fusion, t(11;14) by FISH for Detection in Mantle Cell Lymphoma
2002378	Eosinophilia Panel by FISH	2001538	IGH-MYC Fusion, t(8;14) by FISH for Detection in Burkitt Lymphoma	2003016	MDM2 Gene Amplification by FISH
2011132	Acute Myelogenous Leukemia Panel by FISH	2002345	MYC (8q24) Gene Rearrangement by FISH	2007227	MYCN (N-MYC) Gene Amplification by FISH
2002647	Acute Lymphocytic Leukemia Panel by FISH, Adult	2007227	MYCN (N-MYC) Gene Amplification by FISH	2008418	ROS1 by FISH
2002719	Acute Lymphocytic Leukemia Panel by FISH, Pediatric	2007222	SS18 (SYT) (18q11) Rearrangement by FISH		
2002650	Lymphoma (Aggressive) Panel by FISH				
2002653	AML with MDS or Therapy Related AML by FISH				
2002709	Myelodysplastic Syndrome Panel by FISH				
2002298	*EWSR1 Break Apart Rearrangement by FISH				
2002298	*SYT Rearrangement by FISH				
Testing provided by the ARUP Cytopathology Laboratory					
2002528	Pancreatobiliary FISH				
2001181	UroVysion FISH				

* FISH probes can be tested on touch prep samples.

Refer to the aliases under test code 2002298 on the Laboratory Test Directory on the ARUP website for a complete list of available probes. <http://ltd.aruplab.com/Tests/Pub/2002298>

ONCOLOGY FISH

To order individual probes, use ARUP test code 2002298, Chromosome, FISH Interphase, and specify the desired probe(s).

Testing provided by the ARUP Cytogenetics Laboratory			
FISH PROBES AVAILABLE FOR ONCOLOGY SAMPLES			
Indication		Probe Target	Gene(s)/Unique Sequence
Acute Lymphocytic Leukemia Panel (ALL)	Adult: 2002647	8q24	<i>MYC</i>
		t(9;22)(q34;q11.2)	<i>BCR-ABL1</i>
		11q23	<i>KMT2A (MLL)</i>
		14q32	<i>IGH</i>
	Pediatric: 2002719	19p13	<i>TCF3 (E2A)</i>
		+4,+10	CEP4, CEP10
		t(9;22)(q34;q11.2)	<i>BCR-ABL1</i>
		11q23	<i>KMT2A (MLL)</i>
Acute Myelogenous Leukemia Panel (AML): 2011132	t(12;21)(p13;q22)	<i>ETV6-RUNX1 (TEL-AML1)</i>	
	t(15;17)(q24;q21)	<i>PML-RARA</i>	
	t(8;21)(q22;q22)	<i>RUNX1T1-RUNX1 (ETO-AML1)</i>	
	inv(16)(p13.3q22)	<i>CBFB</i>	
	11q23	<i>KMT2A (MLL)</i>	
	inv(3) or t(3;3)	<i>RPN1/MECOM (EV17)</i>	
	del(5)(q31)	<i>EGR1</i>	
Acute Myelogenous Leukemia with Myelodysplastic Syndrome or Therapy-Related AML Panel: 2002653	del(7)(q31)/-7	D7S486	
	del(5)(q31)	<i>EGR1</i>	
	del(7)(q31)/-7	D7S486	
Chronic Lymphocytic Leukemia Panel (CLL): 2002295	11q23	<i>KMT2A (MLL)</i>	
	del(11)(q22.3)	<i>ATM</i>	
	+12	D12Z3	
	del(13)(q14.3)	D13S319	
Chronic Myelogenous Leukemia (CML): 2002298	del(17)(p13.1)	<i>TP53 (p53)</i>	
	t(9;22)(q34;q11.2)	<i>BCR-ABL1, ASS1</i>	
Eosinophilia Panel: 2002378	4q12	<i>PDGFRA-CHIC2-FIP1L1</i>	
	5q33.1	<i>PDGFRB</i>	
	8p12	<i>FGFR1</i>	
	inv(16)	<i>CBFB</i>	
Lymphoma (Aggressive) Panel: 2002650	3q27	<i>BCL6</i>	
	8q24	<i>MYC</i>	
	t(14;18)(q32;q21)	<i>IGH-BCL2</i>	

ONCOLOGY FISH continued			
Testing provided by the ARUP Cytogenetics Laboratory			
FISH PROBES AVAILABLE FOR ONCOLOGY SAMPLES			
Indication		Probe Target	Gene(s)/Unique Sequence
Lymphoma (probes ordered individually as test code 2002298)	Burkitt	8q24	<i>MYC</i>
	Diffuse large cell	3q27	<i>BCL6</i>
	Follicular	t(14;18)(q32;q21)	<i>IGH-BCL2</i>
	IgH rearrangement	14q32	<i>IGH</i>
	Mantle cell	t(11;14)(q13;q32)	<i>IGH-CCND1</i>
	MALT	18q21	<i>MALT1</i>
Multiple Myeloma Panel: 2002294		1q21	<i>CKS1B</i>
		+9	<i>ASS1</i>
		t(11;14)(q13;q32)	<i>IGH-CCND1</i>
		14q32	<i>IGH rearrangement</i>
		+15	<i>PML</i>
		del(17)(p13.1)	<i>TP53 (p53)</i>
		NOTE: If IGH is positive, additional testing will include:	
		t(4;14)(p16;q32)	<i>IGH-FGFR3</i>
	t(14;16)(q32;q23.1)	<i>IGH-MAF</i>	
Myelodysplastic Syndrome Panel (MDS): 2002709		del(5)(q31)	<i>EGR1</i>
		del(7)(q31)/-7	D7S486
		+8	CEP8
		del(20)(q12)	D20S108
Myeloproliferative Disorder Panel (MPD): 2002360		4q12	<i>PDGFRA-CHIC2-FIP1L1</i>
		5q33.1	<i>PDGFRB</i>
		8p12	<i>FGFR1</i>
		t(9;22)(q34;q11.2)	<i>BCR-ABL1</i>
Ph-Like Acute Lymphocytic Leukemia (ALL) Panel: 3000455		Xp22.33/Yp11.32	<i>CRLF2</i>
		9p24	<i>JAK2</i>
		19p13.2	<i>EPOR</i>
		5q32	<i>CSF1R</i>
		9q34.1	<i>ABL1</i>
		1q25.2	<i>ABL2</i>
		5q33.1	<i>PDGFRB</i>
Sarcoma: 2002298	Synovial	18q11.2	<i>SS18 (SYT)</i>
	Ewing	22q12.2	<i>EWSR1</i>
Myxoid Liposarcoma: 2002298		12q13	<i>DDIT3 (CHOP)</i>
Alveolar Rhabdomyosarcoma: 2002298		13q13	<i>FKHR (FOXO1)</i>

