HOTLINE: Effective February 22, 2022

MEDICARE COVERAGE OF LABORATORY TESTING

Please remember when ordering laboratory tests that are billed to Medicare/Medicaid or other federally funded programs, the following requirements apply:

1. Only tests that are medically necessary for the diagnosis or treatment of the patient should be ordered. Medicare does not pay for screening tests except for certain specifically approved procedures and may not pay for non-FDA approved tests or those tests considered experimental.
2. If there is reason to believe that Medicare will not pay for a test, the patient should be informed. The patient should then sign an Advance Beneficiary Notice (ABN) to indicate that he or she is responsible for the cost of the test if Medicare denies payment.
3. The ordering physician must provide an ICD-10 diagnosis code or narrative description, if required by the fiscal intermediary or carrier.
4. Organ- or disease-related panels should be billed only when all components of the panel are medically necessary.
5. Both ARUP- and client-customized panels should be billed to Medicare only when every component of the customized panel is medically necessary.
6. Medicare National Limitation Amounts for CPT codes are available through the Centers for Medicare & Medicaid Services (CMS) or its intermediaries. Medicaid reimbursement will be equal to or less than the amount of Medicare reimbursement.

The CPT Code(s) for test(s) profiled in this bulletin are for informational purposes only. The codes reflect our interpretation of CPT coding requirements, based upon AMA guidelines published annually. CPT codes are provided only as guidance to assist you in billing. ARUP strongly recommends that clients reconfirm CPT code information with their local intermediary or carrier. CPT coding is the sole responsibility of the billing party.

The regulations described above are only guidelines. Additional procedures may be required by your fiscal intermediary or carrier.

Hotline Page #	Test Number	Summary of Changes by Test Name	Name Change	Methodology	Performed/Reported Schedule	Specimen Requirements	Reference Interval	Interpretive Data	Note	CPT Code	Component Change	Other Interface Change	New Test	Inactive
9	0070031	Adrenocorticotropic Hormone Stimulation, 0 Minutes		x		x		x						
10	0070032	Adrenocorticotropic Hormone Stimulation, 30 Minutes		x		x		x						
10	0070033	Adrenocorticotropic Hormone Stimulation, 60 Minutes		x		x		x						
10	0020008	Alanine Aminotransferase, Serum or Plasma										x		
10	0020012	Aldolase, Serum					x							
11	3004510	Amphiphysin Antibody, IgG, CSF											x	
11	0020804	Amylase, Isoenzymes				x	x							

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12	0020013	Amylase, Serum or Plasma					x							
12	0060193	Antimicrobial Susceptibility - *Nocardia*							x					
12	0050317	Antinuclear Antibodies (ANA), IgG by ELISA with Reflex to ANA HEp-2 Substrate, IgG by IFA and ENA Confirmation		x		x								
13	3004407	*APC*- and *MUTYH*-Associated Polyposis Panel, Sequencing and Deletion/Duplication											x	
13	0020007	Aspartate Aminotransferase, Serum or Plasma				x								
14	3002787	Autoimmune Encephalitis Reflexive Panel, CSF					x		x	x	x	x		
15	3002887	Autoimmune Neurologic Disease Reflexive Panel, CSF					x		x	x	x	x		
16	2006193	B-Cell Clonality Screening (IgH and IgK) by PCR				x								
16	0080054	Beta-2 Microglobulin, CSF				x								
16	0080053	Beta-2 Microglobulin, Serum or Plasma				x	x							
17	0070029	Beta-hCG, Quantitative (Tumor Marker)				x								
17	0020730	Beta-hCG, Quantitative (Tumor Marker), CSF				x								
17	0020033	Bilirubin, Direct, Serum or Plasma										x		
17	0020032	Bilirubin, Total, Serum or Plasma				x								
89	0051730	Biotinidase Deficiency (BTD) Sequencing												x
18	3004424	Biotinidase Deficiency (*BTD*) Sequencing											x	
18	0020027	Calcium, Serum or Plasma				x								
18	2010673	*CALR* (Calreticulin) Exon 9 Mutation Analysis by PCR				x								
19	0080462	Cancer Antigen 125				x	x							
19	0080464	Cancer Antigen-Breast (CA 15-3)				x								
19	0080461	Cancer Antigen-GI (CA 19-9)				x	x							
19	2013798	*Candida* Species by PCR				x								
20	0080080	Carcinoembryonic Antigen				x	x							
20	3004465	Celiac Antibodies, Tissue Transglutaminase (tTG), IgA and IgA, Total											x	
21	3004383	Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy, CADASIL (*NOTCH3*), Sequencing											x	
89	3000531	Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy, CADASIL (*NOTCH3*), Sequencing (Temporary Referral as of 01/25/21)												x
21	0050160	Ceruloplasmin				x	x							

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22	2011311	Chloride, Random Urine				x								
22	0020850	Chloride, Urine				x								
22	0020852	Citric Acid, Urine				x								
22	0050150	Complement Component 3				x	x							
22	0050155	Complement Component 4				x								
23	0050149	Complement Components 3 and 4				x	x							
23	3000480	Comprehensive Systemic Sclerosis Panel				x								
24	2002282	Congenital Adrenal Hyperplasia Panel, 11-Beta Hydroxylase Deficiency					x	x				x		
27	3002463	Connective Tissue Disease First Line Panel with Reflex				x								
27	0051668	Connective Tissue Diseases Profile				x								
27	3000501	Cortisol, Inferior Vena Cava		x		x	x							
27	3000502	Cortisol, Left Adrenal Vein		x		x	x							
28	3000503	Cortisol, Right Adrenal Vein		x		x	x							
28	0070030	Cortisol, Serum		x		x		x						
28	0060055	Coxsackie B Virus Antibodies			x									
28	0050180	C-Reactive Protein				x								
29	0050182	C-Reactive Protein, High Sensitivity						x						
29	0020414	Creatine Kinase Isoenzymes					x							
29	3002030	Creatine Kinase, MB and Relative Percent					x							
29	0020010	Creatine Kinase, Total, Serum or Plasma					x							
30	0070416	C-Telopeptide, Beta-Cross-Linked, Serum				x	x							
31	3004310	CYP2B6											x	
32	3001508	*CYP2C19*						x			x			
32	3001501	*CYP2C8*, *CYP2C9*, and *CYP2C* cluster	x					x			x			
33	3001513	*CYP2D6*		x				x			x			
33	3001518	*CYP3A4* and *CYP3A5*						x			x			
34	3001524	Cytochrome P450 Genotyping Panel		x				x			x			
35	3004255	Cytochrome P450 Genotyping Panel, with GeneDose Access		x				x			x			
35	2003414	Cytogenomic SNP Microarray									x			
35	2002366	Cytogenomic SNP Microarray - Fetal									x			
35	2006325	Cytogenomic SNP Microarray - Oncology									x			
36	2006267	Cytogenomic SNP Microarray Buccal Swab									x			

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36	0070040	Dehydroepiandrosterone Sulfate, Serum				x	x							
36	3003144	Deletion/Duplication Analysis by MLPA							x					
36	3001783	Dermatomyositis and Polymyositis Panel				x								
37	3004512	Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody, IgG by IFA With Reflex to Titer, CSF											x	
37	0095155	DNA Cell Cycle Analysis - Ploidy and S-Phase										x		
37	2011153	Duchenne/Becker Muscular Dystrophy (*DMD*) Sequencing			x									
37	0060053	Echovirus Antibodies			x									
38	0020498	Electrolytes, Urine				x								
38	2014108	Enterovirus Antibodies Panel			x									
38	3001781	Extended Myositis Panel				x								
38	0050652	Extractable Nuclear Antigen Antibodies (Smith/RNP, Smith, SSA 52, SSA 60, and SSB)				x								
89	2004863	Familial Adenomatous Polyposis (APC) Sequencing (Temporary Referral as of 12/07/20)												x
89	2004915	Familial Adenomatous Polyposis Panel: (APC) Sequencing and Deletion/Duplication, (*MUTYH)* 2 Mutations (Extended TAT as of 11/20/20-no referral available)												x
39	3004434	Familial Mediterranean Fever (*MEFV*) Sequencing											x	
89	2002658	Familial Mediterranean Fever (MEFV) Sequencing												x
40	0070065	Ferritin				x	x					x		
40	0097621	Fluconazole, Quantitative by LC-MS/MS				x		x						
40	0070055	Follicle Stimulating Hormone, Serum				x								
41	0099012	Fructosamine					x							
41	2005633	Genomic SNP Microarray, Products of Conception									x			
41	0020725	Glomerular Filtration Rate, Estimated				x	x							
89	2007163	Glucose-6-Phosphate Dehydrogenase Deficiency (G6PD) Sequencing												x
42	3004457	Glucose-6-Phosphate Dehydrogenase Deficiency (*G6PD*) Sequencing											x	
43	3004370	H3K27M by Immunohistochemistry											x	
43	3004364	H3K27me3 by Immunohistochemistry											x	
44	0050280	Haptoglobin				x								
44	2006686	*Helicobacter pylori* Culture				x								
44	3001842	Hereditary Myeloid Neoplasms Panel, Sequencing			x									

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89	2011461	Hereditary Paraganglioma-Pheochromocytoma (SDHA) Sequencing												x
45	3004480	Hereditary Paraganglioma-Pheochromocytoma (*SDHA*, *SDHB*, *SDHC*, and *SDHD*) Sequencing and Deletion/Duplication											x	
89	2007108	Hereditary Paraganglioma-Pheochromocytoma (SDHB) Sequencing and Deletion/Duplication												x
89	2007167	Hereditary Paraganglioma-Pheochromocytoma (SDHB, SDHC, and *SDHD*) Sequencing and Deletion/Duplication Panel												x
89	2007117	Hereditary Paraganglioma-Pheochromocytoma (SDHC) Sequencing and Deletion/Duplication												x
89	2007122	Hereditary Paraganglioma-Pheochromocytoma (SDHD) Sequencing and Deletion/Duplication												x
89	2008125	Hexosaminidase A Percent and Total Hexosaminidase in Leukocytes												x
89	2008129	Hexosaminidase A Percent and Total Hexosaminidase in Plasma with Reflex to Hexosaminidase A Percent and Total Hexosaminidase in Leukocytes												x
89	2008121	Hexosaminidase A Percent and Total Hexosaminidase, Plasma or Serum												x
46	2001763	Hirsutism Evaluation Panel					x					x		
48	3003853	Human Immunodeficiency Virus 1 Drug Resistance by Next Generation Sequencing				x								
89	2003390	Interferon Beta Neutralizing Antibody with Reflex to Titer												x
49	0020420	Iron and Iron Binding Capacity				x	x							
49	0020037	Iron, Plasma or Serum				x	x							
49	0050138	Islet Cell Cytoplasmic Antibody, IgG				x								
50	0098519	Itraconazole, Quantitative by LC-MS/MS				x		x						
50	3004046	*JAK2* (V617F) Mutation by ddPCR, Qualitative				x								
50	3003800	*JAK2* (V617F) Mutation by ddPCR, Qualitative with Reflex to *CALR* (Calreticulin) Exon 9 Mutation Analysis by PCR with Reflex to *MPL* Mutation Detection				x								
50	3003801	*JAK2* (V617F) Mutation by ddPCR, Qualitative with Reflex to *JAK2* Exon 12 Mutation Analysis by PCR				x								
50	3003751	*JAK2* (V617F) Mutation by ddPCR, Quantitative				x								
51	2002357	*JAK2* Exon 12 Mutation Analysis by PCR				x								
51	0098627	Keppra (Levetiracetam)					x							

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51	0020505	Lactate Dehydrogenase Total, Body Fluid										x		
51	0020413	Lactate Dehydrogenase, Isoenzymes										x		
51	0020006	Lactate Dehydrogenase, Serum or Plasma										x		
51	0090177	Lamotrigine					x							
51	0020257	LDL Cholesterol, Direct				x								
52	0051726	*Leishmania* Antibody, IgG (Visceral Leishmaniasis)				x								
52	0020715	Lipase, Fluid				x								
52	0099174	Lipoprotein (a)				x								
52	0080503	Lipoprotein Electrophoresis				x								
53	2002925	Lupus Profile with Reflex to ANA and dsDNA by IFA					x							
55	0070193	Luteinizing Hormone and Follicle Stimulating Hormone				x								
55	0070093	Luteinizing Hormone, Serum				x								
89	3001337	Lymphocyte Proliferation, Anti-CD3, Anti-CD28 and IL-2 Induced, by Flow Cytometry (24-Hr Critical Room Temp)												x
89	3001320	Lymphocyte Proliferation, Antigen Induced, by Flow Cytometry (24-Hr Critical Room Temp)												x
89	3001319	Lymphocyte Proliferation, Antigen-Mitogen Panel by Flow Cytometry (24-Hr Critical Room Temp)												x
89	3001321	Lymphocyte Proliferation, Mitogen Induced, by Flow Cytometry (48-Hr Critical Room Temp)												x
56	2004464	Macroamylase Determination					x							
56	0020477	Magnesium, Urine				x								
56	2005545	*MPL* Mutation Detection by Capillary Electrophoresis				x								
89	2005360	Multiple Endocrine Neoplasia Type 1 (*MEN1)* Sequencing and Deletion/Duplication												x
57	3004437	Multiple Endocrine Neoplasia Type 1 (*MEN1*) Sequencing and Deletion/Duplication											x	
89	2006191	MUTYH-Associated Polyposis (MUTYH) Sequencing												x
57	0020224	Myoglobin, Serum				x	x					x		
58	2001603	*Neisseria meningitidis* Tetravalent Antibodies (Serogroups A, C, W-135 and Y), IgG				x								
58	2010769	Noonan Spectrum Disorders Panel, Sequencing, Fetal			x									
58	0020728	Osteocalcin by Electrochemiluminescent Immunoassay				x	x							

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59	2010841	Paraneoplastic Antibodies (PCCA/ANNA) by IFA with Reflex to Titer and Immunoblot, CSF					x			x		x		
60	3004517	Paraneoplastic Reflexive Panel, CSF											x	
61	0070346	Parathyroid Hormone, Intact				x			x					
61	0070172	Parathyroid Hormone, Intact with Calcium				x	x							
61	0020028	Phosphorus, Inorganic, Plasma or Serum				x								
61	0020478	Phosphorus, Urine				x								
62	2014107	Poliovirus (Types 1, 3) Antibodies			x									
62	2013990	Polymyositis Panel				x								
62	2001739	Posaconazole, Quantitative by LC-MS/MS				x		x						
62	0020849	Potassium, Urine				x								
62	0050435	Prealbumin, Serum				x								
63	0080206	Prostate Specific Antigen, Free Percentage (Includes Free PSA and Total PSA)				x								
63	0070121	Prostate Specific Antigen, Total				x								
63	0070234	Prostate Specific Antigen, Total - Medicare Screening				x								
63	0080264	Prostate Specific Antigen, Total with Reflex to Free PSA (Includes Free Percentage)				x								
63	0098581	Prostate Specific Antigen, Ultrasensitive				x								
63	0020029	Protein, Total, Serum or Plasma				x								
64	3000400	QuantiFERON-TB Gold Plus, 1-Tube			x									
64	3000399	QuantiFERON-TB Gold Plus, 4-Tube			x									
64	2012849	Rapid Mendelian Genes Sequencing Panel, Trio			x									
64	0051368	RhD Gene (*RHD*) Copy Number			x	x								
64	0050465	Rheumatoid Factor				x								
89	2003382	Ristocetin-Induced Platelet Aggregation												x
65	3004472	*Schistosoma* Antibody IgG by ELISA											x	
89	3000582	Schistosoma Antibody, IgG, Serum												x
65	0099375	Sex Hormone Binding Globulin				x	x							
66	3000460	Smith and Smith/RNP (ENA) Antibodies, IgG				x								
66	0050470	Smith/RNP (ENA) Antibody, IgG				x								
66	0020001	Sodium, Plasma or Serum					x							
66	0020851	Sodium, Urine				x								
66	0070283	Soluble Transferrin Receptor				x								

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66	2002270	ST2, Soluble			x									
67	0070135	T3 Uptake				x								
89	2009298	Tay-Sachs Disease (HEXA) Sequencing and 7.6kb Deletion												x
67	3004486	Tay-Sachs Disease (*HEXA*) Sequencing and Deletion/Duplication											x	
68	0081057	Testosterone, Bioavailable and Total, Includes Sex Hormone-Binding Globulin (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)	x			x	x	x				x		
71	0070102	Testosterone, Bioavailable and Total, Includes Sex Hormone-Binding Globulin (Adult Males or Individuals on Testosterone Hormone Therapy)	x				x	x	x			x		
72	0081056	Testosterone, Free and Total, Includes Sex Hormone-Binding Globulin (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)	x			x	x	x	x			x		
74	0070109	Testosterone, Free and Total, Includes Sex Hormone-Binding Globulin (Adult Males or Individuals on Testosterone Hormone Therapy)	x				x	x	x			x		
75	0070141	Thyroid Panel				x	x							
75	0070145	Thyroid Stimulating Hormone				x								
75	0070225	Thyroid Stimulating Hormone 3rd Generation					x							
76	2006108	Thyroid Stimulating Hormone with reflex to Free Thyroxine					x							
76	0070140	Thyroxine				x	x							
76	0070138	Thyroxine, Free (Free T4)				x	x							
77	0050570	Transferrin, Serum				x	x							
77	0020713	Triglycerides, Fluid				x								
77	0020040	Triglycerides, Serum or Plasma				x	x							
77	0070133	Triiodothyronine, Free (Free T3)				x	x							
78	0070474	Triiodothyronine, Total (Total T3)				x								
78	3004386	UGT1A1 Sequencing											x	
89	3001755	UGT1A1 Sequencing (Temporary Referral as of 12/07/20)												x
78	0065031	*Ureaplasma* Species and *Mycoplasma hominis* Culture			x									
89	2004212	Very Long-Chain Acyl-CoA Dehydrogenase Deficiency (*ACADVL)* Sequencing and Deletion/Duplication												x

Hotline Page #	Test Number	Summary of Changes by Test Name	Name Change	Methodology	Performed/Reported Schedule	Specimen Requirements	Reference Interval	Interpretive Data	Note	CPT Code	Component Change	Other Interface Change	New Test	Inactive
79	3004419	Very Long-Chain Acyl-CoA Dehydrogenase Deficiency (*ACADVL*) Sequencing and Deletion/Duplication											x	
80	2002028	Virilization Panel 1					x	x				x		
83	2002281	Virilization Panel 2					x	x				x		
86	3004379	von Willebrand Disease (*VWF*) Sequencing											x	
89	2005480	von Willebrand Disease, Type 2A (*VWF*) Sequencing Exon 28 with Reflex to 9 Exons												x
89	2005486	von Willebrand Disease, Type 2B (*VWF*) Sequencing (Temporary Referral as of 02/10/21)												x
89	2005490	von Willebrand Disease, Type 2M (*VWF*) Sequencing (Temporary Referral as of 02/10/21)												x
89	2005494	von Willebrand Disease, Type 2N (*VWF*) Sequencing (Temporary Referral as of 02/10/21)												x
86	2001737	Voriconazole, Quantitation by LC-MS/MS				x		x						
87	3001541	Warfarin Sensitivity (*CYP2C9, CYP2C* cluster, *CYP4F2, VKORC1*) Genotyping	x					x			x			
89	2010716	Wilson Disease (ATP7B) Sequencing												x
88	3004411	Wilson Disease (*ATP7B*) Sequencing											x	

0070031 **Adrenocorticotropic Hormone Stimulation, 0 Minutes** **CORTISOL 0**

Methodology: Quantitative Electrochemiluminescence Immunoassay

Specimen Required: Patient Prep: Collect 1 timed specimen at 0 minutes.
Collect: Serum separator tube (SST) or Plain Red, green (lithium heparin), Lavender (K_2 EDTA and K_3 EDTA), or pink (K_2 EDTA)
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.4 mL) Specimen must be labeled with time drawn.
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated:4 days; Frozen: 12 months (avoid repeated freeze/thaw cycles)

Interpretive Data:
6 a.m. - 10 a.m. reference interval: 6.0-18.4 µg/dL
4 p.m. - 8 p.m. reference interval: 2.7-10.5 µg/dL
8 hrs post 1 mg dexamethasone given at midnight: 0.0 - 5.0 µg/dL
Normal peak serum cortisol is greater than 18.0 µg/dL at 30 or 60 minutes after 250 micrograms of cosyntropin I.V.

0070032 Adrenocorticotropic Hormone Stimulation, 30 Minutes — CORTISOL30

Methodology: Quantitative Electrochemiluminescence Immunoassay

Specimen Required: Patient Prep: Collect 1 timed specimen at 30 minutes.
Collect: Serum separator tube (SST) or Plain Red, green (lithium heparin), Lavender (K_2 EDTA and K_3 EDTA), or pink (K_2 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.4 mL) Specimen must be labeled with time drawn.
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 4 days; Frozen: 12 months (avoid repeated freeze/thaw cycles)

Interpretive Data:
Normal peak serum cortisol is greater than 18.0 µg/dL at 30 or 60 minutes after 250 micrograms of cosyntropin IV.

0070033 Adrenocorticotropic Hormone Stimulation, 60 Minutes — CORTISOL60

Methodology: Quantitative Electrochemiluminescence Immunoassay

Specimen Required: Patient Prep: Collect 1 timed specimen at 60 minutes.
Collect: Serum separator tube (SST) or Plain Red, green (lithium heparin), Lavender (K_2 EDTA and K_3 EDTA), or pink (K_2 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.4 mL) Specimen must be labeled with time drawn.
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 4 days; Frozen: 12 months (avoid repeated freeze/thaw cycles)

Interpretive Data:
Normal peak serum cortisol is greater than 18.0 µg/dL at 30 or 60 minutes after 250 micrograms of cosyntropin IV

0020008 Alanine Aminotransferase, Serum or Plasma — ALT

HOTLINE NOTE: There is a numeric map change associated with this test.
Change the numeric map for component 0020008, Alanine Aminotransferase from XXXX to XXXXX.

0020012 Aldolase, Serum — ALDOLASE

Reference Interval:
Effective February 22, 2022

0-30 days	6.0-32.0 U/L
1-5 months	3.0-12.0 U/L
6-35 months	3.5-10.0 U/L
3-6 years	2.7-8.8 U/L
7-17 years	3.3-9.7 U/L
18 years and older	1.2-7.6 U/L

New Test **3004510** **Amphiphysin Antibody, IgG, CSF** **AMPHI CSF**
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Methodology: Qualitative Immunoblot
Performed: Mon, Thu, Sat
Reported: 1-4 days

Specimen Required: Collect: CSF.
Specimen Preparation: Transfer 1mL CSF to an ARUP Standard Transport Tube. (Min: 0.60 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Contaminated, heat-inactivated, hemolyzed, or lipemic specimens.
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Reference Interval: Negative

Interpretive Data:
Amphiphysin antibody is present in about 5 percent of patients with stiff-person syndrome and is found variably in other causes of paraneoplastic neurological syndrome (PNS). Amphiphysin antibody is mainly associated with small cell lung cancer and breast tumors.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

CPT Code(s): 84182

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0020804 **Amylase, Isoenzymes** **AMYISO**

Specimen Required: Collect: Serum separator tube or plasma separator tube. Also acceptable: green (lithium heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Body Fluids (refer to Amylase, Body Fluid, ARUP test code 0020506). Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 1 week; Refrigerated: 1 month; Frozen: 1 month

Reference Interval:
Effective February 22, 2022

Component	Reference Interval
Pancreatic amylase	6-35 months: 2-28 U/L 3-6 years: 8-34 U/L 7-17 years: 9-39 U/L 18 years and older: 13-53 U/L
Salivary amylase	18 months and older: 9-86 U/L
Total amylase	3-90 days: 0- 30 U/L 3-6 months: 7-40 U/L 7-8 months: 7-57 U/L 9-11 months: 11-70 U/L 12-17 months: 11-79 U/L 18-35 months: 19-92 U/L 3-4 years: 26-106 U/L 5-12 years: 30-119 U/L 13 years and older: 28-100 U/L

0020013 Amylase, Serum or Plasma — AMY

Reference Interval:
Effective February 22, 2022

Age	Reference Interval
3-90 days	0- 30 U/L
3-6 months	7-40 U/L
7-8 months	7-57 U/L
9-11 months	11-70 U/L
12-17 months	11-79 U/L
18-35 months	19-92 U/L
3-4 years	26-106 U/L
5-12 years	30-119 U/L
13 years and older	28-100 U/L

0060193 Antimicrobial Susceptibility - *Nocardia* — MA NOC

Note: The following agents are available for testing: amikacin, ciprofloxacin, clarithromycin, doxycycline, imipenem, linezolid, moxifloxacin, tigecycline, tobramycin, and trimethoprim/sulfamethoxazole. Selective reporting by organism.

