



**King Hussein Cancer Center**

**Department of Cell Therapy & Applied Genomics**

# Department of Cell Therapy & Applied Genomics

## Tests List & Specimens Collection Requirements

(IPPLAB~GEN.02/R11 Attach I/R3)

**Issue Date September 1<sup>st</sup>, 2020**

Approved by:

Dr. Abdelghani Tbakhi, Chairman of Department of Cell Therapy & Applied Genomics



King Hussein Cancer Center

Department of Cell Therapy & Applied Genomics

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## CTAG Sections Phone Directory

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<b>Flow Cytometry</b>	<b>1036</b>
	<b>1778</b>
<b>Cytogenetics</b>	<b>1546</b>
	<b>5171</b>
<b>BMT</b>	<b>1387</b>
	<b>7572</b>
<b>MDI</b>	<b>1032</b>
	<b>5169</b>

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**CTAG Tests List & Specimens Collection Requirements (IPPLAB-GEN.02/R11 Attach I/R3)**

<b>#</b>	<b>Test Name</b>	<b>Collection Requirements</b>	<b>CTAG Section</b>	<b>Turn Around Time</b>	<b>Specimens Special Handling</b>
1.	<b>7-AAD (Cell viability)</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark. For fluid and tissue please contact flow cytometry laboratory	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	24 Hours	Fresh blood, marrow aspirate, tissue, or fluid maximum 48 hrs. at room temperature
2.	<b>Adenovirus (ADV) Qualitative</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>· 1-2 ml CSF in sterile Falcon tube</li> <li>· 2-5 ml Broncho alveolar lavage (BAL) in sterile cup or Falcon tube</li> <li>· 5-10 ml urine in sterile cup</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>• Need sterile container.</li> <li>• Stability blood-Ambient: 8 hours; refrigerated: 24 hours.</li> <li>• Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>
3.	<b>Alpha Thalassemia mutation Analysis</b>	<ul style="list-style-type: none"> <li>· 2 - 5 ml EDTA blood tube under ice or</li> <li>· 2 ml bone marrow, EDTA on ice</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	20-30 Working days	Stability blood and bone marrow: Ambient: 1 day; Refrigerated 1 week.
4.	<b>Autoimmune lymphoproliferative syndrome (ALPS) Test</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh Blood Maximum 48 hrs. At Room Temperature
5.	<b>BCR/ABL Qualitative Test</b>	2 ml peripheral blood or bone marrow EDTA "Lavender top" tube	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working days	Stability-Ambient: one hour; Refrigerated:24 hours
6.	<b>BCR/ABL1, p190, mRNA Detection, Reverse Transcription-PCR (RT-PCR), Quantitative</b>	<ul style="list-style-type: none"> <li>· 2 - 5 ml EDTA blood tube on ice or</li> <li>· 2 ml bone marrow, EDTA on ice</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working days	Stability-Ambient: one hour; Refrigerated:24 hours

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<b>#</b>	<b>Test Name</b>	<b>Collection Requirements</b>	<b>CTAG Section</b>	<b>Turn Around Time</b>	<b>Specimens Special Handling</b>
7.	<b>BCR/ABL1, p210, mRNA Detection, Reverse Transcription-PCR (RT-PCR), Quantitative</b>	<ul style="list-style-type: none"> <li>· 2 - 5 ml EDTA blood tube on ice</li> <li>or</li> <li>· 2 ml bone marrow, EDTA on ice</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working days	Stability-Ambient: one hour; Refrigerated:24 hours
8.	<b>Beta Thalassemia mutation Analysis</b>	<ul style="list-style-type: none"> <li>· 2 - 5 ml EDTA blood tube under ice</li> <li>or</li> <li>· 2 ml bone marrow, EDTA on ice</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	20-30 Working days	Stability blood and bone marrow: Ambient: 1 day; Refrigerated 1 week.
9.	<b>CD16+CD56/CD45 (Total NK cells)</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh blood or maximum 48 hrs. at room temperature
10.	<b>CD19/CD45 (Total B-Cell)</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh blood maximum 48 hrs. at room temperature
11.	<b>CD20/CD45 (Total B-Cell)</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh blood maximum 48 hrs. at room temperature