MOLECULAR GENETICS WITH SEQUENCING, FRAGMENT ANALYSIS, AND GENOMICS

The Molecular Genetics Department at ARUP provides a comprehensive test menu to assist physicians in the diagnosis of patients with inherited genetic disorders. The laboratory offers diagnostic testing, carrier screening for common genetic conditions, fetal testing, presymptomatic testing, molecular confirmation of abnormal newborn screening results, assessment for genetic variants affecting drug metabolism (pharmacogenetics), and multi-gene panels.

The molecular genetics menu offers diagnostic testing for more than 60 different conditions. Disorders for which molecular genetic testing is available include: cystic fibrosis, fragile X, alpha and beta thalassemia, Huntington disease, hemophilia A and B, hearing loss, hereditary hemorrhagic telangiectasia, hereditary non-polyposis colon cancer, pancreatitis, Rett syndrome, hemochromatosis, factor V Leiden, and common Ashkenazi Jewish disorders.

Once a causative mutation is identified, targeted testing for the familial mutation can be requested for at-risk family members. Pharmacogenetic testing may identify genetic variants influencing the metabolism or efficacy of commonly prescribed drugs. Available pharmacogenetic tests include: tamoxifen (*CYP2D6*), irinotecan (*UGT1A1*), warfarin (*CYP2C9* and *VKORC1*), and numerous others.

Many of the hemoglobin-related tests supplement genetic testing for hemoglobinopathies/thalassemias, and include Hemoglobin Evaluation with Reflex to Electrophoresis and/or RBC Solubility, Oxygen Dissociation (P50) by Hemoximetry, and Hemoglobin Evaluation Reflexive Cascade.

ARUP’s genetic counselors are available to answer questions regarding test selection or interpretation.

MOLECULAR GENETICS MULTI-GENE PANELS (GENOMICS)

TEST #	TEST NAME/DESCRIPTION
2006540	Aortopathy Panel, Sequencing and Deletion/Duplication, 21 Genes
2012026	Breast and Ovarian Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 20 Genes
2012032	Cancer Panel, Hereditary, Sequencing and Deletion/Duplication, 47 Genes
2010183	Cardiomyopathy and Arrhythmia Panel, Sequencing (83 Genes) and Deletion/Duplication (81 Genes)
2012151	Charcot-Marie-Tooth (CMT) and Related Hereditary Neuropathies Panel Sequencing
2012155	Charcot-Marie-Tooth (CMT) and Related Hereditary Neuropathies, PMP22 Deletion/Duplication with Reflex to Sequencing Panel
2007545	Childhood-Onset Epilepsy Panel, Sequencing and Deletion/Duplication
2011157	Cobalamin/Propionate/Homocysteine Metabolism Related Disorders Panel, Sequencing (25 Genes) and Deletion/Duplication (24 Genes)
2006340	Exome Sequencing, Familial Control, Tracking
2006336	Exome Sequencing Symptom-Guided Analysis, Patient Only
2006332	Exome Sequencing with Symptom-Guided Analysis
2008803	Expanded Hearing Loss Panel, Sequencing (56 Genes) and Deletion/Duplication (53 Genes)
2013449	Gastrointestinal Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 16 Genes
2012052	Hereditary Hemolytic Anemia Sequencing, 28 Genes
2009337	Hereditary Hemorrhagic Telangiectasia (HHT) Panel, Sequencing and Deletion/Duplication, 5 Genes

TEST #	TEST NAME/DESCRIPTION
2008848	*Holoprosencephaly Panel, Nonsyndromic, Sequencing and Deletion/Duplication, 11 Genes
2007535	Infantile Epilepsy Panel, Sequence Analysis and Exon-Level Deletion/Duplication
2006065	Mitochondrial Disorders (mtDNA) Sequencing
2006054	Mitochondrial Disorders Panel (mtDNA Sequencing and Deletion/Duplication, 121 Nuclear Genes Sequencing, 119 Nuclear Genes Deletion/Duplication)
2010772	*Noonan Spectrum Disorders Panel, Sequencing, 15 Genes
2007370	Periodic Fever Syndromes Panel, Sequencing, 7 Genes, and Deletion/Duplication, 6 Genes
2011156	Primary Antibody Deficiency Panel, Sequencing (35 Genes) and Deletion/Duplication (26 Genes)
2007533	Progressive Myoclonic Epilepsy (PME) Panel, Sequence Analysis and Exon-Level Deletion/Duplication
2009345	Pulmonary Arterial Hypertension (PAH) Panel, Sequencing and Deletion/Duplication, Multigene
2010214	Renal Hereditary Cancer Panel, Sequencing and Deletion/Duplication, 15 Genes
2007085	Retinitis Pigmentosa/Leber Congenital Amaurosis Panel, Sequencing and Deletion/Duplication, 53 Genes
2012015	*Skeletal Dysplasia Panel, Sequencing (39 Genes) and Deletion/Duplication (35 Genes)
2007384	Vascular Malformations Panel, Sequencing and Deletion/Duplication, 14 Genes