An additional processing fee will be billed for all organisms not submitted in pure culture, as indicated in the specimen requirements.

If species identification is not provided, identification will be performed at ARUP. Additional charges apply.

0050317 Antinuclear Antibodies (ANA), IgG by ELISA with Reflex to ANA HEp-2 Substrate, IgG by IFA and ENA Confirmation — ANA REF

Methodology: Qualitative Enzyme-Linked Immunosorbent Assay/Semi-Quantitative Indirect Fluorescent Antibody/Semi-Quantitative Multiplex Bead Assay/Semi-Quantitative Enzyme-Linked Immunosorbent Assay

Specimen Required: Collect: Serum separator tube.
Specimen Preparation: Separate serum from cells ASAP or within 2 hours of collection. Transfer 1.0 mL serum to an ARUP Standard Transport Tube. (Min: 0.6 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Non-serum specimens. Contaminated, grossly hemolyzed, heat-inactivated, severely lipemic, specimens or inclusion of fibrin clots.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)

New Test **3004407** ***APC*- and *MUTYH*-Associated Polyposis Panel, Sequencing and Deletion/Duplication** **APCMYH NGS**

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Additional Technical Information

Patient History for APC and MUTYH-Associated Polyposis Panel, Sequencing and Deletion/Duplication

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3-6 weeks

Specimen Required: Collect: Lavender or Pink (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens; saliva; buccal brush or swab, FFPE tissue.
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Genes Tested: *APC* (NM_000038, NM_001127511 Exon 1b only), *MUTYH* (NM_001128425)

CPT Code(s): 81201; 81203; 81406; 81479

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0020007 **Aspartate Aminotransferase, Serum or Plasma** **AST**

Specimen Required: Collect: Plasma separator tube or serum separator tube.
Specimen Preparation: Allow serum tube to clot completely at room temperature. Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Specimens containing sodium fluoride/potassium oxalate, EDTA, or citrate. Hemolyzed specimens. Specimens containing cellular material.
Stability (collection to initiation of testing): After separation from cells: Ambient: 4 days; Refrigerated: 1 week; Frozen: 3 months

3002787 **Autoimmune Encephalitis Reflexive Panel, CSF** **AENCEPHCSF**

Reference Interval:

Test Number	Components	Reference Interval
3002788	Glutamic Acid Decarboxylase Antibody, CSF	0.0-5.0 IU/mL
2005164	N-methyl-D-Aspartate Receptor Antibody, IgG, CSF with Reflex to Titer	Effective May 21, 2012 < 1:1
2011699	Aquaporin-4 Receptor Antibody, IgG by IFA, CSF with Reflex to Titer	less than 1:1
3001257	Alpha-Amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPA) Receptor Antibody, IgG by IFA with Reflex to Titer, CSF	Less than 1:1
3001267	Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody, IgG by IFA with Reflex to Titer, CSF	Less than 1:1
3001387	Voltage-Gated Potassium Channel (VGKC) Antibody, CSF	Negative: 0.0-1.1 pmol/L Positive: 1.2 pmol/L or greater
3001986	Contactin-Associated Protein-2 Antibody, IgG with Reflex to Titer, CSF	Less than 1:1
3001992	Leucine-Rich, Glioma-Inactivated Protein 1 Antibody, IgG with Reflex to Titer, CSF	Less than 1:1
3004512	Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody, IgG by IFA With Reflex to Titer, CSF	Less than 1:1

Note: If NMDA CSF antibody IgG is positive, then a NMDA CSF antibody IgG titer will be added. Additional charges apply.
If AQP4 CSF antibody IgG is positive, then an AQP4 CSF antibody IgG titer will be added. Additional charges apply.
If AMPA CSF antibody IgG is positive, then an AMPA CSF antibody IgG titer will be added. Additional charges apply.
If GABA-BR CSF antibody IgG is positive, then a GABA-BR CSF antibody IgG titer will be added. Additional charges apply.
If CASPR2 CSF antibody IgG is positive, then CASPR2 CSF antibody IgG titer will be added. Additional charges apply.
If LGI1 CSF antibody IgG is positive, then LGI1 CSF antibody IgG titer will be added. Additional charges apply.
If DPPX CSF antibody IgG is positive, then DPPX CSF antibody IgG titer will be added. Additional charges apply.

CPT Code(s): 86052; 86255 x6; 83519; 86341; if reflexed, add 86256 per titer

HOTLINE NOTE: There is a component change associated with this test.
Add component 3004513, DPPX Ab IgG CBA IFA Screen, CSF
There is a reflexive pattern change associated with this test.
Add reflex to 3004515, Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody Titer, IgG, CSF (Reflex of 3004512 DPPX CSF, 3002787 AENCEPHCSF, 3002887 NEURORCSF – Not orderable by clients)

3002887 **Autoimmune Neurologic Disease Reflexive Panel, CSF** **NEURORCSF**

Reference Interval:

Test Number	Components	Reference Interval
2005164	N-methyl-D-Aspartate Receptor Antibody, IgG, CSF with Reflex to Titer	Effective May 21, 2012 < 1:1
3001257	Alpha-Amino-3-hydroxy-5-methyl-4-isoxazolepropionic Acid (AMPA) Receptor Antibody, IgG by IFA with Reflex to Titer, CSF	Less than 1:1
3001267	Gamma Aminobutyric Acid Receptor, Type B (GABA-BR) Antibody, IgG by IFA with Reflex to Titer, CSF	Less than 1:1
3001986	Contactin-Associated Protein-2 Antibody, IgG with Reflex to Titer, CSF	Less than 1:1
3001387	Voltage-Gated Potassium Channel (VGKC) Antibody, CSF	Negative: 0.0-1.1 pmol/L Positive: 1.2 pmol/L or greater
2010841	Paraneoplastic Antibodies (PCCA/ANNA) by IFA with Reflex to Titer and Immunoblot, CSF	Effective February 22, 2022 Test Number / Components / Reference Interval Paraneoplastic Abs (PCCA/ANNA) IgG, CSF: Refer to report Neuronal Nuclear Ab Titer, IgG CSF: Refer to report Purkinje Cell Antibody Titer IgG, CSF: Refer to report Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot, CSF: Refer to report
3001992	Leucine-Rich, Glioma-Inactivated Protein 1 Antibody, IgG with Reflex to Titer, CSF	Less than 1:1
3002257	CV2.1 Screen by IFA with Reflex to Titer, CSF	Less than 1:1
3002788	Glutamic Acid Decarboxylase Antibody, CSF	0.0-5.0 IU/mL
3002886	SOX1 Antibody, IgG by Immunoblot, CSF	Negative
3004512	Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody, IgG by IFA With Reflex to Titer, CSF	Less than 1:1
3004510	Amphiphysin Antibody, IgG, CSF	Negative

Note: If NMDA CSF antibody IgG is positive, then a NMDA CSF antibody IgG titer will be added. Additional charges apply.
If AMPA CSF antibody IgG is positive, then an AMPA CSF antibody IgG titer will be added. Additional charges apply.
If GABA-BR CSF antibody IgG is positive, then a GABA-BR CSF antibody IgG titer will be added. Additional charges apply.
If CASPR2 CSF antibody IgG is positive, then CASPR2 CSF antibody IgG titer will be added. Additional charges apply.
PCCA/ANNA CSF antibodies are screened by IFA. If the IFA screen is indeterminate then the Immunoblot will be added. If the IFA screen is positive at 1:1, then a specific titer (PCCA or ANNA) and Immunoblot will be added. Additional charges apply.
If LGI1 CSF antibody IgG is positive, then LGI1 CSF antibody IgG titer will be added. Additional charges apply.
If CV2.1 CSF antibody IgG is positive, then a CV2.1 CSF antibody IgG titer will be added. Additional charges apply.
If DPPX CSF antibody IgG by IFA is positive, then DPPX CSF antibody IgG titer will be added. Additional charges apply.

CPT Code(s): 86255 x8; 83519; 86341; 84182 x2; if reflexed, add 84182 x4; 86256 per titer

HOTLINE NOTE: There is a component change associated with this test.
Add component 3004513, DPPX Ab IgG CBA IFA Screen, CSF

Add component 3004511, Amphiphysin Antibody, CSF
There is a reflexive pattern change associated with this test.
Add reflex to 3004515, Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody Titer, IgG, CSF (Reflex of 3004512 DPPX CSF, 3002787 AENCEPHCSF, 3002887 NEURORCSF – Not orderable by clients)
Add reflex to 3004527, Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot, CSF

2006193 B-Cell Clonality Screening (IgH and IgK) by PCR — BCELL SCRN

Specimen Required: Collect: Whole blood or bone marrow (EDTA), tissue, formalin-fixed tissue.
Specimen Preparation: **Whole Blood**: Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)
Fresh Tissue: Freeze immediately. Transport 100 mg or 0.5-2.0 cm3 tissue.
FFPE Tumor Tissue: Formalin fix (10 percent neutral buffered formalin) and paraffin embed tissue. Protect from excessive heat. Tissue block will be returned after testing. Transport tissue block or four 10-micron shavings in a tissue transport kit (ARUP Supply #47808) available online through eSupply using ARUP Connect™ or contact ARUP Client Services at (800) 522-2787.
Storage/Transport Temperature: **Whole Blood, Bone Marrow**: Refrigerated.
Fresh Tissue: Frozen on dry ice.
FFPE Tumor Tissue: Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months
Remarks: If multiple specimens (blocks or slides) are sent to ARUP, they must be accompanied by one of the following: an order comment indicating that the ARUP pathologist should choose the specimen most appropriate for testing (e.g., "Choose best block"), or individual orders for each sample submitted. A Pathologist Block Selection Fee (ARUP test code 3002076) will be added to orders that utilize the first option. If multiple specimens are sent to ARUP without a request for pathologist block/slide selection or individual orders, they will be held until clarification is provided.
Unacceptable Conditions: Plasma, serum. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.
Tissue: Specimens fixed/processed in alternative fixatives, heavy metal fixatives (B-4 or B-5), or tissue sections on slides. Decalcified specimens.
Stability (collection to initiation of testing): **Whole Blood or Bone Marrow:** Ambient: 24 hours; Refrigerated: 5 days; Frozen: Unacceptable
Fresh Tissue: Ambient: Unacceptable; Refrigerated: 2 hours; Frozen: 1 year
FFPE Tumor Tissue: Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable
Extracted DNA: Ambient: 1 month; Refrigerate: Indefinitely; Frozen: Indefinitely

0080054 Beta-2 Microglobulin, CSF — B2M CSF

Specimen Required: Collect: CSF. Also acceptable: CSF collected in plain red or green (lithium heparin).
Specimen Preparation: Centrifuge to remove cellular material. Transfer 0.5 mL CSF to an ARUP Standard Transport Tube. (Min: 0.4 mL)
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cellular material: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 2 weeks

0080053 Beta-2 Microglobulin, Serum or Plasma — B2M S

Specimen Required: Collect: Serum/plasma separator tube. Also acceptable: Green (lithium heparin), or pink (K_2EDTA or K_3EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: CSF (refer to Beta-2 Microglobulin, CSF, ARUP test code 0080054)
Stability (collection to initiation of testing): After separation from cells: Ambient: 72 hours; Refrigerated: 72 hours; Frozen: 6 months

Reference Interval:
Effective February 22, 2022

<60 years	0.8 – 2.4 mg/L
>60 years	≤3.0 mg/L

0070029 Beta-hCG, Quantitative (Tumor Marker) BHCG TM

Specimen Required: Collect: Serum separator tube. Also acceptable: Lavender (K_2EDTA or K_3EDTA), pink (K_2EDTA), or green (lithium heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.4 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: CSF (refer to Beta-hCG, Quantitative (Tumor Marker) CSF, ARUP test code 0020730). Specimens left to clot at 2-8°C or specimens subjected to repeated freeze/thaw cycles.
Stability (collection to initiation of testing): After separation from cells: Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 1 year

0020730 Beta-hCG, Quantitative (Tumor Marker), CSF BHCG CSF

Specimen Required: Collect: CSF. Also acceptable: CSF collected in plain red or green (lithium heparin).
Specimen Preparation: Transfer 0.5 mL CSF to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Any other body fluids.
Stability (collection to initiation of testing): Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 1 year

0020033 Bilirubin, Direct, Serum or Plasma BILID

HOTLINE NOTE: There is a numeric map change associated with this test.
Change the numeric map for component 0020033, Bilirubin Direct from XX.X to XXX.X

0020032 Bilirubin, Total, Serum or Plasma BILIT

Specimen Required: Collect: Plasma separator tube or serum separator tube.
Specimen Preparation: Protect from light during collection, storage and shipment. Allow serum tube to clot completely at room temperature. Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Amber Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cells if protected from light: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 6 months

New Test **3004424** **Biotinidase Deficiency (*BTD*) Sequencing** **BTD NGS**
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Additional Technical Information

Patient History for Biotinidase Deficiency (*BTD*) Testing

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3 weeks

Specimen Required: Collect: Lavender (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Gene tested: *BTD* (NM_001370658)
BTD (NM_000060) exon 1 is not covered by sequencing.

CPT Code(s): 81404

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0020027 **Calcium, Serum or Plasma** **CA**

Specimen Required: Collect: Serum separator tube or plasma separator tube. Do not use powdered gloves during collection.
Specimen Preparation: Allow serum tube to clot completely at room temperature. Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Specimens from patients receiving EDTA therapy or Hypaque. EDTA, citrate, or oxalate.
Stability (collection to initiation of testing): After separation from cells: Ambient: 1 week; Refrigerated: 3 weeks; Frozen: 8 months

2010673 ***CALR* (Calreticulin) Exon 9 Mutation Analysis by PCR** **CALR**

Specimen Required: Collect: Whole blood or bone marrow (EDTA).
Specimen Preparation: **Whole Blood:** Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.
Stability (collection to initiation of testing): Ambient: 24 hours; Refrigerated: 5 days; Frozen: Unacceptable
Extracted DNA: Ambient: 1 month; Refrigerate: Indefinitely; Frozen: Indefinitely

0080462 Cancer Antigen 125 CA125

Specimen Required: Collect: Plasma separator tube or serum separator tube. Also acceptable: Green (lithium heparin), lavender (EDTA), or pink (K_2EDTA, K_3EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 5 days; Refrigerated: 5 days; Frozen: 24 weeks

Reference Interval:
Effective February 22, 2022
Less than or equal to 38 U/mL

0080464 Cancer Antigen-Breast (CA 15-3) CA-BREAST

Specimen Required: Collect: Serum separator tube or plasma separator tube. Also acceptable: Green (lithium heparin), lavender (K_2EDTA or K_3EDTA), or pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 5 days; Frozen: 3 months

0080461 Cancer Antigen-GI (CA 19-9) CA-GI

Specimen Required: Collect: Serum Separator Tube (SST) or Plasma Separator Tube (PST). Also acceptable: Green (lithium heparin), Lavender (K_2EDTA or K_3EDTA), or Pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Body Fluid (refer to Cancer Antigen-GI (CA19-9), Body Fluid, ARUP test code 0020746). Specimens collected in sodium citrate.
Stability (collection to initiation of testing): After separation from cells: Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 3 months

Reference Interval:
Effective February 22, 2022
Less than or equal to 35 U/mL

2013798 *Candida* Species by PCR CANDPCR

Specimen Required: Collect: Body fluid, Lavender (K_2 EDTA) or Pink (K_2 EDTA).
Specimen Preparation: **Body Fluid:** Transfer 1 mL body fluid to a sterile container. (Min: 0.5 mL).
Whole Blood: Transfer 2 mL whole blood to a sterile container. (Min: 1 mL).
Storage/Transport Temperature: **Body Fluid**: Frozen.
Whole Blood: Refrigerated.
Remarks: Specimen source required.
Unacceptable Conditions: Plasma or serum, tissue.
Stability (collection to initiation of testing): **Body Fluid**: Ambient: 2 weeks; Refrigerated: 2 weeks; Frozen: 2 weeks
Whole Blood: Ambient: 1 week; Refrigerated; 1 week; Frozen: 1 week

0080080 Carcinoembryonic Antigen CEA

Specimen Required: Collect: Serum separator tube, plasma separator tube, green (lithium heparin), lavender (K_2 or K_3 EDTA), or pink (K_2 EDTA)
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.6 mL)
Storage/Transport Temperature: Refrigerated. Also acceptable: Frozen.
Unacceptable Conditions: Body Fluid (refer to Carcinoembryonic Antigen, Fluid, ARUP test code 0020742). Plasma.
Stability (collection to initiation of testing): After separation from cells: Ambient: 7 days; Refrigerated: 2 weeks; Frozen: 6 months

Reference Interval:
Effective February 22, 2022

Age	
0-20 years	No Ranges
20-69 years	0.0 – 3.8 pg/mL
69-150 years	No Ranges

New Test 3004465 Celiac Antibodies, Tissue Transglutaminase (tTG), IgA and IgA, Total CELIAC ABS

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Methodology: Quantitative Immunoturbidimetry/Semi-Quantitative Enzyme-Linked Immunosorbent Assay
Performed: Sun-Sat
Reported: 1-2 days

Specimen Required: Collect: Serum separator tube.
Specimen Preparation: Separate serum from cells ASAP or within 2 hours of collection. Transfer 3 mL serum to an ARUP Standard Transport Tube. (Min: 1.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma. Contaminated, hemolyzed, grossly icteric or grossly lipemic specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: Unacceptable; Refrigerated: 14 days; Frozen: 6 months (avoid repeated freeze/thaw cycles)

Reference Interval:

Test Number	Components	Reference Interval	
0050340	Immunoglobulin A	Effective February 16, 2021	
		Age	**Reference Interval**
		0-2 years	2-126 mg/dL
		3-4 years	14-212 mg/dL
		5-9 years	52-226 mg/dL
		10-14 years	42-345 mg/dL
		15-18 years	60-349 mg/dL
		19 years and older	68-408 mg/dL
0097709	Tissue Transglutaminase (tTG) Antibody, IgA		
		3 U/mL or less	Negative
		4-10 U/mL	Weak Positive
		11 U/mL or greater	Positive

Interpretive Data:
Refer to report.

Note: This is not a reflex test. Test 2008114, Celiac Disease Reflexive Cascade is the preferred reflex screening test for Celiac Disease.

CPT Code(s): 82784; 86364

New York DOH Approved.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

New Test **3004383** **Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy, CADASIL (*NOTCH3*), Sequencing** **NOTCH3 NGS**

Click for Pricing

Additional Technical Information

Patient History for CADASIL (*NOTCH3* Gene) Testing

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3 weeks

Specimen Required: Collect: Lavender (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 5 mL whole blood. (Min: 3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Gene Tested: *NOTCH3* (NM_000435)
Exon 1 is not covered by sequencing.

CPT Code(s): 81406

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0050160 **Ceruloplasmin** **CERU**

Specimen Required: Collect: Serum Separator Tube (SST) or Plasma Preparation Tube (PPT). Also acceptable: Plasma collected in Green (Lithium Heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: EDTA plasma or hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 days; Refrigerated: 2 weeks; Frozen: 1 years

Reference Interval:
Effective February 22, 2022

6 months-6 years	18-37 mg/dL
7-17 years	20-43 mg/dL
18 years and older Male	15-30 mg/dL
18 years and older Female	16-45 mg/dL

2011311 Chloride, Random Urine — U CL RAND

Specimen Required: Collect: Random urine.
Specimen Preparation: Transfer 1 mL aliquot of urine to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): Ambient: 7 days Refrigerated: 2 weeks; Frozen: 1 month

0020850 Chloride, Urine — U CL

Specimen Required: Collect: 24-hour urine (without additives). Refrigerate during collection. Also acceptable: Random urine.
Specimen Preparation: Transfer 1 mL aliquot of urine from a well-mixed collection to an ARUP Standard Transport Tube. (Min: 0.5 mL) Record total volume and collection time interval on transport tube and test request form.
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): Ambient: 7 days; Refrigerated: 2 weeks; Frozen: 1 month

0020852 Citric Acid, Urine — CITRIC U

Specimen Required: Collect: 24-hour urine. Refrigerate during collection. Also acceptable: Random urine.
Specimen Preparation: **Adjust pH to less than or equal to 2 by adding 6M HCl.** Transfer a 4 mL aliquot of urine to an ARUP Standard Transport Tube. (Min: 0.5 mL) Record total volume, collection time interval, and pH on transport tube and test request form. Also acceptable: Specimens previously preserved with boric acid.
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): Ambient: 8 hours; Refrigerated: 2 weeks; Frozen: 1 month

0050150 Complement Component 3 — C3

Specimen Required: Collect: Serum separator tube, Plasma separator tube, Green (Lithium heparin)
Specimen Preparation: Allow specimen to clot at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP Standard Transport Tube and freeze. (Min: 0.3 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Specimens left to clot at refrigerated temperature. Specimens exposed to repeated freeze/thaw cycles.
Stability (collection to initiation of testing): Ambient: 4 days; Refrigerated: 8 days; Frozen: 2 weeks

Reference Interval: Effective February 22, 2022

0-30 days: 59-121 mg/dL 1 month: 55-129 mg/dL 2 months: 61-155 mg/dL 3 months: 67-136 mg/dL 4 months: 65-182 mg/dL 5 months: 67-174 mg/dL 6 months: 77-179 mg/dL	7-8 months: 78-173 mg/dL 9-11 months: 76-187 mg/dL 1 year: 87-181 mg/dL 2 years: 84-177 mg/dL 3-4 years: 80-178 mg/dL 5-11 years: 80-160 mg/dL 12-17 years: 82-163 mg/dL 18 years and older: 90-180 mg/dL

0050155 Complement Component 4 — C4

Specimen Required: Collect: Serum separator tube. Also acceptable: Lavender (EDTA), pink (K_2EDTA), or green (lithium heparin).
Specimen Preparation: Allow specimen to clot at room temperature. Separate serum from cells ASAP or within 2 hours of collection and freeze. Transport 0.5 mL serum. (Min: 0.3 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Specimens left to clot at refrigerated temperature. Specimens exposed to repeated freeze/thaw cycles.
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 8 days; Frozen: 3 months (avoid repeated freeze/thaw cycles)

0050149 Complement Components 3 and 4 C3C4

Specimen Required: Collect: Serum separator tube, Plasma separator tube, Green (Lithium heparin)
Specimen Preparation: Allow specimen to clot at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube and freeze. (Min: 0.6 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Specimens left to clot at refrigerated temperature. Specimens exposed to repeated freeze/thaw cycles.
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 8 days; Frozen: 2 weeks (avoid repeated freeze/thaw cycles)

Reference Interval:

Test Number	Components	Reference Interval	
0050150	Complement Component 3	Effective February 22, 2022	
		0-30 days: 59-121 mg/dL 1 month: 55-129 mg/dL 2 months: 61-155 mg/dL 3 months: 67-136 mg/dL 4 months: 65-182 mg/dL 5 months: 67-174 mg/dL 6 months: 77-179 mg/dL	7-8 months: 78-173 mg/dL 9-11 months: 76-187 mg/dL 1 year: 87-181 mg/dL 2 years: 84-177 mg/dL 3-4 years: 80-178 mg/dL 5-11 years: 80-160 mg/dL 12-17 years: 82-163 mg/dL 18 years and older: 90-180 mg/dL
0050155	Complement Component 4		
		0-30 days: 8-30 mg/dL 1 month: 9-33 mg/dL 2 months: 9-37 mg/dL 3 months: 10-35 mg/dL 4 months: 10-49 mg/dL 5 months: 9-48 mg/dL 6 months: 12-55 mg/dL	7-8 months: 13-48 mg/dL 9-11 months: 16-51 mg/dL 1 year: 16-52 mg/dL 2-4 years: 12-47 mg/dL 5-11 years: 13-44 mg/dL 12-17 years: 14-41 mg/dL 18 years and older: 10-40 mg/dL

3000480 Comprehensive Systemic Sclerosis Panel SCL COMPRE

Specimen Required: Collect: Serum Separator Tube (SST).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer 3 mL serum to an ARUP Standard Transport Tube. (Min: 1.5 mL)
Storage/Transport Temperature: Refrigerated. Also acceptable: Room temperature or frozen.
Unacceptable Conditions: Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

2002282	**Congenital Adrenal Hyperplasia Panel, 11-Beta Hydroxylase Deficiency**	**CAH 11-B HYDROX**

Reference Interval:

Test Number	Components	Reference Interval		
2001638	Androstenedione	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature Infants, 26-28 weeks-Day 4	0.92-2.82 ng/mL	0.92-2.82 ng/mL
		Premature Infants, 31-35 weeks-Day 4	0.80-4.46 ng/mL	0.80-4.46 ng/mL
		Full-term Infants, 1-7 days	0.20-2.90 ng/mL	0.20-2.90 ng/mL
		8-30 days	0.18-0.80 ng/mL	0.18-0.80 ng/mL
		1-5 months	0.06-0.68 ng/mL	0.06-0.68 ng/mL
		6-24 months	Less than 0.15 ng/mL	0.03-0.15 ng/mL
		2-3 years	Less than 0.16 ng/mL	Less than 0.11 ng/mL
		4-5 years	0.02-0.21 ng/mL	0.02-0.17 ng/mL
		6-7 years	0.02-0.28 ng/mL	0.01-0.29 ng/mL
		8-9 years	0.04-0.42 ng/mL	0.03-0.30 ng/mL
		10-11 years	0.09-1.23 ng/mL	0.07-0.39 ng/mL
		12-13 years	0.24-1.73 ng/mL	0.10-0.64 ng/mL
		14-15 years	0.39-2.00 ng/mL	0.18-0.94 ng/mL
		16-17 years	0.35-2.12 ng/mL	0.30-1.13 ng/mL
		18-39 years	0.26-2.14 ng/mL	0.33-1.34 ng/mL
		40 years and older	0.13-0.82 ng/mL	0.23-0.89 ng/mL
		Pre-menopausal	0.26-2.14 ng/mL	Does Not Apply
		Postmenopausal	0.13-0.82 ng/mL	Does Not Apply
		Tanner Stage I	0.05-0.51 ng/mL	0.04-0.32 ng/mL
		Tanner Stage II	0.15-1.37 ng/mL	0.08-0.48 ng/mL
		Tanner Stage III	0.37-2.24 ng/mL	0.14-0.87 ng/mL
		Tanner Stage IV-V	0.35-2.05 ng/mL	0.27-1.07 ng/mL
0092332	17-Hydroxyprogesterone Quantitative by HPLC-MS/MS, Serum or Plasma	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature (26-28 weeks)	124-841 ng/dL	124-841 ng/dL
		Premature (29-35 weeks)	26-568 ng/dL	26-568 ng/dL
		Full term Day 3	7-77 ng/dL	7-77 ng/dL
		4 days-30 days	7-106 ng/dL	Less than 200 ng/dL
		1 month-2 months	13-106 ng/dL	Less than 200 ng/dL
		3 months-5 months	13-106 ng/dL	3-90 ng/dL
		6 months-1 year	Less than or equal to 148 ng/dL	Less than or equal to 148 ng/dL
		2-3 years	Less than or equal to 256 ng/dL	Less than or equal to 228 ng/dL
		4-6 years	Less than or equal to 299 ng/dL	Less than or equal to 208 ng/dL
		7-9 years	Less than or equal to 71 ng/dL	Less than or equal to 63 ng/dL
		10-12 years	Less than or equal to 129 ng/dL	Less than or equal to 79 ng/dL
		13-15 years	9-208 ng/dL	9-140 ng/dL
		16-17 years	Less than or equal to 178 ng/dL	24-192 ng/dL
		18 years and older	Less than 207 ng/dL	Less than 139 ng/dL
		Follicular	15-70 ng/dL	Does Not Apply
		Luteal	35-290 ng/dL	Does Not Apply
		Tanner Stage I	Less than or equal to 74 ng/dL	Less than or equal to 62 ng/dL
		Tanner Stage II	Less than or equal to 164 ng/dL	Less than or equal to 104 ng/dL
		Tanner Stage III	13-209 ng/dL	Less than or equal to 151 ng/dL
		Tanner Stage IV-V	7-170 ng/dL	20-173 ng/dL
0081058	Testosterone (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature (26-28 weeks)	5-16 ng/dL	59-125 ng/dL
		Premature (31-35 weeks)	5-22 ng/dL	37-198 ng/dL
		Newborn	20-64 ng/dL	75-400 ng/dL
		1-5 months	Less than 20 ng/dL	14-363 ng/dL
		6-24 months	Less than 9 ng/dL	Less than 37 ng/dL
		2-3 years	Less than 20 ng/dL	Less than 15 ng/dL
		4-5 years	Less than 30 ng/dL	Less than 19 ng/dL
		6-7 years	Less than 7 ng/dL	Less than 13 ng/dL
		8-9 years	1-11 ng/dL	2-8 ng/dL
		10-11 years	3-32 ng/dL	2-165 ng/dL
		12-13 years	6-50 ng/dL	3-619 ng/dL
		14-15 years	6-52 ng/dL	31-733 ng/dL
		16-17 years	9-58 ng/dL	158-826 ng/dL

		18-39 years	9-55 ng/dL	300-1080 ng/dL
		40-59 years	9-55 ng/dL	300-890 ng/dL
		60 years and older	5-32 ng/dL	300-720 ng/dL
		Premenopausal (18 years and older)	9-55 ng/dL	Does Not Apply
		Postmenopausal	5-32 ng/dL	Does Not Apply
		Tanner Stage I	2-17 ng/dL	2-15 ng/dL
		Tanner Stage II	5-40 ng/dL	3-303 ng/dL
		Tanner Stage III	10-63 ng/dL	10-851 ng/dL
		Tanner Stage IV-V	11-62 ng/dL	162-847 ng/dL
0092331	11-Deoxycortisol Quantitative by HPLC-MS/MS, Serum or Plasma	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature (26-28 weeks)	110-1376 ng/dL	110-1376 ng/dL
		Premature (29-36 weeks)	70-455 ng/dL	70-455 ng/dL
		Full Term (1-5 months)	10-200 ng/dL	10-200 ng/dL
		6-11 months	10-276 ng/dL	10-276 ng/dL
		1-3 years	7-247 ng/dL	7-202 ng/dL
		4-6 years	8-291 ng/dL	8-235 ng/dL
		7-9 years	Less than or equal to 94 ng/dL	Less than or equal to 120 ng/dL
		10-12 years	Less than or equal to 123 ng/dL	Less than or equal to 92 ng/dL
		13-15 years	Less than or equal to 107 ng/dL	Less than or equal to 95 ng/dL
		16-17 years	Less than or equal to 47 ng/dL	Less than or equal to 106 ng/dL
		18 years and older	Less than 33 ng/dL	Less than 50 ng/dL
		Tanner Stage I	Less than or equal to 94 ng/dL	Less than or equal to 105 ng/dL
		Tanner Stage II	Less than or equal to 136 ng/dL	Less than or equal to 108 ng/dL
		Tanner Stage III	Less than or equal to 99 ng/dL	Less than or equal to 111 ng/dL
		Tanner Stage IV & V	Less than or equal to 50 ng/dL	Less than or equal to 83 ng/dL
		After metyrapone stimulation	Greater than 8000 ng/dL	Greater than 8000 ng/dL
2001640	Dehydroepiandrosterone, Serum or Plasma	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature	Less than 40 ng/mL	Less than 40 ng/mL
		0-1 day	Less than 11 ng/mL	Less than 11 ng/mL
		2-6 days	Less than 8.7 ng/mL	Less than 8.7 ng/mL
		7 days-1 month	Less than 5.8 ng/mL	Less than 5.8 ng/mL
		1-5 months	Less than 2.9 ng/mL	Less than 2.9 ng/mL
		6-24 months	Less than 1.9 9 ng/mL	Less than 2.5 ng/mL
		2-3 years	Less than 0.85 ng/mL	Less than 0.63 ng/mL
		4-5 years	Less than 1.03 ng/mL	Less than 0.95 ng/mL
		6-7 years	Less than 1.79 ng/mL	0.06-1.93 ng/mL
		8-9 years	0.14-2.35 ng/mL	0.10-2.08 ng/mL
		10-11 years	0.43-3.78 ng/mL	0.32-3.08 ng/mL
		12-13 years	0.89-6.21 ng/mL	0.57-4.10 ng/mL
		14-15 years	1.22-7.01 ng/mL	0.93-6.04 ng/mL
		16-17 years	1.42-9.00 ng/mL	1.17-6.52 ng/mL
		18-39 years	1.33-7.78 ng/mL	1.33-7.78 ng/mL
		40 years and older	0.63-4.70 ng/mL	0.63-4.70 ng/mL
		Postmenopausal	0.60-5.73 ng/mL	Does Not Apply
		Tanner Stage I	0.14-2.76 ng/mL	0.11-2.37 ng/mL
		Tanner Stage II	0.83-4.87 ng/mL	0.37-3.66 ng/mL
		Tanner Stage III	1.08-7.56 ng/mL	0.75-5.24 ng/mL
		Tanner Stage IV-V	1.24-7.88 ng/mL	1.22-6.73 ng/mL

Interpretive Data:
Free or bioavailable testosterone measurements may provide supportive information.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

HOTLINE NOTE: There is a clinically significant charting name change associated with this test.
Change the charting name for component 0081058, Testosterone, LC-MS/MS from Testosterone, LC-MS/MS to Testosterone by Mass Spec.

3002463 Connective Tissue Disease First Line Panel with Reflex — CTD PAN

Specimen Required: Collect: Serum Separator Tube (SST).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.6 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Specimen types other than those listed. Specimens containing fibrin clots. Contaminated, grossly hemolyzed, heat-inactivated, or severely lipemic specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)

0051668 Connective Tissue Diseases Profile — CONN

Specimen Required: Collect: Serum separator tube.
Specimen Preparation: Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma or other body fluids. Bacterially contaminated specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

3000501 Cortisol, Inferior Vena Cava — CORT IVC

Methodology: Quantitative Electrochemiluminescence Immunoassay

Specimen Required: Patient Prep: Adrenal venous sampling procedure is required.
Collect: Serum separator tube (SST) or Plain Red, green (lithium heparin), Lavender (K_2 EDTA and K_3 EDTA), or pink (K_2 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.4 mL)
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 4 days; Frozen: 12 months (avoid repeated freeze/thaw cycles)

Reference Interval: No reference interval established.

3000502 Cortisol, Left Adrenal Vein — CORT LAV

Methodology: Quantitative Electrochemiluminescence Immunoassay

Specimen Required: Patient Prep: Adrenal venous sampling procedure is required.
Collect: Serum separator tube (SST) or Plain Red, green (lithium heparin), Lavender (K_2 EDTA and K_3 EDTA), or pink (K_2 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.4 mL)
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 4 days; Frozen: 12 months (avoid repeated freeze/thaw cycles)

Reference Interval: No reference interval established.

3000503 Cortisol, Right Adrenal Vein — CORT RAV

Methodology: Quantitative Electrochemiluminescence Immunoassay

Specimen Required: Patient Prep: Adrenal venous sampling procedure is required.
Collect: Serum separator tube (SST) or Plain Red, green (lithium heparin), Lavender (K_2 EDTA and K_3 EDTA), or pink (K_2 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.4 mL)
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 4 days; Frozen: 12 months (avoid repeated freeze/thaw cycles)

Reference Interval: No reference interval established.

0070030 Cortisol, Serum — CORTISOL

Methodology: Quantitative Electrochemiluminescence Immunoassay

Specimen Required: Collect: Serum separator tube (SST) or plain red, green (lithium heparin), Lavender (K_2 EDTA and K_3 EDTA), or pink (K_2 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube.(Min: 0.6 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Saliva (refer to Cortisol, Saliva, ARUP test code 0081117).
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 4 days; Frozen: 12 months (avoid repeated freeze/thaw cycles)

Interpretive Data:
6 a.m. - 10 a.m. reference interval: 6.0-18.4 µg/dL
4 p.m. - 8 p.m. reference interval: 2.7-10.5 µg/dL
8 hrs post 1 mg dexamethasone given at midnight: 0.0 - 5.0 µg/dL
Normal peak serum cortisol is greater than 18.0 µg/dL at 30 or 60 minutes after 250 micrograms of cosyntropin I.V.

0060055 Coxsackie B Virus Antibodies — COX B

Performed: Mon- Fri
Reported: 6-12 days

0050180 C-Reactive Protein — CRP

Specimen Required: Collect: Serum separator tube. Also acceptable: Plasma separator tube, or Green (lithium heparin)
Specimen Preparation: Allow serum tube to clot completely at room temperature. Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 14 days; Refrigerated: 3 weeks; Frozen: 1 year (if frozen within 24 hours)

0050182 C-Reactive Protein, High Sensitivity HSCRP

Interpretive Data:
Patients with higher hs-CRP concentrations are more likely to develop stroke, myocardial infarction, and severe peripheral vascular disease.

CRP is a nonspecific marker of inflammation and a variety of conditions other than atherosclerosis may cause elevated concentrations. If the first result is greater than 3.0 mg/L, recommend repeating test at least 2 weeks later in a metabolically stable state, free of infection or acute illness. The lower of the two results should be used to determine the patient's risk.

Significantly decreased CRP values may result in specimens from patients treated with carboxypenicillins.

hs-CRP results are used to assign risk as follows:	
Less than 1.0 mg/L	Low risk
1.0-3.0 mg/L	Average risk
Greater than 3.0 mg/L	High risk

0020414 Creatine Kinase Isoenzymes CKISO

Reference Interval:
Effective February 22, 2022

Test Number	Components	Reference Interval		
	CK-MM	96-100%		
	CK-MB	0-4%		
	CK-BB	0%		
	CK-Macro Type I	0%		
	CK-Macro Type II	0%		
	Creatine Kinase, Total			
		Age:	**Male:**	**Female:**
		0-30 days	108-564 U/L	108-564 U/L
		31 days-5 months	72-367 U/L	72-367 U/L
		6-35 months	50-272 U/L	38-261 U/L
		3-6 years	56-281 U/L	40-222 U/L
		7-17 years	60-393 U/L	46-250 U/L
		18 years and older	39-308 U/L	26-192 U/L

3002030 Creatine Kinase, MB and Relative Percent CKMB PCT

Reference Interval:

Test Number	Components	Reference Interval		
0080480	Creatine Kinase, MB			
		Test Number	**Components**	**Reference Interval**
		0080481	Creatine Kinase, Isoenzyme MB	Female 0 - 4.3 ng/mL Male 0 - 7.7 ng/mL
	CK-MB Relative Percent	0.0-5.0%		
0020010	Creatine Kinase, Total, Serum or Plasma	Effective February 22, 2022		
		Age	**Male**	**Female**
		0-18 years	By report	By report
		18 years and older	39-308 U/L	26-192 U/L

0020010 Creatine Kinase, Total, Serum or Plasma CK

Reference Interval:
Effective February 22, 2022
By Report (reports may vary based on instrumentation)

0070416 C-Telopeptide, Beta-Cross-Linked, Serum CTX

Specimen Required: Patient Prep: Fasting specimen preferred.
Collect: Serum separator tube, Lavender (K_2 EDTA or K_3 EDTA), Pink (K_2 EDTA), or Green (lithium heparin). A morning specimen is preferred.
Specimen Preparation: Allow serum separator tube to sit for 15-20 minutes at room temperature for proper clot formation. Centrifuge and separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 4 hours; Refrigerated: 8 hours; Frozen: 3 months

Reference Interval:
Effective February 22, 2022

Age	Female	Male
6 months-6 years	500-1800 pg/mL	500-1700 pg/mL
7-9 years	566-1690 pg/mL	522-1682 pg/mL
10-12 years	503-2077 pg/mL	553-2071 pg/mL
13-15 years	160-1590 pg/mL	485-2468 pg/mL
16-17 years	167-933 pg/mL	276-1546 pg/mL
18-29 years		87-1200 pg/mL
30-39 years		70-780 pg/mL
40-49 years		60-700 pg/mL
50-69 years		40-840 pg/mL
70 years or greater		52-847 pg/mL
Premenopausal	25-573 pg/mL	
Postmenopausal	104-1008 pg/mL	

New Test **3004310** **CYP2B6** **2B6GENO**
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Additional Technical Information

Methodology: Polymerase Chain Reaction/Fluorescence Monitoring
Performed: Varies
Reported: 5-10 days

Specimen Required: Collect: Lavender (EDTA), Pink (K_2EDTA), or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 1 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma or serum. Specimens collected in sodium heparin or lithium heparin.
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

Reference Interval: By report

Interpretive Data:
Background Information for *CYP2B6*:
Characteristics: The cytochrome P450 (CYP) isozyme 2B6 is involved in the metabolism of many drugs. Variants in the gene that codes for CYP2B6 may influence pharmacokinetics of substrates and may predict or explain nonstandard dose requirements, therapeutic failure, or adverse reactions.
Inheritance: Autosomal codominant
Cause: *CYP2B6* gene variants affect enzyme function.
Variants Tested: See the "Additional Technical Information" document.
Clinical Sensitivity: Drug dependent.
Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring
Analytical Sensitivity and Specificity: Greater than 99 percent
Limitations: Only the targeted *CYP2B6* variants will be detected by this test, and assumptions about phase and content are made to assign alleles. Publicly available sources such as the www.pharmvar.org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with CYP2B6 substrates may be affected by genetic and nongenetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations and should not be interpreted as recommending any specific medications. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Whole blood is the preferred specimen. Saliva samples that yield inadequate DNA quality and/or quantity will be reported as inconclusive if test performance does not meet laboratory-determined criteria for reporting.

CPT Code(s): 81479

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

3001508 ***CYP2C19*** **2C19GENO**

Interpretive Data:
Background Information for *CYP2C19*:
Characteristics: The cytochrome P450 (CYP) isozyme 2C19 is involved in the metabolism of many drugs. Variants in the gene that code for CYP2C19 will influence pharmacokinetics of CYP2C19 substrates, and may predict or explain non-standard dose requirements, therapeutic failure or adverse reactions.
Inheritance: Autosomal codominant.
Cause: *CYP2C19* gene variants affect enzyme function.
Variants Tested: See the Additional Technical Information document.
Clinical Sensitivity: Drug-dependent.
Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring.
Analytical Sensitivity and Specificity: Greater than 99 percent.
Limitations: Only the targeted *CYP2C19* variants will be detected by this panel, and assumptions about phase and content are made to assign alleles. Publicly available sources such as the www.pharmvar.org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with CYP2C19 substrates may be affected by genetic and non-genetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations, and should not be interpreted as recommending any specific medications. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

HOTLINE NOTE: There is a component change associated with this test.
Add component 2008936, CYP2C19 Phenotype

3001501 ***CYP2C8, CYP2C9, and CYP2C* cluster** **2C8/2C9**

Interpretive Data:
Background Information for *CYP2C8, CYP2C9, and CYP2C* cluster:
Characteristics: The cytochrome P450 (CYP) isozymes 2C8 and 2C9 are involved in the metabolism of many drugs. Variants in the genes that code for CYP2C8 and CYP2C9 may influence pharmacokinetics of substrates, and may predict or explain non-standard dose requirements, therapeutic failure or adverse reactions. The *CYP2C* cluster variant (rs12777823) is associated with a decreased warfarin dose requirement in some people of African descent.
Inheritance: Autosomal codominant.
Cause: *CYP2C8* and *CYP2C9* gene variants and the *CYP2C* cluster variant affect enzyme function.
Variants Tested: See the "Additional Technical Information" document.
Clinical Sensitivity: Drug-dependent.
Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring.
Analytical Sensitivity and Specificity: Greater than 99 percent.
Limitations: Only the targeted *CYP2C8,CYP2C9*, and *CYP2C* cluster variants will be detected by this panel, and assumptions about phase and content are made to assign alleles. Publicly available sources such as the www.pharmvar.org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with CYP2C8 or CYP2C9 substrates may be affected by genetic and non-genetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations, and should not be interpreted as recommending any specific medications. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

HOTLINE NOTE: There is a component change associated with this test.
Add component 3004497, CYP2C8 Phenotype
Add component 2008931, CYP2C9 Phenotype
Add component 3004499, CYP2C Cluster Genotype
Add component 3004500, CYP2C Cluster Phenotype

3001513 *CYP2D6* 2D6GENO

Methodology: Polymerase Chain Reaction/Fluorescence Monitoring/Sequencing

Interpretive Data:
Background Information for *CYP2D6*:
Characteristics: The cytochrome P450 (CYP) isozyme 2D6 is involved in the metabolism of many drugs. Variants in the gene that code for CYP2D6 may influence pharmacokinetics of CYP2D6 substrates, and may predict or explain non-standard dose requirement, therapeutic failure or adverse reactions.
Inheritance: Autosomal codominant.
Cause: *CYP2D6* gene variants and copy number affect enzyme function.
Variants Tested: See the "Additional Technical Information" document.
Clinical Sensitivity: Drug-dependent.
Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring. Sequencing is only performed if needed to characterize a duplicated *CYP2D6* gene.
Analytical Sensitivity and Specificity: Greater than 99 percent.
Limitations: Only the targeted *CYP2D6* variants will be detected by this panel, and assumptions about phase and content are made to assign alleles. Publicly available sources such as the www.pharmvar.org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. A combination of the *5 (gene deletion) and a gene duplication cannot be specifically identified. This combination is not expected to adversely affect the phenotype prediction. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with CYP2D6 substrates may be affected by genetic and non-genetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations, and should not be interpreted as recommending any specific medications. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

HOTLINE NOTE: There is a component change associated with this test.
Add component 2008926, CYP2D6 Phenotype

3001518 *CYP3A4* and *CYP3A5* 3A4/3A5

Interpretive Data:
Background Information for *CYP3A4* and *CYP3A5*:
Characteristics: The cytochrome P450 (CYP) 3A subfamily of enzymes is involved in metabolism of many drugs. Variants in the genes that code for CYP3A4 and CYP3A5 may influence pharmacokinetics of CYP3A substrates, and may predict or explain non-standard dose requirements, therapeutic failure or adverse reactions.
Inheritance: Autosomal codominant.
Cause: *CYP3A4 or CYP3A5* gene variants affect enzyme function.
Variants Tested: See the Additional Technical Information document.
Clinical Sensitivity: Drug-dependent.
Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring.
Analytical Sensitivity and Specificity: Greater than 99 percent.
Limitations: Only the targeted *CYP3A4* and *CYP3A5* variants will be detected by this panel, and assumptions about phase and content are made to assign alleles. Publicly available sources such as the www.pharmvar.org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with CYP3A substrates may be affected by genetic and non-genetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations, and should not be interpreted as recommending any specific medications. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

HOTLINE NOTE: There is a component change associated with this test.
Add component 3004504, CYP3A4 Phenotype
Add component 3004505, CYP3A5 Phenotype

3001524 Cytochrome P450 Genotyping Panel CYP PANEL

Methodology: Polymerase Chain Reaction/Fluorescence Monitoring/Sequencing

Interpretive Data:

Background Information for Cytochrome P450 Genotyping Panel:

Characteristics: The cytochrome P450 (CYP) isozymes 2B6, 2C19, 2C8, 2C9, 2D6 and the CYP3A subfamily are involved in the metabolism of many drugs. Variants in the genes that code for CYP2B6, CYP2C19, CYP2C8, CYP2C9, CYP2D6, CYP3A4, and CYP3A5, and *CYP2C* cluster (rs12777823) loci, will influence pharmacokinetics of respective substrates, and may predict or explain non-standard dose requirements, therapeutic failure, or adverse reactions.

Inheritance: Autosomal codominant.

Cause: Gene variants affect enzyme function.

Variants Tested: See the Additional Technical Information document.

Clinical Sensitivity: Drug-dependent.

Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring. Sequencing is only performed if needed to characterize a duplicated *CYP2D6* gene.

Analytical Sensitivity and Specificity: Greater than 99 percent.