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12.	<b>CD3/CD4/CD8/CD45 (T-cell subsets)</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh blood maximum 48 hrs. at room temperature
13.	<b>CD34, ALLO - (PB) (CD34, Allogenic Stem Cell Quantification including CD3-PB)</b>	EDTA tube	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-4:00 pm Otherwise: Contact lab section	2 Hours	Room temperature within 24 hours
14.	<b>CD34, AUTO – (PBSC) (CD34, Autologus Stem Cell Quantification - PBSC)</b>	Sterile conical tube	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-4:00 pm Otherwise: Contact lab section	2 Hours	Room temperature within 24 hours
15.	<b>CD34, Auto- (PB) (CD34, Autologus Stem Cell Quantification - PB )</b>	EDTA Tube	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-4:00 pm Otherwise: Contact lab section	2 Hours	Room temperature within 24 hours

**CTAG Tests List & Specimens Collection Requirements (IPPLAB-GEN.02/R11 Attach I/R3)**

<b>#</b>	<b>Test Name</b>	<b>Collection Requirements</b>	<b>CTAG Section</b>	<b>Turn Around Time</b>	<b>Specimens Special Handling</b>
16.	<b>CD34,ALLO - (PBSC) (CD34,ALLOGENEIC Stem Cell Quantification, Including, CD3, PBSC</b>	Sterile conical tube	<b>Flow Cytometry</b> Sunday- Thursday: 8:00 am-4:00 pm Otherwise: Contact lab section	2 Hours	Room temperature within 24 hours
17.	<b>CD4/CD3/CD45 (Helper T- cells)</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday- Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh blood or marrow aspirate or maximum 48 hrs. at room temperature
18.	<b>CD8/CD3/CD45 (Suppressor/Cytotoxic T- Cells)</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday- Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh blood maximum 48 hrs. at room temperature
19.	<b>Chimerism (CHIM)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood or bone marrow in lavender top (EDTA) tube.</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel.</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	5-7 Working Days	<ul style="list-style-type: none"> <li>• Stability blood and cord blood- Ambient: 1 week; Refrigerated 1 week.</li> <li>• Stability buccal, swab-must be immediately delivered.</li> <li>• Stability DNA-Refrigerated or Under ice.</li> <li>• Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>

**CTAG Tests List & Specimens Collection Requirements (IPPLAB-GEN.02/R11 Attach I/R3)**

<b>#</b>	<b>Test Name</b>	<b>Collection Requirements</b>	<b>CTAG Section</b>	<b>Turn Around Time</b>	<b>Specimens Special Handling</b>
20.	<b>Chromosomal Breakage</b>	Depends on age, collect in heparin "Green Top" · Adults: 2-5 ml. BM aspirate and/or Peripheral blood · Children: 2-5 ml. BM aspirate and/or Peripheral blood · Newborns : 1-2 ml. BM aspirate and/or peripheral blood	<b>Cytogenetics</b> Sunday-Thursday 8:00 am – 4:00 pm	5 Days	Room temperature
21.	<b>Clinical Sequencing</b>	· 2 - 5 ml EDTA blood tube under ice or · 2 ml bone marrow, EDTA on ice	<b>MDI</b> (8:00 AM -3:00 PM)	20-30 Working days	Stability blood and bone marrow: Ambient: 1 day; Refrigerated 1 week.
22.	<b>CMV Antigenemia</b>	2-4 ml EDTA blood "Lavender Top Tubes" (10 ml if neutropenic).	<b>BMT</b> Sunday, Tuesday, Wednesday only by 12 noon	24 Hours	Room temperature
23.	<b>Cytogenetics BM Karyotype</b>	Heparin tube, Fresh sample, Room temperature	<b>Cytogenetics</b> Sunday-Thursday 8:00 am – 4:00 pm	21 Days	Room Temperature
24.	<b>Cytogenetics PB Karyotype</b>	Heparin tube, Fresh sample, Room temperature	<b>Cytogenetics</b> Sunday-Thursday 8:00 am – 4:00 pm	21 Days	Room Temperature
25.	<b>Cytomegalovirus (CMV) (Quantitative)</b>	· 2 ml peripheral blood in lavender top (EDTA) tube · 1-2 ml CSF in sterile Falcon tube · 2-5 ml Broncho alveolar lavage (BAL) in sterile cup or Falcon tube · 5-10 ml urine in sterile cup	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>• Need sterile container.</li> <li>• Stability blood, swabs, -Ambient: 8 hours; Refrigerated: 24 hour.</li> <li>• Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>