MOLECULAR GENETICS WITH GENETIC SEQUENCING AND FRAGMENT ANALYSIS

TEST #	TEST NAME/DESCRIPTION	TEST #	TEST NAME/DESCRIPTION
2013725	<i>ABCC8</i> -Related Hyperinsulinism, 3 Variants	2014314	Autism and Intellectual Disability Comprehensive Panel (includes Fragile X (<i>FMR1</i>) PCR with Reflex to Methylation Analysis)
0051266	*Achondroplasia (<i>FGFR3</i>) 2 Mutations	0051288	Beta-2-Adrenergic Receptor Haplotyping
2011902	Adrenoleukodystrophy, X- Linked (<i>ABCD1</i>) Sequencing	0051421	*Beta Globin Gene Mutations for HbS, HbC, and HbE by PCR
2011906	‡Adrenoleukodystrophy, X-Linked (<i>ABCD1</i>) Sequencing and Deletion/Duplication	0050578	*Beta Globin (<i>HBB</i>) Sequencing
2006230	Alagille Syndrome (<i>JAG1</i>) by Targeted Sequencing and Deletion/Duplication	2001961	*Beta Globin (<i>HBB</i>) Sequencing, Familial Mutation
0051256	Alpha-1-Antitrypsin and A1A Genotype with Reflex to Phenotype	2010117	‡Beta Globin (<i>HBB</i>) Sequencing and Deletion/Duplication
2011622	Alpha Globin (<i>HBA1</i> and <i>HBA2</i>) Deletion/Duplication	0051700	Biotinidase Deficiency (<i>BTD</i>) 5 Mutations
2011708	Alpha Globin (<i>HBA1</i> and <i>HBA2</i>) Sequencing and Deletion/Duplication	0051730	Biotinidase Deficiency (<i>BTD</i>) Sequencing
0051495	*Alpha Thalassemia <i>HBA1</i> and <i>HBA2</i> Gene Deletions	2001961	*Biotinidase Deficiency (<i>BTD</i>) Sequencing, Familial Mutation
2001961	*Alpha Thalassemia <i>HBA1</i> and <i>HBA2</i> Sequencing, Familial Mutation	2004739	Blood Group Genotyping by Microarray
0051710	Alport Syndrome, X-linked (<i>COL4A5</i>) 3 Mutations	0051433	*Bloom Syndrome (<i>BLM</i>), 1 Variant
0051786	Alport Syndrome, X-linked (<i>COL4A5</i>) Sequencing	0051750	<i>BRAF</i> V600E Mutation with Reflex to <i>MLH1</i> Promoter Methylation, Paraffin
2002398	‡Alport Syndrome, X-linked (<i>COL4A5</i>) Sequencing and Deletion/Duplication	2011954	Breast and Ovarian Hereditary Cancer Syndrome (<i>BRCA1</i> and <i>BRCA2</i>) Sequencing
2001961	*Alport Syndrome, X-linked (<i>COL4A5</i>) Sequencing, Familial Mutation	2011949	Breast and Ovarian Hereditary Cancer Syndrome (<i>BRCA1</i> and <i>BRCA2</i>) Sequencing and Deletion/Duplication
2005077	Angelman Syndrome and Prader-Willi Syndrome by Methylation-Sensitive PCR	0051453	*Canavan Disease (<i>ASPA</i>), 4 Variants
2012232	Angelman Syndrome and Prader-Willi Syndrome by Methylation-Sensitive PCR, Fetal	0051682	Carnitine Deficiency, Primary (<i>SLC22A5</i>) Sequencing
2005564	Angelman Syndrome (<i>UBE3A</i>) Sequencing	2004203	‡Carnitine Deficiency, Primary (<i>SLC22A5</i>) Sequencing and Deletion/Duplication
2001961	*Angelman Syndrome (<i>UBE3A</i>) Sequencing, Familial Mutation	2001961	*Carnitine Deficiency, Primary (<i>SLC22A5</i>) Sequencing, Familial Mutation
0050392	Ankylosing Spondylitis (<i>HLAB27</i>) Genotyping	2004931	<i>CDKL5</i> -Related Disorders (<i>CDKL5</i>) Sequencing
0030192	APC Resistance Profile with Reflex to Factor V Leiden	2004935	‡ <i>CDKL5</i> -Related Disorders (<i>CDKL5</i>) Sequencing and Deletion/Duplication
0055654	Apolipoprotein B Mutation Detection	2001961	* <i>CDKL5</i> -Related Disorders (<i>CDKL5</i>) Sequencing, Familial Mutation
2013341	Apolipoprotein E (APOE) Genotyping, Alzheimer Disease Risk	2005018	Celiac Disease (<i>HLA-DQA1*05</i> , <i>HLA-DQB1*02</i> , and <i>HLA-DQB1*03:02</i>) Genotyping
2013337	Apolipoprotein E (APOE) Genotyping, Cardiovascular Risk	2001961	*‡Cerebral Cavous Malformation (<i>CCM1</i> , <i>CCM2</i> , or <i>CCM3</i>) Sequencing, Familial Mutation
2011144	Arginine:Glycine Amidinotransferase (<i>GATM</i>) Deficiency sequencing	2012151	Charcot-Marie-Tooth (CMT) and Related Hereditary Neuropathies Panel Sequencing
0051415	Ashkenazi Jewish Diseases, 16 Genes	2012155	Charcot-Marie-Tooth (CMT) and Related Hereditary Neuropathies, PMP22 Deletion/Duplication with Reflex to Sequencing Panel
2007872	<i>ATP7A</i> -Related Copper Transport Disorders (<i>ATP7A</i>) Sequencing	2012160	Charcot-Marie-Tooth Type 1A (CMT1A)/Hereditary Neuropathy with Liability to Pressure Palsies (HNPP), PMP22 Deletion/Duplication
2008471	‡ <i>ATP7A</i> -Related Copper Transport Disorders (<i>ATP7A</i>) Sequencing and Deletion/Duplication	2012609	CHARGE Syndrome (<i>CHD7</i>) Sequencing
2001961	* <i>ATP7A</i> -Related Copper Transport Disorders (<i>ATP7A</i>) Sequencing, Familial Mutation	2012717	CHARGE Syndrome (<i>CHD7</i>) Sequencing, Fetal