Limitations: Only the targeted variants will be detected by this panel, and assumptions about phase and content are made to assign alleles. Publicly available sources such as the www.pharmvar.org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. A combination of the *CYP2D6**5 (gene deletion) and a *CYP2D6* gene duplication cannot be specifically identified; however, this combination is not expected to adversely affect the phenotype prediction. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with gene substrates may be affected by genetic and non-genetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations, and should not be interpreted as recommending any specific medications. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

HOTLINE NOTE: There is a component change associated with this test.
Add component 2008936, CYP2C19 Phenotype
Add component 3004497, CYP2C8 Phenotype
Add component 2008931, CYP2C8 Phenotype
Add component 3004499, CYP2C Cluster Genotype
Add component 3004500, CYP2C Cluster Phenotype
Add component 2008926, CYP2D6 Phenotype
Add component 3004504, CYP3A4 Phenotype
Add component 3004505, CYP3A5 Phenotype
Add component 3004493, CYP2B6 Genotype
Add component 3004494, CYP2B6 Phenotype

3004255 Cytochrome P450 Genotyping Panel, with GeneDose Access — CYP GD

Methodology: Polymerase Chain Reaction/Fluorescence Monitoring/Sequencing

Interpretive Data:
Background Information for Cytochrome P450 Genotyping Panel:
Characteristics: The cytochrome P450 (CYP) isozymes 2B6, 2C19, 2C8, 2C9, 2D6, and the CYP3A subfamily are involved in the metabolism of many drugs. Variants in the genes that code for CYP2B6, CYP2C19, CYP2C8, CYP2C9, CYP2D6, CYP3A4, and CYP3A5, and *CYP2C* cluster (rs12777823) loci will influence pharmacokinetics of respective substrates, and may predict or explain nonstandard dose requirements, therapeutic failure, or adverse reactions.
Inheritance: Autosomal codominant.
Cause: Gene variants affect enzyme function.
Variants Tested: See the Additional Technical Information document.
Clinical Sensitivity: Drug dependent.
Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring. Sequencing is only performed if needed to characterize a duplicated *CYP2D6* gene.
Analytical Sensitivity and Specificity: Greater than 99 percent.
Limitations: Only the targeted variants will be detected by this panel, and assumptions about phase and content are made to assign alleles. Publicly available sources such as the www.pharmvar.org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. A combination of the *CYP2D6**5 gene deletion and a *CYP2D6* gene duplication cannot be specifically identified; however, this combination is not expected to adversely affect the phenotype prediction. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with gene substrates may be affected by genetic and nongenetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations and should not be interpreted as recommending any specific medications. GeneDose LIVE content is provided by Coriell Life Sciences and not by ARUP Laboratories. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

HOTLINE NOTE: There is a component change associated with this test.
Add component 2008936, CYP2C19 Phenotype
Add component 3004497, CYP2C8 Phenotype
Add component 2008931, CYP2C9 Phenotype
Add component 3004499, CYP2C Cluster Genotype
Add component 3004500, CYP2C Cluster Phenotype
Add component 2008926, CYP2D6 Phenotype
Add component 3004504, CYP2A4 Phenotype
Add component 3004505, CYP3A5 Phenotype
Add component 3004493, CYP2B6 Genotype
Add component 3004494, CYP2B6 Phenotype

2003414 Cytogenomic SNP Microarray — CMA SNP

HOTLINE NOTE: There is a component change associated with this test.
Remove component 2003416, EER Cytogenomic SNP Microarray

2002366 Cytogenomic SNP Microarray - Fetal — ARRAY FE

HOTLINE NOTE: There is a component change associated with this test.
Remove component 2002367, EER Cytogenomic SNP Microarray - Fetal

2006325 Cytogenomic SNP Microarray - Oncology — CMA ONC

HOTLINE NOTE: There is a component change associated with this test.
Remove component 2006327, EER CMA ONC

2006267 Cytogenomic SNP Microarray Buccal Swab — CMA BUCCAL

HOTLINE NOTE: There is a component change associated with this test.
Remove component 2006269, EER CMA BUCCAL

0070040 Dehydroepiandrosterone Sulfate, Serum — DHEAS

Specimen Required: Collect: Serum separator tube or plasma separator tube. Also acceptable: Green (lithium heparin), lavender (K_2 EDTA or K_3 EDTA), or pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 5 days; Refrigerated: 14 days; Frozen: 12 months

Reference Interval:
Effective February 22, 2022

Age	Male	Female
0-6 days	108-607 µg/dL	108-607 µg/dL
7-30 days	32-431 µg/dL	32-431 µg/dL
1-5 months	3-124 µg/dL	3-124 µg/dL
6-35 months	0-33 µg/dL	0-29 µg/dL
3-6 years	0-44 µg/dL	0-47 µg/dL
7-9 years	5-115 µg/dL	5-94 µg/dL
10-14 years	22-332 µg/dL	22-255 µg/dL
15-19 years	88-483 µg/dL	63-373 µg/dL
20-24 years	211-492 µg/dL	148-407 µg/dL
25-34 years	160-449 µg/dL	99-340 µg/dL
35-44 years	89-427 µg/dL	61-337 µg/dL
45-54 years	44-331 µg/dL	35-256 µg/dL
55-64 years	52-295 µg/dL	19-205 µg/dL
65-74 years	34-249 µg/dL	9-246 µg/dL
75 years and older	16-123 µg/dL	12-154 µg/dL
Tanner Stage I	7-209 µg/dL	7-126 µg/dL
Tanner Stage II	28-260 µg/dL	13-241 µg/dL
Tanner Stage III	39-390 µg/dL	32-446 µg/dL
Tanner Stage IV & V	81-488 µg/dL	65-371 µg/dL

3003144 Deletion/Duplication Analysis by MLPA — DELDUP

Note:
Deletion/duplication analysis by MLPA is offered for the following genes: *ABCD1, ACADVL, ACVRL1, APC, ATP7A, BMPR1A, BRCA1, BRCA2, CFTR, COL4A5, ENG, F8, F9, FBN1, HBB, MECP2, MEN1, MLH1/MSH2, MSH6, NF1, OTC, PLOD1, PMS2, PRSS1, PTEN, RASA1, SDHB, SDHC, SDHD, SLC22A5, SHOX, SMAD4, SPINK1, SPRED1, STK11, TP53, VHL.*

Suspected deletions or duplications in exons 12-15 of *PMS2*, require additional sequencing to exclude pseudogene copy number variants. Additional charges apply.

3001783 Dermatomyositis and Polymyositis Panel — COMBI PAN

Specimen Required: Collect: Serum Separator Tube (SST).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer two 1 mL serum aliquots to ARUP Standard Transport Tubes. (Min: 0.5 mL/aliquot)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens.
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

New Test **3004512** **Dipeptidyl Aminopeptidase-Like Protein 6 (DPPX) Antibody, IgG by IFA With Reflex to Titer, CSF** **DPPX CSF**

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Additional Technical Information

Methodology: Semi-Quantitative Indirect Fluorescent Antibody
Performed: Wed
Reported: 1-8 days

Specimen Required: Collect: Separate CSF.
Specimen Preparation: Transfer 0.5 mL CSF to an ARUP Standard Transport Tube. (Min: 0.15 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Hemolyzed, contaminated, or severely lipemic specimens.
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Reference Interval: Less than 1:1

Interpretive Data:
Anti-DPPX IgG antibody is found in a subset of patients with autoimmune encephalitis and may occur with or without associated tumor. Decreasing antibody levels may be associated with therapeutic response; therefore, clinical correlation must be strongly considered. A negative test result does not rule out a diagnosis of autoimmune limbic encephalitis.

This indirect fluorescent antibody cell-based assay (CBA) utilizes dipeptidyl aminopeptidase-like protein 6 (DPPX) transfected cells for the detection of the DPPX IgG antibody.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes..

Note: If DPPX antibody IgG is positive, then DPPX antibody IgG titer will be added. Additional charges apply.

CPT Code(s): 86255; if reflexed, add 86256

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0095155 **DNA Cell Cycle Analysis - Ploidy and S-Phase** **DNA MISC**

HOTLINE NOTE: There is a clinically significant charting name change associated with this test.
Change the charting name for component 0095814, DNA Analysis S Phase Interpretation from DNA Analysis S Phase Interpretation to DNA Analysis S-Phase Percent.
There is a result type change associated with this test.
Change the result type for component 095814, DNA Analysis S Phase Interpretation from Alpha to Numeric.

2011153 **Duchenne/Becker Muscular Dystrophy (*DMD*) Sequencing** **DMD SEQ**

Performed: Varies
Reported: 3 weeks

0060053 **Echovirus Antibodies** **ECHO**

Performed: Mon-Fri
Reported: 6-12 days

0020498 **Electrolytes, Urine** **ULYTE**

Specimen Required: Collect: 24-hour or random urine. Refrigerate during collection.
Specimen Preparation: Do not adjust specimen pH. Transfer a 1 mL aliquot of urine from a well-mixed collection to an ARUP Standard Transport Tube. (Min: 0.5 mL) Record total volume and collection time interval on transport tube and test request form.
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 months

2014108 **Enterovirus Antibodies Panel** **ENT AB PAN**

Performed: Mon-Fri
Reported: 6-12 days

3001781 **Extended Myositis Panel** **MYOS EXT**

Specimen Required: Collect: Serum Separator Tube (SST).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer three 1 mL serum aliquots to ARUP Standard Transport Tubes. (Min: 0.5 mL/aliquot)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens.
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

0050652 **Extractable Nuclear Antigen Antibodies (Smith/RNP, Smith, SSA 52, SSA 60, and SSB)** **ENA ABS4**

Specimen Required: Collect: Serum separator tube.
Specimen Preparation: Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Storage/Transport Temperature: Refrigerated..
Unacceptable Conditions: Plasma or other body fluids. Bacterially contaminated or severely lipemic specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)

New Test **3004434** **Familial Mediterranean Fever (*MEFV*) Sequencing** **FMF NGS**

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Additional Technical Information

Patient History for Familial Mediterranean Fever (*MEFV*) Testing

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3-6 weeks

Specimen Required: Collect: Lavender (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Genes tested: *MEFV*

CPT Code(s): 81404

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0070065 Ferritin FERITN

Specimen Required: Collect: Serum separator tube. Also acceptable: Plasma separator tube, lavender (K_2EDTA or K_3EDTA), pink (K_2EDTA), or green (lithium heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 12 months

Reference Interval: At birth, ferritin levels average 100 ng/mL and rise to a peak of about 350 ng/mL at one month. During the next five months, ferritin levels fall to about 30 ng/mL (Blood 43:581, 1974).

Effective February 22, 2022

Age:	Male:	Female:
0-9 days	Not Established	Not Established
10-364 days	9 – 115 ng/mL	10 – 194 ng/mL
1-2 years	6 – 70 ng/mL	7 – 81 ng/mL
3-5 years	12 – 71 ng/mL	12 – 74 ng/mL
6-9 years	15 – 81 ng/mL	13 – 92 ng/mL
10-14 years	14 – 101 ng/mL	14 – 101 ng/mL
15-16 years		4 – 114 ng/mL
15-19 years	21 – 173 ng/mL	
17-59 years		13 – 150 ng/mL
20-59 years	30 – 400 ng/mL	
Greater than or equal to 60 years	31 – 409 ng/mL	11 – 328 ng/mL

HOTLINE NOTE: There is a numeric map change associated with this test.
Change the numeric map for component 0070065, Ferritin from XXXXX to XXXXXX.

0097621 Fluconazole, Quantitative by LC-MS/MS FLUCON

Specimen Required: Patient Prep: Timing of specimen collection: Pre-dose (trough) draw - At steady state concentration.
Collect: Plain Red, Lavender (EDTA), or Green (Sodium or Lithium Heparin).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.6 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Whole blood. Gel separator tubes, Light Blue (citrate), or Yellow (SPS or ACD solution).
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 48 hours; Frozen: 6 months

Interpretive Data:
Fluconazole is a synthetic triazole antifungal drug indicated to treat candidiasis and cryptococcal meningitis infections. The therapeutic range is based on serum, predose (trough) draw collection at steady-state concentration. The pharmacokinetics of fluconazole are influenced by drug-drug interactions when coadministered with drugs metabolized by cytochrome P450 2C9, 2C19 and 3A4 enzymes. Adverse effects may include headache, skin rash, abdominal pain and hepatitis.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

0070055 Follicle Stimulating Hormone, Serum FSH

Specimen Required: Collect: Serum separator tube or plasma separator tube. Also acceptable: Green (lithium heparin), Lavender (K_2 EDTA or K_3 EDTA), or Pink (K_2 EDTA).
Specimen Preparation: Pooled specimens must be all serum or all plasma. Allow specimen to clot completely at room temperature and separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 6 months

0099012 Fructosamine — FRUCTOSAM

Reference Interval:
Effective February 22, 2022
Nondiabetic: 205-285 µmol/L

2005633 Genomic SNP Microarray, Products of Conception — ARRAY POC

HOTLINE NOTE: There is a component change associated with this test.
Remove component 2005635, EER SNP Microarray, Products of Concept

0020725 Glomerular Filtration Rate, Estimated — GFRE

Specimen Required: Collect: Plasma separator tube or serum separator tube.
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Remarks: Patient age and sex are required for calculation.
Unacceptable Conditions: Specimens obtained through catheters used to infuse hyperalimentation fluid. Specimens collected with potassium oxalate/sodium fluoride or sodium citrate.
Stability (collection to initiation of testing): After separation from cells: Ambient: 1 week; Refrigerated: 1 week; Frozen: 3 months

Reference Interval: Effective August 20, 2018
Calculated GFR - >= 60 mL/min / 1.73 square meters

Creatinine

Effective February 22, 2022

Age	Male	Female
0-30 days	0.50-1.20 mg/dL	0.50-0.90 mg/dL
31-364 days	0.40-0.70 mg/dL	0.40-0.60 mg/dL
1-3 years	0.40-0.70 mg/dL	0.40-0.70 mg/dL
4-6 years	0.50-0.80 mg/dL	0.50-0.80 mg/dL
7-9 years	0.30-0.60 mg/dL	0.30-0.70 mg/dL
10-11 years	0.30-0.70 mg/dL	0.40-0.80 mg/dL
12-13 years	0.40-0.80 mg/dL	0.40-0.80 mg/dL
14-15 years	0.40-1.10 mg/dL	0.30-0.90 mg/dL
16-18 years	0.60-1.20 mg/dL	0.50-1.00 mg/dL
19 years and older	0.69-1.22 mg/dL	0.59-1.01 mg/dL

New Test **3004457** **Glucose-6-Phosphate Dehydrogenase Deficiency (*G6PD*) Sequencing** **G6PD NGS**

Click for Pricing

Additional Technical Information

Patient History for Glucose-6-Phosphate Dehydrogenase Deficiency (*G6PD*) Testing

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3 weeks

Specimen Required: Collect: Lavender or Pink (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens; saliva, buccal brush, or swab; FFPE tissue.
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Gene Tested: *G6PD* (NM_001042351)

CPT Code(s): 81249

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

New Test **3004370** **H3K27M by Immunohistochemistry** **H3K27M IHC**
Available Now
Click for Pricing

Methodology: Immunohistochemistry
Performed: Mon-Fri
Reported: 1-3 days

Specimen Required: Collect: Tissue.
Specimen Preparation: Formalin fix (10 percent neutral buffered formalin) and paraffin embed specimen (cells must be prepared into a cellblock). Protect paraffin block and/or slides from excessive heat. Transport tissue block or 5 unstained (3- to 5-micron thick sections), positively charged slides in a tissue transport kit (highly recommended), (ARUP supply #47808) available online through eSupply using ARUP Connect or contact ARUP Client Services at (800) 522-2787. (Min: 2 slides) If sending precut slides, do not oven bake.
Storage/Transport Temperature: Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions: Specimens submitted with non-representative tissue type. Depleted specimens.
Stability (collection to initiation of testing): Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Note: This test is performed as a stain and return (technical) service only.

CPT Code(s): 88342

New York DOH Approved.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

New Test **3004364** **H3K27me3 by Immunohistochemistry** **H3K27M3IHC**
Available Now
Click for Pricing

Methodology: Immunohistochemistry
Performed: Mon-Fri
Reported: 1-3 days

Specimen Required: Collect: Tissue.
Specimen Preparation: Formalin fix (10 percent neutral buffered formalin) and paraffin embed specimen (cells must be prepared into a cellblock). Protect paraffin block and/or slides from excessive heat. Transport tissue block or 5 unstained (3- to 5-micron thick sections), positively charged slides in a tissue transport kit (highly recommended), (ARUP supply #47808) available online through eSupply using ARUP Connect or contact ARUP Client Services at (800) 522-2787. (Min: 2 slides) If sending precut slides, do not oven bake.
Storage/Transport Temperature: Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.
Unacceptable Conditions: Specimens submitted with non-representative tissue type. Depleted specimens.
Stability (collection to initiation of testing): Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Interpretive Data:
This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Note: This test is performed as a stain and return (technical) service only.

CPT Code(s): 88342

New York DOH Approved.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0050280 Haptoglobin HAPTO

Specimen Required: Patient Prep: Fasting specimen preferred.
Collect: Plasma separator tube or serum separator tube. Also acceptable: Green (lithium heparin), or pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 3 months; Refrigerated: 8 months; Frozen: 1 months

2006686 *Helicobacter pylori* Culture MC HPYL

Specimen Required: Collect: Duodenal or gastric biopsy.
Specimen Preparation: Preserve in enteric transport media (Cary-Blair) immediately (ARUP supply #29799) available online through eSupply using ARUP Connect™ or contact ARUP Client Services at (800) 522-2787. Also acceptable: Brucella broth, BHI, or equivalent with or without 10-20 percent glycerol.
Storage/Transport Temperature: Refrigerated.
Remarks: Specimen source required.
Unacceptable Conditions: Fecal specimens or swabs.
Stability (collection to initiation of testing): Ambient: Unacceptable; Refrigerated: 48 hours; Frozen: Unacceptable

3001842 Hereditary Myeloid Neoplasms Panel, Sequencing HMYE NGS

Performed: Varies
Reported: 3 weeks. If specimen is a skin punch biopsy, add 2 weeks for culturing.

New Test **3004480** **Hereditary Paraganglioma-Pheochromocytoma (*SDHA, SDHB, SDHC,* and *SDHD*) Sequencing and Deletion/Duplication** **SDH NGS**

Click for Pricing

Patient History for Hereditary Paraganglioma-Pheochromocytoma (*SDHA, SDHB, SDHC* and *SDHD*) Testing

Additional Technical Information

Methodology: Massively Parallel Sequencing/ Multiplex Ligation-dependent Probe Amplification
Performed: Varies
Reported: 3-6 weeks

Specimen Required: Collect: Lavender or pink (EDTA) or yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 2 mL)
Storage/Transport Temperature: Refrigerated
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens; saliva, buccal brush or swab, FFPE tissue, DNA.
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Genes tested: *SDHA** (NM_004168), *SDHB* (NM_003000), *SDHC* (NM_003001), *SDHD* (NM_003002)
* One or more exons are not covered by sequencing, and deletion/duplication detection is not available for this gene; see Additional Technical Information.

CPT Code(s): 81404; 81405; 81406; 81479

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

2001763	**Hirsutism Evaluation Panel**	**HIRSUTISM**

Reference Interval:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td>2001638</td><td>Androstenedione</td><td>Effective August 19, 2013
<table><tr><th>Age</th><th>Female</th><th>Male</th></tr><tr><td>Premature Infants, 26-28 weeks-Day 4</td><td>0.92-2.82 ng/mL</td><td>0.92-2.82 ng/mL</td></tr><tr><td>Premature Infants, 31-35 weeks-Day 4</td><td>0.80-4.46 ng/mL</td><td>0.80-4.46 ng/mL</td></tr><tr><td>Full-term Infants, 1-7 days</td><td>0.20-2.90 ng/mL</td><td>0.20-2.90 ng/mL</td></tr><tr><td>8-30 days</td><td>0.18-0.80 ng/mL</td><td>0.18-0.80 ng/mL</td></tr><tr><td>1-5 months</td><td>0.06-0.68 ng/mL</td><td>0.06-0.68 ng/mL</td></tr><tr><td>6-24 months</td><td>Less than 0.15 ng/mL</td><td>0.03-0.15 ng/mL</td></tr><tr><td>2-3 years</td><td>Less than 0.16 ng/mL</td><td>Less than 0.11 ng/mL</td></tr><tr><td>4-5 years</td><td>0.02-0.21 ng/mL</td><td>0.02-0.17 ng/mL</td></tr><tr><td>6-7 years</td><td>0.02-0.28 ng/mL</td><td>0.01-0.29 ng/mL</td></tr><tr><td>8-9 years</td><td>0.04-0.42 ng/mL</td><td>0.03-0.30 ng/mL</td></tr><tr><td>10-11 years</td><td>0.09-1.23 ng/mL</td><td>0.07-0.39 ng/mL</td></tr><tr><td>12-13 years</td><td>0.24-1.73 ng/mL</td><td>0.10-0.64 ng/mL</td></tr><tr><td>14-15 years</td><td>0.39-2.00 ng/mL</td><td>0.18-0.94 ng/mL</td></tr><tr><td>16-17 years</td><td>0.35-2.12 ng/mL</td><td>0.30-1.13 ng/mL</td></tr><tr><td>18-39 years</td><td>0.26-2.14 ng/mL</td><td>0.33-1.34 ng/mL</td></tr><tr><td>40 years and older</td><td>0.13-0.82 ng/mL</td><td>0.23-0.89 ng/mL</td></tr><tr><td>Pre-menopausal</td><td>0.26-2.14 ng/mL</td><td>Does Not Apply</td></tr><tr><td>Postmenopausal</td><td>0.13-0.82 ng/mL</td><td>Does Not Apply</td></tr><tr><td>Tanner Stage I</td><td>0.05-0.51 ng/mL</td><td>0.04-0.32 ng/mL</td></tr><tr><td>Tanner Stage II</td><td>0.15-1.37 ng/mL</td><td>0.08-0.48 ng/mL</td></tr><tr><td>Tanner Stage III</td><td>0.37-2.24 ng/mL</td><td>0.14-0.87 ng/mL</td></tr><tr><td>Tanner Stage IV-V</td><td>0.35-2.05 ng/mL</td><td>0.27-1.07 ng/mL</td></tr></table></td></tr>
<tr><td>0070040</td><td>Dehydroepiandrosterone Sulfate, Serum</td><td>Effective February 22, 2022
<table><tr><th>Age</th><th>Male</th><th>Female</th></tr><tr><td>0-6 days</td><td>108-607 µg/dL</td><td>108-607 µg/dL</td></tr><tr><td>7-30 days</td><td>32-431 µg/dL</td><td>32-431 µg/dL</td></tr><tr><td>1-5 months</td><td>3-124 µg/dL</td><td>3-124 µg/dL</td></tr><tr><td>6-35 months</td><td>0-33 µg/dL</td><td>0-29 µg/dL</td></tr><tr><td>3-6 years</td><td>0-44 µg/dL</td><td>0-47 µg/dL</td></tr><tr><td>7-9 years</td><td>5-115 µg/dL</td><td>5-94 µg/dL</td></tr><tr><td>10-14 years</td><td>22-332 µg/dL</td><td>22-255 µg/dL</td></tr><tr><td>15-19 years</td><td>88-483 µg/dL</td><td>63-373 µg/dL</td></tr><tr><td>20-24 years</td><td>211-492 µg/dL</td><td>148-407 µg/dL</td></tr><tr><td>25-34 years</td><td>160-449 µg/dL</td><td>99-340 µg/dL</td></tr><tr><td>35-44 years</td><td>89-427 µg/dL</td><td>61-337 µg/dL</td></tr><tr><td>45-54 years</td><td>44-331 µg/dL</td><td>35-256 µg/dL</td></tr><tr><td>55-64 years</td><td>52-295 µg/dL</td><td>19-205 µg/dL</td></tr><tr><td>65-74 years</td><td>34-249 µg/dL</td><td>9-246 µg/dL</td></tr><tr><td>75 years and older</td><td>16-123 µg/dL</td><td>12-154 µg/dL</td></tr><tr><td>Tanner Stage I</td><td>7-209 µg/dL</td><td>7-126 µg/dL</td></tr><tr><td>Tanner Stage II</td><td>28-260 µg/dL</td><td>13-241 µg/dL</td></tr><tr><td>Tanner Stage III</td><td>39-390 µg/dL</td><td>32-446 µg/dL</td></tr><tr><td>Tanner Stage IV & V</td><td>81-488 µg/dL</td><td>65-371 µg/dL</td></tr></table></td></tr>
<tr><td>0081059</td><td>Testosterone, Free (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)</td><td><table><tr><th>Female Free Testosterone, pg/mL</th><th>Male Free Testosterone, pg/mL</th></tr><tr><td>1-6 years: Less than 0.6 pg/mL
7-9 years: 0.6-1.8 pg/mL
10-11 years: 0.1-3.5 pg/mL
12-13 years: 0.9-6.8 pg/mL
14-15 years: 1.2-7.5 pg/mL
16-17 years: 1.2-9.9 pg/mL
18-30 years: 0.8-7.4 pg/mL
31-40 years: 1.3-9.2 pg/mL
41-51 years: 1.1-5.8 pg/mL
Postmenopausal: 0.6-3.8 pg/mL
Tanner Stage I: Less than 2.2 pg/mL
Tanner Stage II: 0.4-4.5 pg/mL
Tanner Stage III: 1.3-7.5 pg mL
Tanner Stage IV: 1.1-15.5 pg/mL
Tanner Stage V: 0.8-9.2 pg/mL</td><td>1-6 years: Less than 0.6 pg/mL
7-9 years: 0.1-0.9 pg/mL
10-11 years: 0.1-6.3 pg/mL
12-13 years: 0.5-98.0 pg/mL
14-15 years: 3-138.0 pg/mL
16-17 years: 38.0-173.0 pg/mL
18 years and older: 47-244 pg/mL
Tanner Stage I: Less than or equal to 3.7 pg/mL
Tanner Stage II: 0.3-21 pg/mL
Tanner Stage III: 1.0-98.0 pg mL
Tanner Stage IV: 35.0-169.0 pg/mL
Tanner Stage V: 41.0-239.0 pg/mL</td></tr></table></td></tr>
<tr><td>0081058</td><td>Testosterone (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)</td><td>Effective August 19, 2013
<table><tr><th>Age</th><th>Female</th><th>Male</th></tr><tr><td>Premature (26-28 weeks)</td><td>5-16 ng/dL</td><td>59-125 ng/dL</td></tr><tr><td>Premature (31-35 weeks)</td><td>5-22 ng/dL</td><td>37-198 ng/dL</td></tr><tr><td>Newborn</td><td>20-64 ng/dL</td><td>75-400 ng/dL</td></tr><tr><td>1-5 months</td><td>Less than 20 ng/dL</td><td>14-363 ng/dL</td></tr><tr><td>6-24 months</td><td>Less than 9 ng/dL</td><td>Less than 37 ng/dL</td></tr></table></td></tr>
</table>

		2-3 years	Less than 20 ng/dL	Less than 15 ng/dL
		4-5 years	Less than 30 ng/dL	Less than 19 ng/dL
		6-7 years	Less than 7 ng/dL	Less than 13 ng/dL
		8-9 years	1-11ng/dL	2-8 ng/dL
		10-11 years	3-32 ng/dL	2-165 ng/dL
		12-13 years	6-50 ng/dL	3-619 ng/dL
		14-15 years	6-52 ng/dL	31-733 ng/dL
		16-17 years	9-58 ng/dL	158-826 ng/dL
		18-39 years	9-55 ng/dL	300-1080 ng/dL
		40-59 years	9-55 ng/dL	300-890 ng/dL
		60 years and older	5-32 ng/dL	300-720 ng/dL
		Premenopausal (18 years and older)	9-55 ng/dL	Does Not Apply
		Postmenopausal	5-32 ng/dL	Does Not Apply
		Tanner Stage I	2-17 ng/dL	2-15 ng/dL
		Tanner Stage II	5-40 ng/dL	3-303 ng/dL
		Tanner Stage III	10-63 ng/dL	10-851 ng/dL
		Tanner Stage IV-V	11-62 ng/dL	162-847 ng/dL
0099375	Sex Hormone-Binding Globulin	Effective February 22, 2022		
		Age	**Male**	**Female**
		1-30 days	13-85 nmol/L	14-60 nmol/L
		31-364 days	70-250 nmol/L	60-215 nmol/L
		1-3 years	50-180 nmol/L	60-190 nmol/L
		4-6 years	45-175 nmol/L	55-170 nmol/L
		7-9 years	28-190 nmol/L	35-170 nmol/L
		10-12 years	23-160 nmol/L	17-155 nmol/L
		13-15 years	13-140 nmol/L	11-120 nmol/L
		16-17 years	10-60 nmol/L	19-145 nmol/L
		18-49 years	17-56 nmol/L	25-122 nmol/L
		50 years and older	19-76 nmol/L	17-125 nmol/L
		Tanner Stage I	26-186 nmol/L	30-173 nmol/L
		Tanner Stage II	22-169 nmol/L	16-127 nmol/L
		Tanner Stage III	13-104 nmol/L	12-98 nmol/L
		Tanner Stage IV	11-60 nmol/L	14-151 nmol/L
		Tanner Stage V	11-71 nmol/L	23-165 nmol/L

HOTLINE NOTE: There is a clinically significant charting name change associated with this test.
Change the charting name for component 0081058, Testosterone, LC-MS/MS from Testosterone, LC-MS/MS to Testosterone by Mass Spec.
Change the charting name for component 0081096, Testosterone, Free LC-MS/MS from Testosterone, Free LC-MS/MS to Testosterone, Free LC-MS/MSby Mass Spec.

