

Effective as of **07/20/2026**

### Additional ordering and billing information

[Information when ordering laboratory tests that are billed to Medicare/Medicaid](#)

[Information regarding Current Procedural Terminology \(CPT\)](#)

Test Number	Mnemonic	Test Name	New Test	Test Name Change	Specimen Requirements	Methodology	Note	Interpretive Data	Reference Interval	Component Charting Name	Component Change	Reflex Pattern	Result Type	Ask at Order Prompt	Numeric Map	Unit of Measure	CPT Code	Pricing Change	Inactivation w/ Replacement	Inactivation w/o Replacement
0030224	PT INR	Prothrombin Time/International Normalized Ratio			x															
0030235	PTT	Partial Thromboplastin Time			x															
0051265	AD PCR FE	Achondroplasia (FGFR3) 2 Mutations, Fetal			x															
0051270	GALTDNA FE	Galactosemia (GALT) 9 Mutations, Fetal			x															
0055284	CYST SER	Cysticercosis Antibody, IgG by ELISA			x			x	x						x	x				
0055285	CYST CSF	Cysticercosis Antibody, IgG by ELISA (CSF)			x			x	x						x	x				
0060113	MC LEGION	Legionella Species, Culture			x		x													
0060841	ML TICAR	Antibiotic Level, Ticarcillin																		x
0070279	ACTH IVC1	Adrenocorticotrophic Hormone, IVC1	x																	
0070300	ACTH LP1	Adrenocorticotrophic Hormone, LP1	x																	
0070311	ACTH RP1	Adrenocorticotrophic Hormone, RP1	x																	
0070413	INHIBINB	Inhibin B			x															
0080055	CARO	Carotene, Serum Total			x															

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0092572	CUTDIF	Direct Immunofluorescence, Tissue Biopsy (Cutaneous, Mucosal, Epithelial)			x															
0099225	VIT K	Vitamin K1, Serum			x															
2001755	F8 INV FE	Hemophilia A (F8) 2 Inversions, Fetal			x															
2002366	ARRAY FE	Cytogenomic SNP Microarray - Fetal			x		x	x												
2002656	AMH	Anti-Mullerian Hormone			x															
2002719	FISH P ALL	Acute Lymphoblastic Leukemia (ALL) Panel by FISH, Pediatric																	x	
2003414	CMA SNP	Cytogenomic SNP Microarray			x		x	x												
2005631	SRA UFH	Serotonin Release Assay (Heparin Dependent Platelet Antibody), Unfractionated Heparin			x				x											
2005633	ARRAY POC	Genomic SNP Microarray, Products of Conception			x			x												

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2005689	JPN GM	Japanese Encephalitis Virus Antibodies, IgG and IgM by ELISA																		x
2006193	BCELL SCRIN	B-Cell Clonality Screening (IgH and IgK) by PCR												x						
2006267	CMA BUCCAL	Cytogenomic SNP Microarray Buccal Swab		x			x	x												
2008863	HPE PAN FE	Holoprosencephaly Panel, Sequencing and Deletion/Duplication, Fetal		x			x	x												
2009034	FX PCR FE	Fragile X (FMR1) with Reflex to Methylation Analysis, Fetal		x																
2010769	NOONAN FE	Noonan Spectrum Disorders Panel, Sequencing, Fetal		x			x	x												
2011231	DMD DD FE	Duchenne/Becker Muscular Dystrophy (DMD) Deletion/Duplication, Fetal		x																
2012010	SKEL FE	Skeletal Dysplasia Panel, Sequencing and Deletion/Duplication, Fetal		x			x	x												

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2013662	CF VAR FE	Cystic Fibrosis (CFTR) Expanded Variant Panel, Fetal			x															
2014704	SCID-MAT	Maternal T Cell Engraftment in SCID, Maternal Specimen			x		x													
3000143	MS QUAD	Maternal Serum Screen, Alpha Fetoprotein, hCG, Estriol, and Inhibin A (Quad)									x									
3000144	MS AFP	Maternal Serum Screen, Alpha Fetoprotein									x									
3000148	MS SEQ2	Maternal Screening, Sequential, Specimen #2, Alpha Fetoprotein, hCG, Estriol, and Inhibin A									x									
3000149	MS INT2	Maternal Serum Screening, Integrated, Specimen #2, Alpha Fetoprotein, hCG, Estriol, and Inhibin A									x									

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3001615	BMF NGS	Hereditary Bone Marrow Failure Panel, Sequencing and Deletion/Duplication			x			x				x								
3001842	HMYE NGS	Hereditary Myeloid Neoplasms Panel, Sequencing			x			x				x								
3002096	TSC NGS FE	Tuberous Sclerosis Complex Panel, Sequencing and Deletion/Duplication, Fetal			x		x													
3002343	CHROM F8	Chromogenic Factor VIII, Activity			x															
3003656	HBA DDCSFE	Alpha Thalassemia (HBA1 and HBA2) Deletion/Duplication with reflex to Hb Constant Spring, Fetal			x			x									x			
3004273	CMAFFPE	Cytogenomic Molecular Inversion Probe Array FFPE Tissue - Products of Conception			x			x												

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3004275	FFPEARRAY	Cytogenomic Molecular Inversion Probe Array FFPE Tissue - Oncology			x			x												
3004277	MSIPCR	Microsatellite Instability (MSI) HNPCC/Lynch Syndrome by PCR												x						
3004550	BG NGS FE	Beta Globin (HBB) Sequencing, Fetal			x		x													
3005003	MMP-9	Matrix Metalloproteinase-9 (MMP-9)																	x	
3005433	STRPOST-34	Chimerism, Posttransplant, Sorted Cells (CD34+ Cells)																		x
3005694	ARRAY FSV	Cytogenomic SNP Microarray, Family-Specific Variant			x															
3005721	ECYT NGS	Hereditary Erythrocytosis Panel, Sequencing			x							x								
3005869	FAM NGS FE	Familial Targeted Sequencing, Fetal			x		x													
3016503	THIOMET	Thiopurine Metabolites in Red Blood Cells									x									

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3016596	CMA RAPID	Cytogenomic SNP Microarray - RAPID			x															
3016639	RBCGENO FE	Red Blood Cell Antigen Genotyping, Fetal			x															
3016640	RHD FE	RhD Gene (RHD) Copy Number, Fetal			x			x												
3016673	HPAGENO FE	Platelet Antigen Genotyping Panel, Fetal			x															
3016676	KELGENO FE	Kell K/k (KEL) Antigen Genotyping, Fetal			x															
3016679	RHCGENO FE	RhC/c (RHCE) Antigen Genotyping, Fetal			x			x												
3016682	RHEGENO FE	RhE/e (RHCE) Antigen Genotyping, Fetal			x			x												
3016752	VITA B3	Vitamin B3 (Niacin and Metabolites), Serum/Plasma																	x	
3016862	AMH MENO	Anti-Mullerian Hormone With Menopausal Status (MenoCheck)			x															

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3017049	SESAME R	Allergen, Food, Sesame Seed With Reflex to Component, IgE					x													
3017101	HGBEL RFX	Hemoglobin Evaluation by HPLC With Reflex to Electrophoresis and/or RBC Solubility						x												
3019566	HBA FGA FE	Alpha Globin (HBA1 and HBA2) Sequencing and Deletion/Duplication, Fetal			x		x													
3019671	VWF_GPIBM	von Willebrand Factor (VWF) GPIbM Activity			x															
3019937	HD PCR FE	Huntington Disease (HD) CAG Repeat Expansion, Fetal			x															
3020123	CB REQ	Comprehensive Bone Marrow Biopsy Workup	x																	
3020627	CGCELLCULT	Cell Culture for Genetic Testing	x																	
3020653	GI BACTNAA	GI Bacterial Panel by PCR	x																	
3020658	GI BACTEXP	GI Expanded Bacterial Panel by PCR	x																	

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3020663	GI BACTRFX	GI Bacterial Panel by PCR With Reflex to GI Expanded Bacterial Panel by PCR	x																	
3020698	FACTOR-H	Complement Factor-H Concentration, Plasma	x																	
3020719	MM MRD SF	ARUP CLARISPECT(TM) Multiple Myeloma MRD by Spectral Flow Cytometry	x																	
3020808	DSCR U	Drug Panel, Screen With Reflex to Quantitation, Urine	x																	
3020812	DSCR UEXP	Drug Panel, Expanded Screen With Reflex to Quantitation, Urine	x																	
3020813	EDDP RFX U	Methadone Metabolite, Urine, Screen With Reflex to Quantitation	x																	
3020898	CSF KFLC	Kappa Free Light Chains, CSF	x																	
3020899	MMP9 S	Matrix Metalloproteinase-9 (MMP-9), Serum	x																	

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3020911	HGBEL PLUS	Hemoglobin Evaluation by HPLC and Electrophoresis With Reflex to RBC Solubility	x																	
3020918	B2GP1-D1	Anti-Beta-2 Glycoprotein 1 Domain 1, IgG	x																	
3020950	FISH PALL	Acute Lymphoblastic Leukemia (ALL) Panel by FISH, Pediatric	x																	
3020992	LMO2_IHC	LMO2 by Immunohistochemistry	x																	
3021006	COR A 14	Allergen, Food, Hazelnut Component Cor a 14, IgE	x																	
3021007	ARA H 2	Allergen, Food, Peanut Component Ara h 2, IgE	x																	
3021008	SOYBEAN R	Allergen, Food, Soybean with Reflex to Components, IgE	x																	
3021015	VIT B3	Vitamin B3 (Niacin and Metabolites), Serum/Plasma	x																	

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3021031	CSF KFLC R	CSF Kappa Free Light Chains With Reflex to Oligoclonal Banding	x																	
3021041	FOOD BIG 9	Allergens, Food, Major 9 Reflexive Profile, IgE	x																	

**TEST CHANGE**

**Prothrombin Time/International Normalized Ratio**

0030224, PT INR

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Lt. blue (sodium citrate). [Refer to Specimen Handling at aruplab.com for hemostasis/thrombosis specimen handling guidelines.](https://www.aruplab.com/for-hemostasis/thrombosis-specimen-handling-guidelines)

**Specimen Preparation:** Transfer 1 mL platelet-poor plasma to an ARUP standard transport tube. (Min: 0.5 mL)

**Transport Temperature:** CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

**Unacceptable Conditions:** Serum. EDTA plasma, clotted or hemolyzed specimens.

**Remarks:**

**Stability:** Ambient: 24 hours; Refrigerated: Unacceptable; Frozen: 2 weeks

**Methodology:** Electromagnetic Mechanical Clot Detection

**Note:** Reference intervals established using 3.2 percent sodium citrate.

**CPT Codes:** 85610

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

Test Number	Components	Reference Interval
	International Normalized Ratio	Coumadin Therapy: INR: 2.0-3.0 conventional anticoagulation INR: 2.5-3.5 intensive anticoagulation
	<a href="#"><u>Prothrombin Time</u></a>	<a href="#"><u>12.0-15.5 seconds</u></a>

**TEST CHANGE**

**Partial Thromboplastin Time**

0030235, PTT

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Lt. blue (sodium citrate). [Refer to Specimen Handling at aruplab.com for hemostasis/thrombosis specimen handling guidelines.](http://aruplab.com)

**Specimen Preparation:** Separate plasma from cells ASAP or within 2 hours of collection and freeze. Transfer 1 mL platelet-poor plasma to an ARUP standard transport tube.

**Transport Temperature:** CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

**Unacceptable Conditions:** Serum. EDTA plasma, clotted or hemolyzed specimens.

**Remarks:**

**Stability:** Ambient: 4 hours; Refrigerated: Unacceptable; Frozen: 2 weeks  
NOTE: Specimens from patients on heparin must be centrifuged within 1 hour of collection and ambient stability is reduced to 2 hours.

**Methodology:**

**Note:** Reference interval established using 3.2% sodium citrate.

**CPT Codes:** 85730

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

Test Number	Components	Reference Interval
	Partial Thromboplastin Time	24-35 seconds

**TEST CHANGE**

**Achondroplasia (FGFR3) 2 Mutations, Fetal**

0051265, AD PCR FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Amniotic fluid OR cultured amniocytes OR cultured chorionic villus sampling (CVS).

Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Amniotic fluid OR cultured amniocytes OR cultured CVS: Two T-25 flasks at 80 percent confluency. AND maternal whole blood: Lavender (K2 or K3EDTA), pink (K2EDTA), or yellow (ACD solution A or B).

If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.

**Specimen Preparation:**

Amniotic fluid: Transport: 10 mL amniotic fluid in a sterile container (min: 5 mL); OR

Two T-25 flasks of 80% confluent cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS).

If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup: Fill flasks with culture media. Backup cultures must be retained at the client's institution. If ARUP receives cultured fetal cells below minimum confluence, Cell Culture for Genetic Testing (3020627) will be added by ARUP. -until testing is complete. AND maternal whole blood: transport 2 mL whole blood (min: 1 mL).

**Transport Temperature:**

Preferred transport temp: Amniotic fluid, cultured amniocytes or cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 2 days of shipment due to liability of cells. Maternal whole blood: Room temperature.

Preferred shipment: Within two days of collection or confluence.

**Unacceptable Conditions:**

Frozen specimens in glass collection tubes.

**Remarks:**

Patient History Form is available on the ARUP Web site or by contacting ARUP Client Services.

Counseling and informed consent are recommended for

genetic testing. Consent forms are linked above.  
New York Clients: **i**nformed consent is required with submission.

Stability: ~~Fetal Specimen~~-Room temperature: 2 days; Refrigerated: 2 days; Frozen: Unacceptable  
~~Maternal whole blood: Room Temperature: 3 days; Refrigerated: 1 week; Frozen: Unacceptable~~

Methodology: Polymerase Chain Reaction (PCR) / Fluorescence Monitoring / Fragment Analysis

Note:

CPT Codes: 81401; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Refer to report

Reference Interval:

Refer to report

**TEST CHANGE**

**Galactosemia (GALT) 9 Mutations, Fetal**

0051270, GALTDNA FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Cultured amniocytes OR cultured chorionic villus sampling (CVS).

Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements.

Fetal: Cultured Amniocytes, Cultured CVS AND Maternal Whole Blood Specimen: Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).

**Specimen Preparation:**

Transport: Two T-25 flasks of 80% confluent Cultured Amniocytes or Cultured CVS: Transfer cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS).

Cultured amniocytes or or cultured CVS is required for testing. If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup to two T-25 flasks at 80 percent confluence. (Min: one T-25 flask at 80 percent confluence) Backup cultures must be retained at the client's institution, until testing is complete. If ARUP receives cultured fetal cells a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) Cytogenetics Grow and Send (ARUP test code 0040182) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cytogenetics Grow and Send should be added to the initial order.

Maternal Whole Blood Specimen: 2 mL whole blood (Min: 1 mL).

**Transport Temperature:**

Preferred transport temp: Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of collection due to viability of cells.

Maternal Whole Blood Specimen: Room temperature. Preferred shipment: Within two days of collection or confluence.

**Unacceptable Conditions:**

Frozen specimens.

**Remarks:**

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: **!**informed consent is required with submission.

Stability: ~~Cultured Amniocytes or Cultured CVS: Room temperature: 2 days; Refrigerated: Unacceptable; Frozen: Unacceptable~~  
~~Maternal Whole Blood Specimen: Room temperature: 1 week; Refrigerated: 1 month; Frozen: Unacceptable~~

Methodology: Polymerase Chain Reaction (PCR) / Single Nucleotide Extensions

Note: This test is offered to individuals with a known familial mutation(s).

CPT Codes: 81401; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Refer to report.

Reference Interval:

Refer to report

**TEST CHANGE**

**Cysticercosis Antibody, IgG by ELISA**

0055284, CYST SER

<b>Specimen Requirements:</b>	
Patient Preparation:	
Collect:	Serum separator tube.
Specimen Preparation:	Transfer 1 mL serum to an ARUP <u>standard transport tube</u> <del>Standard Transport Tube</del> . (Min: 0.1 mL) Parallel testing is preferred and convalescent specimens must be received within 30 days from receipt of the acute specimens. Mark specimens plainly as " <u>acute</u> " <del>acute</del> or " <u>convalescent</u> " <del>convalescent</del> .
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	CSF. Contaminated, heat-inactivated, hemolyzed, icteric, or lipemic specimens.
<b>Remarks:</b>	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Note:	
CPT Codes:	86682
New York DOH Approval Status:	This test is New York DOH approved.

**Interpretive Data:**  
Seroconversion between acute and convalescent sera is considered strong evidence of recent infection. The best evidence for infection is a significant change on two appropriately timed specimens where both tests are done in the same laboratory at the same time.  
  
Patients with collagen vascular diseases, hepatic cirrhosis, schistosomiasis, and other parasitic infections can produce false-positive results. There is a strong cross-reaction between cysticercosis and echinococcosis positive sera. Confirmation of positive ELISA results by the cysticercosis antibody, IgG by Western blot is recommended.

<u>Less than or equal to 0.9 IU Component</u>	<u>Negative: No significant level of cysticercosis IgG antibody detected, Unit Of Measure</u>	<u>Interpretation</u>
<u>1.0 IU</u>	<u>Equivocal: Recommend repeat testing in 2-4 weeks with fresh sample</u>	
<u>Greater than or equal to 1.1 IU</u> Cysticercosis Ab, IgG by ELISA	<u>&lt;9 U 9-11 U &gt;11 U</u>	<u>Negative -- No significant level of cysticercosis IgG antibody detected.</u>

Deleted Cells

Deleted Cells

		<p><del>Equivocal-</del> <del>Recommend</del> <del>repeat testing in</del> <del>2-4 weeks with</del> <del>fresh sample.</del> Positive → IgG antibodies to cysticercosis detected, which may suggest current or past infection.</p>
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**Reference Interval:**

Refer to report Number	Test Components	Reference Interval
	Cysticercosis Ab, IgG by ELISA	<9 U
Test Number	Components	Reference Interval
	Cysticercosis Ab, IgG by ELISA	Less than or equal to 0.9 IV

**HOTLINE NOTE:** There is a numeric map change associated with this test. Refer to the Hotline Test Mix for interface build information.

**HOTLINE NOTE:** There is a unit of measure change associated with this test. Refer to the Hotline Test Mix for interface build information.

**TEST CHANGE**

Cysticercosis Antibody, IgG by ELISA (CSF)

0055285, CYST CSF

Specimen Requirements:	
Patient Preparation:	
Collect:	CSF.
Specimen Preparation:	Transfer 1 mL CSF to an ARUP <del>standard transport tube</del> <b>Standard Transport Tube</b> . (Min: 0.3 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Serum. Contaminated, heat-inactivated, hemolyzed, icteric, or lipemic specimens.
Remarks:	
Stability:	Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month (avoid repeated freeze/thaw cycles)
Methodology:	Semi-Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
Note:	

CPT Codes:	86682
New York DOH Approval Status:	<del>Specimens from New York clients will be sent out to a</del> <b>This test is</b> New York DOH approved <del>laboratory, if possible.</del>

**Interpretive Data:**  
 Diagnosis of central nervous system infections can be accomplished by demonstrating the presence of intrathecally-produced specific antibody. Interpretation of results may be complicated by low antibody levels found in CSF, passive transfer of antibody from blood, and contamination via bloody taps.  
 A negative result does not rule out infection. Repeat testing after 4 weeks if clinical suspicion is high.  
 Cross-reaction with antibodies against *Echinococcus* spp. have been reported.

~~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.~~

Less than or equal to 0.9 IV Component	Negative: No significant level of cysticercosis IgG antibody detected. Unit Of Measure	Interpretation
1.0 IV	Equivocal: Recommend repeat testing in 2-4 weeks with fresh sample	
Greater than or equal to 1.1 IV Cysticercosis Ab, IgG by ELISA;	<9 U-9-11 U >11 U	Negative--No significant level of cysticercosis IgG antibody

Deleted Cells

Deleted Cells

<b>CSF</b>		<p><del>detected.</del>  <del>Equivocal.</del>  <del>Recommend</del>  <del>repeat testing in</del>  <del>2-4 weeks with</del>  <del>fresh sample.</del>          Positive: IgG          antibodies to          cysticercosis          detected, which          may suggest          current or past          infection.</p>
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**Reference Interval:**

<u>Refer to report Number</u>	<u>Test Components</u>	<u>Reference Interval</u>
	<u>Cysticercosis Ab, IgG by ELISA, CSF</u>	<u>&lt;9 U</u>
<u>Test Number</u>	<u>Components</u>	<u>Reference Interval</u>
	<u>Cysticercosis Ab, IgG by ELISA, CSF</u>	<u>Less than or equal to 0.9 IV</u>

**HOTLINE NOTE:** There is a numeric map change associated with this test. Refer to the Hotline Test Mix for interface build information.

**HOTLINE NOTE:** There is a unit of measure change associated with this test. Refer to the Hotline Test Mix for interface build information.