MOLECULAR GENETICS WITH GENETIC SEQUENCING AND FRAGMENT ANALYSIS continued

TEST #	TEST NAME/DESCRIPTION	TEST #	TEST NAME/DESCRIPTION
2006356	Chronic Granulomatous Disease (<i>CYBB</i> Gene Scanning and <i>NCF1</i> Exon 2 GT Deletion) with Reflex to <i>CYBB</i> Sequencing	2005559	‡Ehlers-Danlos Syndrome Kyphoscoliotic Form, Type VI (<i>PLOD1</i>) Sequencing and Deletion/Duplication
2001961	*Chronic Granulomatous Disease (<i>CYBB</i>) Sequencing, Familial Mutation	2001961	*Ehlers-Danlos Syndrome Kyphoscoliotic Form, Type VI (<i>PLOD1</i>) Sequencing, Familial Mutation
2006366	Chronic Granulomatous Disease (<i>NCF1</i>) Exon 2 GT Deletion	2014680	Expanded Carrier Screen by Next Generation Sequencing
2006361	Chronic Granulomatous Disease, X-Linked (<i>CYBB</i>) Gene Scanning with Reflex to Sequencing	2014677	Expanded Carrier Screen by Next Generation Sequencing with Fragile X
2006261	Citrin Deficiency (<i>SLC25A13</i>) Sequencing	2014674	Expanded Carrier Screen Genotyping
2001961	*Citrin Deficiency (<i>SLC25A13</i>) Sequencing, Familial Mutation	2014671	Expanded Carrier Screen Genotyping with Fragile X
2007069	Citrullinemia, Type I (<i>ASS1</i>) Sequencing	0097720	Factor V Leiden (<i>F5</i>) R506Q Mutation
2001961	*Citrullinemia, Type I (<i>ASS1</i>) Sequencing, Familial Mutation	2001549	Factor V, R2 Mutation
2006220	Congenital Amegakaryocytic Thrombocytopenia (CAMT) Sequencing	2003220	Factor XIII (<i>F13A1</i>) V34L Mutation
2008615	Creatine Transporter Deficiency (<i>SLC6A8</i>) Sequencing	2004863	Familial Adenomatous Polyposis (<i>APC</i>) Sequencing
2008610	‡Creatine Transporter Deficiency (<i>SLC6A8</i>) Sequencing and Deletion/Duplication	2001961	*Familial Adenomatous Polyposis (<i>APC</i>) Sequencing, Familial Mutation
2013661	Cystic Fibrosis (<i>CFTR</i>) 165 Pathogenic Variants	2004915	Familial Adenomatous Polyposis Panel: <i>APC</i> Sequencing, <i>APC</i> Deletion/Duplication, and <i>MYH2</i> Mutations
2013662	Cystic Fibrosis (<i>CFTR</i>) 165 Pathogenic Variants, Fetal	2002658	Familial Mediterranean Fever (<i>MEFV</i>) Sequencing
2013663	Cystic Fibrosis (<i>CFTR</i>) 165 Pathogenic Variants with Reflex to Sequencing	2001961	*Familial Mediterranean Fever (<i>MEFV</i>) Sequencing, Familial Mutation
2013664	Cystic Fibrosis (<i>CFTR</i>) 165 Pathogenic Variants with Reflex to Sequencing and Reflex to Deletion/Duplication	2001961	*Familial Mutation, Targeted Sequencing
0051110	Cystic Fibrosis (<i>CFTR</i>) Sequencing	2001980	Familial Mutation, Targeted Sequencing, Fetal
2001961	*Cystic Fibrosis (<i>CFTR</i>) Sequencing, Familial Mutation	2014035	Familial Transthyretin Amyloidosis (TTR) Sequencing
0051640	Cystic Fibrosis (<i>CFTR</i>) Sequencing with Reflex to Deletion/Duplication	0051468	*Fanconi Anemia Group C (<i>FANCC</i>) 2 Mutations
0056006	Cystic Fibrosis Cis-Trans (<i>CFTR</i>) R117H and 5T Mutations	2007883	Filaggrin (<i>FLG</i>) 2 mutations
2006236	Diamond-Blackfan Anemia (<i>RPL11</i>) Sequencing	2009033	Fragile X (<i>FMR1</i>) PCR with Reflex to Methylation Analysis
2006234	Diamond-Blackfan Anemia (<i>RPL5</i>) Sequencing	2009034	Fragile X (<i>FMR1</i>) PCR with Reflex to Methylation Analysis, Fetal
2006238	Diamond-Blackfan Anemia (<i>RPS19</i>) Sequencing	2002662	Freeman-Sheldon Syndrome (<i>MYH3</i>) Sequencing Exon 17
2011235	Duchenne/Becker Muscular Dystrophy (<i>DMD</i>) Deletion/Duplication	0051176	*Galactosemia (<i>GALT</i>) 9 Mutations
2011231	Duchenne/Becker Muscular Dystrophy (<i>DMD</i>) Deletion/Duplication, Fetal	0051175	Galactosemia (<i>GALT</i>) Enzyme Activity and 9 Mutations
2011241	Duchenne/Becker Muscular Dystrophy (<i>DMD</i>) Deletion/Duplication with Reflex to Sequencing	2006697	Galactosemia (<i>GALT</i>) Sequencing
2011153	Duchenne/Becker Muscular Dystrophy (<i>DMD</i>) Sequencing	2001961	*Galactosemia (<i>GALT</i>) Sequencing, Familial Mutation
0051463	*Fanconi Anemia, Group C (<i>FANCC</i>), 2 Variants	0051438	*Gaucher Disease (<i>GBA</i>), 8 Variants
2006244	Dyskeratosis Congenita, Autosomal (<i>TERC</i>) Sequencing	3000258	Genetic Carrier Screen, (CF, FXS, and SMA) with Reflex to Methylation
2006228	Dyskeratosis Congenita, X-linked (<i>DKC1</i>) Sequencing	0051476	Glaucoma, Primary Congenital (<i>CYP1B1</i>) Sequencing
		2001961	*Glaucoma, Primary Congenital (<i>CYP1B1</i>) Sequencing, Familial Mutation
		2011470	<i>GLI3</i> -related disorders (<i>GLI3</i>) Sequencing
		2011465	‡ <i>GLI3</i> -Related Disorders (<i>GLI3</i>) Sequencing and Deletion/Duplication

