

# Specimen Recommendations

Test Name (Test Code)	Specimen(s)	Volume (min.)	Anticoag/ Medium Preferred (accepted)	Storage	Stability	Recommended Shipping	Special Instructions
<b>Flow Cytometry</b>							
Leukemia / myeloma / lymphoma analysis	whole blood	4 mL (1 mL)	sodium heparin (EDTA)	4°C	48 hours	ice pack	Protect from extreme temperature. Separate ice pack from specimen.
	bone marrow aspirate	2 mL (0.5 mL)		4°C	48 hours	ice pack	
	bone marrow core biopsy	2 cm (1 cm)	sterile container with 2-4 mL transport media	4°C	48 hours	ice pack	
	fresh tissue	5 mm <sup>3</sup>					
	fine needle aspirate	4 mL (0.5 mL)					
	fluids, CSF, pleural, synovial, pericardial fluids	4 mL (0.5 mL)	sterile container with 2-4 mL transport media				
Bronchoalveolar lavage	bronchoalveolar lavage	10 mL (5 mL)	sterile container with 2-4 mL transport media	4°C	48 hours	ice pack	
PNH	whole blood	5 mL (0.5 mL)	sodium heparin (EDTA)	4°C	48 hours	ice pack	
<b>Pathology &amp; Immunohistochemistry</b>							
Bone marrow pathology evaluation (All specimen types required)	aspirate	4 mL (0.5 mL)	EDTA; sodium heparin (cytogenetics)	RT	48 hours	ambient	Use hematopathology collection kit and include CBC report.
	core biopsy	1 cm	formalin or B-Plus	RT	up to 72 hours	ambient	
	aspirate clot	5 mm <sup>3</sup>	formalin or B-Plus				
	aspirate smear	4-6 slides	air dried		indefinite		
	blood smear	1 slide	air dried				

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<b>Immunohistochemistry markers</b> Please note: If submitting HER2 protein over-expression by immunohistochemistry, HER2(ERBB2) gene amplification by in situ hybridization or estrogen / progesterone receptor expression by immunohistochemistry, the specimen must follow fixation guidelines listed below: 1. Specimens should be immersed in fixative within one hour of the biopsy or resection. 2. If delivery of a resection specimen to the pathology department is delayed (eg, specimens from remote sites), the tumor should be bisected prior to the immersion in fixative. In such cases, it is important that the surgeon ensure that the identity of the resection margins is retained in the bisected specimen; alternatively, the margins may be separately submitted. 3. The time of removal of the tissue and the time of immersion of the tissue in fixative should be recorded and submitted to the laboratory.	paraffin embedded tissue	block or 3 slides (3-5 µm) per marker on adhesion glass	formalin fixed	RT	indefinite	ambient	Protect from extreme temperature with ice pack. Separate ice pack from specimen.
<b>Molecular Oncology</b>							
<b>Hematological - NGS</b>	whole blood	5 mL (3 mL)	EDTA or sodium heparin	4°C	96 hours	4°C	Protect from extreme temperature with ice pack. Separate ice pack from specimen.
IgVH somatic hypermutation B cell IGH and/or IGK rearrangement	bone marrow	3 mL (1 mL)	EDTA or sodium heparin	4°C	96 hours	4°C	
T cell TCR rearrangement Myeloid Extended Panel AML Panel	paraffin embedded tissue	block or 3 slides (3-5 µm) per marker on adhesion glass	formalin fixed	RT	indefinite		
CALR, JAK2 V617F, JAK2 Exon 12, MPL, MYD88 TP53	DNA	50µl at 200ng/µl		4°C	96 hours	4°C	Isolation of nucleic acids for clinical testing must occur in a CLIA-certified laboratory or a laboratory meeting equivalent requirements.