3003853 Human Immunodeficiency Virus 1 Drug Resistance by Next Generation Sequencing — HIV1 NGS

Specimen Required: Collect: Lavender (EDTA), Pink (K_2 EDTA), or plasma preparation tube.
Specimen Preparation: Separate plasma from cells within 24 hours. Transfer 3.0 mL plasma to an ARUP Standard Transport Tube. (Min: 2.5 mL)
Storage/Transport Temperature: Frozen.
Remarks: Please submit most recent viral load and test date, if available.
Unacceptable Conditions: Serum. Heparinized specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 72 hours; Frozen: 3 months

0020420 Iron and Iron Binding Capacity FEIBC

Specimen Required: Collect: Plasma separator, Serum Separator Tube (SST), or green (lithium heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL) Avoid hemolysis. Also acceptable: Heparinized plasma.
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens. EDTA plasma.
Stability (collection to initiation of testing): After separation from cells: Ambient: 4 days; Refrigerated: 1 week; Frozen: 3 months

Reference Interval:
Effective February 22, 2022

Test Number	Components	Reference Interval
	Iron, Plasma or Serum	Newborn 0-6 weeks: 100-250 µg/dL Infant 7 weeks - 11 months: 40-100 µg/dL Child 1 year - 10 years: 50-120 µg/dL Male 11 years and older: 45-182 µg/dL Female 11 years and older: 28-170 µg/dL
	Transferrin Saturation	20-50%
	Total Iron Binding Capacity	UIBC: Not reported on patient reports: 0-2 months: 59-175 µg/dL 3 months-17 years: 250-400 µg/dL 18 years and older: 240-450 µg/dL

0020037 Iron, Plasma or Serum FE

Specimen Required: Collect: Plasma separator tube, serum separator tube, or green (lithium herparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Specimens collected from patients receiving deferoxamine (wait six hours after last dose). Specimens containing EDTA, sodium/fluoride, oxalate, or sodium citrate. Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 1 week; Refrigerated: 3 weeks; Frozen: 3 months

Reference Interval:
Effective February 22, 2022

Age	Reference Interval
Newborn 0-6 weeks	100-250 µg/dL
Infant 7 weeks - 11 months	40-100 µg/dL
Child 1 year - 10 years	50-120 µg/dL
Male 11 years and older	45-182 µg/dL
Female 11 years and older	28-170 µg/dL

0050138 Islet Cell Cytoplasmic Antibody, IgG ANTI-ISLET

Specimen Required: Collect: Serum separator tube.
Specimen Preparation: Separate serum from cells ASAP or within 2 hours of collection. Transfer1 mL serum to an ARUP Standard Transport Tube. (Min: 0.15 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma. CSF. Contaminated, hemolyzed, or severely lipemic specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles)

0098519 Itraconazole, Quantitative by LC-MS/MS — ITRACONAZ

Specimen Required: Patient Prep: Timing of specimen collection: Pre-dose (trough) draw - At steady state concentration.
Collect: Plain Red, Lavender (EDTA), or Green (Sodium or Lithium Heparin).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.6 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Whole blood. Gel separator tubes, Light Blue (citrate), or Yellow (SPS or ACD solution).
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 48 hours; Frozen: 6 months

Interpretive Data:
Itraconazole is an azole antifungal drug indicated to treat fungal infections. The therapeutic range is based on serum, predose (trough) draw collection at steady-state concentration. The pharmacokinetics of itraconazole are influenced by drug-drug interactions when coadministered with drugs metabolized by cytochrome P450 3A4 enzyme. Itraconazole and hydroxyitraconazole concentrations combined should not exceed 10 µg/mL. Adverse effects may include nausea, abdominal pain, and congestive heart failure.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

3004046 *JAK2* (V617F) Mutation by ddPCR, Qualitative — JAK2 QUAL

Specimen Required: Collect: Whole blood or bone marrow: Lavender (EDTA).
Specimen Preparation: **Whole Blood:** Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.
Stability (collection to initiation of testing): Refrigerated: 7 days; Frozen: Unacceptable

3003800 *JAK2* (V617F) Mutation by ddPCR, Qualitative with Reflex to *CALR* (Calreticulin) Exon 9 Mutation Analysis by PCR with Reflex to *MPL* Mutation Detection — ETPMF RFX

Specimen Required: Collect: Whole blood or bone marrow: Lavender (EDTA).
Specimen Preparation: **Whole Blood:** Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.
Stability (collection to initiation of testing): Refrigerated: 7 days; Frozen: Unacceptable

3003801 *JAK2* (V617F) Mutation by ddPCR, Qualitative with Reflex to *JAK2* Exon 12 Mutation Analysis by PCR — PV RFX

Specimen Required: Collect: Whole blood or bone marrow: Lavender (EDTA).
Specimen Preparation: **Whole Blood:** Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.
Stability (collection to initiation of testing): Refrigerated: 7 days; Frozen: Unacceptable

3003751 *JAK2* (V617F) Mutation by ddPCR, Quantitative — JAK2V617FQ

Specimen Required: Collect: Whole blood or bone marrow: Lavender (EDTA).
Specimen Preparation: **Whole Blood:** Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma, serum, FFPE tissue blocks/slides, or fresh or frozen tissue. Specimens collected in anticoagulants other than EDTA or sodium heparin. Clotted or grossly hemolyzed specimens.
Stability (collection to initiation of testing): Refrigerated: 7 days; Frozen: Unacceptable

2002357 *JAK2* Exon 12 Mutation Analysis by PCR — JAK2 EX12

Specimen Required: Collect: Whole blood **or** bone marrow (EDTA). Also acceptable: DNA extracted by CLIA-certified lab.
Specimen Preparation: **Whole Blood:** Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Do not freeze. Transport 3 mL bone marrow. (Min: 1 mL)
Extracted DNA: Transport 40 uL DNA with at least 50 ng/uL concentration. (Min: 40 uL) Transport DNA in a tissue transport kit (ARUP Supply #47808) available online through eSupply using ARUP Connect™ or contact ARUP Client Services at (800) 522-2787.
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.
Stability (collection to initiation of testing): Ambient: 24 hours; Refrigerated: 5 days; Frozen: Unacceptable
Extracted DNA: Ambient: 1 month; Refrigerate: Indefinitely; Frozen: Indefinitely

0098627 Keppra (Levetiracetam) — KEPPRA

Reference Interval:
Effective February 22, 2022
Therapeutic range: 10-40 µg/mL
Toxic: Not well established

0020505 Lactate Dehydrogenase Total, Body Fluid — LDH-FL

HOTLINE NOTE: There is a numeric map change associated with this test.
Change the numeric map for component 0020505, Lactate Dehydrogenase Total, Body Fluid from XXXXX to XXXXXX.

0020413 Lactate Dehydrogenase, Isoenzymes — LDISO

HOTLINE NOTE: There is a numeric map change associated with this test.
Change the numeric map for component 0020107, Lactate Dehydrogenase, Total from XXXXX to XXXXXX.

0020006 Lactate Dehydrogenase, Serum or Plasma — LDH

HOTLINE NOTE: There is a numeric map change associated with this test.
Change the numeric map for component 0020006, Lactate Dehydrogenase from XXXXX to XXXXXX.

0090177 Lamotrigine — LAMOT

Reference Interval:
Effective February 22, 2022
Therapeutic Range: 3-15.0 µg/mL
Toxic: Greater than or equal to 20 µg/mL

0020257 LDL Cholesterol, Direct — LDL D

Specimen Required: Collect: Plasma separator tube or serum separator tube. Also acceptable: Green (lithium heparin), Lavender (K_2 EDTA or K_3 EDTA), or Pink (K_2 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 hours; Refrigerated: 7 days; Frozen: 12 months

0051726 ***Leishmania* Antibody, IgG (Visceral Leishmaniasis)** **LEISH IGG**

Specimen Required: Collect: Serum separator tube.
Specimen Preparation: Transfer 0.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.1 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma containing glycerol or other viscous materials. Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 3 days; Frozen: 1 year

0020715 **Lipase, Fluid** **LIP FL**

Specimen Required: Collect: Biliary/Hepatic, Drain, Pancreatic, Pericardial, Peritoneal/Ascites, Pleural or Synovial fluid.
Specimen Preparation: Centrifuge to remove cellular material. Transfer 1 mL body fluid to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Remarks: **Specimen source must be provided**.
Unacceptable Conditions: Specimen types other than those listed. Specimens too viscous to be aspirated by instrument.
Stability (collection to initiation of testing): Ambient: 1 week; Refrigerated: 1 week; Frozen: 2 months

0099174 **Lipoprotein (a)** **LIPO A**

Specimen Required: Collect: Serum Separator Tube (SST) or Plasma Separator Tube (PST). Also acceptable: Green (Lithium Heparin), Lavender (EDTA), or Pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Body Fluids.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 hours; Refrigerated: 14 days; Frozen: 1 month

0080503 **Lipoprotein Electrophoresis** **LIPOELECT**

Specimen Required: Patient Prep: Patient should be fasting for 12-15 hours.
Collect: Serum separator tube or plain red.
Specimen Preparation: Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL) Store and ship refrigerated. DO NOT FREEZE.
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Heparin and frozen samples. Body fluids.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 7 days; Frozen: Unacceptable

2002925	**Lupus Profile with Reflex to ANA and dsDNA by IFA**	**LUPUS PRO**

Reference Interval: Effective May 18, 2015

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td>0050080</td><td>Antinuclear Antibodies (ANA), IgG by ELISA with Reflex to ANA, HEp-2 Substrate, IgG by IFA</td><td>Effective November 13, 2017
<table><tr><th>Components</th><th>Reference Interval</th></tr><tr><td>Anti-Nuclear Antibodies (ANA), IgG by ELISA</td><td>None Detected</td></tr><tr><td>Antinuclear Antibody (ANA), HEp-2, IgG</td><td>Less than 1:80</td></tr></table></td></tr>
<tr><td>0050075</td><td>Thyroid Peroxidase (TPO) Antibody</td><td>0.0-9.0 IU/mL</td></tr>
<tr><td>0050150</td><td>Complement Component 3</td><td>Effective February 22, 2022
<table><tr><td>0-30 days: 59-121 mg/dL
1 month: 55-129 mg/dL
2 months: 61-155 mg/dL
3 months: 67-136 mg/dL
4 months: 65-182 mg/dL
5 months: 67-174 mg/dL
6 months: 77-179 mg/dL</td><td>7-8 months: 78-173 mg/dL
9-11 months: 76-187 mg/dL
1 year: 87-181 mg/dL
2 years: 84-177 mg/dL
3-4 years: 80-178 mg/dL
5-11 years: 80-160 mg/dL
12-17 years: 82-163 mg/dL
18 years and older: 90-180 mg/dL</td></tr></table></td></tr>
<tr><td>0050155</td><td>Complement Component 4</td><td><table><tr><td>0-30 days: 8-30 mg/dL
1 month: 9-33 mg/dL
2 months: 9-37 mg/dL
3 months: 10-35 mg/dL
4 months: 10-49 mg/dL
5 months: 9-48 mg/dL
6 months: 12-55 mg/dL</td><td>7-8 months: 13-48 mg/dL
9-11 months: 16-51 mg/dL
1 year: 16-52 mg/dL
2-4 years: 12-47 mg/dL
5-11 years: 13-44 mg/dL
12-17 years: 14-41 mg/dL
18 years and older: 10-40 mg/dL</td></tr></table></td></tr>
<tr><td>0050901</td><td>Cardiolipin Antibody, IgG</td><td>Effective August 18, 2014
<table><tr><td>0-14 GPL</td><td>Negative</td></tr><tr><td>15-19 GPL</td><td>Indeterminate</td></tr><tr><td>20-80 GPL</td><td>Low to Moderately Positive</td></tr><tr><td>81 GPL or above</td><td>High Positive</td></tr></table></td></tr>
<tr><td>0098358</td><td>Cardiolipin Antibody, IgA</td><td>Effective August 18, 2014
<table><tr><td>0-11 APL</td><td>Negative</td></tr><tr><td>12-19 APL</td><td>Indeterminate</td></tr><tr><td>20-80 APL</td><td>Low to Moderately Positive</td></tr><tr><td>81 APL or above</td><td>High Positive</td></tr></table></td></tr>
<tr><td>0050902</td><td>Cardiolipin Antibody, IgM</td><td>Effective August 18, 2014
<table><tr><td>0-12 MPL</td><td>Negative</td></tr><tr><td>13-19 MPL</td><td>Indeterminate</td></tr><tr><td>20-80 MPL</td><td>Low to Moderately Positive</td></tr><tr><td>81 MPL or above</td><td>High Positive</td></tr></table></td></tr>
<tr><td>0050714</td><td>Centromere Antibody, IgG</td><td><table><tr><td>29 AU/mL or less</td><td>Negative</td></tr><tr><td>30-40 AU/mL</td><td>Equivocal</td></tr><tr><td>41 AU/mL or greater</td><td>Positive</td></tr></table></td></tr>
<tr><td>0050215</td><td>Double-Stranded DNA (dsDNA) Antibody, IgG by ELISA with Reflex to dsDNA Antibody, IgG by IFA</td><td>Effective May 17, 2021
<table><tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr><tr><td></td><td>dsDNA (Double Stranded DNA) Antibody, IgG</td><td>Refer to report</td></tr><tr><td>2002693</td><td>Double-Stranded DNA (dsDNA) Antibody, IgG by IFA (using Crithidia luciliae)</td><td>Refer to report</td></tr></table></td></tr>
<tr><td>0050470</td><td>Smith/RNP (ENA) Antibody, IgG</td><td><table><tr><td>29 AU/mL or less</td><td>Negative</td></tr><tr><td>30-40 AU/mL</td><td>Equivocal</td></tr><tr><td>41 AU/mL or greater</td><td>Positive</td></tr></table></td></tr>
<tr><td>0050599</td><td>Scleroderma (Scl-70) (ENA) Antibody, IgG</td><td><table><tr><td>29 AU/mL or less</td><td>Negative</td></tr><tr><td>30-40 AU/mL</td><td>Equivocal</td></tr><tr><td>41 AU/mL or greater</td><td>Positive</td></tr></table></td></tr>
</table>

0050085	Smith (ENA) Antibody, IgG	29 AU/mL or less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive
2012074	SSA 52 and 60 (Ro) (ENA) Antibodies, IgG	**Test Number** / **Components** / **Reference Interval** SSA-52 (Ro52) (ENA) Antibody, IgG: 29 AU/mL or Less: Negative; 30-40 AU/mL: Equivocal; 41 AU/mL or greater: Positive SSA-60 (Ro60) (ENA) Antibody, IgG: 29 AU/mL or Less: Negative; 30-40 AU/mL: Equivocal; 41 AU/mL or greater: Positive
0050692	SSB (La) (ENA) Antibody, IgG	29 AU/mL or less: Negative 30-40 AU/mL: Equivocal 41 AU/mL or greater: Positive

0070193 Luteinizing Hormone and Follicle Stimulating Hormone LH/FSH

Specimen Required: Collect: Serum separator tube, plasma separator tube, Green (lithium heparin), Lavender (K_2 EDTA or K_3 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 2 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 6 months

0070093 Luteinizing Hormone, Serum LH

Specimen Required: Collect: Serum separator tube, plasma separator tube, Green (lithium heparin), or Lavender (K_2 EDTA, or K_3 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 5 days; Refrigerated: 2 weeks; Frozen: 6 months

2004464 Macroamylase Determination MACROAMY

Reference Interval:
Effective February 22, 2022

Test Number	Components	Reference Interval
	Amylase, Total	
		Age / **Reference Interval**
		3-90 days: 0-30 U/L
		3-6 months: 7-40 U/L
		7-8 months: 7-57 U/L
		9-11 months: 11-70 U/L
		12-17 months: 11-79 U/L
		18-35 months: 19-92 U/L
		3-4 years: 26-106 U/L
		5-12 years: 30-119 U/L
		13 years and older: 28-100 U/L
	Amylase, Monomeric	
		Age / **Reference Interval**
		18 years and older: 23-110 U/L
	Amylase, Percent Monomeric	Greater than or equal to 71 percent

0020477 Magnesium, Urine UMG

Specimen Required: Collect: 24-hour urine. Refrigerate during collection. Also acceptable: Random urine.
Specimen Preparation: Adjust pH to 1 by adding 6M HCl (approximately 10 mL HCl/24-hour specimen based on normal adult output of 1000-2000 mL/24 hours. Pediatric specimens will require less than 10 mL to reach the correct pH). Record total volume and collection time interval on transport tube and test request form.
Transfer 4 mL aliquot of urine from a well-mixed 24-hour collection to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Specimens containing preservatives other than HCl. Specimen submitted in metal containers.
Stability (collection to initiation of testing): Ambient: 3 days (if acidified); Refrigerated: 2 weeks; Frozen: 1 year

2005545 *MPL* Mutation Detection by Capillary Electrophoresis MPL

Specimen Required: Collect: Whole blood or bone marrow (EDTA).
Specimen Preparation: **Whole Blood:** Do not freeze. Transport 5 mL whole blood. (Min: 1 mL)
Bone Marrow: Transport 3 mL bone marrow. (Min: 1 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma, serum, FFPE tissue blocks/slides, or frozen tissue. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.
Stability (collection to initiation of testing): Ambient: 24 hours; Refrigerated: 5 days; Frozen: Unacceptable
Extracted DNA: Ambient: 1 month; Refrigerate: Indefinitely; Frozen: Indefinitely

New Test **3004437** **Multiple Endocrine Neoplasia Type 1 (*MEN1*) Sequencing and Deletion/Duplication** **MEN1 NGS**

Click for Pricing

Patient History for Multiple Endocrine Neoplasia Type 1 (*MEN1*) Testing

Additional Technical Information

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3 weeks

Specimen Required: Collect: Lavender or Pink (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens; saliva; buccal brush or swab, FFPE tissue.
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Gene Tested: *MEN1* (NM_130799)

CPT Code(s): 81404, 81405

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0020224 **Myoglobin, Serum** **MYOG-S**

Specimen Required: Collect: Plain red or serum separator tube. Also acceptable: Green (lithium heparin), lavender (K_3EDTA or K_2EDTA) or pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 days; Refrigerated: 2 weeks; Frozen: 1 year

Reference Interval:
Effective February 22, 2022
Male: less than or equal to 72 ng/mL
Female: less than or equal to 58 ng/mL

HOTLINE NOTE: There is a numeric map change associated with this test.
Change the numeric map for component 0020224, Myoglobin Serum from XXXXXX to XXXXXXX.

2001603 ***Neisseria meningitidis* Tetravalent Antibodies (Serogroups A, C, W-135 and Y), IgG** **NMENING**

Specimen Required: Collect: Serum separator tube. Postimmunization specimen should be drawn 30 days after immunization and, if shipped separately, must be received within 60 days of preimmunization specimen.
Specimen Preparation: Separate serum from cells ASAP or within 2 hours of collection. Transfer 1.5 mL serum to an ARUP Standard Transport Tube. (Min: 0.25 mL) MARK SPECIMENS CLEARLY AS PRE- OR POSTPNEUMOCOCCAL VACCINE SO SPECIMENS WILL BE SAVED AND TESTED SIMULTANEOUSLY.
Storage/Transport Temperature: Refrigerated. Pre- and postpneumococcal vaccine specimens can be submitted separately or together for testing.
Unacceptable Conditions: Plasma or other body fluids. Contaminated, hemolyzed or severely lipemic specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year (avoid repeated freeze/thaw cycles).

2010769 **Noonan Spectrum Disorders Panel, Sequencing, Fetal** **NOONAN FE**

Performed: Varies
Reported: 3 weeks; if culture is required, an additional 1 to 2 weeks is required for processing time.