MOLECULAR GENETICS WITH GENETIC SEQUENCING AND FRAGMENT ANALYSIS continued

TEST #	TEST NAME/DESCRIPTION	TEST #	TEST NAME/DESCRIPTION
2007163	Glucose-6-Phosphate Dehydrogenase Deficiency (<i>G6PD</i>) Sequencing	2001961	*Hereditary Paraganglioma-Pheochromocytoma (<i>SDHB</i>) Sequencing, Familial Mutation
2001961	*Glucose-6-Phosphate Dehydrogenase Deficiency (<i>G6PD</i>) Sequencing, Familial Mutation	2007117	Hereditary Paraganglioma-Pheochromocytoma (<i>SDHC</i>) Sequencing and Deletion/Duplication
0051684	Glucose-6-Phosphate Dehydrogenase (<i>G6PD</i>) 2 Mutations, African Alleles	2001961	*Hereditary Paraganglioma-Pheochromocytoma (<i>SDHC</i>) Sequencing, Familial Mutation
2013740	Glycogen Storage Disease, Type 1A (<i>G6PC</i>), 9 Variants	2007122	Hereditary Paraganglioma-Pheochromocytoma (<i>SDHD</i>) Sequencing and Deletion/Duplication
2011140	Guanidinoacetate Methyltransferase (<i>GAMT</i>) Deficiency Sequencing	2011461	Hereditary Paraganglioma-Pheochromocytoma (<i>SDHA</i>) Sequencing
0040116	Haptoglobin (HP) Genotyping	2001961	*Hereditary Paraganglioma-Pheochromocytoma (<i>SDHD</i>) Sequencing, Familial Mutation
0051374	Hearing Loss, Nonsyndromic, Connexin 26 (<i>GJB2</i>) Sequencing	0051650	‡HNPCC/Lynch Syndrome (<i>MLH1</i>) Sequencing and Deletion/Duplication
2001961	*Hearing Loss, Nonsyndromic, Connexin 26 (<i>GJB2</i>) Sequencing, Familial Mutation	0051654	‡HNPCC/Lynch Syndrome (<i>MSH2</i>) Sequencing and Deletion/Duplication
2001956	Hearing Loss, Nonsyndromic, Connexin 30 (<i>GJB6</i>) 2 Deletions	0051656	‡HNPCC/Lynch Syndrome (<i>MSH6</i>) Sequencing and Deletion/Duplication
2002044	Hearing Loss, Nonsyndromic, Mitochondrial DNA 2 Mutations	0051737	‡HNPCC/Lynch Syndrome (<i>PMS2</i>) Sequencing and Deletion/Duplication
2001992	Hearing Loss, Nonsyndromic Panel (<i>GJB2</i>) Sequencing, 2 Deletions, and Mitochondrial DNA, 2 Mutations	2001961	*HNPCC/Lynch Syndrome Sequencing, Familial Mutation
0055656	Hemochromatosis, Hereditary (<i>HFE</i>) 3 Mutations	0049302	HNPCC/Microsatellite Instability by IHC
2005792	Hemoglobin Evaluation Reflexive Cascade	0040018	◊Huntington Disease (<i>HD</i>) Mutation by PCR
2004686	Hemoglobin Lepore (<i>HBD-HBB</i> Fusion) 3 Mutations	0051367	Hypochondroplasia (<i>FGFR3</i>) 2 Mutations
2013399	Hemoglobin S, Sickle Solubility	2006274	Inherited Insulin Resistance Syndromes (<i>INSR</i>) Sequencing
2001759	*Hemophilia A (<i>F8</i>) 2 Inversions	2001961	*Inherited Insulin Resistance Syndromes (<i>INSR</i>) Sequencing, Familial Mutation
2001614	‡Hemophilia A (<i>F8</i>) 2 Inversions with Reflex to Sequencing and Reflex to Deletion/Duplication	2013909	Joubert Syndrome Type 2 (<i>TMEM216</i>), 1 Variant
2001747	Hemophilia A (<i>F8</i>) Sequencing	2004988	Juvenile Polyposis (<i>BMPR1A</i>) Sequencing
2001961	*Hemophilia A (<i>F8</i>) Sequencing, Familial Mutation	2004992	‡Juvenile Polyposis (<i>BMPR1A</i>) Sequencing and Deletion/Duplication
2001578	Hemophilia B (<i>F9</i>) Sequencing	2001961	*Juvenile Polyposis (<i>BMPR1A</i>) Sequencing, Familial Mutation
2010494	Hemophilia B (<i>F9</i>) Sequencing and Deletion/Duplication	0051510	Juvenile Polyposis (<i>SMAD4</i>) Sequencing
2001961	*Hemophilia B (<i>F9</i>) Sequencing, Familial Mutation	2001971	‡Juvenile Polyposis (<i>SMAD4</i>) Sequencing and Deletion/Duplication
0051381	Hereditary Hemorrhagic Telangiectasia (<i>ACVRL1</i> and <i>ENG</i>) Sequencing	2001961	*Juvenile Polyposis (<i>SMAD4</i>) Sequencing, Familial Mutation
0051382	‡Hereditary Hemorrhagic Telangiectasia (<i>ACVRL1</i> and <i>ENG</i>) Sequencing and Deletion/Duplication	2009306	Kabuki Syndrome (<i>KMT2D</i>) Sequencing
2009008	Hereditary Hemorrhagic Telangiectasia (<i>ACVRL1</i> and <i>ENG</i>) Sequencing and Deletion/Duplication with Reflex to Juvenile Polyposis (<i>SMAD4</i>) Sequencing and Deletion/Duplication	0051644	Kell Antigen Genotyping (<i>KEL1-KEL2</i>)
2001961	*Hereditary Hemorrhagic Telangiectasia (<i>ACVRL1</i> or <i>ENG</i>) Sequencing, Familial Mutation	2002945	Legius Syndrome (<i>SPRED1</i>) Sequencing
2007167	‡Hereditary Paraganglioma-Pheochromocytoma (<i>SDHB</i> , <i>SDHC</i> , and <i>SDHD</i>) Sequencing and Deletion/Duplication	2008347	‡Legius Syndrome (<i>SPRED1</i>) Sequencing and Deletion/Duplication
2007108	Hereditary Paraganglioma-Pheochromocytoma (<i>SDHB</i>) Sequencing and Deletion/Duplication	2001961	*Legius Syndrome (<i>SPRED1</i>) Sequencing, Familial Mutation