**TEST CHANGE**

**Legionella Species, Culture**

0060113, MC LEGION

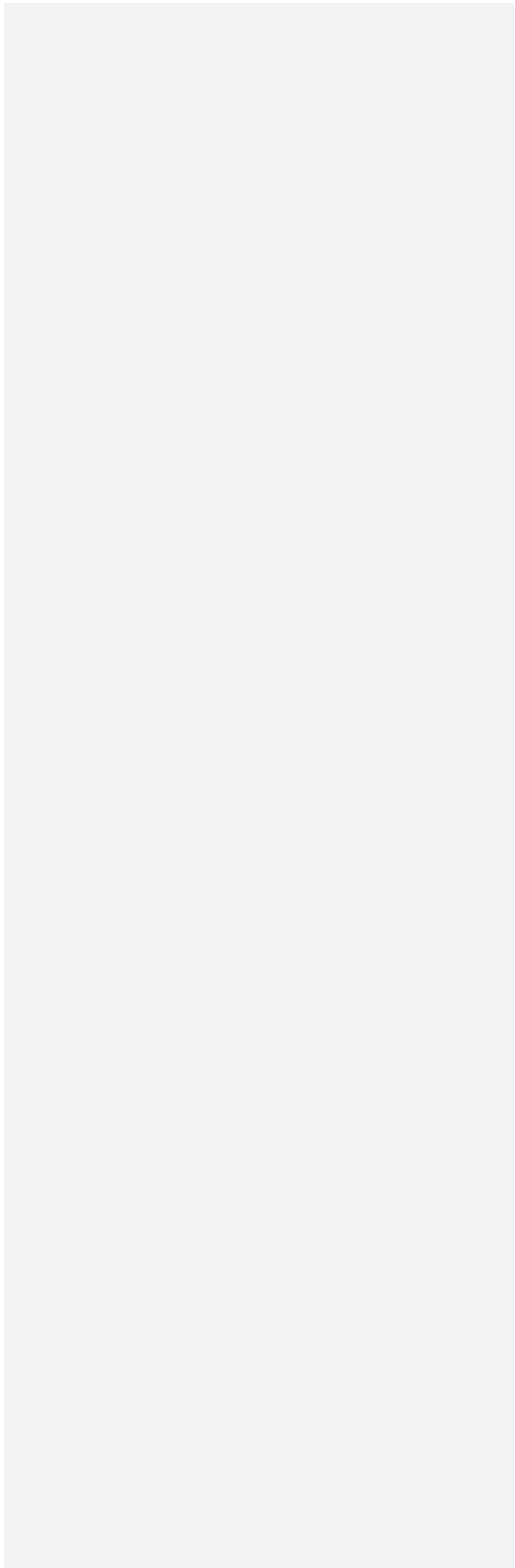
<b>Specimen Requirements:</b>	
Patient Preparation:	
Collect:	Respiratory specimens: Abscess material, aspirates, BAL, fluids, secretions, sputum, or tissue; OR pericardial fluid or blood in <a href="#">a blood culture bottle</a> . <a href="#">SPS Vacutainer tube for microbiology (ARUP supply #24964)</a> . Available online through <a href="#">eSupply using ARUP Connect(TM)</a> or contact <a href="#">ARUP Client Services at 800-522-2787</a> .
Specimen Preparation:	<b>Fluids, respiratory Fluid:</b> Transfer to a sterile container. Place each specimen in an individually sealed bag. (Min. 0.5 mL) <b>Tissue:</b> Place on gauze moistened with sterile sterile container. <b>Blood:</b> Transport blood in <a href="#">a blood culture bottle filled according to manufacturer's recommendations</a> . <a href="#">SPS tube</a> .
Transport Temperature:	Refrigerated. If delay in transport (greater than 48 hours), freeze at -60C or lower and transport on dry ice. <a href="#">Do not refrigerate or freeze blood culture bottles</a> .
Unacceptable Conditions:	Stool, urine, wounds, or other nonrespiratory sites. Dry specimens. Specimens in preservatives or viral transport medium (M4, UTM).
Remarks:	Specimen source preferred.
Stability:	Ambient: 2 hours; Refrigerated: 48 hours; Frozen: 1 week <a href="#">Whole Blood culture bottles:</a> Ambient <a href="#">48-2</a> hours; Refrigerated: <a href="#">unacceptable 48 hours</a> ; Frozen: <a href="#">u</a> Unacceptable
Methodology:	Qualitative Culture
Note:	Amplified DNA testing (PCR) is also available for respiratory specimens. Refer to Legionella Species by Qualitative PCR (ARUP test code 2010125). Legionella pneumophila DFA (ARUP test code 2004598) is also available.  <a href="#">An additional processing fee will be billed for all blood samples in blood culture bottles.</a>
CPT Codes:	87081; Identification CPT codes may vary based on method
New York DOH Approval Status:	This test is New York DOH approved.
<b>Interpretive Data:</b>	
Reference Interval:	
<a href="#">Culture negative for Legionella species.</a>	

Deleted Cells



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and its Department of Pathology*

Effective Date:



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**Adrenocorticotrophic Hormone, IVC1**

0070279, ACTH IVC1

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Lavender (K2EDTA), pink (K2EDTA), or K3EDTA. Collection tube must be siliconized glass or plastic.

**Specimen Preparation:** Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL plasma to an ARUP standard transport tube and freeze immediately. (Min: 0.5 mL)

**Transport Temperature:** CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

**Unacceptable Conditions:** Serum, heparinized plasma, tissue, or urine. Grossly hemolyzed specimens.

**Remarks:**

**Stability:** After separation from cells: Ambient: 3 hours; Refrigerated: 4 hours; Frozen: 10 weeks (No freeze/thaw cycles.)

**Methodology:** Quantitative Electrochemiluminescent Immunoassay (ECLIA)

**Note:**

**CPT Codes:** 82024

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

This assay measures intact ACTH 1-39; some types of synthetic ACTH and ACTH fragments are not detected by this assay.

**Reference Interval:**

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

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**Adrenocorticotrophic Hormone, LP1**

0070300, ACTH LP1

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Lavender (K2EDTA), pink (K2EDTA), or K3EDTA. Collection tube must be siliconized glass or plastic.

**Specimen Preparation:** Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL plasma to an ARUP standard transport tube and freeze immediately. (Min: 0.5 mL)

**Transport Temperature:** CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

**Unacceptable Conditions:** Serum, heparinized plasma, tissue, or urine. Grossly hemolyzed specimens.

**Remarks:**

**Stability:** After separation from cells: Ambient: 3 hours; Refrigerated: 4 hours; Frozen: 10 weeks (No freeze/thaw cycles.)

**Methodology:** Quantitative Electrochemiluminescent Immunoassay (ECLIA)

**Note:**

**CPT Codes:** 82024

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

This assay measures intact ACTH 1-39; some types of synthetic ACTH and ACTH fragments are not detected by this assay.

**Reference Interval:**

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

**NEW TEST – Available Now**

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**Adrenocorticotrophic Hormone, RP1**

0070311, ACTH RP1

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Lavender (K2EDTA), pink (K2EDTA), or K3EDTA. Collection tube must be siliconized glass or plastic.

**Specimen Preparation:** Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL plasma to an ARUP standard transport tube and freeze immediately. (Min: 0.5 mL)

**Transport Temperature:** CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

**Unacceptable Conditions:** Serum, heparinized plasma, tissue, or urine. Grossly hemolyzed specimens.

**Remarks:**

**Stability:** After separation from cells: Ambient: 3 hours; Refrigerated: 4 hours; Frozen: 10 weeks (No freeze/thaw cycles.)

**Methodology:** Quantitative Electrochemiluminescent Immunoassay (ECLIA)

**Note:**

**CPT Codes:** 82024

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

This assay measures intact ACTH 1-39; some types of synthetic ACTH and ACTH fragments are not detected by this assay.

**Reference Interval:**

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

**TEST CHANGE**

**Inhibin B**

0070413, INHIBINB

<b>Specimen Requirements:</b>	
Patient Preparation:	For premenopausal females, collection is preferred during the follicular phase of the menstrual cycle.
Collect:	Serum separator tube or plain red.
Specimen Preparation:	Transfer 0.5 mL serum to an ARUP standard transport tube. (Min: 0.32 mL)
Transport Temperature:	Frozen.
Unacceptable Conditions:	Room temperature specimens. Grossly hemolyzed specimens. Plasma.
<b>Remarks:</b>	
Stability:	After separation from cells: Ambient: Unacceptable; Refrigerated: 72 hours; Frozen: 1 month
Methodology:	Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)
<b>Note:</b>	

CPT Codes: 83520

New York DOH Approval Status: This test is New York DOH approved.

**Interpretive Data:**

This test is performed using the ANSH ultra-sensitive Inhibin B ELISA kit. Values obtained with different methodologies or kits cannot be used interchangeably.

**Reference Interval:**

Test Number	Components	Reference Interval	
	Inhibin B		
		Male (pg/mL)	Female (pg/mL)
		<15 days: 68-373	1 day-12 years: <=182
		15 days-6 months: 42-516	13-41 years (regular cycle, follicular phase): 8-223
		7 months-7 years: 24-300	42-51 years (regular cycle, follicular phase): <=107
		8-30 years: 47-383	51-76 years (postmenopausal): <=11
		31-72	

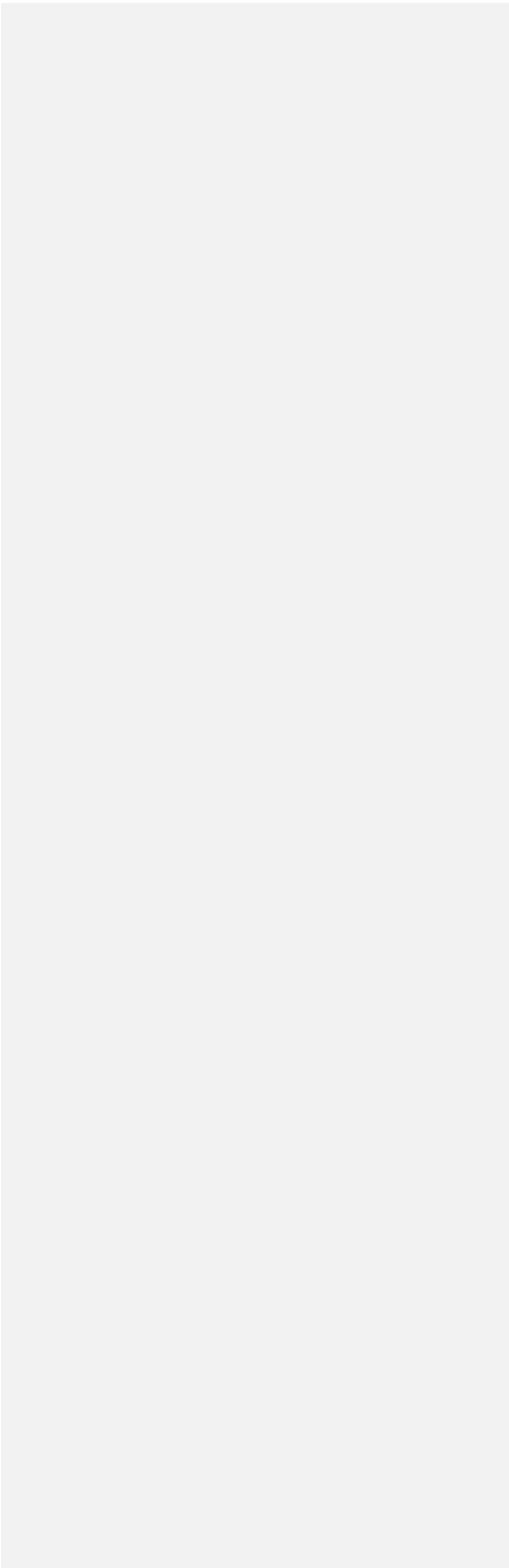
Inserted Cells



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and its Department of Pathology*

Effective Date: July 20, 2026

		years: 10-357	
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**TEST CHANGE**

Carotene, Serum Total

0080055, CARO

**Specimen Requirements:**

Patient Preparation:	Fasting specimens preferred.
Collect:	Serum <del>separator tube</del> <b>Separator Tube</b> (SST) or plain red.
Specimen Preparation:	CRITICAL: Protect from light immediately after collection and during storage and shipment. Transfer 3 mL serum to ARUP <del>amber transport tube</del> <b>Amber Transport Tube</b> . (Min: <del>1.10-6</del> mL)
Transport Temperature:	Frozen. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Any specimen other than serum. Refrigerated or room temperature specimens. Hemolyzed or icteric specimens.

**Remarks:**

Stability: After separation from cells: Ambient: Unacceptable;  
Refrigerated: 4 hours; Frozen: 1 month

Methodology: Quantitative Spectrophotometry

**Note:**

CPT Codes: 82380

New York DOH Approval Status: This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

<u>Test Number</u>	<u>Components</u>	<u>Reference Interval</u>
	<u>Carotene Total</u>	<u>60-200 µg/dL</u>

~~60-200-ug/dL~~

**TEST CHANGE**

Direct Immunofluorescence, Tissue Biopsy (Cutaneous, Mucosal, Epithelial)

0092572, CUTDIF

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Tissue: skin, mucosa (oral, conjunctival, genital, esophageal), ~~other epithelium (gastrointestinal, respiratory, urinary).~~

**Specimen Preparation:** Transport tissue (optimal 4-6 mm) in Michel's medium (ARUP supply #45462) available online through eSupply using ARUP Connect (TM) or call ARUP Client Services at 800-522-2787. Also acceptable: Zeus tissue fixative. Label container with transport medium type, if not an ARUP-supplied vial.

**Transport Temperature:**

**Unacceptable Conditions:** Formalin-fixed tissue. Frozen in Michel's medium. Solid organs or solid organ tissue. Tissue in container of unknown or unacceptable transport medium. Tissue sections on slides, prestained or unstained.

**Remarks:**

**Stability:** Ambient: 10 days; Refrigerated: 10 days; Frozen: Unacceptable

**Methodology:** Direct Immunofluorescence

**Note:**

**CPT Codes:** 88346; 88350 x5

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

Refer to report

**Reference Interval:**

Refer to ~~By~~ report

**TEST CHANGE**

Vitamin K1, Serum

0099225, VIT K

Specimen Requirements:

Patient Preparation:	Patient should fast overnight for 12 hours and should not consume alcohol for 24 hours prior to blood draw.
Collect:	Plain red or serum separator tube. Also acceptable: Lavender (EDTA) or pink (K2EDTA).
Specimen Preparation:	Protect from light during collection, storage, and shipment. Separate serum or plasma from cells within 1 hour of collection. Transfer 1 mL serum or plasma to an ARUP <b>amber transport tube</b> . <del>Amber Transport Tube</del> . (Min: 0.6 mL)
Transport Temperature:	Frozen. Separate specimens must be submitted when multiple tests are ordered.
Unacceptable Conditions:	Any specimen other than serum or EDTA plasma. Hemolyzed <b>or lipemic</b> specimens.
Remarks:	
Stability:	After separation from cells: Ambient: Unacceptable; Refrigerated: 1 month; Frozen: 6 months

Methodology: Quantitative High Performance Liquid Chromatography (HPLC)

Note:

CPT Codes: 84597

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Vitamin K concentration is reported as nanomoles per liter (nmol/L). To convert concentration to nanograms per milliliter (ng/mL), multiply the result by 0.45.

~~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.~~

Reference Interval:

<u>Test Number</u>	<u>Components</u>	<u>Reference Interval</u>
	<u>Vitamin K1</u>	<u>0.22 - 4.88 nmol/L</u>
<u>0.22-4.88 nmol/L</u>		

**TEST CHANGE**

**Hemophilia A (F8) 2 Inversions, Fetal**

2001755, F8 INV FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Fetal Specimen: Cultured amniocytes OR cultured chorionic villus sampling (CVS).  
Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. ~~Fetal Cultured Amniocytes or Cultured CVS AND Maternal Whole Blood Specimen: Lavender (EDTA) or yellow (ACD solution A or B).~~

**Specimen Preparation:** Transport: Two T-25 flasks of 80% confluent Cultured Amniocytes or Cultured CVS: Transfer cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS).  
Cultured amniocytes or ~~or~~ cultured CVS is required for testing. If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup to two T-25 flasks at 80 percent confluence: (Min: one T-25 flask at 80 percent confluence). Backup cultures must be retained at the client's institution, until testing is complete. If ARUP receives cultured fetal cells a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) Cytogenetics Grow and Send (ARUP test code 0040182) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cytogenetics Grow and Send should be added to initial order.  
Maternal Whole Blood Specimen: Transport 2 mL whole blood (Min: 1 mL)

**Transport Temperature:** Preferred transport ~~temperature~~ temp: Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of collection due to viability of cells.  
Maternal Whole Blood Specimen: Room temperature. Preferred shipment: Within two days of collection or confluence.

**Unacceptable Conditions:** Frozen specimens.

**Remarks:** Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.  
New York Clients: Informed consent is required with submission.

**Stability:** ~~Cultured Amniocytes or Cultured CVS:~~ Room temperature: 2 days; Refrigerated: Unacceptable; Frozen: Unacceptable

Maternal Whole Blood Specimen: Room temperature: 1 week;  
Refrigerated: 1 month; Frozen: Unacceptable

Methodology: Inverse Polymerase Chain Reaction / Polymerase Chain Reaction (PCR) / Electrophoresis

Note:

CPT Codes: 81403; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status: Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Refer to report

Reference Interval:

Refer to report

**TEST CHANGE**

**Cytogenomic SNP Microarray - Fetal**

2002366, ARRAY FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Amniotic fluid OR chorionic villi in cytogenetic tissue media (ARUP Supply #32788). If cytogenetic tissue media is not available, collect in plain RPMI, Hanks solution, saline, or ringers.

~~OR fetal urine, ascites fluid, pleural fluid, cystic hygroma fluid.~~  
New York State Clients: Discard first 2 mL of fluid aspirated to avoid maternal cell contamination.

Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements.

**Specimen Preparation:**

Do not freeze specimen or expose to extreme temperatures. Do not place in formalin.

Transport 15-30 mL amniotic fluid in a sterile container OR 5-20 mg CVS in a sterile, screw-top container filled with tissue culture transport medium. ~~Fetal urine, ascites fluid, pleural fluid, or cystic hygroma fluid: 4-15 mL in sterile tube.~~

New York State Clients: Specimen is collected in a 20 mL sterile syringe and transferred aseptically to sterile tubes. Specimen must be received at performing laboratory within 48 hours of collection. For specimen requirements and direct submission instructions please contact ARUP Referral Testing at 800-242-2787 ext. 5161.

**Transport Temperature:**

Preferred transport temp: Room temperature, ~~(all specimens)~~ received within 48 hours.

**Unacceptable Conditions:**

Frozen or fixed specimens.

**Remarks:**

Counseling and informed consent are recommended for genetic testing.

New York State Clients: Must submit specimen with Labcorp's Informed Consent and Prenatal Chromosome SNP Microarray Questionnaire

**Stability:**

Room temperature: 2 days~~All specimen types: Ambient: 48 hours~~; Refrigerated: 2 days~~48 hours~~ Acceptable; Frozen: Unacceptable

**Methodology:**

Genomic Microarray (Oligo-SNP Array)

**Note:**

~~Maternal Cell Contamination: Maternal cell contamination studies recommended.~~ For array AND amniotic fluid chromosomes, also order Chromosome Analysis, Amniotic fluid

(ARUP test code 2002293). For array AND CVS chromosomes, also order Chromosome Analysis, Chorionic Villus (ARUP test code 2002291). ~~For maternal cell contamination studies or if submitting maternal blood, order Maternal Cell Contamination, Maternal Specimen (ARUP test code 0050608) accompanied by a test request form for the mother (this test is performed at no charge). For questions regarding ordering please contact ARUP's genetic counselor at 800-242-2787 ext. 2141.~~

A processing fee will be charged if this procedure is canceled, at the client's request, after the test has been set up, or if the specimen integrity is inadequate to allow culture growth. The fee will vary based on specimen type.

Turnaround times may be delayed if specimens are suboptimal or culturing is required prior to testing.

This test must be ordered using Cytogenetic test request form 43098 or through your ARUP interface. Please submit the Patient History for Prenatal Cytogenetics form with the electronic packing list (<http://ltd.aruplab.com/Tests/Pdf/65>).

CPT Codes: 81229; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status: Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

~~Refer to report. See report.~~

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

Reference Interval:

~~Refer to~~ By report

**TEST CHANGE**

**Anti-Mullerian Hormone**

2002656, AMH

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Serum separator tube. Also acceptable: Plain red or green (lithium heparin).

**Specimen Preparation:** Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP standard transport tube. (Min: ~~0.3~~ 0.5 mL)

**Transport Temperature:** Frozen.

**Unacceptable Conditions:**

**Remarks:**

**Stability:** Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 3 weeks (avoid repeated freeze/thaw cycles)

**Methodology:** Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

**Note:**

**CPT Codes:** 82166

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

<u>Test Number</u>	<u>Components</u>	<u>Reference Interval</u>	
	<u>Anti-Mullerian Hormone</u>		
		<u>Female Reference Intervals</u>	
		<u>Age</u>	<u>Reference Intervals (ng/mL)</u>
		<u>6 months - 14 years</u>	<u>0.256-6.345</u>
		<u>15-17 years</u>	<u>0.861-10.451</u>
		<u>18-29 years</u>	<u>0.401-16.015</u>
		<u>30-39 years</u>	<u>0.176-11.705</u>
		<u>40-45 years</u>	<u>6.282 or less</u>
		<u>46-50 years</u>	<u>0.064 or less</u>
		<u>Post-menopausal</u>	<u>0.003 or less</u>

Effective April 7, 2014

<u>Test Number</u>	<u>Components</u>	<u>Reference Interval</u>

Anti-Mullerian Hormone	
Age	Reference Intervals (ng/mL)
40-45 years	<=6.282 ng/mL
46-50 years	<=0.064 ng/mL
Post-menopausal	<=0.003

**TEST CHANGE**

**Cytogenomic SNP Microarray**

2003414, CMA SNP

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** ~~Collect: Peripheral or blood in green (sodium heparin) or lavender (K2EDTA), cord blood in green (sodium heparin) or lavender (K2EDTA), or PUBS in green (sodium heparin) or lavender (K2EDTA).~~  
New York State Clients: Green (sodium heparin) AND lavender (K2EDTA).

**Specimen Preparation:** ~~Whole Blood, Cord Blood, & PUBS:~~ Transport 5 mL (Min: 1 mL).  
New York State Clients: Transport 4 mL ~~whole blood in the original~~ green (sodium heparin) (Min: 2 mL) tube and 3 mL ~~whole blood in the original~~ lavender (K2EDTA) tube. (Min: 2 mL sodium heparin and 2 mL EDTA).