0020728 **Osteocalcin by Electrochemiluminescent Immunoassay** **OSTEO NMID**

Specimen Required: Collect: Serum separator tube. Also acceptable: Lavender (K_2 EDTA or K_3 EDTA), pink (K_2EDTA), or green (lithium heparin).
Specimen Preparation: Allow serum tube to sit for 15-20 minutes at room temperature for proper clot formation. Centrifuge and separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 hours; Refrigerated: 72 hours; Frozen: 3 months

Reference Interval:
Effective February 22, 2022

Age	Male	Female
6 months-6 years	39-121 ng/mL	44-130 ng/mL
7-9 years	66-182 ng/mL	73-206 ng/mL
10-12 years	85-232 ng/mL	77-262 ng/mL
13-15 years	70-336 ng/mL	33-222 ng/mL
16-17 years	43-237 ng/mL	24-99 ng/mL
18 years and older	8-36 ng/mL	8-36 ng/mL

2010841 **Paraneoplastic Antibodies (PCCA/ANNA) by IFA with Reflex to Titer and Immunoblot, CSF** **PCCAANNA C**

Reference Interval:

Test Number	Components	Reference Interval
	Paraneoplastic Abs (PCCA/ANNA) IgG, CSF	None Detected
	Neuronal Nuclear Ab Titer, IgG CSF	Less than 1:1
	Purkinje Cell Antibody Titer IgG, CSF	Less than 1:1
	Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot, CSF	

Test Number	Components	Reference Interval
	Neuronal Nuclear Ab (Hu) IgG, IB, CSF	Refer to report
	Neuronal Nuclear Ab (Ri) IgG, IB, CSF	Refer to report
	Neuronal Nuclear Ab (Yo) IgG, IB, CSF	Refer to report
	Neuronal Nuclear Ab (TR/DNER) IgG, CSF	Refer to report

CPT Code(s): 86255; if reflexed add 84182 x4 and/or 86256

HOTLINE NOTE: There is a reflexive pattern change associated with this test.
Add reflex to 3004527, Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot, CSF
Remove reflex 2010847, Neuronal Nuclear Antibodies (Hu, Ri, Yo) IgG by Immunoblot, CSF

New Test **3004517** **Paraneoplastic Reflexive Panel, CSF** **PNSPAN CSF**
Click for Pricing

Methodology: Semi-Quantitative Indirect Fluorescent Antibody/Qualitative Immunoblot
Performed: Wed
Reported: 1-9 days

Specimen Required: Collect: CSF.
Specimen Preparation: Transfer 2 mL CSF to an ARUP Standard Transport Tube. (Min: 1 mL).
Storage/Transport Temperature: Refrigerated
Unacceptable Conditions: Contaminated, heat-inactivated, hemolyzed, or lipemic specimens
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Reference Interval:

Test Number	Components	Reference Interval
3002257	CV2.1 Screen by IFA with Reflex to Titer, CSF	Less than 1:1
2010841	PCCA/ANNA by IFA with Reflex to Titer and Immunoblot, CSF	
	Test Number / Components / Reference Interval	
	Purkinje Cell/Neuronal Nuclear IgG Scrn	None Detected
	Neuronal Nuclear Antibody (ANNA) IFA Titer, IgG	Less than 1:1
	Purkinje Cell Antibody, Titer	Less than 1:1
	Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot, CSF	Refer to report
3004510	Amphiphysin Antibody, IgG, CSF	Negative
3002885	SOX1 Antibody, IgG by Immunoblot, CSF	Negative

Interpretive Data:
Refer to report

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Note: Purkinje Cell (PCCA) antibody and Neuronal Nuclear (ANNA) antibody IgG are screened by IFA. If the IFA screen is indeterminate, then a Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot will be added. If the IFA screen is positive at 1:1 or greater, then a PCCA/ANNA antibodies titer and Neuronal Nuclear Antibodies (Hu, Ri, Yo, Tr/DNER) IgG by Immunoblot will be added. Additional charges apply.
If CV2.1 Antibody IgG Screen by IFA is positive, then CV2.1 Antibody IgG Titer by IFA will be added. Additional charges apply.

CPT Code(s): 86255 x2; 84182 x2; if reflexed add 86256 and/or 84182 x4; if reflexed add 86256

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0070346 Parathyroid Hormone, Intact PTH-INT

Specimen Required: Collect: Lavender (K_2 or K_3 EDTA) or pink (K_2 EDTA). Also acceptable: Serum Separator Tube (SST).
Specimen Preparation: **Allow serum specimen to clot fully at room temperature and centrifuge immediately.** Transfer 2 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions: Body Fluid (refer to Parathyroid Hormone, FNA, ARUP test code 2001491); Urine. Rapid Serum Tubes (RST). Hemolyzed samples. Grossly lipemic samples.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 hours; Refrigerated: 48 hours; Frozen: 6 months

Note: PTH is unstable in unseparated serum. If collecting serum instead of plasma, tubes should be centrifuged immediately after clotting.

0070172 Parathyroid Hormone, Intact with Calcium PTHI

Specimen Required: Collect: Plain red or serum separator tube.
Specimen Preparation: **Allow serum specimen to clot fully at room temperature before centrifuging.** Transfer 2 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen. Separate specimens must be submitted when multiple tests are ordered.
Remarks: If requesting Ionized Calcium with PTH, submit two separate specimens. Refer to Calcium, Ionized, Serum (ARUP test code 0020135) for requirements.
Unacceptable Conditions: Body Fluid (refer to Parathyroid Hormone, FNA, ARUP test code 2001491). Specimens collected in EDTA. Rapid Serum Tubes (RST). Hemolyzed samples. Grossly lipemic samples.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 hours; Refrigerated: 48 hours; Frozen: 6 months

Reference Interval:
Effective February 22, 2022

Test Number	Components	Reference Interval	
0070346	Parathyroid Hormone, Intact	15-65 pg/mL	
	Calcium, Total	**Age**	**Reference Interval**
		0-10 days	7.6-10.4 mg/dL
		10 days - 2 years	9.0-11.0 mg/dL
		2-12 years	8.8-10.8 mg/dL
		12-18 years	8.4-10.2 mg/dL
		18-60 years	8.6-10.0 mg/dL
		60-90 years	8.8-10.2 mg/dL
		> 90 years	8.2-9.6 mg/dL

0020028 Phosphorus, Inorganic, Plasma or Serum PHOS

Specimen Required: Collect: Plasma separator tube or serum separator tube. Also acceptable: Green (lithium heparin), Lavender (K_2 EDTA), or Pink (K_2 EDTA).
Specimen Preparation: Allow serum tube to clot completely at room temperature. Separate serum or plasma from cells within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Hemolyzed specimens. Specimens collected in sodium fluoride/potassium oxalate, citrate.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 4 days; Frozen: 1 year

0020478 Phosphorus, Urine UPHOS

Specimen Required: Collect: 24-hour urine. Refrigerate specimen during collection. Also acceptable: Random urine.
Specimen Preparation: Mix entire 24-hour collection. Adjust pH to 1.5-2.0 by adding 6M HCl in 1 mL increments. Transfer one 3 mL aliquot from a well-mixed 24-hour collection to an ARUP Standard Transport Tube. (Min: 0.5 mL) Record total volume, collection time interval, and pH on transport tube and test request form.
Storage/Transport Temperature: Frozen.
Stability (collection to initiation of testing): Ambient: 24 hours, Refrigerated: 2 weeks, Frozen: 1 month

2014107 Poliovirus (Types 1, 3) Antibodies — POLIO AB

Performed: Mon-Fri
Reported: 6-12 days

2013990 Polymyositis Panel — POLY MYO

Specimen Required: Collect: Serum Separator Tube (SST).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer two 1 mL serum aliquots to ARUP Standard Transport Tubes. (Min: 0.5 mL/aliquot)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Hemolyzed, hyperlipemic, icteric, heat-treated or contaminated specimens.
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

2001739 Posaconazole, Quantitative by LC-MS/MS — POSACON AF

Specimen Required: Patient Prep: Timing of specimen collection: Pre-dose (trough) draw - At steady state concentration. Blood levels may be affected by other concurrent medications, patient conditions, fat intake at dosing, and other factors.
Collect: Plain Red, Lavender (EDTA), or Green (Sodium or Lithium Heparin).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube and freeze. (Min: 0.6 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Whole blood. Gel separator tubes, Light Blue (citrate), or Yellow (SPS or ACD solution).
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 48 hours; Frozen: 6 months

Interpretive Data:
Posaconazole is a triazole antifungal drug indicated to treat invasive aspergillus and candidiasis infections. The therapeutic range is based on serum, predose (trough) draw collection at steady-state concentration. The pharmacokinetics of posaconazole are influenced by drug-drug interactions when coadministered with drugs metabolized by UDP-glucuronosyltransferase. Posaconazole is also an inhibitor of cytochrome P450 3A4 enzyme. Adverse effects may include fever, nausea, vomiting, diarrhea, cardiovascular disorders, and liver toxicity.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

0020849 Potassium, Urine — U K

Specimen Required: Collect: 24-hour or random urine without additives. Refrigerate during collection.
Specimen Preparation: Transfer a 1 mL aliquot of urine from a well-mixed collection to an ARUP Standard Transport Tube. (Min: 0.2 mL) Record total volume and collection time interval on transport tube and test request form.
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): Ambient: 14 Days; Refrigerated: 2 weeks; Frozen: 1 month

0050435 Prealbumin, Serum — PREALB

Specimen Required: Patient Prep: Fasting specimen preferred.
Collect: Serum separator tube.
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 3 days; Refrigerated: 6 months; Frozen: 12 months

0080206 **Prostate Specific Antigen, Free Percentage (Includes Free PSA and Total PSA)** **PSA FP**

Specimen Required: Collect: Serum separator tube. Also acceptable: Green (lithium heparin), Lavender (K_2EDTA), or Pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Grossly hemolyzed specimens. Vaginal washings.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 hours; Refrigerated: 5 days; Frozen: 3 months

0070121 **Prostate Specific Antigen, Total** **PSA**

Specimen Required: Collect: Serum Separator Tube (SST). Also acceptable: Green (lithium heparin), Lavender (K_2EDTA), or Pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Grossly hemolyzed specimens. Vaginal washings.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 5 days; Frozen: 6 months

0070234 **Prostate Specific Antigen, Total - Medicare Screening** **PSA SCN**

Specimen Required: Collect: Serum Separator Tube (SST). Also acceptable: Green (lithium heparin), Lavender (K_2EDTA), or Pink (K_2EDTA).
Specimen Preparation: Transport 1 mL serum or plasma in an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Hemolyzed specimens.
Stability (collection to initiation of testing): Ambient: 24 hours; Refrigerated: 5 days; Frozen: 6 months

0080264 **Prostate Specific Antigen, Total with Reflex to Free PSA (Includes Free Percentage)** **TPSAR**

Specimen Required: Collect: Serum Separator Tube (SST). Also acceptable: Green (lithium heparin), Lavender (K_2EDTA), or pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Grossly hemolyzed specimens. Vaginal washings.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 hours; Refrigerated: 5 days; Frozen: 3 months

0098581 **Prostate Specific Antigen, Ultrasensitive** **PSA ULTRA**

Specimen Required: Collect: Serum Separator Tube (SST). Also acceptable: Green (lithium heparin), Lavender (K_2EDTA, or Pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Grossly hemolyzed specimens. Vaginal washings.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 5 days; Frozen: 6 months

0020029 **Protein, Total, Serum or Plasma** **TP**

Specimen Required: Patient Prep: Tourniquet application should be minimal.
Collect: Plasma separator tube or serum separator tube.
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Body Fluid (refer to Total Protein, Body Fluid, ARUP test code 0020502). Urine (refer to Total Protein, Urine, ARUP test code 0020479).
Stability (collection to initiation of testing): After separation from cells: Ambient: 6 days; Refrigerated: 1 month; Frozen: 2 months

3000400 QuantiFERON-TB Gold Plus, 1-Tube — QFT-PLUS

Performed: Sun-Sat
Reported: 1-4 days

3000399 QuantiFERON-TB Gold Plus, 4-Tube — QFT-4

Performed: Sun-Sat
Reported: 1-4 days

2012849 Rapid Mendelian Genes Sequencing Panel, Trio — RAPID SEQ

Performed: Varies
Reported: 3 weeks

0051368 RhD Gene (*RHD*) Copy Number — RHD

Performed: Varies
Reported: 2-7 days

Specimen Required: Collect: **Fetal genotyping: Cultured amniocytes**: Two T-25 flasks at 80 percent confluency.
OR cultured CVS: Two T-25 flasks at 80 percent confluency.
If the client is unable to culture amniocytes or CVS, this can be arranged by contacting ARUP Client Services at (800) 522-2787.
WITH maternal cell contamination specimen (see Remarks): Lavender (EDTA), pink (K_2EDTA), or yellow (ACD Solution A or B).
Parental genotyping: Lavender (EDTA), pink (K_2EDTA), or yellow (ACD Solution A or B).
Specimen Preparation: **Cultured amniocytes AND cultured CVS:** Transport two T-25 flasks at 80 percent confluency filled with culture media. Backup cultures must be retained at the client's institution until testing is complete.
Maternal cell contamination specimen: Transport 3 mL whole blood (Min: 1 mL)
Whole blood (parental genotyping): Transport 3 mL whole blood. (Min: 1 mL)
Storage/Transport Temperature: **Cultured amniocytes and cultured CVS: CRITICAL ROOM TEMPERATURE.** Must be received within 48 hours of shipment due to lability of cells.
Whole blood or maternal cell contamination specimen: Refrigerated.
Remarks: Maternal specimen is recommended for proper test interpretation if contamination of the fetal specimen from the mother is suspected. Order Maternal Cell Contamination. Patient History Form is available on the ARUP website or by contacting ARUP Client Services.
Unacceptable Conditions: Frozen specimens in glass collection tubes.
Stability (collection to initiation of testing): **Cultured amniocytes and cultured CVS Fetal Specimen:** Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable
Whole blood or maternal cell contamination specimen: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month

0050465 Rheumatoid Factor — RA

Specimen Required: Patient Prep: Fasting specimen preferred.
Collect: Serum separator tube or plasma separator tube. Also acceptable: Green (lithium heparin), lavender or pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Body Fluid (refer to Rheumatoid Factor, Body Fluid, ARUP test code 2003347). Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 8 days; Frozen: 3 months (should not be thawed more than once)

New Test **3004472** ***Schistosoma* Antibody IgG by ELISA** **SCHISTOIGG**
Click for Pricing

Methodology: Semi-Quantitative Enzyme-Linked Immunosorbent Assay
Performed: Tue, Sat
Reported: 1-6 days

Specimen Required: Collect: Serum Separator Tube (SST) or Plain Red.
Specimen Preparation: Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Preferred transport temp: Refrigerated. Also acceptable: Frozen
Unacceptable Conditions: Contaminated, heat-inactivated, grossly hemolyzed, or lipemic specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

Reference Interval:

< 9 U	Negative – No significant level of *Schistosoma* IgG antibody detected.
9 – 11 U	Equivocal – Recommend repeat testing in 2-4 weeks with fresh sample.
>11 U	Positive – IgG antibodies to *Schistosoma* detected, which may suggest current or past infection.

Interpretive Data:
Refer to report.

Note: N/A

CPT Code(s): 86682

New York DOH Approved.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0099375 **Sex Hormone Binding Globulin** **SHBG**

Specimen Required: Collect: Serum separator tube. Also acceptable: Green (lithium heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.4 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Specimens collected in lavender (EDTA) or pink (K_2EDTA). Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 6 months

Reference Interval:
Effective February 22, 2022

Age	Male	Female
1-30 days	13-85 nmol/L	14-60 nmol/L
31-364 days	70-250 nmol/L	60-215 nmol/L
1-3 years	50-180 nmol/L	60-190 nmol/L
4-6 years	45-175 nmol/L	55-170 nmol/L
7-9 years	28-190 nmol/L	35-170 nmol/L
10-12 years	23-160 nmol/L	17-155 nmol/L
13-15 years	13-140 nmol/L	11-120 nmol/L
16-17 years	10-60 nmol/L	19-145 nmol/L
18-49 years	17-56 nmol/L	25-122 nmol/L
50 years and older	19-76 nmol/L	17-125 nmol/L
Tanner Stage I	26-186 nmol/L	30-173 nmol/L
Tanner Stage II	22-169 nmol/L	16-127 nmol/L
Tanner Stage III	13-104 nmol/L	12-98 nmol/L
Tanner Stage IV	11-60 nmol/L	14-151 nmol/L
Tanner Stage V	11-71 nmol/L	23-165 nmol/L

3000460 Smith and Smith/RNP (ENA) Antibodies, IgG — SMITH_RNP

Specimen Required: Collect: Serum Separator Tube (SST).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma or other body fluids. Contaminated, hemolyzed, or severely lipemic specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)

0050470 Smith/RNP (ENA) Antibody, IgG — RNP

Specimen Required: Collect: Serum separator tube.
Specimen Preparation: Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Plasma or other body fluids. Contaminated, hemolyzed, or severely lipemic specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)

0020001 Sodium, Plasma or Serum — NA

Reference Interval:
Effective February 22, 2022
By report

0020851 Sodium, Urine — U NA

Specimen Required: Collect: 24-hour urine with no additive. Refrigerate during collection. Also acceptable: Random urine.
Specimen Preparation: Transport 1 mL aliquot of urine from a well-mixed collection. (Min: 0.2 mL) Record total volume and collection time interval on transport tube and test request form.
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: pH adjusted urine specimens.
Stability (collection to initiation of testing): Ambient: 14 days; Refrigerated: 2 weeks; Frozen: 1 month

0070283 Soluble Transferrin Receptor — STR

Specimen Required: Collect: Serum separator tube or plasma separator tube. Also acceptable: green (lithium heparin).
Specimen Preparation: Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Contaminated, severely hemolyzed, icteric, or lipemic specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 72 hours; Refrigerated: 1 week; Frozen: 1 month (avoid repeated freeze/thaw cycles)

2002270 ST2, Soluble — ST2

Performed: Fri
Reported: 1-8 days

0070135 **T3 Uptake** **T3 UP**

Specimen Required: Collect: Serum Separator Tube (SST). Also acceptable: Lavender (K_2 EDTA or K_3 EDTA), Pink (K_2 EDTA), or Green (Lithium Heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation of cells: Ambient: 8 days; Refrigerated: 2 weeks; Frozen: 2 years

New Test **3004486** **Tay-Sachs Disease (*HEXA*) Sequencing and Deletion/Duplication** **HEXA NGS**
Click for Pricing

Additional Technical Information

Patient History for Tay-Sachs Disease (*HEXA*) Testing

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3 weeks

Specimen Required: Collect: Lavender or pink (EDTA) or yellow (ACD Solution A or B)
Specimen Preparation: Transport 3 mL whole blood. (Min: 3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens; saliva, buccal brush or swab, FFPE tissue.
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Gene Tested: *HEXA* (NM_000520)
The pathogenic 7.6kb deletion specific to French Canadian populations is detected by this assay at reduced sensitivity.

CPT Code(s): 81406, 81479

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0081057	**Testosterone, Bioavailable and Total, Includes Sex Hormone-Binding Globulin (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)**	**BIO T MASS**

Specimen Required: Patient Prep: Collect between 6-10 a.m.
Collect: Serum separator tube or green (sodium or lithium heparin).
Specimen Preparation: Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.8 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: EDTA plasma.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 6 months

Reference Interval:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td>0099375</td><td>Sex Hormone-Binding Globulin</td><td>Effective February 22, 2022
<table>
<tr><th>Age</th><th>Male</th><th>Female</th></tr>
<tr><td>1-30 days</td><td>13-85 nmol/L</td><td>14-60 nmol/L</td></tr>
<tr><td>31-364 days</td><td>70-250 nmol/L</td><td>60-215 nmol/L</td></tr>
<tr><td>1-3 years</td><td>50-180 nmol/L</td><td>60-190 nmol/L</td></tr>
<tr><td>4-6 years</td><td>45-175 nmol/L</td><td>55-170 nmol/L</td></tr>
<tr><td>7-9 years</td><td>28-190 nmol/L</td><td>35-170 nmol/L</td></tr>
<tr><td>10-12 years</td><td>23-160 nmol/L</td><td>17-155 nmol/L</td></tr>
<tr><td>13-15 years</td><td>13-140 nmol/L</td><td>11-120 nmol/L</td></tr>
<tr><td>16-17 years</td><td>10-60 nmol/L</td><td>19-145 nmol/L</td></tr>
<tr><td>18-49 years</td><td>17-56 nmol/L</td><td>25-122 nmol/L</td></tr>
<tr><td>50 years and older</td><td>19-76 nmol/L</td><td>17-125 nmol/L</td></tr>
<tr><td>Tanner Stage I</td><td>26-186 nmol/L</td><td>30-173 nmol/L</td></tr>
<tr><td>Tanner Stage II</td><td>22-169 nmol/L</td><td>16-127 nmol/L</td></tr>
<tr><td>Tanner Stage III</td><td>13-104 nmol/L</td><td>12-98 nmol/L</td></tr>
<tr><td>Tanner Stage IV</td><td>11-60 nmol/L</td><td>14-151 nmol/L</td></tr>
<tr><td>Tanner Stage V</td><td>11-71 nmol/L</td><td>23-165 nmol/L</td></tr>
</table></td></tr>
<tr><td></td><td>Testosterone LC-MS, Bioavailable</td><td>
<table>
<tr><th>Female - Bioavailable Testosterone, ng/dL</th><th>Male - Bioavailable Testosterone, ng/dL</th></tr>
<tr><td>1-6 years: Less than 1.3 ng/dL
7-9 years: 0.3-5.0 ng/dL
10-11 years: 0.4-9.6 ng/dL
12-13 years: 1.7-18.8 ng/dL
14-15 years: 3.0-22.6 ng/dL
16-17 years: 3.3-28.6 ng/dL
18-30 years: 2.2-20.6 ng/dL
31-40 years: 4.1-25.5 ng/dL
41-51 years: 2.8-16.5 ng/dL
Postmenopausal: 1.5-9.4 ng/dL
Tanner Stage I: 0.3-5.5 ng/dL
Tanner Stage II: 1.2-15.0 ng/dL
Tanner Stage III: 3.8-28.0 ng/dL
Tanner Stage IV: 2.8-39.0 ng/dL
Tanner Stage V: 2.5-23.0 ng/dL</td><td>1-6 years: Less than 1.3 ng/dL
7-9 years: 0.3-2.8 ng/dL
10-11 years: 0.1-17.9 ng/dL
12-13 years: 1.4-288.0 ng/dL
14-15 years: 9.5-337.0 ng/dL
16-17 years: 35.0-509.0 ng/dL
18 years and older: 130-680 ng/dL
Tanner Stage I: 0.3-13.0 ng/dL
Tanner Stage II: 0.3-59.0 ng/dL
Tanner Stage III: 1.9-296.0 ng/dL
Tanner Stage IV: 40.0-485.0 ng/dL
Tanner Stage V: 124.0-596.0 ng/dL</td></tr>
</table></td></tr>
<tr><td>0081059</td><td>Testosterone, Free (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)</td><td>
<table>
<tr><th>Female Free Testosterone, pg/mL</th><th>Male Free Testosterone, pg/mL</th></tr>
<tr><td>1-6 years: Less than 0.6 pg/mL
7-9 years: 0.6-1.8 pg/mL
10-11 years: 0.1-3.5 pg/mL
12-13 years: 0.9-6.8 pg/mL
14-15 years: 1.2-7.5 pg/mL
16-17 years: 1.2-9.9 pg/mL
18-30 years: 0.8-7.4 pg/mL
31-40 years: 1.3-9.2 pg/mL
41-51 years: 1.1-5.8 pg/mL
Postmenopausal: 0.6-3.8 pg/mL
Tanner Stage I: Less than 2.2 pg/mL
Tanner Stage II: 0.4-4.5 pg/mL
Tanner Stage III: 1.3-7.5 pg mL
Tanner Stage IV: 1.1-15.5 pg/mL
Tanner Stage V: 0.8-9.2 pg/mL</td><td>1-6 years: Less than 0.6 pg/mL
7-9 years: 0.1-0.9 pg/mL
10-11 years: 0.1-6.3 pg/mL
12-13 years: 0.5-98.0 pg/mL
14-15 years: 3-138.0 pg/mL
16-17 years: 38.0-173.0 pg/mL
18 years and older: 47-244 pg/mL
Tanner Stage I: Less than or equal to 3.7 pg/mL
Tanner Stage II: 0.3-21 pg/mL
Tanner Stage III: 1.0-98.0 pg mL
Tanner Stage IV: 35.0-169.0 pg/mL
Tanner Stage V: 41.0-239.0 pg/mL</td></tr>
</table></td></tr>
<tr><td>0081058</td><td>Testosterone (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)</td><td>Effective August 19, 2013
<table>
<tr><th>Age</th><th>Female</th><th>Male</th></tr>
<tr><td>Premature (26-28 weeks)</td><td>5-16 ng/dL</td><td>59-125 ng/dL</td></tr>
<tr><td>Premature (31-35 weeks)</td><td>5-22 ng/dL</td><td>37-198 ng/dL</td></tr>
<tr><td>Newborn</td><td>20-64 ng/dL</td><td>75-400 ng/dL</td></tr>
<tr><td>1-5 months</td><td>Less than 20 ng/dL</td><td>14-363 ng/dL</td></tr>
<tr><td>6-24 months</td><td>Less than 9 ng/dL</td><td>Less than 37 ng/dL</td></tr>
<tr><td>2-3 years</td><td>Less than 20 ng/dL</td><td>Less than 15 ng/dL</td></tr>
<tr><td>4-5 years</td><td>Less than 30 ng/dL</td><td>Less than 19 ng/dL</td></tr>
<tr><td>6-7 years</td><td>Less than 7 ng/dL</td><td>Less than 13 ng/dL</td></tr>
<tr><td>8-9 years</td><td>1-11ng/dL</td><td>2-8 ng/dL</td></tr>
<tr><td>10-11 years</td><td>3-32 ng/dL</td><td>2-165 ng/dL</td></tr>
<tr><td>12-13 years</td><td>6-50 ng/dL</td><td>3-619 ng/dL</td></tr>
<tr><td>14-15 years</td><td>6-52 ng/dL</td><td>31-733 ng/dL</td></tr>
</table></td></tr>
</table>

		16-17 years	9-58 ng/dL	158-826 ng/dL
		18-39 years	9-55 ng/dL	300-1080 ng/dL
		40-59 years	9-55 ng/dL	300-890 ng/dL
		60 years and older	5-32 ng/dL	300-720 ng/dL
		Premenopausal (18 years and older)	9-55 ng/dL	Does Not Apply
		Postmenopausal	5-32 ng/dL	Does Not Apply
		Tanner Stage I	2-17 ng/dL	2-15 ng/dL
		Tanner Stage II	5-40 ng/dL	3-303 ng/dL
		Tanner Stage III	10-63 ng/dL	10-851 ng/dL
		Tanner Stage IV-V	11-62 ng/dL	162-847 ng/dL

Interpretive Data:
Bioavailable testosterone concentration is calculated using total testosterone (measured by mass spectrometry) and the binding constant of testosterone and sex hormone-binding globulin (SHBG) and/or albumin.