MOLECULAR GENETICS WITH GENETIC SEQUENCING AND FRAGMENT ANALYSIS continued

TEST #	TEST NAME/DESCRIPTION	TEST #	TEST NAME/DESCRIPTION
2009302	Li-Fraumeni (<i>TP53</i>) Sequencing	2004911	<i>MYH</i> -Associated Polyposis (<i>MYH</i>) 2 Mutations
2009313	‡Li-Fraumeni (<i>TP53</i>) Sequencing and Deletion/Duplication	2005023	Narcolepsy (<i>HLA-DQB1*06:02</i>) Genotyping
2013735	Lipoamide Dehydrogenase Deficiency (DLD), 2 Variants	2013745	<i>NEB</i> -Related Nemaline Myopathy, 1 Variant
2004543	‡ <i>LMNA</i> -Related Disorders (<i>LMNA</i>) Sequencing	2007159	Neurofibromatosis Type 1 (<i>NF1</i>) Sequencing
2001961	* <i>LMNA</i> -Related Disorders (<i>LMNA</i>) Sequencing, Familial Mutation	2007154	‡Neurofibromatosis Type 1 (<i>NF1</i>) Sequencing and Deletion/Duplication
2002705	Loeys-Dietz Syndrome (<i>TGFBR1</i> and <i>TGFBR2</i>) Sequencing	2001961	*Neurofibromatosis Type 1 (<i>NF1</i>) Sequencing, Familial Mutation
2001961	*Loeys-Dietz Syndrome (<i>TGFBR1</i> or <i>TGFBR2</i>) Sequencing, Familial Mutation	0051458	*Niemann-Pick, Type A (<i>SMPD1</i>) 4 Variants
0051674	Macular Degeneration, Age-Related, 2 DNA Markers	2009077	Non-Invasive Prenatal Testing for RHD Genotyping, Fetal
2013730	Maple Syrup Urine Disease, Type 1B (<i>BCKDHB</i>), 3 Variants	2014599	Non-Alcoholic Fatty Liver Disease Susceptibility (<i>PNPLA3</i>) Genotyping
2005589	Marfan Syndrome, <i>FBN1</i> Sequencing	2001961	*Noonan Syndrome (<i>PTPN11</i> or <i>SOS1</i>) Sequencing, Familial Mutation
2005584	‡Marfan Syndrome, <i>FBN1</i> Sequencing and Deletion/Duplication	0051805	Noonan Syndrome (<i>PTPN11</i>) Sequencing
2001961	*Marfan Syndrome, <i>FBN1</i> Sequencing, Familial Mutation	2004189	Noonan Syndrome (<i>PTPN11</i>) Sequencing with Reflex to <i>SOS1</i> Sequencing
2014699	Maternal T Cell Engraftment in SCID	2004195	Noonan Syndrome (<i>SOS1</i>) Sequencing
2014704	Maternal T Cell Engraftment in SCID, Maternal Specimen	2004901	Ornithine Transcarbamylase Deficiency (<i>OTC</i>) Sequencing
2014694	Maternal T Cell Engraftment in SCID, Pre-Engraftment Specimen	2004896	‡Ornithine Transcarbamylase Deficiency (<i>OTC</i>) Sequencing and Deletion/Duplication
0051205	Medium Chain Acyl-CoA Dehydrogenase Deficiency (<i>ACADM</i>) 2 Mutations	2001961	*Ornithine Transcarbamylase Deficiency (<i>OTC</i>) Sequencing, Familial Mutation
0051758	Medium Chain Acyl-CoA Dehydrogenase Deficiency (<i>ACADM</i>) Sequencing	2010703	Pancreatitis (<i>CTRC</i>) Sequencing
2001961	*Medium Chain Acyl-CoA Dehydrogenase Deficiency (<i>ACADM</i>) Sequencing, Familial Mutation	2010876	Pancreatitis, Panel (<i>CTRC</i> , <i>CFTR</i> , <i>PRSS1</i> , <i>SPINK1</i>) Sequencing
0055655	Methylenetetrahydrofolate Reductase (<i>MTHFR</i>) 2 Mutations	2002016	Pancreatitis (<i>PRSS1</i>) Sequencing
2005270	Mismatch Repair by IHC with Reflex to <i>MLH1</i> Promoter Methylation	2001961	*Pancreatitis (<i>PRSS1</i>) Sequencing, Familial Mutation
0051755	Molar Pregnancy, 16 DNA Markers	2002012	Pancreatitis (<i>SPINK1</i>) Sequencing
0051448	*Mucopolipidosis Type IV (<i>MCOLN1</i>) 2 Variants	2001961	*Pancreatitis (<i>SPINK1</i>) Sequencing, Familial Mutation
2005359	Multiple Endocrine Neoplasia Type 1 (<i>MEN1</i>) Sequencing	2008394	Peutz-Jeghers Syndrome (<i>STK11</i>) Sequencing
2005360	‡Multiple Endocrine Neoplasia Type 1 (<i>MEN1</i>) Sequencing and Deletion/Duplication	2008398	‡Peutz-Jeghers Syndrome (<i>STK11</i>) Sequencing and Deletion/Duplication
2001961	*Multiple Endocrine Neoplasia Type 1 (<i>MEN1</i>) Sequencing, Familial Mutation	2001961	*Peutz-Jeghers Syndrome (<i>STK11</i>) Sequencing, Familial Mutation
0051390	Multiple Endocrine Neoplasia, Type 2 (<i>RET</i>) Sequencing Exons 10, 11, 13–16	2004980	Plasminogen Activator Inhibitor-1, PAI-1 (<i>SERPINE1</i>) Genotyping
2001961	*Multiple Endocrine Neoplasia Type 2 (<i>RET</i>) Sequencing, Familial Mutation	+	Platelet Antigen Genotyping: HPA 1, 2, 3, 4, 5, 6, and 15 (ordered individually or as panel)
2006307	<i>MUTYH</i> -Associated Polyposis (<i>MUTYH</i>) 2 Mutations with Reflex to Sequencing	2012250	Polycystic Kidney Disease, Autosomal Dominant (PKD1 and PKD2) Sequencing and Deletion/Duplication
2006191	<i>MUTYH</i> -Associated Polyposis (<i>MUTYH</i>) Sequencing	2012255	Polycystic Kidney Disease, Autosomal Dominant (PKD1 and PKD2) Sequencing
2001961	* <i>MUTYH</i> -Associated Polyposis (<i>MUTYH</i>) Sequencing, Familial Mutation	2005077	Angelman Syndrome and Prader-Willi Syndrome by Methylation