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<b>Solid Tumor- NGS</b> EGFR, KRAS, BRAF, IDH1/2 genes Colon, Lung, Melanoma, GIST, NRAS, KIT (D816V)	paraffin embedded tissue	block or 3 slides (3-5 µm) per marker on adhesion glass	formalin fixed	RT	indefinite	ambient	
	whole blood	5 mL (3 mL)	EDTA or sodium heparin	4°C	96 hours	4°C	Protect from extreme temperature with ice pack. Separate ice pack from specimen.
	bone marrow	3 mL (1 mL)	EDTA or sodium heparin	4°C	96 hours	4°C	
	DNA	50µl at 200ng/µl		4°C	96 hours	4°C	Isolation of nucleic acids for clinical testing must occur in a CLIA-certified laboratory or a laboratory meeting equivalent requirements.
EGFR - <i>therascreen</i> ® - PCR	paraffin embedded tissue	block or 3 slides (3-5 µm) per marker on adhesion glass	formalin fixed	RT	indefinite	ambient	No heavy metal fixatives.
BCR/ABL major p210 and minor p190 transcript s-qRT <b>PCR, MRD</b> <b>PML RARA qRT, PCR, MRD</b> BCR/ABL major p210 and minor p190 transcripts-qRT PCR, MRD PML/RARA qRT PCR, MRD	DNA	50µl at 50 ng/µl		4°C	96 hours	4°C	Isolation of nucleic acids for clinical testing must occur in a CLIA-certified laboratory or a laboratory meeting equivalent requirements.
	whole blood	(10 mL)	EDTA or sodium heparin	4°C	96 hours	4°C	Protect from extreme temperature with ice pack. Separate ice pack from specimen.
	bone marrow	2 mL (1 mL)	EDTA or sodium heparin	4°C	96 hours	4°C	Protect from extreme temperature with ice pack. Separate ice pack from specimen.
	RNA	50µL at 200ng/µL		-20°C	96 hours	dry ice	<b>Freeze immediately</b> Isolation of nucleic acids for clinical testing must occur in a CLIA-certified laboratory or a laboratory meeting equivalent requirements.
<b>Cytogenetics - Oncology</b>							

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Chromosome analysis	peripheral blood	5 mL 1 mL (newborn blood) 2 mL (percutaneous umbilical blood)	sodium heparin	RT	72 hours	ambient	4°C to 25°C during transit, but specimens may be transported on refrigerated gel packs. Do not allow the gel pack to come in contact with the specimen. Do not freeze. Extreme temperatures should be avoided.
	bone marrow	3 mL					
	bone marrow core	5 mm of bone core sample in at least 4 mL tissue culture	transport media (RPMI) using 10 mL sterile transport tube				
	lymph node	10 mm <sup>3</sup> lymph node sample in at least 4 mL tissue culture					
	fixed cytogenetically prepared cells	sterile centrifuge tube pellet must be visible	3:1, methanol:acetic acid	-28 °C - 15 °C	fixed cell pellets are stable for years	4°C to 25°C during transit, but specimens may be transported on refrigerated gel packs. Do not allow the gel pack to come in contact with the specimen. Do not freeze. Extreme temperatures should be avoided.	
Fluorescence <i>in situ</i> hybridization (FISH) probes for hematological disorders	whole blood	5 mL	sodium heparin (EDTA)	RT	72 hours	ambient	4°C to 25°C during transit, but specimens may be transported on refrigerated gel packs. Do not allow the gel pack to come in contact with the specimen. Do not freeze. Extreme temperatures should be avoided.
	bone marrow	3 mL					
	fixed cytogenetically prepared cells	sterile centrifuge tube pellet must be visible	3:1, methanol:acetic acid	-28 °C - 15 °C	fixed cell pellets are stable for years	4°C to 25°C during transit, but specimens may be transported on refrigerated gel packs. Do not allow the gel pack to come in contact with the specimen. Do not freeze. Extreme temperatures should be avoided.	