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26.	<b>DNA Extraction (DNA Ext)</b>	Minimum 2 ml any sample type if applicable	<b>MDI</b> (8:00 AM -3:00 PM)	1-3 Working Day	<ul style="list-style-type: none"> <li>• Need sterile container.</li> <li>• Stability blood-Ambient: 8 hours; Refrigerated: 24 hours.</li> <li>• Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months.</li> <li>• Paraffin embedded tissue- Ambient</li> </ul>
27.	<b>EGFR Mutation</b>	Paraffin embedded tissue	<b>MDI</b> (8:00 AM -3:00 PM)	7-10 Working Days	Ambient
28.	<b>Enterovirus (Qualitative)</b>	<ul style="list-style-type: none"> <li>• 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>• 2 ml CSF in sterile Falcon tube</li> <li>• 2 ml BAL in sterile cup or Falcon tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>• Need sterile container.</li> <li>• Stability blood, swabs, -Ambient: 8 hours; Refrigerated: 24 hour.</li> <li>• Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>
29.	<b>Epstein Barr Virus (EBV)</b> <b>(Quantitative)</b>	<ul style="list-style-type: none"> <li>• 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>• 1-2 ml CSF in sterile Falcon tube</li> <li>• 2-5 ml Broncho alveolar lavage (BAL) in sterile cup or Falcon tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>• Need sterile container.</li> <li>• Stability blood, swabs, -Ambient: 8 hours; Refrigerated: 24 hour.</li> <li>• Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>
30.	<b>Factor II (Prothrombin) Mutation By PCR</b>	<ul style="list-style-type: none"> <li>• 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>• 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	7 Working Days	Stability- Ambient: 3 days; Refrigerated: 1 week
31.	<b>Factor V Leiden (F5) R506Q Mutation</b>	<ul style="list-style-type: none"> <li>• 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>• 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	7 Working Days	Stability- Ambient: 3 days; Refrigerated: 1 week
32.	<b>Familial Hemophagocytic Lymphohistiocytosis Genetic Study</b>	2 ml peripheral blood in lavender top (EDTA) tube	<b>MDI</b> (8:00 AM -3:00 PM)	15-25 Working Days	<ul style="list-style-type: none"> <li>• Need sterile container</li> <li>• Stability blood-Ambient: 8 hours; Refrigerated: 1 week</li> </ul>

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33.	<b>Fertility Test [CD3/CD4/CD25/CD16/CD56/C D45]</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh Blood Maximum 48 hrs. At Room Temperature
34.	<b>Fever and Rash Panel (HHV7, Measles, HHV6, Enterovirus, B19)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>· 2 ml CSF in sterile Falcon tube</li> <li>· 2 ml body fluids in a sterile tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need Sterile Container</li> <li>· Stability Blood-Ambient: 8 Hours; Refrigerated: 24 Hours</li> <li>· Stability Fluids-Ambient: 8 Hours; Refrigerated: 24 Hours; Under ice: 3 Months</li> </ul>
35.	<b>FISH for Hematological Disorders</b>	Heparin tube, Room temperature	<b>Cytogenetics</b> Sunday-Thursday 8:00 am – 4:00 pm	5 Days	Room Temperature
36.	<b>FISH on Paraffin Embedded Tissue</b>	Paraffin Embedded Tissue	<b>Cytogenetics</b> Sunday-Thursday 8:00 am – 4:00 pm	10 Days	Room Temperature
37.	<b>Flow Cytometry Marker (Specify)</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark. For fluid and tissue please contact flow cytometry laboratory.	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh blood, marrow aspirate, tissue, or fluid maximum 48 hrs. at room temperature
38.	<b>FLT3 Mutation</b>	2 ml peripheral blood or bone marrow in lavender top (EDTA) tube	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	Stability blood-bone marrow Ambient: 8 hours; Refrigerated: 1 week