MOLECULAR GENETICS WITH GENETIC SEQUENCING AND FRAGMENT ANALYSIS continued

TEST #	TEST NAME/DESCRIPTION	TEST #	TEST NAME/DESCRIPTION
0051476	Primary Congenital Glaucoma (<i>CYP11B1</i>) Sequencing	2007569	TACI-Associated Common Variable Immunodeficiency (<i>TNFRSF13B</i>) Sequencing
0056060	Prothrombin (<i>F2</i>) G20210A Mutation	2001961	*TACI-Associated Common Variable Immunodeficiency (<i>TNFRSF13B</i>) Sequencing, Familial Mutation
2005898	Protocadherin 19 (<i>PCDH19</i>) Sequencing	2009298	*Tay-Sachs Disease (<i>HEXA</i>), 7 Variants
2002722	<i>PTEN</i> -Related Disorders (<i>PTEN</i>) Sequencing	0051428	*Tay-Sachs (<i>HEXA</i>) 7 Mutations
2002470	‡ <i>PTEN</i> -Related Disorders (<i>PTEN</i>) Sequencing and Deletion/Duplication	2010015	Telangiectasia Syndrome (<i>BMP9/GDF2</i>) Sequencing
2001961	* <i>PTEN</i> -Related Disorders (<i>PTEN</i>) Sequencing, Familial Mutation	0051506	*Thanatophoric Dysplasia, Types I and II (<i>FGFR3</i>) 13 Mutations
2003410	Pulmonary Arterial Hypertension (<i>BMPR2</i>) Sequencing	0056200	Thrombotic Risk, DNA Panel
2003405	‡Pulmonary Arterial Hypertension (<i>BMPR2</i>) Sequencing and Deletion/Duplication	0030133	Thrombotic Risk, Inherited Etiologies (Most Common) with Reflex to Factor V Leiden
2001961	*Pulmonary Arterial Hypertension (<i>BMPR2</i>) Sequencing, Familial Mutation	2006385	Thrombotic Risk Reflexive Panel
2002730	<i>RASA1</i> -Related Disorders (<i>RASA1</i>) Sequencing	0050547	Twin Zygosity Testing
2007852	‡ <i>RASA1</i> -Related Disorders (<i>RASA1</i>) Sequencing and Deletion/Duplication	2013750	Usher Syndrome, Types 1F and 3 (<i>PCDH15</i> and <i>CLRN1</i>), 2 Variants
2001961	* <i>RASA1</i> -Related Disorders (<i>RASA1</i>) Sequencing, Familial Mutation	2002001	Very Long-Chain Acyl-CoA Dehydrogenase Deficiency (<i>ACADVL</i>) Sequencing
0051378	Rett Syndrome (<i>MECP2</i>) Sequencing	2004212	‡Very Long-Chain Acyl-CoA Dehydrogenase Deficiency (<i>ACADVL</i>) Sequencing and Deletion/Duplication
0051614	‡Rett Syndrome (<i>MECP2</i>) Sequencing and Deletion/Duplication	2001961	*Very Long-Chain Acyl-CoA Dehydrogenase Deficiency (<i>ACADVL</i>) Sequencing, Familial Mutation
2001961	*Rett Syndrome (<i>MECP2</i>) Sequencing, Familial Mutation	2002970	von Hippel-Lindau (<i>VHL</i>) Sequencing
0050421	RhCc Antigen (<i>RHCE</i>) Genotyping	2002965	‡von Hippel-Lindau (<i>VHL</i>) Sequencing and Deletion/Duplication
0051368	RhD Antigen (<i>RhD</i>) Genotyping	2001961	*von Hippel-Lindau (<i>VHL</i>) Sequencing, Familial Mutation
2009077	Non-Invasive Prenatal Testing for RhD Genotyping, Fetal	2005476	von Willebrand Disease, Platelet Type (<i>GP1BA</i>) 4 Mutations
0050423	RhEe Antigen (<i>RHCE</i>) Genotyping	2001961	*von Willebrand Disease, Type 2A, 2B, 2M, or 2N (<i>VWF</i>) Sequencing, Familial Mutation
2005896	<i>SCN1A</i> -Related Seizure Disorders (<i>SCN1A</i>), Sequencing and Deletion/Duplication	2005480	von Willebrand Disease, Type 2A (<i>VWF</i>) Sequencing Exon 28 with Reflex to 9 Exons
2006948	SDHB with Interpretation by Immunohistochemistry	2005486	von Willebrand Disease, Type 2B (<i>VWF</i>) Sequencing
2006240	Shwachman-Diamond Syndrome (<i>SBDS</i>) Sequencing	2005490	von Willebrand Disease, Type 2M (<i>VWF</i>) Sequencing
2011457	Smith-Lemli-Opitz Syndrome (<i>DHCR7</i>) Sequencing	2005494	von Willebrand Disease, Type 2N (<i>VWF</i>) Sequencing
2011704	Smith-Lemli-Opitz Syndrome (<i>DHCR7</i>) Sequencing, Fetal	2010716	Wilson Disease (<i>ATP7B</i>) Sequencing
2013436	Spinal Muscular Atrophy (SMA) Copy Number Analysis	2006352	X-Chromosome Inactivation Analysis
2013444	Spinal Muscular Atrophy (SMA) Copy Number Analysis, Fetal	2001778	Y-Chromosome Microdeletion