**Transport Temperature:** ~~Preferred transport temp~~ ~~Whole Blood, Cord Blood, & PUBS:~~ Room temperature.

**Unacceptable Conditions:** ~~Frozen or clotted~~ Clotted specimens, ~~frozen~~

**Remarks:**

**Stability:** ~~Room temperature: 2 days~~ ~~Whole Blood, Cord Blood, & PUBS: Ambient: 48 hours;~~ Refrigerated: ~~3 days~~ 72 hours;  
Frozen: Unacceptable  
New York State Clients: ~~Room temperature~~ Ambient: 1 week;  
Refrigerated: 1 week; Frozen: Unacceptable

**Methodology:** Genomic Microarray (Oligo-SNP Array)

**Note:** This test must be ordered using a Cytogenetic test request form 43097 or through your ARUP interface. Please submit the Genomic Microarray Patient ~~History~~ ~~Clinical Information~~ Form with the electronic packing list (<http://ltd.aruplab.com/Tests/Pdf/76>).

**CPT Codes:** 81229

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

~~Refer to report.~~ ~~Refer to report.~~

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

**Reference Interval:**



**TEST CHANGE**

Serotonin Release Assay (Heparin Dependent Platelet Antibody), Unfractionated Heparin 2005631, SRA UFH

Specimen Requirements:

Patient Preparation:

Collect: Serum separator tube.

Specimen Preparation: Transfer 5 mL serum to ARUP Standard Transport Tubes. (Min: 1 mL)

Transport Temperature: Frozen. Also acceptable: Refrigerated.

Unacceptable Conditions:

Remarks:

Stability: Ambient: Unacceptable; Refrigerated: 1 week; Frozen: ~~2 years~~[Indefinitely](#).

Methodology: Qualitative Serotonin Release Assay

Note:

CPT Codes: 86022

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

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.

Reference Interval:

<u>Test Number</u>	<u>Components</u>	<u>Reference Interval</u>
	<a href="#">SRA, Unfractionated Heparin</a>	<a href="#">Negative</a>

[Refer to report](#)

**TEST CHANGE**

Genomic SNP Microarray, Products of Conception

2005633, ARRAY POC

Specimen Requirements:

Patient Preparation:

Collect:

~~Fetal Specimen: Thaw media prior to tissue inoculation.~~  
Products of conception in a sterile, screw-top container (~~wide-mouth containers:~~ ARUP supply #42710) filled with tissue culture transport medium (ARUP supply #32788). Available online through eSupply using ARUP Connect or contact ARUP Client Services at 800-522-2787. If cytogenetics tissue media is not available, collect in plain RPMI, Hanks solution, sterile saline, or ringers.  
If autopsy is performed: Facia lata, diaphragm, tendon, skin, tissue from internal organs (if fresh), chest wall cartilage (particularly if macerated) or placenta from fetal side.  
If no autopsy is performed: Placenta from fetal side is preferred (eg, villi).

Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements.

~~Also acceptable: Skin (POC), Cord Tissue, Umbilical cord, Decidua, or Achilles tendon.~~

Specimen Preparation:

~~Do not place in formalin.~~ Transport products of conception (Min: skin (POC), cord tissue, or decidua (min: 5mg)) in sterile, screw-top container filled with tissue transport medium. If specimen size is too large for a normal collection tube, a larger sterile container can be used such as a sterile urine cup and can be flooded with several tubes of cytogenetic tissue media.

Transport Temperature:

Preferred transport temp: Room temperature. ~~(fresh tissue or culture flask).~~ Also acceptable: Refrigerated or frozen.

Unacceptable Conditions:

Intact fetus. Specimens preserved in formalin. Autolyzed or contaminated specimens.

~~Skin (POC), Decidua: formalin fixed.~~

~~Cord Tissue: formalin fixed, decomposed.~~

Remarks:

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: informed consent is required with submission. If specimen collection time is greater than 72 hours, testing may be compromised. The laboratory will make every attempt to culture the specimen. Send specimen to lab for testing.

NOTE: Decidua is acceptable but represents maternal rather

~~than fetal tissue.~~

Stability: Room temperature: 2 days~~Ambient: 48 hours~~; Refrigerated: 2 days~~48 hours~~; Frozen: Indefinitely

Methodology: Genomic Microarray (Oligo-SNP Array)

Note: A processing fee will be charged if this procedure is canceled, at the client's request, after the test has been set up.

This test must be ordered using Cytogenetic test request form #43098 or through your ARUP interface. Please submit the Patient History for Prenatal Cytogenetics form with the electronic packing list (<http://ltd.aruplab.com/Tests/Pdf/65>).

CPT Codes: 81229

New York DOH Approval Status: Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

~~Refer to report.~~~~Refer to report.~~

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

Reference Interval:

**TEST CHANGE**

**B-Cell Clonality Screening (IgH and IgK) by PCR**

2006193, BCELL SCRIN

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Whole blood or bone marrow in lavender (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 cm<sup>3</sup> tissue.  
FFPE Tumor Tissue: Formalin-fixed (10 percent neutral buffered formalin) and paraffin-embedded 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(TM) or contact ARUP Client Services at 800-522-2787.

**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.

**Unacceptable Conditions:** Plasma, serum. Specimens collected in anticoagulants other than EDTA. Clotted or grossly hemolyzed specimens.  
Tissue: FFPE specimens fixed in any fixative other than 10 percent neutral buffered formalin.  
Bone specimens submitted in non-EDTA decalcifier.

**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.

**Stability:** Whole Blood or Bone Marrow: Refrigerated: 7 days; Frozen: Unacceptable  
Fresh Tissue: Ambient: Unacceptable; Refrigerated: 2 hours; Frozen: 1 year  
FFPE Tumor Tissue: Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

Methodology: Capillary Electrophoresis / Polymerase Chain Reaction (PCR)

Note:

CPT Codes: 81261; 81264

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Refer to report.

Reference Interval:

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**HOTLINE NOTE: There is a prompt change associated with this test. Refer to the Hotline Test Mix for interface build information.**

**TEST CHANGE**

**Cytogenomic SNP Microarray Buccal Swab**

2006267, CMA BUCCAL

**Specimen Requirements:**

**Patient Preparation:** Patient should not eat, drink, smoke or chew gum for 30 minutes before collecting oral sample.

**Collect:** One buccal swab using the ORAcollect collection kit (ARUP supply #49295). Available online through eSupply using ARUP Connect(TM) or ~~ensuring the sponge tip does not come into contact~~ ARUP Client Services at 800-522-2787 ~~with any surface prior to collection. Donor should not eat, drink, smoke or chew gum for 30 minutes before collecting oral sample.~~

**Specimen Preparation:** Ensure the sponge tip does not come into contact with any surface prior to collection. Transport ~~one buccal~~ Buccal swab in ORAcollect Collection kit (ARUP supply #49295). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800) 522-2787.

**Transport Temperature:** Preferred transport temp: Room temperature.

**Unacceptable Conditions:** Specimens ~~exposed to extreme temperatures~~ or ~~Specimens collected in or by any specimen device other than indicated.~~

**Remarks:** Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: informed consent is required with submission.

**Stability:** Room temperature: 1 week ~~Ambient: 7 days~~; Refrigerated: 1 week ~~Unacceptable~~; Frozen: Unacceptable

**Methodology:** Genomic Microarray (Oligo-SNP Array)

**Note:** This test must be ordered using a Cytogenetic test request form 43097 or through your ARUP interface. Please submit the Genomic Microarray Patient ~~History~~ Clinical Information Form with the electronic packing list (<http://ltd.aruplab.com/Tests/Pdf/76>).

**CPT Codes:** 81229

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

Refer to report. ~~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.~~

Reference Interval:

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**TEST CHANGE**

**Holoprosencephaly Panel, Sequencing and Deletion/Duplication, Fetal**

2008863, HPE PAN FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: ~~Cultured Two T-25 flasks at 90% confluent of cultured~~ amniocytes ~~OR~~ cultured chorionic villi.

~~villus sampling (CVS).~~

~~AND Maternal Whole Blood Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Lavender (EDTA), pink (K2EDTA), or yellow (ACD Solution A or B).~~

**Specimen Preparation:**

Cultured Amniocytes or Cultured CVS: ~~+~~ Fill flasks with culture media. Transport two T-25 flasks ~~of~~ at 90 percent confluent ~~of~~ cultured amniocytes or two T-25 flasks of 90% cultured chorionic villi sampling (CVS).

This assay is not performed on direct amniotic fluid or direct chorionic villi specimens. Clients submitting direct amniotic fluid and direct chorionic villi must add Cell-filled with Culture for Genetic Testing (3020627) to the initial order.

~~Media. Backup cultures must be retained at the client's institution until testing is complete. If ARUP receives cultured specimens a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627 CG GRW&SND (0040182) will be added on by ARUP for an additional fee. The client is responsible for maintaining backup cultures charges will apply. If clients are unable to culture specimens, CG GRW&SND should be added to initial order.~~

~~Maternal Whole Blood Specimen: Transport 3 mL whole blood. (Min: 1 mL)~~

~~New York State Clients: Specimen must be sent overnight to performing laboratory. For specimen requirements and direct submission instructions please contact ARUP Referral Testing at 800-242-2787 ext. 5161.~~

**Transport Temperature:**

Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to viability of cells.

~~Maternal Specimen: Room Temperature~~

**Unacceptable Conditions:**

**Remarks:**

Patient history forms and informed consent documents are available by selecting the links above or by contacting ARUP Client Services. Counseling and informed consent are

recommended for genetic testing. New York Clients: Informed consent is required with specimen submission.

Stability:

Cultured Amniocytes or Cultured CVS: Room temperature: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable  
~~Maternal Whole Blood Specimen: Room temperature: 7 days, Refrigerated: 1 month, Frozen: Unacceptable~~

Methodology:

Massively Parallel Sequencing

Note:

~~Determine the etiology of holoprosencephaly in an affected pregnancy or determine if parents of an affected pregnancy are carriers. Chromosome analysis should be performed in an affected pregnancy before ordering this test.~~

Genes tested: *CDON*; *FGFR1\**; *GLI2*; *PTCH1*; *SHH*; *SIX3*; *TGIF1*; *ZIC2\**

~~\*~~

~~\*One or more exons are not covered by sequencing and/or deletion/duplication analysis for the indicated gene; see Additional Technical Information.~~

Chromosome analysis, with or without reflex to genomic microarray, should be performed for the affected pregnancy before ordering this test.

~~Reported times are based on receiving the two T-25 flasks at 90-percent confluent. Cell culture time is independent of testing turnaround time. Maternal specimen is recommended for proper test interpretation. Order Maternal Cell Contamination.~~

CPT Codes:

81479; 81265

New York DOH Approval Status:

Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Refer to report.

~~Refer to report.~~

~~Patient History forms are available online at [www.aruplab.com](http://www.aruplab.com).~~

~~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.

Reference Interval:

Refer to **By** report

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**TEST CHANGE**

Fragile X (*FMR1*) with Reflex to Methylation Analysis, Fetal

2009034, FX PCR FE

Specimen Requirements:

Patient Preparation:

Collect:

Fetal Specimen: Cultured amniocytes.  
Amniocytes  
~~AND Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Whole Blood Specimen: Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).~~

Specimen Preparation:

~~Transport: Two T-25 flasks of 80% confluent Cultured Amniocytes: Transfer cultured amniocytes. Cultured amniocytes are required for testing. If submitting uncultured (direct) amniotic fluid and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup to two T-25 flasks at 80 percent confluence (Min: one T-25 flask at 80 percent confluence). Backup cultures must be retained at the client's institution, until testing is complete. If ARUP receives cultured fetal cells a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) Cytogenetics Grow and Send (ARUP test code 0040182) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cytogenetics Grow and Send should be added to initial order. Maternal Whole Blood Specimen: Transport 2 mL whole blood. (Min: 1 mL)~~

Transport Temperature:

Preferred transport: Room temperature.  
Preferred shipment: Within two days of collection or confluence.~~Cultured Amniocytes: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of collection due to viability of cells.~~  
~~Maternal Whole Blood Specimen: Room temperature.~~

Unacceptable Conditions:

Frozen specimens.

Remarks:

Methylation patterns may not be fully established in early gestation; thus, methylation testing performed on chorionic villus samples may not distinguish between premutation and full mutation alleles.

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: informed consent is required with submission.

Stability: ~~Cultured Amniocytes: Room temperature: 2 days 48 hours;~~  
~~Refrigerated: Unacceptable; Frozen: Unacceptable~~  
~~Maternal Whole Blood Specimen: Room temperature: 7 days;~~  
~~Refrigerated: 1 month; Frozen: Unacceptable~~

Methodology: Polymerase Chain Reaction (PCR) / Capillary Electrophoresis

Note: If a CGG repeat of 100 or greater is detected by PCR and capillary electrophoresis, methylation analysis will be added. Additional charges apply.

CPT Codes: 81243; 81265 Fetal Cell Contamination (FCC); if reflexed, add 81244

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Refer to report.

Phenotype	Number of CGG Repeats
Unaffected	<45
Intermediate	45-54
Premutation	55-200
Affected	>200

Reference Interval:

Refer to ~~By~~ report

**TEST CHANGE**

Noonan Spectrum Disorders Panel, Sequencing, Fetal

2010769, NOONAN FE

Specimen Requirements:

Patient Preparation:

Collect:

Fetal Specimen: ~~Cultured Two T-25 flasks at 90 percent confluent of cultured~~ amniocytes OR cultured chorionic villi.

~~Maternal Specimen: Refer to or cultured CVS- AND Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Specimen: Lavender (EDTA), pink (K2EDTA), or yellow (ACD Solution A or B).~~

Specimen Preparation:

Cultured Amniocytes or Cultured CVS: Fill flasks with culture media. Transport two T-25 flasks ~~of~~ at 90 percent confluent ~~of~~ cultured amniocytes or two T-25 flasks of 90% cultured chorionic villi sampling (CVS).

This assay is not performed on direct amniotic fluid or direct chorionic villi specimens. Clients submitting direct amniotic fluid and direct chorionic villi must add Cell Culture for Genetic Testing (3020627) to the initial order.

~~cells filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. If ARUP receives cultured specimens a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627 CG GRW&SND (0040182) will be added on by ARUP for an and additional fee. The client is responsible for maintaining backup cultures. charges will apply. If clients are unable to culture specimens, CG GRW&SND should be added to initial order.~~

~~AND Maternal Cell Contamination Specimen: Transport 3 mL whole blood (Min: 1 mL)~~

Transport Temperature:

Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to viability of cells.

~~Maternal Cell Contamination Specimen: Ambient.~~

Unacceptable Conditions:

Remarks:

Patient history forms and informed consent documents are available by selecting the links above or by contacting ARUP Client Services. Counseling and informed consent are recommended for genetic testing.

New York Clients: Informed consent is required with specimen

	<u>submission.</u>
Stability:	Cultured Amniocytes or Cultured CVS: <u>Room temperature</u> Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable <u>Maternal: Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable</u>
Methodology:	Massively Parallel Sequencing
Note:	<u>Genes Tested</u> Reported times are based on receiving the two T-25 flasks at 90 percent confluency. Cell culture time is independent of testing turn-around time. Maternal specimen is recommended for proper test interpretation. Order Maternal Cell Contamination.  <u>GENES TESTED: BRAF, CBL, HRAS, KRAS, LZTR1, MAP2K1, MAP2K2, NRAS, PTPN11, RAF1, RASA2, RIT1, SHOC2, SOS1, SOS2, SPRED1</u>
CPT Codes:	81442; 81265
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	<u>Refer to report.</u> <u>Refer to report.</u>  <u>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.</u>  <u>Counseling and informed consent are recommended for genetic testing. Consent forms are available online.</u>
Reference Interval:	<u>Refer to</u> By report

**TEST CHANGE**

Duchenne/Becker Muscular Dystrophy (DMD) Deletion/Duplication, Fetal

2011231, DMD DD FE

Specimen Requirements:

Patient Preparation:

**Collect:** Fetal Specimen: Cultured amniocytes OR cultured chorionic villus sampling (CVS).  
Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. ~~Fetal Cultured Amniocytes or Cultured CVS AND Maternal Whole Blood Specimen: Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).~~

**Specimen Preparation:** Transport: Two T-25 flasks of 80% confluent Cultured Amniocytes or Cultured CVS: Transfer cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS). Cultured amniocytes or ~~or~~ cultured CVS is required for testing. If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup to two T-25 flasks at 80 percent confluence. (Min: one T-25 flask at 80 percent confluence). Backup cultures must be retained at the client's institution, until testing is complete. If ARUP receives cultured fetal cells a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) Cytogenetics Grow and Send (ARUP test code 0040182) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cytogenetics Grow and Send should be added to initial order. ~~Maternal Whole Blood Specimen: Transport 2 mL whole blood. (Min: 1 mL)~~

**Transport Temperature:** Preferred transport temp: Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of collection due to viability of cells. ~~Maternal Whole Blood Specimen: Room temperature.~~ Preferred shipment: Within two days of collection or confluence.

**Unacceptable Conditions:** Frozen specimens.

**Remarks:** Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.  
New York Clients: Informed consent is required with submission.

**Stability:** Cultured Amniocytes or Cultured CVS: Room temperature: 2 days; Refrigerated: Unacceptable; Frozen: Unacceptable

[Maternal Whole Blood Specimen: Room temperature: 1 week;](#)  
[Refrigerated: 1 month; Frozen: Unacceptable](#)

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Methodology:	Multiplex Ligation-Dependent Probe Amplification (MLPA)
Note:	
CPT Codes:	81161; 81265 Fetal Cell Contamination (FCC)
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
Refer to report	
Reference Interval:	
Refer to report	

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**TEST CHANGE**

Skeletal Dysplasia Panel, Sequencing and Deletion/Duplication, Fetal  
2012010, SKEL FE

Specimen Requirements:

Patient Preparation:

Collect: Fetal Specimen: ~~Cultured Two T-25 flasks at 90% confluent of cultured~~ amniocytes ~~OR~~ cultured chorionic villi.

~~villus sampling (CVS).~~

~~AND Maternal Whole Blood Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Lavender (EDTA), pink (K2EDTA), or yellow (ACD Solution A or B).~~

Specimen Preparation:

Cultured Amniocytes or Cultured CVS: Fill flasks with culture media. Transport two T-25 flasks ~~of~~at 90 percent confluent ~~of~~ cultured amniocytes or two T-25 flasks of 90% cultured chorionic villi sampling (CVS).

This assay is not performed on direct amniotic fluid or direct chorionic villi specimens. Clients submitting direct amniotic fluid and direct chorionic villi must add Cell Culture for Genetic Testing (3020627) to the initial order.

~~filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. If ARUP receives cultured specimens a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627 CG GRW&SND (0040182) will be added on by ARUP for an and additional fee. The client is responsible for maintaining backup cultures charges will apply. If clients are unable to culture specimens, CG GRW&SND should be added to initial order.~~

~~Maternal Whole Blood Specimen: Transport 3 mL whole blood (Min: 1 mL)~~

~~New York State Clients: Specimens must be sent overnight to the performing laboratory. For specimen requirements and direct submission instructions please contact ARUP Referral Testing at 800-242-2787 ext. 5161.~~

Transport Temperature:

Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to viability of cells.

~~Maternal Specimen: Room temperature.~~

Unacceptable Conditions:

Remarks:

Patient history forms and informed consent documents are available by selecting the links above or by contacting ARUP Client Services. Counseling and informed consent are

recommended for genetic testing. New York Clients: Informed consent is required with specimen submission.

**Stability:**

New York State Clients: Cultured Amniocytes or Cultured CVS: Room temperature: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable  
Maternal Whole Blood Specimen: Room temperature: 7 days; Refrigerated: 1 month; Frozen: Unacceptable  
New York State Clients: Specimens must be received at performing laboratory within 24 hours of shipping. Older specimens will be evaluated by performing laboratory for acceptability. For specimen requirements and direct submission instructions please contact ARUP Referral Testing at 800-242-2787 ext. 5161.

**Methodology:**

Massively Parallel Sequencing

**Note:**

Genes Tested: AGPS; ALPL; ARSL; CANT1; CCN6; CILK1; COL1A1; COL1A2\*; COL2A1; COL10A1; COL11A1; COL11A2; COMP; CRTAP; DDR2; DLL3; DYM\*; DYNC2H1; EBP; EVC; EVC2; FGFR1\*; FGFR2; FGFR3; FKBP10; FLNA; FLNB; GDF5; GNPAT; HSPG2; IFT80; INPPL1; LBR; LIFR; NEK1\*; NPR2; P3H1; PCNT; PEX7; POR\*; PPIB; PTH1R; RUNX2; SERPINH1; SLC26A2; SLC35D1; SMARCAL1; SOX9; TRIP11; TRPV4; TTC21B; WDR19; WDR35

\*

\*One or more exons are not covered by sequencing and/or deletion/duplication analysis for the indicated gene; see Additional Technical Information.

Reported times are based on receiving the two T-25 flasks at 90 percent confluent. Cell culture time is independent of testing turnaround time. Maternal specimen is recommended for proper test interpretation. Order Maternal Cell Contamination.

**CPT Codes:**

81405; 81408; 81479; 81265

**New York DOH Approval Status:**

Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

Refer to report.

~~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.

Reference Interval:

Refer to **By** report

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**TEST CHANGE**

**Cystic Fibrosis (CFTR) Expanded Variant Panel, Fetal**

2013662, CF VAR FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Amniotic fluid OR cultured amniocytes OR cultured chorionic villus sampling (CVS).  
Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements.  
~~Amniotic fluid OR cultured amniocytes OR cultured CVS: Two T-25 flasks at 80 percent confluency.  
 AND maternal whole blood: lavender (K2 or K3EDTA), pink (K2EDTA), yellow (ACD solution A or B).~~  
  
~~If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.~~

**Specimen Preparation:**

~~Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container (min: 5 mL) OR  
Two T-25 flasks of 80% confluent cultured amniocytes OR  
Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS). If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup: Fill flasks with culture media. Backup cultures must be retained at the client's institution. If ARUP receives cultured fetal cells below minimum confluence or less than 5 until testing is complete.  
~~AND maternal whole blood: 2 mL of direct amniotic fluid, Cell Culture for Genetic Testing (3020627) will be added by ARUP. whole blood (min: 1 mL).~~~~

**Transport Temperature:**

Preferred transport: Room temperature.  
Preferred shipment: Within two days of collection or confluence.~~Amniotic fluid, cultured amniocytes, or cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.~~  
~~Maternal whole blood: Room temperature.~~

**Unacceptable Conditions:**

~~Frozen specimens in glass collection tubes.~~

**Remarks:**

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: Informed consent is required with submission. Patient History Form is available on the ARUP website or by contacting ARUP Client Services.