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39.	<b>Flu A, B and H1N1 Screening</b>	<ul style="list-style-type: none"> <li>· Nasopharyngeal/ throat swab placed in universal transport media</li> <li>· Sputum in 1 ml sputum collection kit or a sterile, plastic container with a leak-proof cap</li> <li>· 2 ml BAL in sterile cup or Falcon tube</li> <li>· 2 ml pleural fluid in sterile cup or Falcon tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability swabs-Ambient: 8 hours; Refrigerated: 48 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 48 hours; Under ice: 2 months</li> </ul>
40.	<b>Full Myeloid Panel by Next Generation Sequencing (NGS)</b>	<ul style="list-style-type: none"> <li>· 2 - 5 ml EDTA blood tube under ice or</li> <li>· 2 ml bone marrow, EDTA on ice</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	20-30 Working days	Stability blood and bone marrow: Ambient: 1 day; Refrigerated 1 week.
41.	<b>Full Solid Tumor Panel by Next Generation Sequencing (NGS)</b>	Formalin-fixed, paraffin-embedded (FFPE)	<b>MDI</b> (8:00 AM -3:00 PM)	20-30 Working days	Ambient
42.	<b>HCV genotyping (HCVg)</b>	3-5 ml Whole blood Plain "Red Top Tube"	<b>MDI</b> (8:00 AM -3:00 PM)	5-10 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> </ul>
43.	<b>Hemochromatosis HFE Gene Analysis, Blood</b>	2 ml peripheral blood in lavender top (EDTA) tube	<b>MDI</b> (8:00 AM -3:00 PM)	7-10 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 1 week</li> </ul>
44.	<b>Hepatitis B Virus Quantitative (HBV QN)</b>	2 ml peripheral blood in lavender top (EDTA) tube	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; refrigerated: 24 hours.</li> <li>· Under ice plasma: 3 months</li> </ul>
45.	<b>Hepatitis C virus Quantitative (HCV QN)</b>	2 ml peripheral blood in lavender top (EDTA) tube	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; refrigerated: 24 hours.</li> <li>· Under ice plasma: 3 months</li> </ul>

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46.	<b>Herpes Simplex Virus (HSV) I and II (Qualitative)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>· 1-2 ml CSF in sterile Falcon tube</li> <li>· 2-5 ml Broncho alveolar lavage (BAL) in sterile cup or Falcon tube</li> <li>· Swab placed in phosphate buffered saline (PBS)</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>
47.	<b>HIV By Real Time PCR</b>	2 ml EDTA blood tube "Lavender Top "	<b>MDI</b> (8:00 AM -3:00 PM)	7 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> </ul>
48.	<b>HLA-A Intermediate/High Resolution</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	5-7 Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood-Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>
49.	<b>HLA-A Sequence Specific Oligonucleotide (SSO)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	5-7 Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood-Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>

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50.	<b>HLA-A Sequence Specific Primer (SSP)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood- Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>
51.	<b>HLA-A-B and DR By SSO</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood- Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>
52.	<b>HLA-B Intermediate/High Resolution</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood- Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>
53.	<b>HLA-B Sequence Specific Oligonucleotide (SSO)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood- Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>

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#	Test Name	Collection Requirements	CTAG Section	Turn Around Time	Specimens Special Handling
54.	<b>HLA-B Sequence Specific Primer (SSP)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood- Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>
55.	<b>HLA-C Genotyping</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood- Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>
56.	<b>HLA-DQ Genotyping</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood- Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>
57.	<b>HLA-DRB1 Intermediate/High Resolution</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood- Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>