For individuals on testosterone-suppressing hormone therapies (e.g., antiandrogens or estrogens), refer to cisgender female reference intervals. For a complete set of all established reference intervals, refer to ltd.aruplab.com/Tests/Pub/0081057.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

HOTLINE NOTE: There is a clinically significant charting name change associated with this test.
Change the charting name for component 0081058, Testosterone, LC-MS/MS from Testosterone, LC-MS/MS to Testosterone by Mass Spec.
Change the charting name for component 0081096, Testosterone, Free LC-MS/MS from Testosterone, Free LC-MS/MS to Testosterone, Free by Mass Spec.
Change the charting name for component 0081098, Testosterone, LC-MS/MS, Bioavailable from Testosterone, LC-MS/MS, Bioavailable to Testosterone, Bioavailable by Mass Spec.
Remove information found in the Remarks field.

0070102 Testosterone, Bioavailable and Total, Includes Sex Hormone-Binding Globulin (Adult Males or Individuals on Testosterone Hormone Therapy) BIO T

Reference Interval:

Test Number	Components	Reference Interval
0070111	Testosterone, Free (Adult Males or Individuals on Testosterone Hormone Therapy)	**Male:** 14-15 years: 3-138 pg/mL 16-17 years: 38-173 pg/mL 18 years and older: 47-244 pg/mL Tanner Stage IV: 35-169 pg/mL Tanner Stage V: 41-239 pg/mL
0070130	Testosterone (Adult Males or Individuals on Testosterone Hormone Therapy)	Male: 14-15 years: 33-585 ng/dL 16-17 years: 185-886 ng/dL 18-39 years: 300-1080 ng/dL 40-59 years: 300-890 ng/dL 60 years and older: 300-720 ng/dL Tanner Stage IV: 165-854 ng/dL Tanner Stage V: 194-783 ng/dL
0099375	Sex Hormone-Binding Globulin	Effective February 22, 2022

Age	Male	Female
1-30 days	13-85 nmol/L	14-60 nmol/L
31-364 days	70-250 nmol/L	60-215 nmol/L
1-3 years	50-180 nmol/L	60-190 nmol/L
4-6 years	45-175 nmol/L	55-170 nmol/L
7-9 years	28-190 nmol/L	35-170 nmol/L
10-12 years	23-160 nmol/L	17-155 nmol/L
13-15 years	13-140 nmol/L	11-120 nmol/L
16-17 years	10-60 nmol/L	19-145 nmol/L
18-49 years	17-56 nmol/L	25-122 nmol/L
50 years and older	19-76 nmol/L	17-125 nmol/L
Tanner Stage I	26-186 nmol/L	30-173 nmol/L
Tanner Stage II	22-169 nmol/L	16-127 nmol/L
Tanner Stage III	13-104 nmol/L	12-98 nmol/L
Tanner Stage IV	11-60 nmol/L	14-151 nmol/L
Tanner Stage V	11-71 nmol/L	23-165 nmol/L

Component	Reference Interval
Testosterone, Bioavailable, Adult Male	14-15 years: 10-337 ng/dL 16-17 years: 35-509 ng/dL 18 years and older: 131-682 ng/dL Tanner Stage IV: 40-485 ng/dL Tanner Stage V: 124-596 ng/dL
Testosterone, Percentage Free, Adult Male	1.6-2.9%

Interpretive Data: Bioavailable testosterone concentration is calculated using total testosterone (measured by immunoassay) and the binding constant of testosterone and sex hormone-binding globulin (SHBG) and/or albumin. Testosterone immunoassays are both imprecise and inaccurate at low testosterone concentrations, such as those found in children and cisgender females. For these individuals, testing by mass spectrometry is recommended; refer to Testosterone, Bioavailable and Total, Includes Sex Hormone-Binding Globulin (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy) (ARUP test code 0081057).

For individuals on testosterone hormone therapy, refer to cisgender male reference intervals. No reference intervals have been established for males younger than 14 years or for cisgender females. For a complete set of all established reference intervals, refer to ltd.aruplab.com/Tests/Pub/0070102.

Note: Bioavailable testosterone includes free plus weakly bound (non-SHBG bound) testosterone. Bioavailable testosterone is an assessment of the biologically active testosterone in serum.

HOTLINE NOTE: There is a clinically significant charting name change associated with this test.
Change the charting name for component 0070130, Testosterone, Adult Male from Testosterone, Adult Male to Testosterone by Immunoassay.

0081056	**Testosterone, Free and Total, Includes Sex Hormone-Binding Globulin (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)**	**TESTOS F&T**

Specimen Required: Patient Prep: Collect between 6-10 a.m.
Collect: Serum separator tube or green (sodium or lithium heparin).
Specimen Preparation: Separate serum from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.8 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: EDTA plasma.
Stability (collection to initiation of testing): After separation from cells: Ambient: 24 hours; Refrigerated: 1 week; Frozen: 6 months

Reference Interval:

Test Number	Components	Reference Interval
0081059	Testosterone, Free (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)	

Female Free Testosterone, pg/mL	Male Free Testosterone, pg/mL
1-6 years: Less than 0.6 pg/mL 7-9 years: 0.6-1.8 pg/mL 10-11 years: 0.1-3.5 pg/mL 12-13 years: 0.9-6.8 pg/mL 14-15 years: 1.2-7.5 pg/mL 16-17 years: 1.2-9.9 pg/mL 18-30 years: 0.8-7.4 pg/mL 31-40 years: 1.3-9.2 pg/mL 41-51 years: 1.1-5.8 pg/mL Postmenopausal: 0.6-3.8 pg/mL Tanner Stage I: Less than 2.2 pg/mL Tanner Stage II: 0.4-4.5 pg/mL Tanner Stage III: 1.3-7.5 pg mL Tanner Stage IV: 1.1-15.5 pg/mL Tanner Stage V: 0.8-9.2 pg/mL	1-6 years: Less than 0.6 pg/mL 7-9 years: 0.1-0.9 pg/mL 10-11 years: 0.1-6.3 pg/mL 12-13 years: 0.5-98.0 pg/mL 14-15 years: 3-138.0 pg/mL 16-17 years: 38.0-173.0 pg/mL 18 years and older: 47-244 pg/mL Tanner Stage I: Less than or equal to 3.7 pg/mL Tanner Stage II: 0.3-21 pg/mL Tanner Stage III: 1.0-98.0 pg mL Tanner Stage IV: 35.0-169.0 pg/mL Tanner Stage V: 41.0-239.0 pg/mL

0081058	Testosterone (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)	Effective August 19, 2013

Age	Female	Male
Premature (26-28 weeks)	5-16 ng/dL	59-125 ng/dL
Premature (31-35 weeks)	5-22 ng/dL	37-198 ng/dL
Newborn	20-64 ng/dL	75-400 ng/dL
1-5 months	Less than 20 ng/dL	14-363 ng/dL
6-24 months	Less than 9 ng/dL	Less than 37 ng/dL
2-3 years	Less than 20 ng/dL	Less than 15 ng/dL
4-5 years	Less than 30 ng/dL	Less than 19 ng/dL
6-7 years	Less than 7 ng/dL	Less than 13 ng/dL
8-9 years	1-11 ng/dL	2-8 ng/dL
10-11 years	3-32 ng/dL	2-165 ng/dL
12-13 years	6-50 ng/dL	3-619 ng/dL
14-15 years	6-52 ng/dL	31-733 ng/dL
16-17 years	9-58 ng/dL	158-826 ng/dL
18-39 years	9-55 ng/dL	300-1080 ng/dL
40-59 years	9-55 ng/dL	300-890 ng/dL
60 years and older	5-32 ng/dL	300-720 ng/dL
Premenopausal (18 years and older)	9-55 ng/dL	Does Not Apply
Postmenopausal	5-32 ng/dL	Does Not Apply
Tanner Stage I	2-17 ng/dL	2-15 ng/dL
Tanner Stage II	5-40 ng/dL	3-303 ng/dL
Tanner Stage III	10-63 ng/dL	10-851 ng/dL
Tanner Stage IV-V	11-62 ng/dL	162-847 ng/dL

0099375	Sex Hormone-Binding Globulin	Effective February 22, 2022

Age	Male	Female
1-30 days	13-85 nmol/L	14-60 nmol/L
31-364 days	70-250 nmol/L	60-215 nmol/L
1-3 years	50-180 nmol/L	60-190 nmol/L
4-6 years	45-175 nmol/L	55-170 nmol/L
7-9 years	28-190 nmol/L	35-170 nmol/L
10-12 years	23-160 nmol/L	17-155 nmol/L
13-15 years	13-140 nmol/L	11-120 nmol/L
16-17 years	10-60 nmol/L	19-145 nmol/L
18-49 years	17-56 nmol/L	25-122 nmol/L
50 years and older	19-76 nmol/L	17-125 nmol/L
Tanner Stage I	26-186 nmol/L	30-173 nmol/L
Tanner Stage II	22-169 nmol/L	16-127 nmol/L
Tanner Stage III	13-104 nmol/L	12-98 nmol/L
Tanner Stage IV	11-60 nmol/L	14-151 nmol/L
Tanner Stage V	11-71 nmol/L	23-165 nmol/L

Interpretive Data:

Free testosterone concentration is calculated using total testosterone (measured by mass spectrometry) and the binding constant of testosterone and sex hormone-binding globulin (SHBG).

For individuals on testosterone-suppressing hormone therapies (e.g., antiandrogens or estrogens), refer to cisgender female reference intervals. For a complete set of all established reference intervals, refer to ltd.aruplab.com/Tests/Pub/0081056.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Note: Please refer to individual components for stability of sample for this test.

HOTLINE NOTE: There is a clinically significant charting name change associated with this test.
Change the charting name for component 0081058, Testosterone, LC-MS/MS from Testosterone, LC-MS/MS to Testosterone by Mass Spec.
Change the charting name for component 0081096, Testosterone, Free LC-MC/MS from Testosterone, Free LC-MS/MS to Testosterone, Free by Mass Spec.
Remove information found in the Remarks field.

0070109 Testosterone, Free and Total, Includes Sex Hormone-Binding Globulin (Adult Males or Individuals on Testosterone Hormone Therapy) — FREE T

Reference Interval:

<table>
<tr><th>Test Number</th><th>Components</th><th>Reference Interval</th></tr>
<tr><td></td><td>Testosterone, Percentage Free</td><td>18 years and older: 1.6-2.9%</td></tr>
<tr><td>0099375</td><td>Sex Hormone-Binding Globulin</td><td>Effective February 22, 2022
<table>
<tr><th>Age</th><th>Male</th><th>Female</th></tr>
<tr><td>1-30 days</td><td>13-85 nmol/L</td><td>14-60 nmol/L</td></tr>
<tr><td>31-364 days</td><td>70-250 nmol/L</td><td>60-215 nmol/L</td></tr>
<tr><td>1-3 years</td><td>50-180 nmol/L</td><td>60-190 nmol/L</td></tr>
<tr><td>4-6 years</td><td>45-175 nmol/L</td><td>55-170 nmol/L</td></tr>
<tr><td>7-9 years</td><td>28-190 nmol/L</td><td>35-170 nmol/L</td></tr>
<tr><td>10-12 years</td><td>23-160 nmol/L</td><td>17-155 nmol/L</td></tr>
<tr><td>13-15 years</td><td>13-140 nmol/L</td><td>11-120 nmol/L</td></tr>
<tr><td>16-17 years</td><td>10-60 nmol/L</td><td>19-145 nmol/L</td></tr>
<tr><td>18-49 years</td><td>17-56 nmol/L</td><td>25-122 nmol/L</td></tr>
<tr><td>50 years and older</td><td>19-76 nmol/L</td><td>17-125 nmol/L</td></tr>
<tr><td>Tanner Stage I</td><td>26-186 nmol/L</td><td>30-173 nmol/L</td></tr>
<tr><td>Tanner Stage II</td><td>22-169 nmol/L</td><td>16-127 nmol/L</td></tr>
<tr><td>Tanner Stage III</td><td>13-104 nmol/L</td><td>12-98 nmol/L</td></tr>
<tr><td>Tanner Stage IV</td><td>11-60 nmol/L</td><td>14-151 nmol/L</td></tr>
<tr><td>Tanner Stage V</td><td>11-71 nmol/L</td><td>23-165 nmol/L</td></tr>
</table></td></tr>
<tr><td>0070111</td><td>Testosterone, Free (Adult Males or Individuals on Testosterone Hormone Therapy)</td><td>Male:
14-15 years: 3-138 pg/mL
16-17 years: 38-173 pg/mL
18 years and older: 47-244 pg/mL

Tanner Stage IV: 35-169 pg/mL
Tanner Stage V: 41-239 pg/mL</td></tr>
<tr><td>0070130</td><td>Testosterone (Adult Males or Individuals on Testosterone Hormone Therapy)</td><td>Male:
14-15 years: 33-585 ng/dL
16-17 years: 185-886 ng/dL
18-39 years: 300-1080 ng/dL
40-59 years: 300-890 ng/dL
60 years and older: 300-720 ng/dL

Tanner Stage IV: 165-854 ng/dL
Tanner Stage V: 194-783 ng/dL</td></tr>
</table>

Interpretive Data:
Free testosterone concentration is calculated using total testosterone (measured by immunoassay) and the binding constant of testosterone and sex hormone-binding globulin (SHBG). Testosterone immunoassays are both imprecise and inaccurate at low testosterone concentrations, such as those found in children and cisgender females. For these individuals, testing by mass spectrometry is recommended; refer to Testosterone, Free and Total, Includes Sex Hormone-Binding Globulin (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy) (ARUP test code 0081056).

For individuals on testosterone hormone therapy, refer to cisgender male reference intervals. No reference intervals have been established for males younger than 14 years or for cisgender females. For a complete set of all established reference intervals, refer to ltd.aruplab.com/Tests/Pub/0070109.

HOTLINE NOTE: There is a clinically significant charting name change associated with this test.
Change the charting name for component 0070130, Testosterone, Adult Male from Testosterone, Adult Male to Testosterone by Immunoassay.
Remove information found in the Note field.

0070141 Thyroid Panel T7

Specimen Required: Collect: Serum separator tube. Also acceptable: Lavender (K_2EDTA or K_3EDTA), pink (K_2EDTA), or green (lithium heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation of cells: Ambient: 4 days; Refrigerated: 8 days; Frozen: 1 year

Reference Interval:

Test Number	Components	Reference Interval	
	Thyroid Panel (T7)	FTI 1.7-4.2	
0070135	T3 Uptake	28-41% uptake	
0070140	Thyroxine	Effective February 22, 2022	
		Cord blood	6.60-17.50 µg/dL
		0-3 days	5.37-22.40 µg/dL
		4-30 days	5.24-23.20 µg/dL
		1-23 months	5.37-16.00 µg/dL
		2-6 years	5.26-14.80 µg/dL
		7-11 years	5.70-14.10 µg/dL
		12-19 years	4.74-14.60 µg/dL
		20 years and older	4.50-11.70 µg/dL

0070145 Thyroid Stimulating Hormone TSH

Specimen Required: Collect: Plasma separator tube (PST). Also acceptable: Serum separator tube (SST).
Specimen Preparation: Separate serum or plasma from cells ASAP or within 2 hours of collection. Allow serum specimen to clot completely at room temperature. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation of cells: Ambient: 8 days; Refrigerated: 2 weeks; Frozen: 2 years

0070225 Thyroid Stimulating Hormone 3rd Generation TSH 3

Reference Interval:
Effective February 22, 2022

	Males	Females
Cord Blood	2.000-40.000 mU/L	2.000-40.000 mU/L
0-3 days	5.170-14.600 mU/L	5.170-14.600 mU/L
4-30 days	0.430-16.100 mU/L	0.430-16.100 mU/L
1-24 months	0.620-8.050 mU/L	0.620-8.050 mU/L
2-6 years	0.540-4.530 mU/L	0.540-4.530 mU/L
7-11 years	0.660-4.140 mU/L	0.660-4.140 mU/L
12-19 years	0.530-3.590 mU/L	0.530-3.590 mU/L
20 years and older	0.270-4.200 mU/L	0.0.270-4.200 mU/L
1st trimester (10-13 weeks gestation)		0.03-3.40 mU/L
2nd trimester (14-20 weeks gestation)		0.19-4.06 mU/L

2006108 Thyroid Stimulating Hormone with reflex to Free Thyroxine TSHREFLEX

Reference Interval:
Effective February 22, 2022

	Males	Females
0-3 days	5.17-14.60 mU/L	5.17-14.60 mU/L
4-30 days	0.43-16.10 mU/L	0.43-16.10 mU/L
1-24 months	0.62-8.05 mU/L	0.62-8.05 mU/L
2-6 years	0.54-4.53 mU/L	0.54-4.53 mU/L
7-11 years	0.66-4.14 mU/L	0.66-4.14 mU/L
12-19 years	0.53-3.59 mU/L	0.53-3.59 mU/L
20 years and older	0.27-4.20 mU/L	0.27-4.20 mU/L
1st trimester (10-13 weeks gestation)		0.03-3.40 mU/L
2nd trimester (14-20 weeks gestation)		0.19-4.06 mU/L

0070140 Thyroxine T4

Specimen Required: Collect: Serum separator tube or green (lithium heparin). Also acceptable: lavender (K_2 EDTA or K_3 EDTA), or pink (K_2 EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 4 days; Refrigerated: 8 days; Frozen: 1 year

Reference Interval:
Effective February 22, 2022

Cord blood	6.60-17.50 µg/dL
0-3 days	5.37-22.40 µg/dL
4-30 days	5.24-23.20 µg/dL
1-23 months	5.37-16.00 µg/dL
2-6 years	5.26-14.80 µg/dL
7-11 years	5.70-14.10 µg/dL
12-19 years	4.74-14.60 µg/dL
20 years and older	4.50-11.70 µg/dL

0070138 Thyroxine, Free (Free T4) FT4

Specimen Required: Collect: Serum separator tube or plasma separator tube. Also acceptable: Green (lithium heparin), lavender (K_3EDTA or K_2EDTA) or pink (K_2EDTA).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation of cells: Ambient: 5 days; Refrigerated: 1 week; Frozen: 1 month

Reference Interval:
Effective February 22, 2022

Free Thyroxine, ng/dL	
0-3 days	0.7-2.7 ng/dL
4-30 days	0.8-3.1 ng/dL
1-23 months	0.5-2.3 ng/dL
2-6 years	0.9-1.8 ng/dL
7-11 years	0.9-1.7 ng/dL
12-19 years	0.9-1.6 ng/dL
20 years and older	0.9-1.7 ng/dL
Pregnancy, 1st Trimester	0.9-1.4 ng/dL
Pregnancy, 2nd Trimester	0.7-1.3 ng/dL

0050570 Transferrin, Serum TRNSF

Specimen Required: Patient Prep: Fasting specimen preferred.
Collect: Serum separator tube or plasma separator tube. Also acceptable: Green (lithium heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Specimens collected in EDTA. Hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 days; Refrigerated: 8 days; Frozen: 6 months

Reference Interval:
Effective February 22, 2022
200-360 mg/dL

0020713 Triglycerides, Fluid TRG FL

Specimen Required: Collect: Drain, Pericardial, Peritoneal/Ascites, or Pleural fluid.
Specimen Preparation: Centrifuge to remove cellular material. Transfer 1 mL body fluid to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Remarks: **Specimen source must be provided**.
Unacceptable Conditions: Specimen types other than those listed. Specimens too viscous to be aspirated by instrument.
Stability (collection to initiation of testing): Ambient: 48 hours; Refrigerated: 1 week; Frozen: 3 months

0020040 Triglycerides, Serum or Plasma TRG

Specimen Required: Patient Prep: Fasting specimen is preferred.
Collect: Plasma separator tube or serum separator tube.
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Body Fluid (refer to Triglycerides, Fluid, ARUP test code 0020713).Collection tubes with glycerol-lubricated stoppers.
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 1 week; Frozen: 3 months

Reference Interval:
Effective February 22, 2022
By report

0070133 Triiodothyronine, Free (Free T3) FT3

Specimen Required: Collect: Serum separator tube or plasma separator tube. Also acceptable: Lavender (K_3EDTA or K_2EDTA) or pink (K_2EDTA), Green (lithium heparin)
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 5 days; Refrigerated: 1 week; Frozen: 1 month

Reference Interval:
Effective February 22, 2022

0-3 days	2.0-7.9 pg/mL
4-30 days	2.0-5.2 pg/mL
1-24 months	1.6-6.4 pg/mL
2-6 years	2.0-6.0 pg/mL
7-11 years	2.7-5.2 pg/mL
12-19 years	2.3-5.0 pg/mL
20 years and older	2.5-4.3 pg/mL

0070474 **Triiodothyronine, Total (Total T3)** **T3 TOTAL**

Specimen Required: Collect: Serum Separator Tube (SST). Also acceptable: Lavender (K_2 EDTA or K_3 EDTA), Pink (K_2 EDTA), or Green (lithium heparin).
Specimen Preparation: Allow specimen to clot completely at room temperature. Separate serum or plasma from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.5 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Grossly hemolyzed specimens.
Stability (collection to initiation of testing): After separation from cells: Ambient: 8 days; Refrigerated: 2 weeks; Frozen: 1 year

New Test **3004386** **UGT1A1 Sequencing** **UGT1A1 NGS**
Click for Pricing

Additional Technical Information

Patient History for UGT1A1 Testing

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3 weeks

Specimen Required: Collect: Lavender (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Gene Tested: *UGT1A1* (NM_000463), promoter (NC_000002)
Deletion/duplication analysis is not available for this gene.