Stability:

Room temperature: 2 days Fetal Specimen: Ambient 48 hours;  
Refrigerated: 2 days 48 hours; Frozen: Unacceptable  
Maternal whole blood: Ambient: 72 hours; Refrigerated: 1 week;  
Frozen: Unacceptable

Methodology:

Matrix-Assisted Laser Desorption Ionization-Time of Flight (MALDI-TOF) Mass Spectrometry / Fragment Analysis

Note:

CPT Codes:

81220; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status:

This test is New York DOH approved.

Interpretive Data:

Refer to report.

Reference Interval:

Refer to By report

**TEST CHANGE**

**Maternal T Cell Engraftment in SCID, Maternal Specimen**

2014704, SCID-MAT

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A).

**Specimen Preparation:** Transport 2 mL whole blood. (Min: 1 mL)

**Transport Temperature:** Preferred transport temp: Refrigerated. Also acceptable: Room temperatureAmbient.

**Unacceptable Conditions:** Frozen, clotted, or hemolyzed specimens.

**Remarks:**

**Stability:** Room Temperature: 1 week; Refrigerated: 1 month; Frozen: unacceptable

**Methodology:** Polymerase Chain Reaction (PCR) / Fragment Analysis

**Note:** To complete Maternal T Cell Engraftment in SCID testing, samples should be collected to perform the following three tests: (1) A buccal brush collected from the patient for Maternal T Cell Engraftment in SCID, Pre-Engraftment Specimen (ARUP test code 2014694), used as a genetic baseline for the patient. (2) A peripheral blood sample from the biological mother for Maternal T Cell Engraftment in SCID, Maternal Specimen (ARUP test code 2014704), used as a genetic baseline for the mother. (3) A peripheral blood sample collected from the patient for Maternal T Cell Engraftment in SCID (ARUP test code 2014699). T cells isolated from the blood sample will be genotyped for comparison to the patient and biological mother baseline genotypes. ~~If T-cell sorting is not completed on the blood sample before submission of Maternal T Cell Engraftment in SCID (ARUP test code 2014699), BMT Cell Isolation (ARUP test code 2005498) will be added to each order of Maternal T Cell Engraftment in SCID (ARUP test code 2014699). Additional charges apply for cell isolation.~~

**CPT Codes:** See CPT code for Maternal T Cell Engraftment in SCID, Pre-Engraftment Specimen (ARUP test code 2014694)

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

Refer to report.

**Reference Interval:**



*A nonprofit enterprise of the University of Utah  
and its Department of Pathology*

Effective Date: **July 20, 2026**

## TEST CHANGE

### Maternal Serum Screen, Alpha Fetoprotein, hCG, Estriol, and Inhibin A (Quad)

3000143, MS QUAD

#### Specimen Requirements:

**Patient Preparation:** Specimen must be drawn between 14 weeks, 0 days and 24 weeks, 6 days gestation. The recommended time for maternal serum screening is 16 to 18 weeks gestation.

**Collect:** Serum Separator Tube (SST) or Plain Red.

**Specimen Preparation:** Separate from cells ASAP or within 2 hours of collection. Transfer 3 mL serum to an ARUP Standard Transport Tube. (Min: 1 mL)

**Transport Temperature:** Refrigerated.

**Unacceptable Conditions:** Plasma. Hemolyzed specimens.

**Remarks:** Submit with Order: Patient's date of birth, current weight, due date, dating method (US, LMP), number of fetuses present, patient's race, if the patient was diabetic at the time of conception, if there is a known family history of neural tube defects, if the patient has had a previous pregnancy with a trisomy, if the patient is currently smoking, if the patient is taking valproic acid or carbamazepine (Tegretol), if this is a repeat sample, and the age of the egg donor if in vitro fertilization.

**Stability:** After separation from cells: Ambient: 72 hours; Refrigerated: 2 weeks; Frozen: 1 year (Avoid repeated freeze/thaw cycles.)

**Methodology:** Quantitative Chemiluminescent Immunoassay (CLIA)

**Note:** This test is used to screen for fetal risk of Down syndrome (trisomy 21), trisomy 18, and Open Neural Tube Defect (ONTD, spina bifida).

**CPT Codes:** 81511

**New York DOH Approval Status:** This test is New York DOH approved.

#### 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.

**Reference Interval:**

By report

**HOTLINE NOTE:** There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.



*A nonprofit enterprise of the University of Utah  
and its Department of Pathology*

Effective Date: **July 20, 2026**

**TEST CHANGE**

**Maternal Serum Screen, Alpha Fetoprotein**

3000144, MS AFP

**Specimen Requirements:**

**Patient Preparation:** Specimen must be drawn between 14 weeks, 0 days and 24 weeks, 6 days gestation.

**Collect:** Serum Separator Tube (SST) or Plain Red.

**Specimen Preparation:** Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL serum to an ARUP Standard Transport Tube. (Min: 0.5 mL)

**Transport Temperature:** Refrigerated.

**Unacceptable Conditions:** Plasma. Hemolyzed specimens.

**Remarks:** Submit with Order: Patient's date of birth, current weight, due date, dating method (US, LMP), number of fetuses present, patient's race, if the patient was diabetic at the time of conception, if there is a known family history of neural tube defects, if the patient is currently smoking, if the patient is taking valproic acid or carbamazepine (Tegretol), if this is a repeat sample, and the age of the egg donor if an in vitro fertilization.

**Stability:** After separation from cells: Ambient: 72 hours; Refrigerated: 2 weeks; Frozen: 1 year (Avoid repeated freeze/thaw cycles.)

**Methodology:** Quantitative Chemiluminescent Immunoassay (CLIA)

**Note:** This test is used to screen for fetal risk of Open Neural Tube Defect (i.e., spina bifida).

**CPT Codes:** 82105

**New York DOH Approval Status:** This test is New York DOH approved.

**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.

**Reference Interval:**

By report

**HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.**

**TEST CHANGE**

**Maternal Screening, Sequential, Specimen #2, Alpha Fetoprotein, hCG, Estriol, and Inhibin A**

3000148, MS SEQ2

**Specimen Requirements:**

<b>Patient Preparation:</b>	Specimen must be drawn between 14 weeks, 0 days and 24 weeks, 6 days gestation. The recommended time for maternal serum screening is 16 to 18 weeks gestation.
<b>Collect:</b>	Serum separator tube (SST) or plain red.
<b>Specimen Preparation:</b>	Separate from cells ASAP or within 2 hours of collection. Transfer 3 mL serum to an ARUP standard transport tube. (Min: 1 mL)
<b>Transport Temperature:</b>	Refrigerated.
<b>Unacceptable Conditions:</b>	Plasma. Hemolyzed specimens.
<b>Remarks:</b>	Requires that a previous first trimester specimen, Maternal Screening, Sequential, Specimen #1, hCG, PAPP-A, NT (ARUP test code 3000146), has been performed.
<b>Stability:</b>	After separation from cells: Ambient: 72 hours; Refrigerated: 2 weeks; Frozen: 1 year (Avoid repeated freeze/thaw cycles.)
<b>Methodology:</b>	Quantitative Chemiluminescent Immunoassay (CLIA)
<b>Note:</b>	This test is used to screen for fetal risk of Down syndrome (trisomy 21), trisomy 18, and open neural tube defect (ONTD, spina bifida).
<b>CPT Codes:</b>	81511
<b>New York DOH Approval Status:</b>	This test is New York DOH approved.
<b>Interpretive Data:</b>	
<b>Refer to report.</b>	
<b>Reference Interval:</b>	
<b>By report</b>	

**HOTLINE NOTE: There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.**

## TEST CHANGE

### Maternal Serum Screening, Integrated, Specimen #2, Alpha Fetoprotein, hCG, Estriol, and Inhibin A

3000149, MS INT2

#### Specimen Requirements:

**Patient Preparation:** Specimen must be drawn between 14 weeks, 0 days and 24 weeks, 6 days gestation. The recommended time for maternal serum screening is 16 to 18 weeks gestation.

**Collect:** Serum Separator Tube (SST) or Plain Red.

**Specimen Preparation:** Separate from cells ASAP or within 2 hours of collection. Transfer 3 mL serum to an ARUP Standard Transport Tube. (Min: 1 mL)

**Transport Temperature:** Refrigerated.

**Unacceptable Conditions:** Plasma. Hemolyzed specimens.

**Remarks:** Requires that a previous first trimester specimen, Maternal Serum Screening, Integrated, Specimen #1, PAPP-A, NT (ARUP test code 3000147), has been performed.

**Stability:** After separation from cells: Ambient: 72 hours; Refrigerated: 2 weeks; Frozen: 1 year (Avoid repeated freeze/thaw cycles.)

**Methodology:** Quantitative Chemiluminescent Immunoassay (CLIA)

**Note:** This test is used to screen for fetal risk of Down syndrome (trisomy 21), trisomy 18, and Open Neural Tube Defect (ONTD, spina bifida).

**CPT Codes:** 81511

**New York DOH Approval Status:** This test is New York DOH approved.

#### 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.

**Reference Interval:**

By report

**HOTLINE NOTE:** There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

**TEST CHANGE**

**Hereditary Bone Marrow Failure Panel, Sequencing and Deletion/Duplication**

3001615, BMF NGS

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Cultured skin fibroblasts (preferred) or Whole blood: Lavender (EDTA) or yellow (ACD solution A or B). Or  
Skin punch biopsy: Thaw media prior to tissue inoculation. Place skin punch biopsy in a sterile, screw-top container filled with tissue culture transport medium (ARUP Supply #32788). Available online through eSupply using ARUP Connect(TM). If cytogenetics tissue media is not available, collect in plain RPMI, Hanks' solution, sterile saline, or Ringer's solution.  
New York State Clients: Lavender (EDTA) or yellow (ACD solution A or B) AND Prevention Genetics Healthcare Provider Statement

**Specimen Preparation:** Cultured skin fibroblasts: 2 T-25 flasks at 80 percent confluency, Fill flasks with culture media. Backup cultures must be maintained at the client's institution until testing is complete. Skin punch biopsy: DO NOT FREEZE. Do not place in formalin. Transport a 4 mm skin biopsy in a sterile, screw-top container filled with tissue transport medium.  
If ARUP receives a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cell Culture for Genetic Testing should be added to initial order.  
Whole blood: Transport 3 mL whole blood. (Min: 2 mL)  
New York State Clients: Transport 5 mL whole blood (Min: 3 mL)

**Transport Temperature:** Cultured skin fibroblasts: Critical room temperature. Must be received within 48 hours of shipment due to lability of cells.  
Skin punch biopsy: Room temperature  
Whole Blood: Refrigerated

**Unacceptable Conditions:** Grossly hemolyzed or frozen specimens; formalin fixed tissue, FFPE

**Remarks:** Cultured skin fibroblast backup cultures must be retained at the client's institution until testing is complete. Skin punch biopsies can be cultured at ARUP at an additional charge.

**Stability:** Cultured skin fibroblasts: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable,  
Skin punch biopsy: Ambient: 48 hours; Refrigerated: 48 hours; Frozen: Unacceptable  
Whole blood: Ambient: 72 hours; Refrigerated: 1 week; Frozen:

**Unacceptable**

New York State Clients: Only whole blood: Ambient: 48 hours;  
Refrigerated: 1 week; Frozen: Unacceptable

**Methodology:** Massively Parallel Sequencing

**Note:** Genes Tested: *ACD; ALAS2; ANKRD26; ATM; BLM; BRCA1\** (NM\_007294); *BRCA2* (NM\_000059); *BRIP1; CBL; CEBPA\*\*;* *CSF3R; CTC1; CXCR4\*; DDX41; DKC1; DNAJC21\*;* *ELANE; ERCC4; ERCC6L2\*;* *ETV6; FANCA\*;* *FANCB; FANCC; FANCD2\*;* *FANCE; FANCF; FANCG; FANCI; FANCL\*;* *G6PC3; GATA1; GATA2; GF11; HAX1; HOXA11; IKZF1; KRAS; MBD4; MPL; MYH9; NBN; NHP2; NOP10\*\*;* *NRAS; PALB2; PARN; PTPN11; RAD51C; RMRP\*\*;* *RPL11; RPL15\*\*;* *RPL26; RPL35A; RPL5; RPS10; RPS19; RPS24; RPS26; RPS7; RTEL1; RUNX1; SAMD9; SAMD9L; SLX4; SRP72; TERC\*\*\*;* *TERT; TET2; TIN2; TP53; UBE2T; USB1; VPS45; WAS; WRAP53*

\*One or more exons are not covered by sequencing for the indicated gene; see Additional Technical Information.  
\*\*Deletion/duplication detection is not available for this gene.  
\*\*\*Duplication detection is not available for this gene.

If a skin punch biopsy is submitted, specimen will be reflexed for culturing. Additional charges apply.

**CPT Codes:** 81162; 81218; 81307; 81351; 81405; 81406; 81408; 81479; for skin punch biopsy, add 88233

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**  
~~Refer to report. 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.~~

**Reference Interval:**  
~~Refer to~~ By report

**HOTLINE NOTE:** There is a reflexive pattern change associated with this test. One or more orderable or component has been added or removed to the reflexive pattern. Refer to the Hotline Test Mix for interface build information.

**TEST CHANGE**

**Hereditary Myeloid Neoplasms Panel, Sequencing**

3001842, HMYE NGS

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Cultured skin fibroblasts (preferred) or Whole blood: Lavender (EDTA) or yellow (ACD solution A or B) or Skin punch biopsy : Thaw media prior to tissue inoculation. Place skin punch biopsy in a sterile, screw-top container filled with tissue culture transport medium (ARUP Supply #32788). Available online through eSupply using ARUP Connect. If cytogenetics tissue media is not available, collect in plain RPMI, Hanks solution, sterile saline, or ringers. New York State Clients: Collect Monday-Thursday only.

**Specimen Preparation:** Cultured skin fibroblasts: 2 T-25 flasks at 80 percent confluency. Fill flasks with culture media. Backup cultures must be maintained at the client's institution until testing is complete. Skin punch biopsy: DO NOT FREEZE. Do not place in formalin. Transport a 4 mm skin biopsy in a sterile, screw-top container filled with tissue transport medium. Whole blood: Transport 3 mL whole blood. (Min: 1.5 mL) New York State Clients: Cultured skin fibroblasts: 2 T-25 flasks at 80 percent confluency. If ARUP receives a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cell Culture for Genetic Testing should be added to initial order. Whole blood: Transport 5 mL whole blood (min. 3 mL). Do not send cultured fibroblasts to ARUP Laboratories . Specimens must be received at performing laboratory within 48 hours of collection. For specimen requirements and direct submission instructions please contact ARUP Referral Testing at 800-242-2787 ext. 5161.

**Transport Temperature:** Cultured skin fibroblasts: Critical room temperature. Must be received within 48 hours of shipment due to lability of cells Skin punch biopsy: Room temperature Whole Blood: Refrigerated.

**Unacceptable Conditions:** Grossly hemolyzed or frozen specimens, formalin fixed tissue, FFPE

**Remarks:** Cultured skin fibroblast backup cultures must be retained at the client's institution until testing is complete. Skin punch biopsies can be cultured at ARUP at an additional charge.

**Stability:** Cultured skin fibroblasts: Ambient: 48 hours; Refrigerated:

Unacceptable; Frozen: Unacceptable,  
Skin punch biopsy: Ambient: 48 hours; Refrigerated: 48 hours;  
Frozen: Unacceptable  
Whole blood: Ambient: 72 hours; Refrigerated: 2 weeks; Frozen:  
Unacceptable  
New York State Clients: Cultured skin fibroblasts: Ambient: 48  
hours; Refrigerated: Unacceptable; Frozen: Unacceptable,  
Whole blood: Ambient: 48 hours; Refrigerated: 1 week; Frozen:  
Unacceptable

Methodology:	Massively Parallel Sequencing
Note:	Genes tested: <i>ANKRD26*</i> , <i>ATM</i> , <i>BLM</i> , <i>CBL</i> , <i>CEBPA</i> , <i>DDX41</i> , <i>ELANE</i> , <i>ETV6</i> , <i>GATA1</i> , <i>GATA2</i> , <i>KRAS</i> , <i>NBN</i> , <i>PTPN11*</i> , <i>RUNX1</i> , <i>SAMD9</i> , <i>SAMD9L</i> , <i>SRP72*</i> , <i>TERC</i> , <i>TERT</i> , <i>TP53</i> .
	*One or more exons are not covered by sequencing for the indicated gene; see Additional Technical Information.
	If a skin punch biopsy is submitted, specimen will be reflexed for culturing. Additional charge apply.
CPT Codes:	81479; for skin punch biopsy, add 88233.
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

~~Refer to report. 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.~~

Reference Interval:

~~Refer to~~ **By report**

**HOTLINE NOTE: There is a reflexive pattern change associated with this test. One or more orderable or component has been added or removed to the reflexive pattern. Refer to the Hotline Test Mix for interface build information.**

**TEST CHANGE**

Tuberous Sclerosis Complex Panel, Sequencing and Deletion/Duplication, Fetal  
3002096, TSC NGS FE

Specimen Requirements:

Patient Preparation:

Collect: Fetal Specimen: ~~Cultured Two T-25 flasks at 90% confluent of cultured~~ amniocytes ~~OR~~ cultured chorionic villi.

~~villus sampling (CVS).~~

~~AND Maternal Whole Blood Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Lavender (EDTA), pink (KEDTA), or yellow (ACD Solution A or B).~~

Specimen Preparation:

Cultured Amniocytes or Cultured CVS: Fill flasks with culture media. Transport two T-25 flasks ~~of~~ at 90 percent confluent ~~of~~ cultured amniocytes or two T-25 flasks of 90% cultured chorionic villi sampling (CVS).

This assay is not performed on direct amniotic fluid or direct chorionic villi specimens. Clients submitting direct amniotic fluid and direct chorionic villi must add Cell Culture for Genetic Testing (3020627) to the initial order.

~~filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. If ARUP receives cultured specimens a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) ~~CG GRW&SND (0040182)~~ will be added ~~on~~ by ARUP for an and additional fee. The client is responsible for maintaining backup cultures. charges will apply. If clients are unable to culture specimens, CG GRW&SND should be added to initial order.~~

~~Maternal Whole Blood Specimen: Transport 3 mL whole blood (Min: 1 mL)~~

Transport Temperature:

Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to viability of cells.

~~Maternal Specimen: Room temperature.~~

Unacceptable Conditions:

Remarks:

Patient history forms and informed consent documents are available by selecting the links above or by contacting ARUP Client Services. Counseling and informed consent are recommended for genetic testing.

Stability:

Cultured Amniocytes or Cultured CVS: Room temperature ~~Ambient~~: 48 hours; Refrigerated: Unacceptable;

Frozen: Unacceptable  
~~Maternal Cell Contamination Specimen: Room temperature: 7 days; Refrigerated: 1 month; Frozen: Unacceptable~~

Methodology: Massively Parallel Sequencing

Note: ~~Genes tested: TSC1, TSC2~~  
~~Genes tested: TSC1, TSC2~~

~~Reported times are based on receiving the two T-25 flasks at 90 percent confluent. Cell culture time is independent of testing turn-around time. Maternal specimen is recommended for proper test interpretation. Order Maternal Cell Contamination.~~

CPT Codes: 81405; 81406; 81407; 81265

New York DOH Approval Status: Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Refer to report.

Reference Interval:

~~Refer to~~By report

**TEST CHANGE**

**Chromogenic Factor VIII, Activity**

3002343, CHROM F8

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Light blue (sodium citrate). Refer to [Special Specimen Collection and Handling Hemostasis/Thrombosis Specimens guide located at https://www.aruplab.com for hemostasis/thrombosis specimen handling guidelines./Specimen-Handling/SpecialSpecimenCollection/Hemostasis-Thrombosis.pdf](https://www.aruplab.com/files/SpecialSpecimenCollection/SpecimenHandling/SpecialSpecimenCollection/Hemostasis-Thrombosis.pdf)

**Specimen Preparation:** Transfer 1 mL platelet-poor plasma to an ARUP standard transport tube. (Min: 0.8 mL)

**Transport Temperature:** CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

**Unacceptable Conditions:** Serum or EDTA plasma. Clotted or hemolyzed specimens.

**Remarks:**

**Stability:** Ambient: 4 hours; Refrigerated: Unacceptable; Frozen: 3 months

**Methodology:** Chromogenic Assay

**Note:**

**CPT Codes:** 85240

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

Information on the clinical uses of chromogenic FVIII activity testing can be found at [arupconsult.com](http://arupconsult.com).