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FISH probes for solid tumors	paraffin embedded tissue	block or 3 slides (3-5 µm) per marker on adhesion glass	FFPE tissue is acceptable for FISH analysis. Preferred fixative is 10% neutral buffered formalin. Tissues preserved in B5 fixative or decalcified are usually not suitable for FISH. Tumor sections cut 3-5 µm thick and mounted on positively charged organosilane coated (silanized) slides work well. Request several unstained sections (two for each probe) and one H&E stained slide	RT	indefinite	ambient	4°C to 25°C during transit, but specimens may be transported on refrigerated gel packs. Do not allow the gel pack to come in contact with the specimen. Do not freeze. Extreme temperatures should be avoided.  Note: Specimens subject to HER2 (ERBB2) testing must follow fixation guidelines listed below. Specimens should be placed in fixative within one hour of biopsy or resection (cold ischemia time) and remain in 10% neutral buffered formalin for at least six hours and up to 72 hours (formalin fixation time). Decalcification solutions with strong acids should not be used. These times should be recorded and submitted to the laboratory.
Bladder Cancer FISH	urine	voided urine must be > 33 mL. Mix voided urine with preservative at 2:1 ratio of urine to preservative for a total volume > 50 mL.	PreservCyt®	2°C to 8°C	72 hours	ice pack	2°C to 8°C during transit, but specimens may be transported on refrigerated gel packs. Do not allow the gel pack to come in contact with the specimen. Do not freeze. Extreme temperatures should be avoided.
<b>Cytogenetics - Constitutional</b>							
Chromosome analysis	newborn blood	1 mL	sodium heparin	RT	72 hours	ambient	4°C to 25°C during transit, but specimens may be transported on refrigerated gel packs. Do not allow the gel pack to come in contact with the specimen. Do not freeze. Extreme temperatures should be avoided.
	whole blood	5 mL	sodium heparin				
	umbilical blood	2 mL	sodium heparin				

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<b>Infectious Disease</b>							
Chlamydia trachomatis Neisseria gonorrhoeae	cervical cells	3 mL	ThinPrep® or SurePath™	2°C -30°C	21 days	ambient	
	cervical or urethral swab	one swab	APTIMA unisex swab specimen collection	2°C -30°C	60 days	ambient	
	urine	20-30 mL	preservative-free urine collection cup	4°C	24 hours	4°C	Void first 10 mL.
	urine	2 mL	APTIMA urine tube	RT	30 days	ambient	
	throat swab	one swab	Aptima Multitest Swab	4°C -30°C	60 days	ambient	
	anal Swab	one swab	Aptima Multitest Swab	4°C -30°C	60 days	ambient	
HPV high risk by Aptima Trichomonas Vaginalis	cervical cells	2 mL (1 mL)	ThinPrep® or SurePath™	RT	21 days	ambient	
HPV genotyping	liquid cytology	2 mL	ThinPrep® or SurePath™	RT	21 days	ambient	
Herpes Simplex Type 1/2 qualitative by real-time PCR	HSV lesion		viral transport media	4°C	96 hours	4°C	Separate ice pack from specimen.
	whole blood	2 mL	EDTA	4°C	96 hours	4°C	
	fresh frozen tissue	5 mm <sup>3</sup>	sterile container with 2-4 mL transport medium	4°C -20°C	96 hours ~	4°C dry ice	
	swab from any site		viral transport media	4°C	96 hours	4°C	Separate ice pack from specimen.
	CSF	2 mL (1 mL)	sterile container	4°C -20°C	72 hours ~	4°C dry ice	Freeze within 4 hours
	cervical cells	2 mL (1 mL)	ThinPrep® or SurePath™	RT	21 days	ambient	
SARS-CoV-2 by Aptima	Nasal swab	One swab	NADx transport medium; Aptima multitest tube; Panther Fusion specimen lysis tube.	RT or 4°C	6 days at RT; 3 months at 4°C	ambient	To avoid additional processing or recollection, ensure that swab is properly scored.
	Oropharyngeal swab	One swab					
	Nasopharyngeal swab	One swab					