CPT Code(s): 81404

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

0065031 ***Ureaplasma* Species and *Mycoplasma hominis* Culture** **V UREA**

Performed: Sun-Sat
Reported: Negative at 10 days
Positives as soon as detected

New Test **3004419** **Very Long-Chain Acyl-CoA Dehydrogenase Deficiency (*ACADVL*) Sequencing and Deletion/Duplication** **VLCAD NGS**

Click for Pricing

Additional Technical Information

Patient History for VLCAD Deficiency Testing

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3 weeks

Specimen Required: Collect: Lavender or Pink (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens; saliva; buccal brush or swab, FFPE tissue.
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Gene Tested: *ACADVL* (NM_000018)

CPT Code(s): 81406; 81479

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

2002028	**Virilization Panel 1**	**VIRIL PANEL**

Reference Interval:

Test Number	Components	Reference Interval		
2001638	Androstenedione	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature Infants, 26-28 weeks-Day 4	0.92-2.82 ng/mL	0.92-2.82 ng/mL
		Premature Infants, 31-35 weeks-Day 4	0.80-4.46 ng/mL	0.80-4.46 ng/mL
		Full-term Infants, 1-7 days	0.20-2.90 ng/mL	0.20-2.90 ng/mL
		8-30 days	0.18-0.80 ng/mL	0.18-0.80 ng/mL
		1-5 months	0.06-0.68 ng/mL	0.06-0.68 ng/mL
		6-24 months	Less than 0.15 ng/mL	0.03-0.15 ng/mL
		2-3 years	Less than 0.16 ng/mL	Less than 0.11 ng/mL
		4-5 years	0.02-0.21 ng/mL	0.02-0.17 ng/mL
		6-7 years	0.02-0.28 ng/mL	0.01-0.29 ng/mL
		8-9 years	0.04-0.42 ng/mL	0.03-0.30 ng/mL
		10-11 years	0.09-1.23 ng/mL	0.07-0.39 ng/mL
		12-13 years	0.24-1.73 ng/mL	0.10-0.64 ng/mL
		14-15 years	0.39-2.00 ng/mL	0.18-0.94 ng/mL
		16-17 years	0.35-2.12 ng/mL	0.30-1.13 ng/mL
		18-39 years	0.26-2.14 ng/mL	0.33-1.34 ng/mL
		40 years and older	0.13-0.82 ng/mL	0.23-0.89 ng/mL
		Pre-menopausal	0.26-2.14 ng/mL	Does Not Apply
		Postmenopausal	0.13-0.82 ng/mL	Does Not Apply
		Tanner Stage I	0.05-0.51 ng/mL	0.04-0.32 ng/mL
		Tanner Stage II	0.15-1.37 ng/mL	0.08-0.48 ng/mL
		Tanner Stage III	0.37-2.24 ng/mL	0.14-0.87 ng/mL
		Tanner Stage IV-V	0.35-2.05 ng/mL	0.27-1.07 ng/mL
2001640	Dehydroepiandrosterone, Serum or Plasma	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature	Less than 40 ng/mL	Less than 40 ng/mL
		0-1 day	Less than 11 ng/mL	Less than 11 ng/mL
		2-6 days	Less than 8.7 ng/mL	Less than 8.7 ng/mL
		7 days-1 month	Less than 5.8 ng/mL	Less than 5.8 ng/mL
		1-5 months	Less than 2.9 ng/mL	Less than 2.9 ng/mL
		6-24 months	Less than 1.9 9 ng/mL	Less than 2.5 ng/mL
		2-3 years	Less than 0.85 ng/mL	Less than 0.63 ng/mL
		4-5 years	Less than 1.03 ng/mL	Less than 0.95 ng/mL
		6-7 years	Less than 1.79 ng/mL	0.06-1.93 ng/mL
		8-9 years	0.14-2.35 ng/mL	0.10-2.08 ng/mL
		10-11 years	0.43-3.78 ng/mL	0.32-3.08 ng/mL
		12-13 years	0.89-6.21 ng/mL	0.57-4.10 ng/mL
		14-15 years	1.22-7.01 ng/mL	0.93-6.04 ng/mL
		16-17 years	1.42-9.00 ng/mL	1.17-6.52 ng/mL
		18-39 years	1.33-7.78 ng/mL	1.33-7.78 ng/mL
		40 years and older	0.63-4.70 ng/mL	0.63-4.70 ng/mL
		Postmenopausal	0.60-5.73 ng/mL	Does Not Apply
		Tanner Stage I	0.14-2.76 ng/mL	0.11-2.37 ng/mL
		Tanner Stage II	0.83-4.87 ng/mL	0.37-3.66 ng/mL
		Tanner Stage III	1.08-7.56 ng/mL	0.75-5.24 ng/mL
		Tanner Stage IV-V	1.24-7.88 ng/mL	1.22-6.73 ng/mL
0081058	Testosterone (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature (26-28 weeks)	5-16 ng/dL	59-125 ng/dL
		Premature (31-35 weeks)	5-22 ng/dL	37-198 ng/dL
		Newborn	20-64 ng/dL	75-400 ng/dL
		1-5 months	Less than 20 ng/dL	14-363 ng/dL
		6-24 months	Less than 9 ng/dL	Less than 37 ng/dL
		2-3 years	Less than 20 ng/dL	Less than 15 ng/dL
		4-5 years	Less than 30 ng/dL	Less than 19 ng/dL
		6-7 years	Less than 7 ng/dL	Less than 13 ng/dL
		8-9 years	1-11 ng/dL	2-8 ng/dL
		10-11 years	3-32 ng/dL	2-165 ng/dL
		12-13 years	6-50 ng/dL	3-619 ng/dL
		14-15 years	6-52 ng/dL	31-733 ng/dL
		16-17 years	9-58 ng/dL	158-826 ng/dL

		18-39 years	9-55 ng/dL	300-1080 ng/dL
		40-59 years	9-55 ng/dL	300-890 ng/dL
		60 years and older	5-32 ng/dL	300-720 ng/dL
		Premenopausal (18 years and older)	9-55 ng/dL	Does Not Apply
		Postmenopausal	5-32 ng/dL	Does Not Apply
		Tanner Stage I	2-17 ng/dL	2-15 ng/dL
		Tanner Stage II	5-40 ng/dL	3-303 ng/dL
		Tanner Stage III	10-63 ng/dL	10-851 ng/dL
		Tanner Stage IV-V	11-62 ng/dL	162-847 ng/dL

Interpretive Data:
Free or bioavailable testosterone measurements may provide supportive information.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

HOTLINE NOTE: There is a clinically significant charting name change associated with this test.
Change the charting name for component 0081058, Testosterone, LC-MS/MS from Testosterone, LC-MS/MS to Testosterone, by Mass Spec.

2002281	**Virilization Panel 2**	**VIRIL PAN2**

Reference Interval:

Available Separately	Components	Reference Interval		
2001638	Androstenedione	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature Infants, 26-28 weeks-Day 4	0.92-2.82 ng/mL	0.92-2.82 ng/mL
		Premature Infants, 31-35 weeks-Day 4	0.80-4.46 ng/mL	0.80-4.46 ng/mL
		Full-term Infants, 1-7 days	0.20-2.90 ng/mL	0.20-2.90 ng/mL
		8-30 days	0.18-0.80 ng/mL	0.18-0.80 ng/mL
		1-5 months	0.06-0.68 ng/mL	0.06-0.68 ng/mL
		6-24 months	Less than 0.15 ng/mL	0.03-0.15 ng/mL
		2-3 years	Less than 0.16 ng/mL	Less than 0.11 ng/mL
		4-5 years	0.02-0.21 ng/mL	0.02-0.17 ng/mL
		6-7 years	0.02-0.28 ng/mL	0.01-0.29 ng/mL
		8-9 years	0.04-0.42 ng/mL	0.03-0.30 ng/mL
		10-11 years	0.09-1.23 ng/mL	0.07-0.39 ng/mL
		12-13 years	0.24-1.73 ng/mL	0.10-0.64 ng/mL
		14-15 years	0.39-2.00 ng/mL	0.18-0.94 ng/mL
		16-17 years	0.35-2.12 ng/mL	0.30-1.13 ng/mL
		18-39 years	0.26-2.14 ng/mL	0.33-1.34 ng/mL
		40 years and older	0.13-0.82 ng/mL	0.23-0.89 ng/mL
		Pre-menopausal	0.26-2.14 ng/mL	Does Not Apply
		Postmenopausal	0.13-0.82 ng/mL	Does Not Apply
		Tanner Stage I	0.05-0.51 ng/mL	0.04-0.32 ng/mL
		Tanner Stage II	0.15-1.37 ng/mL	0.08-0.48 ng/mL
		Tanner Stage III	0.37-2.24 ng/mL	0.14-0.87 ng/mL
		Tanner Stage IV-V	0.35-2.05 ng/mL	0.27-1.07 ng/mL
0092332	17-Hydroxyprogesterone Quantitative by HPLC-MS/MS, Serum or Plasma	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature (26-28 weeks)	124-841 ng/dL	124-841 ng/dL
		Premature (29-35 weeks)	26-568 ng/dL	26-568 ng/dL
		Full term Day 3	7-77 ng/dL	7-77 ng/dL
		4 days-30 days	7-106 ng/dL	Less than 200 ng/dL
		1 month-2 months	13-106 ng/dL	Less than 200 ng/dL
		3 months-5 months	13-106 ng/dL	3-90 ng/dL
		6 months-1 year	Less than or equal to 148 ng/dL	Less than or equal to 148 ng/dL
		2-3 years	Less than or equal to 256 ng/dL	Less than or equal to 228 ng/dL
		4-6 years	Less than or equal to 299 ng/dL	Less than or equal to 208 ng/dL
		7-9 years	Less than or equal to 71 ng/dL	Less than or equal to 63 ng/dL
		10-12 years	Less than or equal to 129 ng/dL	Less than or equal to 79 ng/dL
		13-15 years	9-208 ng/dL	9-140 ng/dL
		16-17 years	Less than or equal to 178 ng/dL	24-192 ng/dL
		18 years and older	Less than 207 ng/dL	Less than 139 ng/dL
		Follicular	15-70 ng/dL	Does Not Apply
		Luteal	35-290 ng/dL	Does Not Apply
		Tanner Stage I	Less than or equal to 74 ng/dL	Less than or equal to 62 ng/dL
		Tanner Stage II	Less than or equal to 164 ng/dL	Less than or equal to 104 ng/dL
		Tanner Stage III	13-209 ng/dL	Less than or equal to 151 ng/dL
		Tanner Stage IV-V	7-170 ng/dL	20-173 ng/dL
0081058	Testosterone (Adult Females, Children, or Individuals on Testosterone-Suppressing Hormone Therapy)	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature (26-28 weeks)	5-16 ng/dL	59-125 ng/dL
		Premature (31-35 weeks)	5-22 ng/dL	37-198 ng/dL
		Newborn	20-64 ng/dL	75-400 ng/dL
		1-5 months	Less than 20 ng/dL	14-363 ng/dL
		6-24 months	Less than 9 ng/dL	Less than 37 ng/dL
		2-3 years	Less than 20 ng/dL	Less than 15 ng/dL
		4-5 years	Less than 30 ng/dL	Less than 19 ng/dL
		6-7 years	Less than 7 ng/dL	Less than 13 ng/dL
		8-9 years	1-11 ng/dL	2-8 ng/dL
		10-11 years	3-32 ng/dL	2-165 ng/dL
		12-13 years	6-50 ng/dL	3-619 ng/dL
		14-15 years	6-52 ng/dL	31-733 ng/dL

		16-17 years	9-58 ng/dL	158-826 ng/dL
		18-39 years	9-55 ng/dL	300-1080 ng/dL
		40-59 years	9-55 ng/dL	300-890 ng/dL
		60 years and older	5-32 ng/dL	300-720 ng/dL
		Premenopausal (18 years and older)	9-55 ng/dL	Does Not Apply
		Postmenopausal	5-32 ng/dL	Does Not Apply
		Tanner Stage I	2-17 ng/dL	2-15 ng/dL
		Tanner Stage II	5-40 ng/dL	3-303 ng/dL
		Tanner Stage III	10-63 ng/dL	10-851 ng/dL
		Tanner Stage IV-V	11-62 ng/dL	162-847 ng/dL
2001640	Dehydroepiandrosterone, Serum or Plasma	Effective August 19, 2013		
		Age	**Female**	**Male**
		Premature	Less than 40 ng/mL	Less than 40 ng/mL
		0-1 day	Less than 11 ng/mL	Less than 11 ng/mL
		2-6 days	Less than 8.7 ng/mL	Less than 8.7 ng/mL
		7 days-1 month	Less than 5.8 ng/mL	Less than 5.8 ng/mL
		1-5 months	Less than 2.9 ng/mL	Less than 2.9 ng/mL
		6-24 months	Less than 1.9 9 ng/mL	Less than 2.5 ng/mL
		2-3 years	Less than 0.85 ng/mL	Less than 0.63 ng/mL
		4-5 years	Less than 1.03 ng/mL	Less than 0.95 ng/mL
		6-7 years	Less than 1.79 ng/mL	0.06-1.93 ng/mL
		8-9 years	0.14-2.35 ng/mL	0.10-2.08 ng/mL
		10-11 years	0.43-3.78 ng/mL	0.32-3.08 ng/mL
		12-13 years	0.89-6.21 ng/mL	0.57-4.10 ng/mL
		14-15 years	1.22-7.01 ng/mL	0.93-6.04 ng/mL
		16-17 years	1.42-9.00 ng/mL	1.17-6.52 ng/mL
		18-39 years	1.33-7.78 ng/mL	1.33-7.78 ng/mL
		40 years and older	0.63-4.70 ng/mL	0.63-4.70 ng/mL
		Postmenopausal	0.60-5.73 ng/mL	Does Not Apply
		Tanner Stage I	0.14-2.76 ng/mL	0.11-2.37 ng/mL
		Tanner Stage II	0.83-4.87 ng/mL	0.37-3.66 ng/mL
		Tanner Stage III	1.08-7.56 ng/mL	0.75-5.24 ng/mL
		Tanner Stage IV-V	1.24-7.88 ng/mL	1.22-6.73 ng/mL

Interpretive Data:
Free or bioavailable testosterone measurements may provide supportive information.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

HOTLINE NOTE: There is a clinically significant charting name change associated with this test.
Change the charting name for component 0081058, Testosterone, LC-MS/MS from Testosterone, LC-MS/MS to Testosterone by Mass Spec.

New Test **3004379** **von Willebrand Disease (*VWF*) Sequencing** **VWF NGS**

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Additional Technical Information

Patient History for von Willebrand Disease (*VWF*) Testing

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3 weeks

Specimen Required: Collect: Lavender (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 3 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Gene Tested: *VWF* (NM_000552)
Exons 26 and 34 are not covered by sequencing, and deletion/duplication analysis is not available for this gene.

CPT Code(s): 81408

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

2001737 **Voriconazole, Quantitation by LC-MS/MS** **VORICON AF**

Specimen Required: Patient Prep: Specimens collected just before or within 15 minutes of the next dose represent the TROUGH levels. Specimens obtained within 15-30 minutes after the end of I.V. infusion or 45-60 minutes after an IM injection or 90 minutes after oral intake represent the PEAK level. Timing of specimen collection: Pre-dose (trough) draw - At steady state concentration.
Collect: Plain Red, Lavender (EDTA), or Green (Sodium or Lithium Heparin).
Specimen Preparation: Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum or plasma to an ARUP Standard Transport Tube. (Min: 0.6 mL)
Storage/Transport Temperature: Frozen.
Unacceptable Conditions: Whole blood. Gel separator tubes, Light Blue (citrate), or Yellow (SPS or ACD solution).
Stability (collection to initiation of testing): After separation from cells: Ambient: 48 hours; Refrigerated: 48 hours; Frozen: 6 months

Interpretive Data:
Voriconazole is an azole antifungal drug indicated to treat invasive aspergillosis, candidiasis, scedosporiosis, and fusariosis infections. The therapeutic range is based on serum, predose (trough) draw collection at steady-state concentration. The pharmacokinetics of voriconazole are influenced by drug-drug interactions when coadministered with drugs metabolized by cytochrome P450 2C9, 2C19 and 3A4 enzymes. Adverse effects may include nausea, vomiting, tachycardia, and elevated serum liver enzymes.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

3001541 Warfarin Sensitivity (*CYP2C9, CYP2C* cluster, *CYP4F2, VKORC1*) Genotyping WARF PAN

Interpretive Data:

Background Information for Warfarin Sensitivity (*CYP2C9, CYP2C* cluster, *CYP4F2, VKORC1*) Genotyping:
Characteristics: Warfarin sensitivity can lead to a life-threatening overdose event such as excessive bleeding. Genetic variation is recognized to explain a large proportion of variability in warfarin dose requirements. This test may predict individual warfarin sensitivity and non-standard dose requirements. The cytochrome P450 (CYP) isozyme 2C9 is involved in the metabolism of many drugs. Variants in the gene that codes CYP2C9 may influence pharmacokinetics of substrates such as warfarin, and may predict or explain nonstandard dose requirements, therapeutic failure, or adverse reactions. Variants in the *VKORC1* and *CYP4F2* genes may predict sensitivity to warfarin. The *CYP2C* cluster variant, rs12777823, common in people of African descent, with a minor allele frequency of approximately25 percent, is found to be associated with warfarin dose in this population. Genetic information and nongenetic factors can be used in combination with warfarin dose calculators, such as through www.WarfarinDosing.org.
Inheritance: Autosomal codominant.
Cause: *CYP2C9* and *CYP2C* cluster variants are associated with reduced dose requirements. The *VKORC1*2* allele is associated with reduced expression of the warfarin target, vitamin K epoxide reductase (VKOR), and a reduced dose requirement. The *CYP4F2* variant is associated with an increased dose requirement.
Variants Tested: See the "Additional Technical Information" document.
Clinical Sensitivity: Genetic factors and known non-genetic factors account for approximately 50 percent of the variability in warfarin dose.
Methodology: Polymerase chain reaction (PCR) and fluorescence monitoring.
Analytical Sensitivity and Specificity: Greater than 99 percent.
Limitations: Only the targeted *CYP2C9, CYP2C* cluster, *CYP4F2,* and *VKORC1* variants will be detected by this panel, and assumptions about phase and content are made to assign alleles. Publicly available sources such as the www.pharmvar.org or www.pharmgkb.org provide guidance on phenotype predictions and allele frequencies. Diagnostic errors can occur due to rare sequence variations. Risk of therapeutic failure or adverse reactions with CYP2C9 substrates may be affected by genetic and nongenetic factors that are not detected by this test. This result does not replace the need for therapeutic drug or clinical monitoring.

Please note the information contained in this report does not contain medication recommendations, and should not be interpreted as recommending any specific medications. Any dosage adjustments or other changes to medications should be evaluated in consultation with a medical provider.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the US Food and Drug Administration. This test was performed in a CLIA certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

HOTLINE NOTE: There is a component change associated with this test.
Add component 2008931, CYP2C9 Phenotype
Add component 3004499, CYP2C Cluster Geno
Add component 3004500, CYP2C Cluster Pheno
Add component 3004506, CYP4F2 Phenotype
Add component 3004507, VKORC1 Phenotype
Remove component 3001503, CYP2C8 Genotype

New Test **3004411** **Wilson Disease (*ATP7B*) Sequencing** **ATP7B NGS**

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Additional Technical Information

Patient History for Wilson Disease (*ATP7B*) Testing

Methodology: Massively Parallel Sequencing
Performed: Varies
Reported: 3 weeks

Specimen Required: Collect: Lavender (EDTA) or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 3 mL whole blood. (Min: 2 mL)
Storage/Transport Temperature: Refrigerated.
Unacceptable Conditions: Serum or plasma; grossly hemolyzed or frozen specimens
Stability (collection to initiation of testing): Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Reference Interval: By report

Interpretive Data:
Refer to report.

This test was developed and its performance characteristics determined by ARUP Laboratories. It has not been cleared or approved by the U.S. Food and Drug Administration. This test was performed in a CLIA-certified laboratory and is intended for clinical purposes.

Counseling and informed consent are recommended for genetic testing. Consent forms are available online.

Note: Gene tested: *ATP7B* (NM_000053)
The Sardinian founder variant, c.-436_-422del15 is not evaluated, and deletion/duplication analysis is not available for this gene.
CPT Code(s): 81406

New York DOH approval pending. Call for status update.

HOTLINE NOTE: Refer to the Test Mix Addendum for interface build information.

ARUP LABORATORIES

HOTLINE: Effective February 22, 2022

The following will be discontinued from ARUP's test menu on February 22, 2022.
Replacement test options are supplied if applicable.

Test Number	Test Name	Refer To Replacement
0051730	Biotinidase Deficiency (*BTD*) Sequencing	Biotinidase Deficiency (*BTD*) Sequencing (3004424)
3000531	Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy, CADASIL (*NOTCH3*), Sequencing (Temporary Referral as of 01/25/21)	Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy, CADASIL (*NOTCH3*), Sequencing (3004383)
2004863	Familial Adenomatous Polyposis (*APC*) Sequencing (Temporary Referral as of 12/07/20)	*APC*- and *MUTYH*-Associated Polyposis Panel, Sequencing and Deletion/Duplication (3004407)
2004915	Familial Adenomatous Polyposis Panel: (*APC)* Sequencing and Deletion/Duplication, (*MUTYH)* 2 Mutations (Extended TAT as of 11/20/20-no referral available)	*APC*- and *MUTYH*-Associated Polyposis Panel, Sequencing and Deletion/Duplication (3004407)
2002658	Familial Mediterranean Fever (*MEFV*) Sequencing	Familial Mediterranean Fever (*MEFV*) Sequencing (3004434)
2007163	Glucose-6-Phosphate Dehydrogenase Deficiency (*G6PD*) Sequencing	Glucose-6-Phosphate Dehydrogenase Deficiency (*G6PD*) Sequencing (3004457)
2011461	Hereditary Paraganglioma-Pheochromocytoma (*SDHA*) Sequencing	Hereditary Paraganglioma-Pheochromocytoma (*SDHA, SDHB, SDHC, and SDHD*) Sequencing and Deletion/Duplication (3004480)
2007108	Hereditary Paraganglioma-Pheochromocytoma (*SDHB*) Sequencing and Deletion/Duplication	Hereditary Paraganglioma-Pheochromocytoma (*SDHA, SDHB, SDHC, and SDHD*) Sequencing and Deletion/Duplication (3004480)
2007167	Hereditary Paraganglioma-Pheochromocytoma (*SDHB, SDHC, and SDHD*) Sequencing and Deletion/Duplication Panel	Hereditary Paraganglioma-Pheochromocytoma (*SDHA, SDHB, SDHC, and SDHD*) Sequencing and Deletion/Duplication (3004480)
2007117	Hereditary Paraganglioma-Pheochromocytoma (*SDHC*) Sequencing and Deletion/Duplication	Hereditary Paraganglioma-Pheochromocytoma (*SDHA, SDHB, SDHC, and SDHD*) Sequencing and Deletion/Duplication (3004480)
2007122	Hereditary Paraganglioma-Pheochromocytoma (*SDHD*) Sequencing and Deletion/Duplication	Hereditary Paraganglioma-Pheochromocytoma (*SDHA, SDHB, SDHC, and SDHD*) Sequencing and Deletion/Duplication (3004480)
2008125	Hexosaminidase A Percent and Total Hexosaminidase in Leukocytes	Tay-Sachs Disease (*HEXA*) Sequencing and Deletion/Duplication (3004486)
2008129	Hexosaminidase A Percent and Total Hexosaminidase in Plasma with Reflex to Hexosaminidase A Percent and Total Hexosaminidase in Leukocytes	Tay-Sachs Disease (*HEXA*) Sequencing and Deletion/Duplication (3004486)
2008121	Hexosaminidase A Percent and Total Hexosaminidase, Plasma or Serum	Tay-Sachs Disease (*HEXA*) Sequencing and Deletion/Duplication (3004486)
2003390	Interferon Beta Neutralizing Antibody with Reflex to Titer	
3001337	Lymphocyte Proliferation, Anti-CD3, Anti-CD28 and IL-2 Induced, by Flow Cytometry (24-Hr Critical Room Temp)	
3001320	Lymphocyte Proliferation, Antigen Induced, by Flow Cytometry (24-Hr Critical Room Temp)	Lymphocyte Antigen Proliferation (0096055)
3001319	Lymphocyte Proliferation, Antigen-Mitogen Panel by Flow Cytometry (24-Hr Critical Room Temp)	Lymphocyte Ag and Mitogen Panel (0096056)
3001321	Lymphocyte Proliferation, Mitogen Induced, by Flow Cytometry (48-Hr Critical Room Temp)	Lymphocyte Mitogen Proliferation (0096043)
2005360	Multiple Endocrine Neoplasia Type 1 (*MEN1)* Sequencing and Deletion/Duplication	Multiple Endocrine Neoplasia Type 1 (*MEN1*) Sequencing and Deletion/Duplication (3004437)
2006191	*MUTYH*-Associated Polyposis (*MUTYH*) Sequencing	*APC*- and *MUTYH*-Associated Polyposis Panel, Sequencing and Deletion/Duplication (3004407)
2003382	Ristocetin-Induced Platelet Aggregation	Platelet Aggregation Studies (0030160)
3000582	Schistosoma Antibody, IgG, Serum	Schistosoma Antibody IgG by ELISA (3004472)
2009298	Tay-Sachs Disease (HEXA) Sequencing and 7.6kb Deletion	Tay-Sachs Disease (*HEXA*) Sequencing and Deletion/Duplication (3004486)
3001755	UGT1A1 Sequencing (Temporary Referral as of 12/07/20)	UGT1A1 Sequencing (3004386)
2004212	Very Long-Chain Acyl-CoA Dehydrogenase Deficiency (*ACADVL)* Sequencing and Deletion/Duplication	Very Long-Chain Acyl-CoA Dehydrogenase Deficiency (*ACADVL*) Sequencing and Deletion/Duplication (3004419)
2005480	von Willebrand Disease, Type 2A (*VWF*) Sequencing Exon 28 with Reflex to 9 Exons	von Willebrand Disease (*VWF*) Sequencing (3004379)
2005486	von Willebrand Disease, Type 2B (*VWF*) Sequencing (Temporary Referral as of 02/10/21)	von Willebrand Disease (*VWF*) Sequencing (3004379)
2005490	von Willebrand Disease, Type 2M (*VWF*) Sequencing (Temporary Referral as of 02/10/21)	von Willebrand Disease (*VWF*) Sequencing (3004379)
2005494	von Willebrand Disease, Type 2N (*VWF*) Sequencing (Temporary Referral as of 02/10/21)	von Willebrand Disease (*VWF*) Sequencing (3004379)
2010716	Wilson Disease (*ATP7B*) Sequencing	Wilson Disease (*ATP7B*) Sequencing (3004411)