**Reference Interval:**

Test Number	Components	Reference Interval	
	Chromogenic Factor VIII, Activity		
		Age	Reference Intervals (Percent )
		0 - 6 years	56 - 191
		7 - 9 years	76 - 199
		10 - 11 years	80 - 209
		12 - 13 years	72 - 198
		14 - 15 years	69 - 237
		16 -17 years	63 - 221

		18 years and older	56 - 191
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**TEST CHANGE**

Alpha Thalassemia (*HBA1* and *HBA2*) Deletion/Duplication with reflex to Hb Constant Spring, Fetal

3003656, HBA DDCSFE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Cultured amniocytes OR cultured chorionic villus sampling (or Cultured CVS).  
~~-AND Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Whole Blood Specimen: Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B)-~~

**Specimen Preparation:**

Transport: Two T-25 flasks of 80% confluent Cultured Amniocytes or Cultured CVS: Transfer cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS). Cultured amniocytes or or-cultured CVS is required for testing. If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup to two T-25 flasks at 80 percent confluence. (Min: one T-25 flask at 80 percent confluence). Backup cultures must be retained at the client's institution, until testing is complete. If ARUP receives cultured fetal cells a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) Cytogenetics Grow and Send (ARUP test code 0040182) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cytogenetics Grow and Send should be added to initial order. Maternal Whole Blood Specimen: Transport 2 mL whole blood. (Min: 1 mL)

**Transport Temperature:**

Preferred transport: Room temperature. Preferred shipment: Within two days of collection or confluence. Cultured Amniocytes or CVS : CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of collection due to viability of cells. Maternal Whole Blood Specimen: Room temperature.

**Unacceptable Conditions:**

Frozen specimens.

**Remarks:**

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: Informed consent is required with submission.

**Stability:**

Cultured Amniocytes or Cultured CVS: Room temperature: 2 days 48 hours; Refrigerated: Unacceptable; Frozen:

**Unacceptable**

**Maternal Whole Blood Specimen : Room temperature: 7 days;  
Refrigerated: 1 month; Frozen: Unacceptable**

Methodology:	Multiplex Ligation-Dependent Probe Amplification (MLPA) / Sequencing
Note:	If a concurrent deletion of <i>HBA2</i> is not identified, PCR and bidirectional sequencing for the HbCS copy number will be performed. Additional charges apply.
CPT Codes:	81269; 81265; <u>Fetal Cell Contamination (FCC)</u> ; if reflexed, add 81257

New York DOH Approval Status: This test is New York DOH approved.

**Interpretive Data:**

~~Refer to report. Background Information: Alpha Globin (HBA1 and HBA2) Deletion/Duplication Characteristics: Decreased or absent synthesis of the hemoglobin (Hb) alpha-chain resulting in clinical presentations ranging from asymptomatic silent carriers to severe anemia and fetal lethality. Alpha thalassemia silent carrier commonly results from deletion of a single alpha globin gene (-a/aa) and is clinically asymptomatic. Alpha thalassemia trait may be caused by deletion of a single alpha globin gene from both chromosomes (-a/-a), or deletion of the HBA1 and HBA2 globin genes from the same chromosome (-/aa). Heterozygosity for Hb Constant Spring (HbCS) is usually asymptomatic but may be associated with mild microcytic anemia. Homozygous HbCS is characterized by overt hemolytic anemia, jaundice and splenomegaly. Hemoglobin H disease occurs due to inactivation of three alpha globin genes and results in hemolysis with Heinz bodies, moderate anemia, and splenomegaly. Hb Bart hydrops fetalis syndrome results from deletion of all four alpha globin genes (-/-/-/-) and is lethal in the fetal or early neonatal period. Alpha globin gene duplication results in three or more active alpha globin genes on a single chromosome.~~

~~Epidemiology: Carrier frequency of alpha thalassemia in African, African American (1:3), Mediterranean (1:30-50), Middle Eastern, Southeast Asian (1:20).~~

~~Inheritance: Autosomal recessive.~~

~~Cause: Pathogenic variants in the alpha globin gene cluster (HBZ, HBM, HBA2, HBA1, HBQ1) or regulatory region.~~

~~Clinical Sensitivity: Varies by ethnicity, at least 90 percent.~~

~~Methodology: Multiplex ligation-dependent probe amplification (MLPA) for the HBZ, HBM, HBA2, HBA1, and HBQ1 genes, the HS-40 regulatory region, and Hb Constant Spring (HbCS) HBA2 c.427T>C; p.Ter143Gln. To determine copy number of HbCS in absence of a concurrent deletion of HBA2, PCR and bidirectional sequencing for HbCS is performed.~~

~~Analytical Sensitivity and Specificity: 99 percent.~~

~~Limitations: Diagnostic errors can occur due to rare sequence variations. Specific breakpoints of large deletions/duplications will not be determined; therefore, it may not be possible to distinguish variants of similar size. Nondeletional variants within the coding or regulatory regions of the alpha globin cluster genes, other than HbCS, will not be detected. Fetuses carrying both a deletion and duplication within the alpha globin gene cluster may appear to have a normal number of alpha globin gene copies. Rare syndromic or acquired forms of alpha thalassemia associated with ATRX gene variants will not be detected.~~

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

Reference Interval:

Refer to report

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**TEST CHANGE**

**Cytogenomic Molecular Inversion Probe Array FFPE Tissue - Products of Conception  
3004273, CMAPFFPE**

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Fetal autopsy or products of conception.

**Specimen Preparation:** FFPE Fetal tissue: Transport ten slides, each with 5 um unstained sections or four 20 um scrolls or tissue block.  
OR FFPE villi: Transport one H&E stained slide and ten slides, each with 5 um unstained sections or tissue block.  
New York State Clients: Transport 1 FFPE block or 10 slides (10 um each).

**Transport Temperature:** Preferred transport temp: Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.

**Unacceptable Conditions:** Specimens fixed or processed in alternative fixatives or heavy metal fixatives (B-4 or B-5). Decalcified tissue

**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.

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: informed consent is required with submission.

**Stability:** Room temperature~~Ambient~~: Indefinitely; Refrigerated: Indefinitely; Frozen: ~~Indefinitely~~Unacceptable

**Methodology:** Molecular Inversion Probe Array

**Note:** If sending placenta instead of fetal tissue, at least 80% villi for products of conception specimens.

This test must be ordered using Cytogenetic test request form #43098 or through your ARUP interface. Please submit the Patient History for Prenatal Cytogenetics form with the electronic packing list (<http://ltd.aruplab.com/Tests/Pdf/65>).

**CPT Codes:** 81229

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New

York DOH approved laboratory, if possible.

**Interpretive Data:**

~~Refer to report. For detection of copy number alterations and loss of heterozygosity in FFPE specimens.  
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.~~

**Reference Interval:**

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**TEST CHANGE**

**Cytogenomic Molecular Inversion Probe Array FFPE Tissue - Oncology**

3004275, FFPEARRAY

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Tumor tissue

**Specimen Preparation:** Formalin fix (10 percent neutral buffered formalin) and paraffin embed tissue.  
Protect from excessive heat. Transport 10 slides, each with 5-micron unstained sections or four 20-micron scrolls or tissue block. Tissue block will be returned after testing. Transport tissue in a tissue transport kit (ARUP supply #47808) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at (800-)522-2787.

**Transport Temperature:** Preferred transport temp: Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months.

**Unacceptable Conditions:** Specimens fixed or processed in alternative fixatives or heavy metal fixatives (B-4 or B-5). Decalcified tissue

**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.

**Stability:** Room temperature~~Ambient~~: Indefinitely; Refrigerated: Indefinitely; Frozen: Indefinitely~~Unacceptable~~

**Methodology:** Molecular Inversion Probe Array

**Note:** Samples must contain a region with at least 50 percent tumor.

**CPT Codes:** 81277

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

~~Refer to report. For detection of copy number alterations and loss of heterozygosity in FFPE specimens. 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.~~

Reference Interval:

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**TEST CHANGE**

**Microsatellite Instability (MSI) HNPCC/Lynch Syndrome by PCR**

3004277, MSIPCR

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Tumor AND normal epithelial tissue.

**Specimen Preparation:** Tissue: Formalin fix (10 percent neutral buffered formalin) and paraffin embed tissue. Protect from excessive heat. Transport tissue block(s) or 10 unstained 5-micron slides (5 tumor and 5 normal epithelial). Transport block(s) and/or slide(s) in a tissue transport kit (ARUP Supply #47808) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787.

**Transport Temperature:** Room temperature. Also acceptable: Refrigerated. Ship in cooled container during summer months

**Unacceptable Conditions:** Less than 25 percent tumor or less than 50 percent normal epithelial tissue.  
Specimens fixed in any fixative other than 10 percent neutral buffered formalin.  
Bone specimens submitted in non-EDTA decalcifier.

**Remarks:** Include surgical pathology report.  
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.

**Stability:** Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

**Methodology:** Capillary Electrophoresis / Polymerase Chain Reaction (PCR)

**Note:**

**CPT Codes:** 81301

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

Refer to report.

**Reference Interval:**

**HOTLINE NOTE:** There is a prompt change associated with this test. Refer to the Hotline Test Mix for interface build information.

**TEST CHANGE**

Beta Globin (*HBB*) Sequencing, Fetal

3004550, BG NGS FE

Specimen Requirements:

Patient Preparation:

Collect: Fetal Specimen: ~~Cultured Two T-25 flasks at 90% confluent of cultured~~ amniocytes ~~OR~~ cultured chorionic villi.

~~villus sampling (CVS).~~

~~AND Maternal Whole Blood Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).~~

Specimen Preparation:

Cultured Amniocytes or Cultured CVS: Fill flasks with culture media. Transport two T-25 flasks ~~of~~at 90 percent confluent ~~of~~ cultured amniocytes or two T-25 flasks of 90% cultured chorionic villi sampling (CVS).

This assay is not performed on direct amniotic fluid or direct chorionic villi specimens. Clients submitting direct amniotic fluid and direct chorionic villi must add Cell Culture for Genetic Testing (3020627) to the initial order.

~~filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. If ARUP receives cultured specimens a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627 CG GRW&SND (0040182) will be added on by ARUP for an and additional fee. The client is responsible for maintaining backup cultures. charges will apply. If clients are unable to culture specimens, CG GRW&SND should be added to initial order~~

~~Maternal Whole Blood Specimen: Transport 3 mL whole blood. (Min: 1 mL).~~

Transport Temperature:

Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to viability of cells.-

Maternal Specimen: Room temperature

Unacceptable Conditions:

Remarks:

Patient history forms and informed consent documents are available by selecting the links above or by contacting ARUP Client Services. Counseling and informed consent are recommended for genetic testing. New York Clients: Informed consent is required with specimen submission.

Stability:

Cultured Amniocytes or Cultured CVS: Room temperature: 48

hours; Refrigerated: Unacceptable; Frozen: Unacceptable  
~~Maternal Whole Blood Specimen: Room temperature: 7 days;  
Refrigerated: 1 month; Frozen: Unacceptable~~

Methodology:	Massively Parallel Sequencing
Note:	Gene tested: <i>HBB</i> (NM_000518) Deletion/duplication analysis is not performed for this gene.  <del>Reported times are based on receiving the two T-25 flasks at 90 percent confluent. Cell culture time is independent of testing turn-around time. Maternal specimen is recommended for proper test interpretation. Order Maternal Cell Contamination.</del>
CPT Codes:	81364, 81265
New York DOH Approval Status:	Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.
Interpretive Data:	
Refer to report	
Reference Interval:	
<a href="#">Refer to</a> <del>By</del> report	

**TEST CHANGE**

Cytogenomic SNP Microarray, Family-Specific Variant

3005694, ARRAY FSV

Specimen Requirements:

Patient Preparation:	<del>If collecting buccal swab: patient should not eat, drink, smoke, or chew gum for 30 minutes before collection.</del>
Collect:	<p><del>Green (sodium heparin) or lavender. Peripheral blood required. Also acceptable: Lavender (K2EDTA) whole blood.</del></p> <p><del>OR one buccal swab using the Oracollect collection kit (ARUP supply #49295). Available online through eSupply using ARUP Connect or ensuring the sponge tip does not come in contact ARUP Client Services at 800-522-2787. with any surface prior to collection.</del></p> <p><del>Donor should not eat, drink, smoke, or chew gum for 30 minutes before collecting oral sample.</del></p> <p><del>OR cultured fibroblasts. If unable to culture or sending direct sample from skin, biopsy is sent to ARUP, additional culture charges will apply. If sending skin, please also order Cell Culture for Genetic Testing Cytogenetic Grow and Send (ARUP test code 3020627)0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.</del></p> <p><del>If the client is unable to culture, order test Cytogenetics Genetic Counselor (ext. 2141) or CytoMSSGCs@aruplab.com) Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.</del></p>
Specimen Preparation:	<p>Whole Blood: Transport 5 mL <del>in original collection tube.</del> (Min: 2 mL)</p> <p>Buccal Swab: <del>ensure the sponge tip does not come in contact with any surface prior to collection.</del> Transport buccal swab in ORAcollect Collection kit <del>(ARUP supply #49295). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787.</del></p> <p>Cultured fibroblasts: Two T-25 flasks at 80 percent confluency. Fill flasks with culture media. Backup cultures must be maintained at the client's institution until testing is complete.</p>
Transport Temperature:	<p><del>Preferred transport temps:</del></p> <p><del>Whole Blood or buccal swab: Room temperature</del></p> <p><del>Buccal: Ambient</del></p> <p><del>Cultured fibroblasts: Room temperature: 2 days Ambient: 48 hours; Refrigerated: 2 days 48 hours</del></p>
Unacceptable Conditions:	<del>Frozen or clotted specimens. Clotted specimens.</del>

Remarks:

Documentation of the familial copy number variant (CNV) is required to perform targeted array analysis. Submit a copy of a relative's laboratory test report documenting the CNV for which testing is requested or include the ARUP accession number of the proband.

[Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.](#)

[New York Clients: informed consent is required with submission.](#)

Stability:

Whole ~~blood: Room temperature: 2 days~~~~Blood: Ambient 48 hours~~; Refrigerated: ~~3 days~~~~72 hours~~; Frozen: Unacceptable  
Buccal ~~swab: Room temperature: 1 week~~~~Ambient 7 days~~; Refrigerated: ~~1 week~~~~Unacceptable~~; Frozen: Unacceptable  
Cultured fibroblasts: ~~Room temperature: 2 days~~~~Ambient 48 hours~~; Refrigerated: ~~2 days~~~~48 hours~~; Frozen: Unacceptable

Methodology:

Genomic Microarray (Oligo-SNP Array)

Note:

Order this test to identify a known deletion or duplication, identified by microarray, in a family member.

CPT Codes:

81229

New York DOH Approval Status:

Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Refer to report.

Reference Interval:

**TEST CHANGE**

**Hereditary Erythrocytosis Panel, Sequencing**

3005721, ECYT NGS

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Cultured skin fibroblasts (preferred) or Whole blood: Lavender (EDTA) or yellow (ACD solution A or B). or Skin punch biopsy: Thaw media prior to tissue inoculation. Place skin punch biopsy in a sterile, screw-top container filled with tissue culture transport medium (ARUP Supply #32788). Available online through eSupply using ARUP Connect(TM).- If cytogenetics tissue media is not available, collect in plain RPMI, Hanks solution, sterile saline, or Ringers.  
New York State Clients: Whole blood: Lavender (EDTA)

**Specimen Preparation:** Cultured skin fibroblasts: 2 T-25 flasks at 80 percent confluency, Fill flasks with culture media. Backup cultures must be maintained at the client's institution until testing is complete. Skin punch biopsy DO NOT FREEZE. Do not place in formalin. Transport a 4 mm skin biopsy in a sterile, screw-top container filled with tissue transport medium.  
If ARUP receives a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) will be added on by ARUP, and additional charges will apply. If clients are unable to culture specimens, Cell Culture for Genetic Testing should be added to initial order.  
Whole blood: Transport 3 mL (Min: 2 mL)  
New York State Clients: Specimens must be received at performing laboratory within 48 hours of collection. For specimen requirements and direct submission instructions please contact ARUP Referral Testing at 800-242-2787 ext. 5161.

**Transport Temperature:** Cultured skin fibroblasts: Critical room temperature. Must be received within 48 hours of shipment due to lability of cells  
Skin punch biopsy: Room temperature  
Whole Blood: Refrigerated.

**Unacceptable Conditions:** Grossly hemolyzed or frozen specimens, formalin fixed tissue, FFPE

**Remarks:** Cultured skin fibroblast backup cultures must be retained at the client's institution until testing is complete. Skin punch biopsies can be cultured at ARUP at an additional charge.

**Stability:** Cultured skin fibroblasts: Ambient: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable, Skin punch biopsy: Ambient: 48 hours; Refrigerated: 48 hours; Frozen: Unacceptable Whole blood: Ambient: 72 hours; Refrigerated: 2 weeks; Frozen: Unacceptable

New York State Clients: Whole blood: Ambient: 48 hours

Methodology: Massively Parallel Sequencing

Note: Genes tested: *BPGM*, *EGLN1 (PHD2)*, *EPAS1 (HIF2A)*, *EPOR*, *HBB*, *HIF1A*, *JAK2*, *SH2B3*, *VHL*\*

\*One or more exons are not covered by sequencing for the indicated gene; see Additional Technical Information.

If a skin punch biopsy is submitted, specimen will be reflexed for culturing. Additional charges apply.

CPT Codes: 81364, 81404; 81479; for skin punch biopsy, add 88233

New York DOH Approval Status: Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Refer to report.

Reference Interval:

[Refer to](#) [By](#) report

**HOTLINE NOTE: There is a reflexive pattern change associated with this test. One or more orderable or component has been added or removed to the reflexive pattern. Refer to the Hotline Test Mix for interface build information.**

**TEST CHANGE**

**Familial Targeted Sequencing, Fetal**

3005869, FAM NGS FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Cultured amniocytes OR cultured chorionic villi.

Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Submit fetal specimen and maternal whole blood specimen. To avoid delays due to inappropriate sample submission, contact ARUP's genetic counselors at 800-242-2787 ext. 2141 for specimen requirements prior to sending samples.

New York State Clients: ARUP cannot facilitate testing for New York patients. Please work directly with a New York approved laboratory.

**Specimen Preparation:**

Cultured Amniocytes or Cultured CVS: Fill flasks with culture media. Transport two T-25 flasks of 90 percent confluent cultured amniocytes or two T-25 flasks of 90% cultured chorionic villi sampling (CVS).

This assay is not performed on direct amniotic fluid or direct chorionic villi specimens. Clients submitting direct amniotic fluid and direct chorionic villi must add Cell Culture for Genetic Testing (3020627) to the initial order.

If ARUP receives cultured specimens below the minimum confluence, Cell Culture for Genetic Testing (3020627) will be added by ARUP for an additional fee. The client is responsible for maintaining backup cultures.

**Transport Temperature:**

Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to viability of cells.

**Unacceptable Conditions:**

**Remarks:**

Documentation of the familial gene variants from a relative's laboratory test report is required to perform testing. Testing will begin upon receipt of all necessary components, including a ~~clinical~~ clinical ~~an original~~ laboratory report detailing the familial variant(s) to be tested. Patient history forms and informed consent documents are available by selecting the links above or by contacting ARUP Client Services. Counseling and informed consent are ~~A maternal specimen is~~ recommended for genetic testing. ~~proper fetal test interpretation. Order~~

~~Maternal Cell Contamination on the maternal specimen (ARUP test code 0050608).~~

Stability: Cultured Amniocytes or Cultured CVS: Room temperature: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable

Methodology: Massively Parallel Sequencing

Note: Only the requested sequence variant(s) of interest and other incidentally detected pathogenic or likely pathogenic sequence variants related to the condition in the gene of interest will be reported. ~~Reported times are based on receiving the cultured fetal sample (at 90 percent confluency) and required documentation. Backup cultures must be retained at the client's institution until testing is complete. If the client is unable to culture the fetal sample, this can be arranged by contacting ARUP Client Services at 800-522-2787 prior to test submission. Cell culture time is independent of testing turnaround time. Maternal specimen is recommended for proper test interpretation. Order Maternal Cell Contamination, Maternal Specimen on the maternal specimen.~~

CPT Codes: 81403; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status: Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

Interpretive Data:

Refer to report.

Reference Interval:

Refer toBy report

**TEST CHANGE**

**Thiopurine Metabolites in Red Blood Cells**

3016503, THIOMET

**Specimen Requirements:**

Patient Preparation:	Trough collection (within 1 hour prior to the next dose).
Collect:	Lavender (EDTA) or pink (K2EDTA).
Specimen Preparation:	Transport 5 mL whole blood. (Min: 2.5 mL)
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Gel separator tubes. Hemolyzed or lipemic specimens. Frozen specimens.

**Remarks:**

Stability: Ambient: 24 hours; Refrigerated: 7 days; Frozen: Unacceptable

Methodology: Quantitative Liquid Chromatography-Tandem Mass Spectrometry

**Note:**

CPT Codes: 80299 (Alt code: G0480)

New York DOH Approval Status: This test is New York DOH approved.

**Interpretive Data:**

Thiopurine drug therapy is used to treat autoimmune diseases, inflammatory bowel disease, acute lymphoblastic leukemia, and to prevent rejection after solid organ transplant. Thiopurine drugs are metabolized to active 6-thioguanine nucleotides, which are regulated by thiopurine methyltransferase (TPMT) and nudix hydrolase 15 (NUDT15). Certain variants in the TPMT and/or NUDT15 genes can be associated with an accumulation of cytotoxic metabolites that increase the risk of drug-related toxicity with standard doses of thiopurine drugs. Thiopurine metabolites concentrations are used to assess therapeutic and toxic concentrations of thiopurine drugs.

INTERPRETIVE INFORMATION: Thiopurine metabolites	
6-TG	
Therapeutic range (optimal dosing)	235-450 pmol 6-TGN/8x10 <sup>8</sup> red blood cells
Suboptimal dosing	<235 pmol 6-TGN/8x10 <sup>8</sup> red blood cells
Increased risk for toxicity	>450 pmol 6-TGN/8x10 <sup>8</sup> red blood cells may increase the risk for myelotoxicity and leukopenia
6-MMP	
Increased risk for	>5700 pmol 6-

toxicity	MMPN/8x10 <sup>8</sup> red blood cells may increase the risk for hepatotoxicity
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Reference Interval:

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**HOTLINE NOTE:** There is a component change associated with this test. One or more components have been added or removed. Refer to the Hotline Test Mix for interface build information.