PHARMACOGENETICS MARKERS

TEST #	TEST NAME/DESCRIPTION	TEST #	TEST NAME/DESCRIPTION
2007228	5-Fluorouracil (5-FU) Toxicity and Chemotherapeutic Response, 5 Mutations	2012049	HLA-B*15:02 Genotyping, Carbamazepine Hypersensitivity
2004247	CEBPA Mutation Detection	2002429	HLA-B*5701 Genotyping for Abacavir Sensitivity
2002766	Cytochrome P450 2C9, <i>CYP2C9</i> - 2 Variants	2004680	Interleukin 28B-Associated Variants, IL28B, 2 SNPs
2012769	Cytochrome P450 2C19, <i>CYP2C19</i> - 9 Variants	0040248	<i>KRAS</i> Mutation Detection
2012772	Warfarin Sensitivity, <i>CYP2C9</i> and <i>VKORC1</i> , 3 Variants	2001932	<i>KRAS</i> Mutation Detection with <i>BRAF</i> Reflex
2012740	Cytochrome P450 3A5 Genotyping, <i>CYP3A5</i> , 2 Variants	0055655	Methylenetetrahydrofolate Reductase (<i>MTHFR</i>) 2 Mutations
2013098	Cytochrome P450 Genotype Panel	2008767	Opioid Receptor, Mu 1, <i>OPRM1</i> Genotype, 1 Variant
2014547	Cytochrome P450 2D6 (<i>CYP2D6</i>) 15 Variants and Gene Duplication	2002871	<i>PML-RARA</i> Translocation, t(15;17) by RT-PCR, Quantitative
2012166	Dihydropyrimidine Dehydrogenase (DPYD), 3 Variants	2008426	Statin Sensitivity (<i>SLCO1B1</i>), 1 Variant
2002440	EGFR Mutation Detection by Pyrosequencing	2012233	Thiopurine Methyltransferase (<i>TPMT</i>) Genotyping, 4 Variants
2002674	Gastrointestinal Stromal Tumor Mutation (<i>C-KIT</i>)—imatinib	0051332	UDP Glucuronosyltransferase 1A1 (<i>UGT1A1</i>) Genotyping—irinotecan
2008603	<i>ERBB2</i> (HER2/neu) Gene Amplification by FISH, Tissue		

HEMATOLOGIC DISORDERS

TEST #	TEST NAME/DESCRIPTION	TEST #	TEST NAME/DESCRIPTION
0051495	Alpha Thalassemia (<i>HBA1</i> and <i>HBA2</i>) 7 Deletions	2005792	Hemoglobin Evaluation Reflexive Cascade
2001582	Alpha Thalassemia <i>HBA1</i> and <i>HBA2</i> Sequencing	0050610	Hemoglobin Evaluation with Reflex to Electrophoresis and/or RBC Solubility
2011622	Alpha Globin (<i>HBA1</i> and <i>HBA2</i>) Deletion/Duplication	0081348	Hemoglobin F
0051421	Beta Globin Gene Mutations for <i>HbS</i> , <i>HbC</i> , and <i>HbE</i> by PCR	0050613	Hemoglobin (Hb) A2 and F by Column
0050578	Beta Globin (<i>HBB</i>) Sequencing	2004686	Hemoglobin Lepore (<i>HBD-HBB</i> Fusion) 3 Mutations
2010117	‡Beta Globin (<i>HBB</i>) Sequencing and Deletion/Duplication	0050520	Hemoglobin S, Evaluation with Reflex to RBC Solubility
2007163	Glucose-6-Phosphate Dehydrogenase Deficiency (<i>G6PD</i>) Sequencing	2013399	Hemoglobin S, Sickle Solubility
0080135	Glucose-6-Phosphate Dehydrogenase (enzyme)	0049020	Hemoglobin, Unstable
0051684	Glucose-6-Phosphate Dehydrogenase (<i>G6PD</i>) 2 Mutations	2002984	Oxygen Dissociation (P50) by Hemoximetry
0049090	Heinz Body Stain	0080290	Pyruvate Kinase
		2002970	von Hippel-Lindau (<i>VHL</i>) Sequencing

+ Multiple tests available

* Fetal testing available

◊ Testing is not offered for patients under the age of 18

‡ For standalone deletion/duplication testing please contact the ARUP genetic counselors for more information

Please see the ARUP Molecular Oncology Services brochure for a complete listing of molecular tests related to oncology.

Refer to the Laboratory Test Directory on the ARUP website, www.aruplab.com, for more detailed test information.



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