**TEST CHANGE**

**Cytogenomic SNP Microarray - RAPID**

3016596, CMA RAPID

**Specimen Requirements:**

**Patient Preparation:** IF Buccal swab: Patient should not eat, drink, smoke, or chew gum for 30 minutes before collecting oral sample.

**Collect:** Peripheral blood or cord blood collected in lavender (K2EDTA) or in green (sodium heparin).  
OR Buccal swab: collect one buccal swab using the ORAcollection Collection Kit (ARUP supply #49295). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787.  
New York State Clients: Green (sodium heparin) AND lavender (K2EDTA).

**Specimen Preparation:** Whole Blood: Transport 3 mL. (Min: 0.5 mL)  
Buccal Swab: ensure the sponge tip does not come in contact with any surface prior to collection. Transport buccal swab in ORAcollection Collection Kit.  
New York State Clients: Transport 4 mL whole blood in the original green (sodium heparin) tube and 3 mL whole blood in the original lavender (K2EDTA) tube. (Min: 2 mL sodium heparin and 2 mL EDTA).

**Transport Temperature:** Preferred transport temp: Room temperature.

**Unacceptable Conditions:** Frozen or clotted specimens

**Remarks:**

**Stability:** Whole blood: Room temperature: 2 days; Refrigerated: 3 days;  
Frozen: Unacceptable  
Buccal swab: Room temperature: 1 week; Refrigerated: 1 week;  
Frozen: Unacceptable

**Methodology:** Genomic Microarray (Oligo-SNP Array)

**Note:**

**CPT Codes:** 81229

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

Refer to report.

**Reference Interval:**



*A nonprofit enterprise of the University of Utah  
and its Department of Pathology*

Effective Date: July 20, 2026

**TEST CHANGE**

**Red Blood Cell Antigen Genotyping, Fetal**

3016639, RBCGENO FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Amniotic fluid OR cultured amniocytes OR cultured chorionic villus sampling (CVS).  
Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements.  
~~Amniotic fluid OR cultured amniocytes OR cultured CVS: Two T-25 flasks at 80 percent confluency.  
AND maternal whole blood: lavender (K2 or K3EDTA), pink (K2EDTA), or yellow (ACD solution A or B).  
If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.~~

**Specimen Preparation:**

~~Amniotic fluid: Transport: 10 mL amniotic fluid (min: in a sterile container. (Min: 5 mL)  
OR  
Two T-25 flasks of 80% confluent cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS). If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup: Fill flasks with culture media. Backup cultures must be retained at the client's institution. If ARUP receives cultured fetal cells below minimum confluence, Cell Culture for Genetic Testing (3020627) will be added by ARUP. until testing is complete.  
AND Maternal whole blood: Transport 2 mL whole blood (min: 1 mL).~~

**Transport Temperature:**

Preferred transport: Room temperature.  
Preferred shipment: Within two days of collection or confluence.  
~~Amniotic fluid, cultured amniocytes or cultured CVS: CRITICAL TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.  
Maternal whole blood: room temperature.~~

**Unacceptable Conditions:**

~~Frozen specimens in glass collection tubes.~~

**Remarks:**

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.  
New York Clients: Informed consent is required with

submission. ~~The Patient History Form is available on the ARUP website or by contacting ARUP Client Services.~~

Stability:

~~Room Temperature: 2 days~~ ~~Fetal specimens: Ambient: 48 hours;~~ Refrigerated: ~~2 days~~48 hours; Frozen: Unacceptable  
~~Maternal whole blood: Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable~~

Methodology:

Polymerase Chain Reaction (PCR) / Fluorescence Monitoring / Fragment Analysis

Note:

CPT Codes:

0001U; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status:

This test is New York DOH approved.

Interpretive Data:

Refer to report

Reference Interval:

**TEST CHANGE**

**RhD Gene (RHD) Copy Number, Fetal**

3016640, RHD FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Amniotic fluid OR cultured amniocytes OR cultured chorionic villus sampling (CVS).  
Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements.  
~~Amniotic fluid OR cultured amniocytes OR cultured CVS: Two T-25 flasks at 80 percent confluency.  
AND maternal whole blood: lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).~~

~~If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.~~

**Specimen Preparation:**

~~Amniotic fluid: Transport: 10 mL amniotic fluid (min: in a sterile container (Min: 5 mL) OR Two T-25 flasks of 80% confluent cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS). If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup: Fill with culture media. Backup cultures must be retained at the client's institution. If ARUP receives cultured fetal cells below minimum confluence, Cell Culture for Genetic Testing (3020627) will be added by ARUP. until testing is complete.~~  
~~AND maternal whole blood for maternal: transport 2 mL whole blood (min: 1 mL).~~

**Transport Temperature:**

Preferred transport: Room temperature.  
Preferred shipment: Within two days of collection or confluence.  
~~Amniotic fluid, cultured amniocytes and cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.  
Maternal whole blood: room temperature.~~

**Unacceptable Conditions:**

~~Frozen specimens in glass collection tubes.~~

**Remarks:**

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: Informed consent is required with

[submission.](#) [Patient History Form is available on the ARUP website or by contacting ARUP Client Services.](#)

Stability:

[Room temperature: 2 days](#) [Fetal Specimens: Ambient: 48 hours;](#)  
[Refrigerated: 2 days](#) [48 hours;](#) [Frozen: Unacceptable](#)  
[Maternal whole blood for maternal cell contamination:](#)  
[Ambient: 72 hours;](#) [Refrigerated: 1 week;](#) [Frozen: Unacceptable](#)

Methodology:

Polymerase Chain Reaction (PCR) / Fluorescence Monitoring /  
Fragment Analysis

Note:

CPT Codes:

81403; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status:

This test is New York DOH approved.

Interpretive Data:

[Refer to report.](#) [Refer to report.](#)

[Counseling and informed consent are recommended for genetic testing. Consent forms are available online.](#)

Reference Interval:

[Refer to](#) [By](#) report

**TEST CHANGE**

**Platelet Antigen Genotyping Panel, Fetal**

3016673, HPAGENO FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Amniotic fluid OR cultured amniocytes OR cultured chorionic villus sampling (CVS).  
Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements.  
~~Amniotic fluid OR cultured amniocytes OR cultured CVS: Two T-25 flasks at 80 percent confluency.  
AND maternal whole blood: lavender (K2 or K3EDTA), pink (K2EDTA), or yellow (ACD solution A or B)~~

~~If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.~~

**Specimen Preparation:**

~~Amniotic fluid: Transport: 10 mL amniotic fluid (min in a sterile container. (Min: 5 mL)  
OR  
Two T-25 flasks of 80% confluent cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS). If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup: Fill flasks with culture media. Backup cultures must be retained at the client's institution. If ARUP receives cultured fetal cells below minimum confluence, Cell Culture for Genetic Testing (3020627) will be added by ARUP. -until testing is complete.  
AND maternal whole blood for maternal cell contamination: Transport 2 mL whole blood (Min: 1 mL).~~

**Transport Temperature:**

Preferred transport: Room temperature.  
Preferred shipment: Within two days of collection or confluence.  
~~Amniotic fluid, cultured amniocytes, cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.  
Maternal whole blood: room temperature.~~

**Unacceptable Conditions:**

~~Frozen specimens in glass collection tubes.~~

**Remarks:**

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: Informed consent is required with submission. The Patient History Form is available on the ARUP website or by contacting ARUP Client Services.

Stability:

Room temperature: 2 days Fetal specimens: Ambient: 48 hours; Refrigerated: 2 days 48 hours; Frozen: Unacceptable  
Maternal whole blood: Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable

Methodology:

Polymerase Chain Reaction (PCR) / Fluorescence Monitoring / Fragment Analysis

Note:

CPT Codes:

81105; 81106; 81107; 81108; 81109; 81110; 81112; 81265  
Fetal Cell Contamination (FCC)

New York DOH Approval Status:

This test is New York DOH approved.

Interpretive Data:

Refer to report.

Reference Interval:

**TEST CHANGE**

**Kell K/k (KEL) Antigen Genotyping, Fetal**

3016676, KELGENO FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Amniotic fluid OR cultured amniocytes OR cultured chorionic villus sampling (CVS).

Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Amniotic fluid

OR cultured amniocytes OR cultured CVS: Two T-25 flasks at 80 percent confluency.

AND maternal whole blood: lavender (K2 or K3EDTA), pink (K2EDTA), yellow (ACD solution A or B).

If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.

**Specimen Preparation:**

Amniotic fluid: Transport: 10 mL amniotic fluid in a sterile container (min: 5 mL) OR

Two T-25 flasks of 80% confluent cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS). If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen,

add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup: Fill flasks with culture media. Backup cultures must be retained at the client's institution. If ARUP receives cultured fetal cells below minimum confluence, Cell Culture for Genetic Testing (3020627) will be added by ARUP. until testing is complete.

AND Maternal whole blood: Transport 2 mL whole blood (min: 1 mL)

**Transport Temperature:**

Preferred transport: Room temperature.

Preferred shipment: Within two days of collection or confluence. Amniotic fluid, cultured amniocytes, or cultured

CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.

Maternal whole blood: room temperature.

**Unacceptable Conditions:**

Frozen specimens in glass collection tubes.

**Remarks:**

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

New York Clients: informed consent is required with

~~submission. The Patient History Form is available on the ARUP website or by contacting ARUP Client Services.~~

Stability:

~~Room temperature: 2 days; Fetal specimens: Ambient: 48 hours; Refrigerated: 2 days; 48 hours; Frozen: Unacceptable; Maternal whole blood for maternal cell contamination: Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable~~

Methodology:

Polymerase Chain Reaction (PCR) / Fluorescence Monitoring / Fragment Analysis

Note:

CPT Codes:

0001U; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status:

This test is New York DOH approved.

Interpretive Data:

Refer to report.

Reference Interval:

~~Refer to~~ By report.

**TEST CHANGE**

**RhC/c (RHCE) Antigen Genotyping, Fetal**

3016679, RHCGENO FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Amniotic fluid OR cultured amniocytes OR cultured chorionic villus sampling (CVS).  
Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements.  
Amniotic fluid OR cultured amniocytes OR cultured CVS: Two T-25 flasks at 80 percent confluency.  
AND Maternal whole blood: lavender (K2 or K3EDTA), pink (K2EDTA), or yellow (ACD solution A or B).  
If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.

**Specimen Preparation:**

Amniotic fluid: Transport 10 mL amniotic fluid in a sterile container (min: 5 mL).  
OR  
Two T-25 flasks of 80% confluent cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS). If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup. Fill flasks with culture media. Backup cultures must be retained at the client's institution. If ARUP receives cultured fetal cells below minimum confluence, Cell Culture for Genetic Testing (3020627) will be added by ARUP, until testing is complete.  
AND maternal whole blood: Transport 2 mL whole blood (min: 1 mL).

**Transport Temperature:**

Preferred transport: Room temperature.  
Preferred shipment: Within two days of collection or confluence.  
Amniotic fluid, cultured amniocytes or cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.  
Maternal whole blood: room temperature.

**Unacceptable Conditions:**

Frozen specimens in glass collection tubes.

**Remarks:**

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.  
New York Clients: Informed consent is required with submission. Patient History Form is available on the ARUP

Stability:

~~website or by contacting ARUP Client Services.~~

~~Room temperature: 2 days; Fetal specimens: Ambient: 48 hours;  
Refrigerated: 2 days; 48 hours; Frozen: Unacceptable  
Maternal whole blood: Ambient: 72 hours; Refrigerated: 1 week;  
Frozen: Unacceptable~~

Methodology:

Polymerase Chain Reaction (PCR) / Fluorescence Monitoring /  
Fragment Analysis

Note:

CPT Codes:

0001U; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status:

This test is New York DOH approved.

Interpretive Data:

~~Refer to report. Refer to report.~~

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

Reference Interval:

~~Refer to~~ By report

**TEST CHANGE**

**RhE/e (RHCE) Antigen Genotyping, Fetal**

3016682, RHEGENO FE

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Fetal Specimen: Amniotic fluid OR cultured amniocytes OR cultured chorionic villus sampling (CVS).

Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Amniotic fluid

OR cultured amniocytes OR cultured CVS: Two T-25 flasks at 80 percent confluency.

AND maternal whole blood: lavender (K2 or K3EDTA), pink (K2EDTA), or yellow (ACD solution A or B).

If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.

**Specimen Preparation:**

Amniotic fluid: Transport: 10 mL amniotic fluid in a sterile container (min: 5 mL) OR

Two T-25 flasks of 80% confluent cultured amniocytes OR Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS). If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen,

add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup: Fill flasks with culture media. Backup cultures must be retained at the client's institution. If ARUP receives cultured fetal cells below minimum confluence, Cell Culture for Genetic Testing (3020627) will be added by ARUP. -until testing is complete.

AND maternal whole blood: Transport 2 mL whole blood (min: 1 mL).

**Transport Temperature:**

Preferred transport: Room temperature.

Preferred shipment: Within two days of collection or confluence. Amniotic fluid, cultured amniocytes, or cultured

CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.

Maternal whole blood for maternal cell contamination: Refrigerated.

**Unacceptable Conditions:**

Frozen specimens in glass collection tubes.

**Remarks:**

Counseling and informed consent are recommended for genetic testing. Consent forms are linked above.

~~New York Clients: Informed consent is required with submission. Patient History Form is available on the ARUP Web site or by contacting ARUP Client Services.~~

Stability:

~~Room temperature: 2 days Fetal specimens: Ambient: 48 hours; Refrigerated: 2 days 48 hours; Frozen: Unacceptable Maternal whole blood: Ambient: 72 hours; Refrigerated: 1 week; Frozen: Unacceptable~~

Methodology:

Polymerase Chain Reaction (PCR) / Fluorescence Monitoring / Fragment Analysis

Note:

CPT Codes:

0001U; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status:

This test is New York DOH approved.

Interpretive Data:

~~Refer to report. Refer to report.~~

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

Reference Interval:

~~Refer to~~ By report

**TEST CHANGE**

**Anti-Mullerian Hormone With Menopausal Status (MenoCheck)**

3016862, AMH MENO

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Serum separator tube. Also acceptable: Plain red or green (lithium heparin).

**Specimen Preparation:** Separate from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP standard transport tube. (Min: 0.32 mL)

**Transport Temperature:** Frozen.

**Unacceptable Conditions:**

**Remarks:** Specimens must be from individuals 42-62 years of age.

**Stability:** Ambient: Unacceptable; Refrigerated: 1 week; Frozen: 3 weeks (avoid repeated freeze/thaw cycles)

**Methodology:** Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

**Note:**

**CPT Codes:** 82166

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

MenoCheck is an FDA-cleared test intended to be used as an aid in the determination of menopausal status in people between 42 to 62 years of age that were assigned female at birth. This test should be used in conjunction with other clinical and laboratory findings. This test should not be used to assess a menstruating individual's fertility status or for use in monitoring or predicting the ovarian response in menstruating individuals undergoing or planning to undergo fertility treatments.

**Reference Interval:**

Test Number	Components	Reference Interval	
	Anti-Mullerian Hormone, Menopause		
		Age	Reference Intervals (ng/mL)
		40-45 years	Less than or equal to 6.282
		46-50 years	Less than or equal to 0.064
		Postmenopausal	Less than or equal to 0.003



*A nonprofit enterprise of the University of Utah  
and its Department of Pathology*

Effective Date: **July 20, 2026**

**TEST CHANGE**

Allergen, Food, Sesame Seed With Reflex to Component, IgE

3017049, SESAME R

**Specimen Requirements:**

Patient Preparation:	Multiple patient encounters should be avoided.
Collect:	Serum separator tube.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP standard transport tube. (Min: 0.25 mL). For multiple allergen orders refer to <a href="http://www.aruplab.com/testing/resources/specimen">"Allergen Specimen Collection Instructions"</a> at <a href="http://www.aruplab.com/testing/resources/specimen">www.aruplab.com/testing/resources/specimen</a> .
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, icteric, or lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 year

**Methodology:** Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay

**Note:** This assay will reflex to sSesame rSes i 1 component if the result is 0.1035 kU/L or higher. Additional charges apply.

**CPT Codes:** 86003; if reflexed add 86008

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

Allergen results of 0.10-0.34 kU/L are intended for specialist use as the clinical relevance is undetermined. Even though increasing ranges are reflective of increasing concentrations of allergen-specific IgE, these concentrations may not correlate with the degree of clinical response or skin testing results when challenged with a specific allergen. The correlation of allergy laboratory results with clinical history and in vivo reactivity to specific allergens is essential. A negative test may not rule out clinical allergy or even anaphylaxis.

Reporting Range (reported in kU/L)	Probability of IgE Mediated Clinical Reaction	Class Scoring
Less than 0.10	No significant level detected	0
0.10 - 0.34	Clinical relevance undetermined	0/1
0.35 - 0.70	Low	1
0.71 - 3.50	Moderate	2
3.51 - 17.50	High	3
17.51 - 50.00	Very high	4
50.01 - 100.00	Very high	5
Greater than 100.00	Very high	6

**Reference Interval:**

Test Number	Components	Reference Interval
	Allergen, Food, Sesame Seed IgE	Less than or equal to 0.34 kU/L

**TEST CHANGE**

**Hemoglobin Evaluation by HPLC With Reflex to Electrophoresis and/or RBC Solubility  
3017101, HGBEL RFX**

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Lavender (EDTA) or pink (K2EDTA).

**Specimen Preparation:** Transport 5 mL whole blood in original tube. (Min: 0.5 mL) Also acceptable: whole blood in an ARUP standard transport tube.

**Transport Temperature:** Refrigerated

**Unacceptable Conditions:** Frozen or room temperature specimens.

**Remarks:**

**Stability:** Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Unacceptable

**Methodology:** High Performance Liquid Chromatography (HPLC) / Capillary Electrophoresis / RBC Solubility

**Note:**

If abnormal peaks suggestive of a hemoglobin variant are detected, then RBC solubility and/or capillary electrophoresis will be performed to aid in confirmation and identification of the variant. Additional charges apply.

If a hemoglobin variant cannot be quantitated by HPLC, results from capillary electrophoresis will be reported.

Quantitation of hemoglobin is recommended for a definitive diagnosis in infants 1 year and older.

**CPT Codes:** 83021; if reflexed, add 83020; 85660

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Hemoglobin Evaluation:**

**HPLC Report: Results from HPLC are reported.**

**See CE Report: Results from capillary electrophoresis are reported under Hemoglobin Evaluation by Capillary Electrophoresis (3017102). Results were confirmed by HPLC.**

**Sickle Cell Solubility Reflex:**

**Not Performed:** Solubility testing for hemoglobin S not indicated.

**Positive:** Positive for hemoglobin S by HPLC and confirmed by solubility testing. ~~Additional charges apply.~~

**Conf Previous:** Positive for hemoglobin S by HPLC. Solubility testing performed previously and not repeated with this submission.

Hgb Capillary Electrophoresis Reflex:

Not Performed: Confirmation by capillary electrophoresis not indicated.

Performed: Results confirmed by capillary electrophoresis. ~~Additional charges apply.~~

Conf Previous: Capillary electrophoresis confirmation performed as part of a previous submission. Confirmation not repeated with this submission.

Reference Interval:

Test Number	Components	Reference Interval	
	Hemoglobin A		
		Age	Reference Intervals (%)
		0-1 months	7.6-54.8
		2 months	14.7-70.1
		3 months	26.6-81.8
		4 months	43.0-89.5
		5 months	60.8-94.0
		6-8 months	78.2-96.6
		9-12 months	86.1-97.2
		13-23 months	85.1-97.7
		2 years and older	95.0-97.9
	Hemoglobin A2		
		Age	Reference Intervals (%)
		0-1 months	0.0-1.4
		2 months	0.0-2.0
		3 months	0.1-2.6
		4 months	0.8-3.0
		5 months	1.5-3.3
		6-8 months	1.8-3.5
		9-23 months	1.9-3.5
		2 years and older	2.0-3.5
	Hemoglobin C	0.0	
	Hemoglobin E	0.0	
	Hemoglobin F		
		Age	Reference Intervals (%)
		0-1 months	45.8-91.7
		2 months	32.7-85.2
		3 months	14.5-73.7
		4 months	4.2-56.9
		5 months	1.0-38.1
		6-8 months	0.9-19.4
		9-12 months	0.6-11.6
		13-23 months	0.0-8.5

		2 years and older	0.0-2.1
	Hemoglobin Other	0.0	
	Hemoglobin S	0.0	



**TEST CHANGE**

Alpha Globin (*HBA1* and *HBA2*) Sequencing and Deletion/Duplication, Fetal

3019566, HBA FGA FE

Specimen Requirements:

Patient Preparation:

Collect: Fetal Specimen: ~~Cultured Two T-25 flasks at 90% confluent of cultured~~ amniocytes ~~OR~~ cultured chorionic villi.

~~villus sampling (CVS).~~

~~AND Maternal Whole Blood Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Lavender (EDTA), pink (K2EDTA), or yellow (ACD solution A or B).~~

Specimen Preparation:

Cultured Amniocytes or Cultured CVS: Fill flasks with culture media. Transport two T-25 flasks ~~of~~at 90 percent confluent ~~of~~ cultured amniocytes or two T-25 flasks of 90% cultured chorionic villi sampling (CVS).

This assay is not performed on direct amniotic fluid or direct chorionic villi specimens. Clients submitting direct amniotic fluid and direct chorionic villi must add Cell Culture for Genetic Testing (3020627) to the initial order.

~~filled with culture media. Backup cultures must be retained at the client's institution until testing is complete. If ARUP receives cultured specimens a sample below the minimum confluence, Cell Culture for Genetic Testing (3020627) Cytogenetics Grow and Send (0040182) will be added on by ARUP for an additional fee. The client is responsible for maintaining backup cultures. charges will apply. If clients are unable to culture specimens, Cytogenetics Grow and Send should be added to initial order.~~

~~Maternal Whole Blood Specimen: Transport 3 mL whole blood. (Min: 1 mL).~~

Transport Temperature:

Cultured Amniocytes or Cultured CVS: CRITICAL ROOM TEMPERATURE. ~~Separate specimens must be submitted when multiple tests are ordered.~~ Must be received within 48 hours of shipment due to viability of cells.

~~Maternal specimen: Refrigerated~~

Unacceptable Conditions:

~~Frozen specimens~~

Remarks:

Patient history forms and informed consent documents are available by selecting the links above or by contacting ARUP Client Services. Counseling and informed consent are recommended for genetic testing. New York Clients: Informed consent is required with specimen submission.

Stability: Cultured Amniocytes or Cultured CVS: Room temperature: 48 hours; Refrigerated: Unacceptable; Frozen: Unacceptable  
~~Maternal Whole Blood Specimen: Room temperature: 7 days; Refrigerated: 1 month; Frozen: Unacceptable~~

Methodology: Qualitative Multiplex Ligation-Dependent Probe Amplification (MLPA) / Qualitative Sequencing

Note: ~~Reported times are based on receiving the two T-25 flasks at 90 percent confluent. Cell culture time is independent of testing turnaround time. Maternal specimen is recommended for proper test interpretation. Order Maternal Cell Contamination.~~

CPT Codes: 81259; 81269; 81265

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Refer to report

Reference Interval:

~~Refer to~~By report

**TEST CHANGE**

**von Willebrand Factor (VWF) GPIbM Activity**

3019671, VWF\_GPIBM

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Light blue (sodium citrate). Refer to [Special Collection and Handling Hemostasis/Thrombosis Specimens guide located at https://aruplab.com\\_for hemostasis/thrombosis specimen handling guidelines./Specimen-Handling/SpecialSpecimenCollection/Hemostasis-Thrombosis.pdf](https://aruplab.com/SpecialCollection/Handling/Hemostasis/Thrombosis-Specimens/guide-located-at-https://aruplab.com_for_hemostasis/thrombosis_specimen_handling_guidelines./Specimen-Handling/SpecialSpecimenCollection/Hemostasis-Thrombosis.pdf)

**Specimen Preparation:** Transfer 1.5 mL platelet-poor plasma to an ARUP standard transport tube. (Min: 1.0 mL)

**Transport Temperature:** CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

**Unacceptable Conditions:** Serum, EDTA plasma, clotted, or hemolyzed specimens

**Remarks:**

**Stability:** Ambient: 4 hours; Refrigerated: Unacceptable; Frozen: 3 months

**Methodology:** Quantitative Immunospectrometry

**Note:**

**CPT Codes:** 85397

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

Test Number	Components	Reference Interval	
	von Willebrand Factor, Activity (GPIbM)		
		Age	Reference Intervals (%)
		0-6 years	51-215
		7-9 years	52-176
		10-11 years	60-195
		12-13 years	50-184
		14-15 years	50-203
		16-17 years	49-204

		18 years and older	51-215
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**TEST CHANGE**

Huntington Disease (HD) CAG Repeat Expansion, Fetal

3019937, HD PCR FE

Specimen Requirements:

Patient Preparation:

Collect:

Fetal Specimen: Amniotic fluid OR chorionic villi OR cultured amniocytes OR cultured chorionic villus sampling (CVS).  
Maternal Specimen: Refer to Maternal Cell Contamination, Maternal Specimen (0050608) for maternal specimen requirements. Amniotic fluid OR cultured amniocytes OR cultured CVS: Two T-25 flasks at 80 percent confluency.  
AND maternal whole blood: lavender (K2 or K3EDTA), pink (K2EDTA), yellow (ACD solution A or B).

If the client is unable to culture, order test Cytogenetics Grow and Send (ARUP test code 0040182) in addition to this test and ARUP will culture upon receipt (culturing fees will apply). If you have any questions, contact ARUP's Genetics Processing at 800-522-2787 ext. 3301.

Specimen Preparation:

Amniotic fluid: Transport: 10 mL amniotic fluid in a sterile container (min: 5 mL) OR  
Chorionic villi 20 mg (min: 5mg) OR  
Two T-25 flasks of 80% confluent cultured amniocytes OR  
Two T-25 flasks of 80% confluent cultured chorionic villus sampling (CVS).

If submitting uncultured (direct) amniotic fluid or (direct) CVS and testing is desired on a cultured specimen, add Cell Culture for Genetic Testing (3020627). If transporting flasks, the client is responsible for maintaining backup: Fill flasks with culture media. Backup cultures must be retained at the client's institution. If ARUP receives cultured fetal cells below minimum confluence, Cell Culture for Genetic Testing (3020627) will be added by ARUP. -until testing is complete.  
AND maternal whole blood: 2 mL whole blood (min: 1 mL).

Transport Temperature:

Preferred transport: Room temperature.  
Preferred shipment: Within two days of collection or confluence. Amniotic fluid, cultured amniocytes, or cultured CVS: CRITICAL ROOM TEMPERATURE. Must be received within 48 hours of shipment due to lability of cells.  
Maternal whole blood: Room temperature.

Unacceptable Conditions:

Maternal: Frozen specimens in glass collection tubes.

Remarks:

Counseling and informed consent are recommended for

[genetic testing. Consent forms are linked above.](#)

[New York Clients: Informed consent is required with submission.](#)

Stability:

[Room temperature: 2 days](#)~~Fetal Specimen: Ambient 48 hours;~~  
~~Refrigerated: 2 days~~[unacceptable](#); Frozen: Unacceptable  
~~Maternal whole blood: Ambient: 72 hours; Refrigerated: 1 week;~~  
~~Frozen: Unacceptable~~

Methodology:

Polymerase Chain Reaction (PCR) / Capillary Electrophoresis /  
Fragment Analysis

Note:

CPT Codes: 81271; 81265 Fetal Cell Contamination (FCC)

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Refer to report.

Reference Interval:

**NEW TEST**

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**Comprehensive Bone Marrow Biopsy Workup**

3020123, CB REQ

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Preauthorization is required prior to collecting specimens for this test. Contact ARUP Client Services and mention key word CB REQUEST.

**Specimen Preparation:**

**Transport Temperature:**

**Unacceptable Conditions:** Specimens submitted to ARUP without preauthorization.

**Remarks:**

**Stability:**

**Methodology:** Microscopy / Varies

**Note:** Additional ancillary studies will be ordered by a board-certified ARUP hematopathologist as needed to establish the diagnosis. Additional charges may apply.

**CPT Codes:** CPT codes vary by individual case.

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

Refer to report.

**Reference Interval:**

Refer to report

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

**NEW TEST**

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**Cell Culture for Genetic Testing**

3020627, CGCELLCULT

**Specimen Requirements:**

**Patient Preparation:**

**Collect:**

Amniotic fluid OR chorionic villi in cytogenetic tissue media (ARUP Supply #32788). If cytogenetic tissue media is not available, collect in plain RPMI, Hanks solution, sterile saline, or ringers.

New York State Clients: Discard first 2 mL of fluid aspirated to avoid maternal cell contamination.

Skin biopsy OR Product of Conception (POC): Place tissue in a sterile, screw-top container filled with thawed Cytogenetic Tissue Media (ARUP Supply #32788). Available online through eSupply using ARUP Connect. If Cytogenetic Tissue Media is not available, collect in plain RPMI, Hanks (HBSS), sterile saline, or ringers.

If autopsy is performed: Facia lata, diaphragm, tendon, skin, tissue from internal organs (if fresh), chest wall cartilage (particularly if macerated) or placenta from fetal side. If no autopsy is performed: Placenta from fetal side is preferred (e.g., villi). Also acceptable: Umbilical cord or achilles tendon.

**Specimen Preparation:**

Do not freeze any specimen submitted or expose to extreme temperatures. Do not place in formalin.

Amniotic fluid: Transport 30 mL amniotic fluid (min: 15 ml) in a sterile tube.

Chorionic Villi: 20 mg (min: 5mg) in a sterile, screw-top container filled with Cytogenetic Tissue Media.

New York State Clients: Specimen is collected in a 20 mL sterile syringe and transferred aseptically to sterile tubes. Specimen must be received at performing laboratory within 48 hours of collection.

Skin biopsy: Transport a 4 mm skin biopsy in a sterile, screw-top container filled with tissue transport media.

Product of Conception(POC): Transport POC, skin (POC), cord tissue, or decidua (min: 5mg) in sterile, screw-top container

filled with tissue transport medium. If specimen size is too large for a normal collection tube, a larger sterile container can be used such as a sterile urine cup and can be flooded with several tubes of cytogenetic tissue media.

Cultured skin fibroblasts: 2 T-25 flasks at 80 percent confluency. Fill flasks with culture media. Backup cultures must be maintained at the client's institution until testing is complete.

**Transport Temperature:** Amniotic fluid, chorionic villi, skin OR POC sample: Room temperature.

Cultured skin fibroblasts: Critical room temperature.

**Unacceptable Conditions:** Frozen specimens. Specimens preserved in formalin.

**Remarks:**

**Stability:** Amniotic fluid, chorionic villi, skin OR POC sample: Room Temperature: 2 days; Refrigerated: 2 days; Frozen: Unacceptable

Cultured skin fibroblasts: Room Temperature: 2 days; Refrigerated: Unacceptable; Frozen: Unacceptable

**Methodology:** Cell Culture

**Note:**

Desired tests must be indicated on the request form that accompanies the specimen. Cultured samples requested for frozen storage will be held for 6 months then discarded. Please note that contamination by maternal cells may interfere with attempts to culture cells and may cause interpretive problems.

Cell culturing should only be ordered in conjunction with testing at ARUP Laboratories OR for clients who utilize ARUP Laboratories as their primary cytogenetics laboratory. To confirm if it is appropriate to order cell culturing, please contact an ARUP genetic counselor at 800-242-2787 ext. 2141.

Cytogenetics Cell Culture for Genetic Testing includes a base cost for case management and review. Additional charges will apply if the following processing is required:

1. Culture Processing

3020744 AF/CVS

3020743 Skin/POC

2. Subculturing for total required flasks

3020735 AF/CVS 2 flasks

- 3020736 AF/CVS 3 flasks
- 3020944 AF/CVS 4 flasks
- 3020737 AF/CVS 5 flasks
- 3020947 AF/CVS 6 flasks
- 3020738 AF/CVS 7 flasks
- 3020949 AF/CVS 8 flasks
- 3020631 Tissue 2 flasks
- 3020721 Tissue 3 flasks
- 3020937 Tissue 4 flasks
- 3020723 Tissue 5 flasks
- 3020939 Tissue 6 flasks
- 3020728 Tissue 7 flasks
- 3020942 Tissue 8 flasks
- 3020729 Tissue 1 T25, 1 T75 flasks
- 3020730 Tissue 2 T25, 1 T75 flasks
- 3. 3020739 Cryopreservation

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CPT Codes:	88233, 88235, 88240
New York DOH Approval Status:	This test is New York DOH approved.
Interpretive Data:	
Reference Interval:	

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

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**GI Bacterial Panel by PCR**

3020653, GI BACTNAA

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Stool in Cary-Blair transport media

**Specimen Preparation:** Transfer stool to enteric transport media (Cary-Blair) (ARUP supply #29799) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. Refrigerate after transfer.

**Transport Temperature:** Refrigerated

**Unacceptable Conditions:** Unpreserved stool, stool in media other than liquid Cary-Blair.

**Remarks:**

**Stability:** Ambient: 4 days; Refrigerated: 7 days; Frozen: Unacceptable

**Methodology:** Qualitative Polymerase Chain Reaction (PCR)

**Note:**

This assay is intended to aid in the differential diagnosis of *Salmonella*, *Shigella/Enteroinvasive Escherichia coli* (EIEC), *Campylobacter* spp. (*C.coli*, *C.jejuni*), and Shiga toxin-producing *E. coli* Stx1/Stx2.

**CPT Codes:** 87505

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

Test Number	Components	Reference Interval
	Campylobacter by PCR	Not Detected
	Salmonella by PCR	Not Detected
	Shiga toxin-producing E. coli (STEC) PCR	Not Detected
	Shigella/Enteroinvasive E. coli by PCR	Not Detected

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

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**GI Expanded Bacterial Panel by PCR**

3020658, GI BACTEXP

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Stool in liquid Cary-Blair transport media

**Specimen Preparation:** Transfer stool to enteric transport media (Cary-Blair) (ARUP supply #29799) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. Refrigerate after transfer.

**Transport Temperature:** Refrigerated

**Unacceptable Conditions:** Unpreserved stool, stool in media other than liquid Cary-Blair.

**Remarks:**

**Stability:** Ambient: 4 days; Refrigerated: 7 days; Frozen: Unacceptable

**Methodology:** Qualitative Polymerase Chain Reaction (PCR)

**Note:**

This assay detects *Yersinia enterocolitica*, *Vibrio* spp. (*V. parahaemolyticus*, *V. vulnificus*, *V. cholerae*), *Escherichia coli* O157, and *Plesiomonas shigelloides*.

**CPT Codes:** 87505

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

Test Number	Components	Reference Interval
	Escherichia coli O157 by PCR	Not Detected
	Plesiomonas shigelloides by PCR	Not Detected
	Vibrio species by PCR	Not Detected
	Yersinia enterocolitica by PCR	Not Detected

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

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**GI Bacterial Panel by PCR With Reflex to GI Expanded Bacterial Panel by PCR  
3020663, GI BACTRFX**

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Stool in liquid Cary-Blair transport media

**Specimen Preparation:** Transfer stool to enteric transport media (Cary-Blair) (ARUP supply #29799) available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. Refrigerate after transfer.

**Transport Temperature:** Refrigerated

**Unacceptable Conditions:** Unpreserved stool, stool in media other than liquid Cary-Blair.

**Remarks:**

**Stability:** Ambient: 4 days; Refrigerated: 7 days; Frozen: Unacceptable

**Methodology:** Qualitative Polymerase Chain Reaction (PCR)

**Note:**

If GI Bacterial Panel by PCR results are negative for all components, then GI Expanded Bacterial Panel by PCR will be added. Additional charges apply.

**CPT Codes:** 87505; if reflexed, add 87505

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

**Refer to report**

Test Number	Components	Reference Interval
	Campylobacter by PCR	Not Detected
	Salmonella by PCR	Not Detected
	Shiga toxin-producing E. coli (STEC) PCR	Not Detected
	Shigella/Enteroinvasive E. coli by PCR	Not Detected

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

**NEW TEST – Available Now**

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**Complement Factor-H Concentration, Plasma**

3020698, FACTOR-H

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Pink (K2EDTA), tan (K2EDTA), royal blue (K2EDTA), or lavender (EDTA).

**Specimen Preparation:** Separate plasma from cells within 2 hours of collection. Transfer plasma (minimum 0.5 mL) to an ARUP standard transport tube and freeze immediately.

**Transport Temperature:** CRITICAL FROZEN. Separate specimens must be submitted when multiple tests are ordered.

**Unacceptable Conditions:** Nonfrozen specimens. Specimens exposed to repeated freeze/thaw cycles. Grossly hemolyzed, lipemic, and icteric specimens. Serum samples. Heparinized and lithium plasma samples.

**Remarks:**

**Stability:** Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 30 days

**Methodology:** Quantitative Enzyme-Linked Immunosorbent Assay (ELISA)

**Note:**

**CPT Codes:** 86160

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

Test Number	Components	Reference Interval
	Complement Factor-H conc, plasma	156-325 ug/mL

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

**NEW TEST**

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**ARUP CLARISPECT(TM) Multiple Myeloma MRD by Spectral Flow Cytometry  
3020719, MM MRD SF**

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Bone marrow aspirate in green (sodium heparin) or lavender (EDTA).

**Specimen Preparation:** Transport 5 mL bone marrow aspirate. (Min: 1 mL) Do not freeze.

**Transport Temperature:** Room temperature. Also acceptable: Refrigerated. Specimen should be received within 24 hours of collection for optimal cell viability.

**Unacceptable Conditions:** Frozen specimens. Paraffin-embedded specimens. Clotted specimens.

**Remarks:**

**Stability:** Ambient: 48 hours; Refrigerated: 48 hours; Frozen: Unacceptable

**Methodology:** Flow Cytometry

**Note:**

**CPT Codes:** 88184; 88185 x17; 88189

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

Refer to report.

Reference Interval:

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

**NEW TEST**

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**Drug Panel, Screen With Reflex to Quantitation, Urine  
3020808, DSCR U**

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Random urine.

**Specimen Preparation:** Transfer 8 mL urine with no additives or preservatives in ARUP standard transport tubes. (Min: 4 mL)

**Transport Temperature:** Refrigerated.

**Unacceptable Conditions:** Specimens exposed to repeated freeze/thaw cycles.

**Remarks:**

**Stability:** Ambient: 1 week; Refrigerated: 1 month; Frozen: 1 month

**Methodology:** Qualitative Enzyme Multiplied Immunoassay Technique (EMIT) / Quantitative Gas Chromatography-Flame Ionization Detection / Quantitative Gas Chromatography-Mass Spectrometry (GC-MS) / Quantitative Liquid Chromatography-Tandem Mass Spectrometry

**Note:**

If the specimen screens positive, then confirmation/quantitation by GC/MS, GC/FID, and/or LC-MS/MS will be added to confirm result. Additional charges apply.

To order testing for individual opioids, refer to Fentanyl and Metabolite, Urine, Quantitative (ARUP test code 0092570), Buprenorphine and Metabolites, Urine, Quantitative (ARUP test code 2010092), Meperidine and Metabolite Quantitative, Urine (ARUP test code 3000248), Tramadol and Metabolite, Urine, Quantitative (ARUP test code 2002736). For the comprehensive panel, refer to Drug Profile, Targeted by Tandem Mass Spectrometry and Enzyme Immunoassay, Urine (ARUP test code 2007479).

**CPT Codes:** 80307; if reflexed, add 80321; 80325; 80345; 80346; 80349; 80353; 80354; 80358; 80359; 80361; 80365; 83992 (Reflexed Alt Code: G0480)

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

Flagging indicates a positive result; not that the result is abnormal.

Presumptive negative results for drug(s) and/or drug metabolite(s) may indicate

noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration at which the screening test can detect a drug or metabolite varies within a drug class.

For medical purposes only; not valid for forensic use.

Reference Interval:

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

**NEW TEST**

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**Drug Panel, Expanded Screen With Reflex to Quantitation, Urine**  
3020812, DSCR UEXP

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Random urine.

**Specimen Preparation:** Transfer 4 mL each into two (2) ARUP standard transport tubes of urine with no additives or preservatives. (Min: 2 mL each)

**Transport Temperature:** Refrigerated.

**Unacceptable Conditions:** Specimens exposed to multiple freeze/thaw cycles, Pharmaceutical preparation.

**Remarks:**

**Stability:** Ambient: 1 week; Refrigerated: 1 month; frozen: 1 month

**Methodology:** Qualitative Enzyme Multiplied Immunoassay Technique (EMIT) / Quantitative Gas Chromatography-Mass Spectrometry (GC-MS) / Quantitative Gas Chromatography-Mass Spectrometry (GC-MS) / Quantitative Liquid Chromatography-Tandem Mass Spectrometry

**Note:**

If the specimen screens positive, then confirmation/quantitation by GC/MS and/or LC-MS/MS will be added to confirm result. Additional charges apply.

**CPT Codes:** 80307; if reflexed, add 80321; 80325; 80345; 80346; 80348; 80349; 80353; 80354; 80358; 80359; 80361; 80365; 80368; 80369; 80372; 80373; 83992 (Reflexed Alt Code: G0480)

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

Flagging indicates a positive result; not that the result is abnormal.

Presumptive negative results for drug(s) and/or drug metabolite(s) may indicate noncompliance, inappropriate timing of specimen collection relative to drug administration, poor drug absorption, diluted/adulterated urine, or limitations of testing. The concentration at which the screening test can detect a drug or metabolite varies within a drug class.

For medical purposes only; not valid for forensic use.

Drugs covered and range of cutoff concentrations	Screen
Amphetamines	Methodology: Immunoassay Positive Cutoff: 300 ng/mL
Barbiturates	Methodology: Immunoassay Positive Cutoff: 200 ng/mL
Benzodiazepines	Methodology: Immunoassay Positive Cutoff: 200 ng/mL
Buprenorphine	Methodology: Immunoassay Positive Cutoff: 5 ng/mL
Carisoprodol	Methodology: Immunoassay Positive Cutoff: 100 ng/mL
Cocaine	Methodology: Immunoassay Positive Cutoff: 150 ng/mL
Ethyl Glucuronide	Methodology: Immunoassay Positive Cutoff: 500 ng/mL
Fentanyl	Methodology: Immunoassay Positive Cutoff: 1 ng/mL
Opiates	Methodology: Immunoassay Positive Cutoff: 300 ng/mL
Oxycodone	Methodology: Immunoassay Positive Cutoff: 100 ng/mL
Methadone	Methodology:

Metabolite (EDDP)	Immunoassay Positive Cutoff: 100 ng/mL
Phencyclidine	Methodology: Immunoassay Positive Cutoff: 25 ng/mL
Tapentadol	Methodology: Immunoassay Positive Cutoff: 200 ng/mL
Tramadol	Methodology: Immunoassay Positive Cutoff: 100 ng/mL
THC (Cannabinoids)	Methodology: Immunoassay Positive Cutoff: 50 ng/mL
Zolpidem	Methodology: Immunoassay Positive Cutoff: 20 ng/mL

Reference Interval:

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

**NEW TEST**

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**Methadone Metabolite, Urine, Screen With Reflex to Quantitation**

3020813, EDDP RFX U

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Random Urine

**Specimen Preparation:** Transfer 4 mL urine with no additives or preservatives to an ARUP standard transport tube. (Min: 2 mL)

**Transport Temperature:** Room temperature.

**Unacceptable Conditions:** Breast milk. Specimens exposed to repeated freeze/thaw cycles.

**Remarks:**

**Stability:** Ambient: 1 week; Refrigerated: 1 month; Frozen: 1 month

**Methodology:** Qualitative Enzyme Immunoassay (EIA) / Quantitative Liquid Chromatography-Tandem Mass Spectrometry

**Note:**

If the specimen screens positive, then Methadone and Metabolite, Urine, Quantitative (ARUP test code 0090362) will be added to confirm result. Additional charges apply.

Compare to Pain Management, Methadone, Quantitative, with medMatch, Urine; Pain Management, Methadone, with Confirmation with medMatch, Urine.

**CPT Codes:** 80307; if reflexed, add 80358 (Reflexed Alt Code: G0480)

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Methodology:** Immunoassay

**Positive Cutoff:** 100 ng/mL

**Reference Interval:**

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

**NEW TEST**

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**Kappa Free Light Chains, CSF**

3020898, CSF KFLC

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** CSF

**Specimen Preparation:** Transfer 1 mL CSF to an ARUP standard transport tube (Min: 0.5 mL)

**Transport Temperature:** Frozen

**Unacceptable Conditions:** Grossly bloody or hemolyzed specimens.

**Remarks:**

**Stability:** Ambient: 48 hours; Refrigerated: 14 days; Frozen: 30 days

**Methodology:** Quantitative Immunoturbidimetry

**Note:**

**CPT Codes:** 83521

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

Results between 0.33 and 1.09 mg/L are considered equivocal, while results greater than or equal to 1.10 mg/L are considered positive. These findings reflect CSF-specific immunoglobulin synthesis. They are not specific for multiple sclerosis and may also be detected in patients with other neurologic diseases (autoimmune, infectious, inflammatory, cerebrovascular, and paraneoplastic). Consider additional CSF testing such as oligoclonal banding if clinically indicated.

Negative:	Less than 0.33 mg/L
Equivocal:	0.33 mg/L-1.09 mg/L
Positive:	Greater than 1.09 mg/L

**Reference Interval:**

Test Number	Components	Reference Interval
	Kappa Free Light Chains, CSF	Less than 0.33 mg/L

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



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**NEW TEST**

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**Matrix Metalloproteinase-9 (MMP-9), Serum**

3020899, MMP9 S

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Serum separator tube (SST)

**Specimen Preparation:** Transfer 1 mL serum to an ARUP standard transport tube and freeze immediately. (Min: 0.21 mL)  
Test is not performed at ARUP; separate specimens must be submitted when multiple tests are ordered.

**Transport Temperature:** CRITICAL FROZEN

**Unacceptable Conditions:**

**Remarks:**

**Stability:** Ambient: Unacceptable; Refrigerated: Unacceptable; Frozen: 1 month

**Methodology:** Enzyme-Linked Immunosorbent Assay (ELISA)

**Note:**

**CPT Codes:** 83520

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

**Reference Interval:**

Refer to report

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

**NEW TEST**

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**Hemoglobin Evaluation by HPLC and Electrophoresis With Reflex to RBC Solubility  
3020911, HGBEL PLUS**

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Lavender (EDTA) or pink (K2EDTA).

**Specimen Preparation:** Transport 5 mL whole blood in original tube (Min: 0.5 mL). Also acceptable: whole blood in an ARUP standard transport tube.

**Transport Temperature:** Refrigerated

**Unacceptable Conditions:** Frozen or room temperature specimens.

**Remarks:**

**Stability:** Ambient: Unacceptable; Refrigerated: 1 week; Frozen: Unacceptable

**Methodology:** High Performance Liquid Chromatography (HPLC) / Capillary Electrophoresis / RBC Solubility

**Note:**

HPLC and capillary electrophoresis are performed on all samples. If a hemoglobin variant cannot be quantitated by HPLC, results from capillary electrophoresis will be reported.

If abnormal peaks suggestive of a sickling hemoglobin variant are detected, then RBC solubility will be performed. Additional charges apply.

**CPT Codes:** 83021; 83020; if reflexed, add 85660

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Hemoglobin Evaluation:**

**HPLC Report:** Results from HPLC are reported. Results were confirmed by capillary electrophoresis.

**See CE Report:** Results from capillary electrophoresis are reported under Hemoglobin Evaluation by Capillary Electrophoresis (3017102). Results were confirmed by HPLC.

**Sickle Cell Solubility Reflex:**

**Not Performed:** Solubility testing for hemoglobin S not indicated.

**Positive:** Positive for hemoglobin S by HPLC and confirmed by solubility testing.

**Conf Previous:** Positive for hemoglobin S by HPLC. Solubility testing performed previously and not repeated with this submission.

**Reference Interval:**

Test Number	Components	Reference Interval	
	Hemoglobin A		
		Age	Reference Intervals (%)
		0-1 months	7.6-54.8
		2 months	14.7-70.1
		3 months	26.6-81.8
		4 months	43.0-89.5
		5 months	60.8-94.0
		6-8 months	78.2-96.6
		9-12 months	86.1-97.2
		13-23 months	85.1-97.7
		2 years and older	95.0-97.9
	Hemoglobin A2		
		Age	Reference Intervals (%)
		0-1 months	0.0-1.4
		2 months	0.0-2.0
		3 months	0.1-2.6
		4 months	0.8-3.0
		5 months	1.5-3.3
		6-8 months	1.8-3.5
		9-23 months	1.9-3.5
		2 years and older	2.0-3.5
	Hemoglobin C	0.0	
	Hemoglobin E	0.0	
	Hemoglobin F		
		Age	Reference Intervals (%)
		0-1 months	45.8-91.7
		2 months	32.7-85.2
		3 months	14.5-73.7
		4 months	4.2-56.9
		5 months	1.0-38.1
		6-8 months	0.9-19.4
		9-12 months	0.6-11.6
		13-23 months	0.0-8.5

		2 years and older	0.0-2.1
	Hemoglobin Other	0.0	
	Hemoglobin S	0.0	

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

**NEW TEST**

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**Anti-Beta-2 Glycoprotein 1 Domain 1, IgG**

3020918, B2GP1-D1

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Serum separator tube (SST) or citrated plasma

**Specimen Preparation:** Separate serum or plasma from cells as soon as possible or within 2 hours of collection. Transfer 0.5 mL serum to an ARUP standard transport tube. (Min: 0.3 mL)

**Transport Temperature:** Refrigerated (2-8 degrees C).

**Unacceptable Conditions:** Contaminated, heat-inactivated, clots, fibrin, gross red blood cells, severely lipemic, severely hemolyzed, or severely icteric specimens.

**Remarks:**

**Stability:** After separation from cells:  
Room temperature: 48 hours  
Refrigerated: 2 weeks  
Frozen: 30 days (avoid repeated freeze-thaw cycles, but up to 3 freeze-thaw cycles is acceptable)

**Methodology:** Semi-Quantitative Chemiluminescent Immunoassay (CLIA)

**Note:**

**CPT Codes:** 86146

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

IgG autoantibodies to the domain-1 of the beta-2 glycoprotein protein (anti-B2GP1-D1) are a subset of anti-B2GP1 antibodies that have been linked to thrombotic and/or obstetric complications in individuals with antiphospholipid syndrome (APS). Anti-B2GP1-D1 antibodies have been found to be of high specificity for APS diagnosis. Note that anti-B2GP1-D1 are not included in the ACR/EULAR APS classification criteria.

**Reference Interval:**

Test Number	Components	Reference Interval
	B2Glycoprotein 1 Domain 1, IgG Antibody	0.0-19.9 CU: Negative

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



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**NEW TEST**

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**Acute Lymphoblastic Leukemia (ALL) Panel by FISH, Pediatric  
3020950, FISH PALL**

**Specimen Requirements:**

**Patient Preparation:**

<b>Collect:</b>	Nondiluted bone marrow aspirate collected in a heparinized syringe. Also acceptable: Whole blood in green (sodium heparin) tube.
<b>Specimen Preparation:</b>	Transfer bone marrow to a green (sodium heparin) tube. Transport 3 mL bone marrow (Min: 1 mL) OR 5 mL whole blood (Min: 2 mL).
<b>Transport Temperature:</b>	Preferred Transport Temp: Room temperature.
<b>Unacceptable Conditions:</b>	Frozen specimens. Clotted or paraffin-embedded specimens.

**Remarks:**

Clinical indication or reason for testing and specimen type required with test order. Sample will still be processed if this information is not initially provided but appropriate culturing and reporting may be compromised or delayed.

**Stability:**

Room temperature: 2 days; Refrigerated: 2 days; Frozen: Unacceptable

**Methodology:**

Fluorescence in situ Hybridization (FISH)

**Note:**

A processing fee will be charged if this procedure is canceled, at the client's request, after the test has been set up, or if the specimen integrity is inadequate to allow culture growth. The fee will vary based on specimen type. To order probes separately, refer to FISH Interphase (3020127).

Other specimen types may be acceptable, contact the Cytogenetics Laboratory for specific specimen collection and transportation instructions.

If cell pellets or dropped cytogenetics slides are submitted, a processing fee will not apply.

This test must be ordered using Oncology test request form #43099 or through your ARUP interface.

If chromosome analysis is not performed at ARUP on the same sample, Bone Marrow/PBL Culture Processing Fee (0093271) will be added to account for sample processing, and additional charge will apply. If multiple FISH tests are ordered, 0093271

will only be applied to one of the FISH tests.

CPT Codes: 88271 x6; 88275 x6

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Probes included: ETV6/RUNX1, BCR/ABL1/ASS1, CEP4, CEP10, MLL (KMT2A), TCF3 (E2A)

Reference Interval:

Refer to report

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

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**LMO2 by Immunohistochemistry**

3020992, LMO2\_IHC

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** Tissue or cells.

**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 (ARUP supply #47808). Available online through eSupply using ARUP Connect(TM) or contact ARUP Client Services at 800-522-2787. (Min: 2 slides). If sending precut slides, do not oven bake.

**Transport Temperature:** Room temperature or refrigerated. Ship in cooled container during summer months.

**Unacceptable Conditions:** Specimens submitted with nonrepresentative tissue type. Depleted specimens.

**Remarks:** IMMUNOHISTOCHEMISTRY ORDERING AND SUBMISSION DETAILS : Submit electronic request. If you do not have electronic ordering capability, use an ARUP Immunohistochemistry Stain Form (#32978) with an ARUP client number. For additional technical details, contact ARUP Client Services at 800-522-2787.

**Stability:** Ambient: Indefinitely; Refrigerated: Indefinitely; Frozen: Unacceptable

**Methodology:** Qualitative Immunohistochemistry (IHC)

**Note:** This test is performed as a stain and return only.

**CPT Codes:** 88342

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

**Reference Interval:**

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



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Effective Date: **July 20, 2026**

**NEW TEST**

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**Allergen, Food, Hazelnut Component Cor a 14, IgE**

3021006, COR A 14

<b>Specimen Requirements:</b>	
Patient Preparation:	Multiple patient encounters should be avoided.
Collect:	Serum separator tube or plain red.
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: 0.25 mL). For multiple allergen orders refer to "Allergen Specimen Collection Instructions" at <a href="http://www.aruplab.com/testing/resources/specimen">www.aruplab.com/testing/resources/specimen</a> .
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, icteric, or lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay
Note:	
CPT Codes:	86008
New York DOH Approval Status:	This test is New York DOH approved.

**Interpretive Data:**

Presence of allergen-specific IgE indicates sensitization, but it may not differentiate between tolerant and allergic individuals. Serology results alone cannot confirm or establish an allergy diagnosis. A negative test does not rule out clinical allergy or even anaphylaxis.

**Reference Interval:**

Test Number	Components	Reference Interval
	Allergen,Hazelnut Component, Cor a14,IgE	Less than or equal to 0.09 kU/L

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

**NEW TEST**

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**Allergen, Food, Peanut Component Ara h 2, IgE**

3021007, ARA H 2

**Specimen Requirements:**

<b>Patient Preparation:</b>	Multiple patient encounters should be avoided.
<b>Collect:</b>	Serum separator tube or plain red.
<b>Specimen Preparation:</b>	Separate serum from cells ASAP or within 2 hours of collection. Transfer 1.0 mL serum to an ARUP standard transport tube. (Min: 0.25 mL). For multiple allergen orders refer to "Allergen Specimen Collection Instructions" at <a href="http://www.aruplab.com/testing/resources/specimen">www.aruplab.com/testing/resources/specimen</a> .
<b>Transport Temperature:</b>	Refrigerated.
<b>Unacceptable Conditions:</b>	Hemolyzed, icteric, or lipemic specimens.
<b>Remarks:</b>	
<b>Stability:</b>	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month

**Methodology:** Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay

**Note:**

**CPT Codes:** 86008

**New York DOH Approval Status:** This test is New York DOH approved.

**Interpretive Data:**

Presence of allergen-specific IgE indicates sensitization, but it may not differentiate between tolerant and allergic individuals. Serology results alone cannot confirm or establish an allergy diagnosis. A negative test does not rule out clinical allergy or even anaphylaxis.

**Reference Interval:**

Test Number	Components	Reference Interval
	Allergen, Food, Severe Peanut Ara h 2	Less than or equal to 0.09 kU/L

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

**NEW TEST**

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**Allergen, Food, Soybean with Reflex to Components, IgE**

3021008, SOYBEAN R

<b>Specimen Requirements:</b>	
Patient Preparation:	Multiple patient encounters should be avoided.
Collect:	Serum separator tube or plain red.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 2.0 mL serum to an ARUP standard transport tube. (Min: 1.0 mL). For multiple allergen orders refer to "Allergen Specimen Collection Instructions" at <a href="http://www.aruplab.com/testing/resources/specimen">www.aruplab.com/testing/resources/specimen</a> .
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, icteric, or lipemic specimens.
Remarks:	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay
Note:	This assay will initially test soybean whole allergen. If the whole allergen result is greater than or equal to 0.10 kU/L, Allergen, Food, Soybean Components IgE (Gly m 4, Gly m 5, and GLY m6) will be ordered. Additional charges apply.
CPT Codes:	86003; if reflexed, add 86008 x3
New York DOH Approval Status:	This test is New York DOH approved.
<b>Interpretive Data:</b>	

**Reference Interval:**

Test Number	Components	Reference Interval
	Allergen, Food, Soybean IgE	Less than or equal to 0.34 kU/L

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

**NEW TEST**

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**Vitamin B3 (Niacin and Metabolites), Serum/Plasma**

3021015, VIT B3

**Specimen Requirements:**

<b>Patient Preparation:</b>	Collect specimen after a 4-hour fast.
<b>Collect:</b>	Plain Red, Serum Separator Tube (SST), Green (sodium or lithium heparin) or Plasma separator tube (PST)
<b>Specimen Preparation:</b>	Separate from cells ASAP or within 2 hours of collection. Transfer 1 mL of serum or plasma to an ARUP standard transport tube. (Min: 0.3 mL)
<b>Transport Temperature:</b>	Frozen
<b>Unacceptable Conditions:</b>	Hemolyzed samples. Samples collected in EDTA tubes.
<b>Remarks:</b>	Light protection is preferred during storage and shipment.

**Stability:** After separation from cells: Ambient: 6 hours; Refrigerated: Unacceptable; Frozen: 1 month

**Methodology:** Quantitative High Performance Liquid Chromatography-Tandem Mass Spectrometry

**Note:** For determination of vitamin B3 sufficiency, avoid use of vitamin supplements for 24 hours prior to collection.

**CPT Codes:** 84591

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

Niacin (nicotinic acid, NIC) and its metabolites, nicotinamide (NAM) and nicotinuric acid (NUA) are measured in this assay. Measurable concentrations of NIC and NUA typically are not found in fasting specimens and may indicate therapeutic use of niacin.

Vitamin B3 concentrations are reported in nmol/L. To convert to nanograms per milliliter (ng/mL), multiply the reported concentration for nicotinamide by 0.122, nicotinic acid by 0.123, and nicotinuric acid by 0.180.

**Reference Interval:**

Test Number	Components	Reference Interval
	Nicotinamide	88-400 nmol/L
	Nicotinic Acid	Less than or equal to 80 nmol/L
	Nicotinuric Acid	Less than or equal to 55 nmol/L

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

**NEW TEST**

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**CSF Kappa Free Light Chains With Reflex to Oligoclonal Banding**

3021031, CSF KFLC R

**Specimen Requirements:**

**Patient Preparation:**

**Collect:** CSF AND serum separator tube or plain red

**Specimen Preparation:** Allow serum to clot completely at room temperature. Separate serum from cells ASAP or within 2 hours of collection. Transport two specimens. Transfer 1.5 mL CSF to an ARUP standard transport tube (Min: 0.7 mL) AND transfer 1 mL serum to an ARUP standard transport tube. (Min: 0.6 mL).

**Transport Temperature:** Frozen

**Unacceptable Conditions:** Grossly bloody or hemolyzed specimens.

**Remarks:** Recommendation is for CSF and serum to be collected within 24 hours of each other. Specimens collected outside this timeframe will be accepted at ordering provider's discretion

**Stability:** Ambient: Unacceptable; Refrigerated: 14 days; Frozen: 30 days

**Methodology:** Quantitative Immunoturbidimetry / Qualitative Isoelectric Focusing

**Note:** If Kappa Free Light Chains, CSF result is less than or equal to 0.33 m/L then Oligoclonal Bands in CSF and Serum (ARUP test code 0081135) will be added. Additional charges apply

**CPT Codes:** 83521; If reflexed, add 83916

**New York DOH Approval Status:** Specimens from New York clients will be sent out to a New York DOH approved laboratory, if possible.

**Interpretive Data:**

May be used in the assessment of multiple sclerosis or other inflammatory CNS diseases as a quantitative alternative to the oligoclonal band assay. This test screens for the presence of CSF kappa free light chains. Equivocal or positive results are reflexed to oligoclonal band testing.

Negative:	Less than 0.33 mg/L
Equivocal:	0.33 mg/L-1.09 mg/L
Positive:	Greater than 1.09 mg/L

**Reference Interval:**

Refer to report

Test Number	Components	Reference Interval
	Kappa Free Light Chains, CSF	Less than 0.33 mg/L

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

**NEW TEST**

[Click for Pricing](#)

**Allergens, Food, Major 9 Reflexive Profile, IgE**

3021041, FOOD BIG 9

<b>Specimen Requirements:</b>	
Patient Preparation:	Multiple patient encounters should be avoided.
Collect:	Serum separator tube or plain red.
Specimen Preparation:	Separate serum from cells ASAP or within 2 hours of collection. Transfer 4.0 mL serum to an ARUP standard transport tube. (Min: 2.5 mL). For multiple allergen orders refer to "Allergen Specimen Collection Instructions" at <a href="http://www.aruplab.com/testing/resources/specimen">www.aruplab.com/testing/resources/specimen</a> .
Transport Temperature:	Refrigerated.
Unacceptable Conditions:	Hemolyzed, icteric, or lipemic specimens.
<b>Remarks:</b>	
Stability:	After separation from cells: Ambient: 48 hours; Refrigerated: 2 weeks; Frozen: 1 month
Methodology:	Quantitative ImmunoCAP Fluorescent Enzyme Immunoassay

**Note:**

This profile initially tests for IgE in whole allergen extracts and will reflex to their respective components. Additional charges apply.

If Brazil nut result is greater than or equal to 0.10 kU/L, Brazil nut component Ber e 1 will be added.

If cashew result is greater than or equal to 0.10 kU/L, the cashew component rAna o 3 will be ordered.

If hazelnut result is greater than or equal to 0.10 kU/L, the hazelnut components Cor a 1, Cor a 8, Cor a 9, Cor a 14 will be ordered.

If walnut result is greater than or equal to 0.10 kU/L, walnut components rJug r 1 and rJug r 3 will be ordered.

If sesame result is greater than or equal to 0.10 kU/L, sesame component rSes i 1 will be ordered.

If wheat result is greater than or equal to 0.10 kU/L, wheat components Tri a 14 and Tri a 19 will be ordered.

If peanut result is greater than or equal to 0.10 kU/L, peanut components Ara h 1, Ara h 2, Ara h 3, Ara h 6, Ara h 8 and Ara h 9 will be ordered.

If milk result is greater than or equal to 0.10 kU/L, milk components alpha-lactalbumin and beta-lactoglobulin will be ordered.

If whole egg result is greater than or equal to 0.10 kU/L, whole egg components ovomucoid and ovalbumin will be ordered.

If soybean result is greater than or equal to 0.10 kU/L, soybean components Gly m 4, Gly m 5, and Gly m 6 will be ordered.

CPT Codes: 86003 x16; if reflexed, add 86008 per component

New York DOH Approval Status: This test is New York DOH approved.

Interpretive Data:

Reference Interval:

Test Number	Components	Reference Interval
	Allergen, Food, Almond IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Brazil Nut IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Cashew IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Chestnut IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Clam IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Crab IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Egg Whole IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Hazelnut IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Milk (Cow) IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Peanut IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Salmon IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Sesame Seed IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Soybean IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Tuna IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Walnut (Juglans spp) IgE	Less than or equal to 0.34 kU/L
	Allergen, Food, Wheat IgE	Less than or equal to 0.34 kU/L

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

## Inactivations

The following will be discontinued from ARUP's test menu on **July 20, 2026**  
Replacement test options are indicated when applicable.

Test Number	Test Name	Refer to Replacement Test
0060841	Antibiotic Level, Ticarcillin	
2002719	Acute Lymphoblastic Leukemia (ALL) Panel by FISH, Pediatric	Acute Lymphoblastic Leukemia (ALL) Panel by FISH, Pediatric (3020950)
2005689	Japanese Encephalitis Virus Antibodies, IgG and IgM by ELISA	
3005003	Matrix Metalloproteinase-9 (MMP-9)	Matrix Metalloproteinase-9 (MMP-9), Serum (3020899)
3005433	Chimerism, Posttransplant, Sorted Cells (CD34+ Cells)	
3016752	Vitamin B3 (Niacin and Metabolites), Serum/Plasma	Vitamin B3 (Niacin and Metabolites), Serum/Plasma (3021015)