**CTAG Tests List & Specimens Collection Requirements (IPPLAB-GEN.02/R11 Attach I/R3)**

#	Test Name	Collection Requirements	CTAG Section	Turn Around Time	Specimens Special Handling
58.	<b>HLA-DRB1 Sequence Specific Oligonucleotide (SSO)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood-Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>
59.	<b>HLA-DRB1 Sequence Specific Primer (SSP)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood, bone marrow or umbilical cord blood in lavender top (EDTA) tube</li> <li>· 2-4 sterile Buccal Swabs stored in a sealed container without gel</li> <li>· 1 ml Amniotic Fluid</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>5-7</b> Working Days	<ul style="list-style-type: none"> <li>· Stability blood and cord blood-Ambient: 1 week; Refrigerated 1 week.</li> <li>· Stability buccal, swab-must be immediately delivered</li> <li>· Stability DNA-Refrigerated or Under ice.</li> <li>· Patient should not be blood transfused for at least 1 week before blood drawing</li> </ul>
60.	<b>Human Herpes Virus 6 (Qualitative)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>· 2 ml CSF in sterile Falcon tube</li> <li>· 2 ml body fluids in a sterile tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>3-5</b> Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>
61.	<b>Human Herpes Virus 7 (Qualitative)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>· 2 ml CSF in sterile Falcon tube</li> <li>· 2 ml body fluids in a sterile tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>3-5</b> Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>

**CTAG Tests List & Specimens Collection Requirements (IPPLAB-GEN.02/R11 Attach I/R3)**

<b>#</b>	<b>Test Name</b>	<b>Collection Requirements</b>	<b>CTAG Section</b>	<b>Turn Around Time</b>	<b>Specimens Special Handling</b>
62.	<b>Hyper IgM</b>	2-4.5 ml in Lithium/Sodium heparin tube "Green top" fill to mark	<b>Flow Cytometry</b> Sunday- Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh Blood Maximum 48 hrs. At Room Temperature
63.	<b>IGH Gene Rearrangement, Clonality Screening By PCR</b>	<ul style="list-style-type: none"> <li>· 2 - 5 ml EDTA blood tube under ice, or ml bone marrow, EDTA on ice</li> <li>· Formalin-fixed-paraffin-embedded tissue (specimen source is required)</li> <li>· CSF</li> <li>· DNA</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	7-10 Working Days	<ul style="list-style-type: none"> <li>· Stability for FFPE-Ambient Indefinitely, Refrigerated: Indefinitely</li> <li>· Stability for blood and CSF-Ambient: one day; Refrigerated: 5 days</li> </ul>
64.	<b>JAK-2 V617F Mutation</b>	2 ml peripheral blood or bone marrow in lavender top (EDTA) tube	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	Stability blood-bone marrow Ambient: 8 hours; Refrigerated: 1 week
65.	<b>(JCV &amp; BKV) Polyomaviruses (Qualitative)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>· 1-2 ml CSF in sterile Falcon tube</li> <li>· 5-10 ml urine in sterile cup</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>
66.	<b>KRAS Mutation</b>	Paraffin embedded tissue	<b>MDI</b> (8:00 AM -3:00 PM)	7-10 Working Days	Ambient
67.	<b>Leukemia/Lymphoma Immunophenotyping</b>	2-4.5 ml Marrow in Lavender top tube or EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday- Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh blood up to 48 hrs. R.T. Collect tissue / FNA in RPMI media and send immediately

**CTAG Tests List & Specimens Collection Requirements (IPPLAB-GEN.02/R11 Attach I/R3)**

<b>#</b>	<b>Test Name</b>	<b>Collection Requirements</b>	<b>CTAG Section</b>	<b>Turn Around Time</b>	<b>Specimens Special Handling</b>
68.	<b>Leukocyte adhesion deficiency I (LAD) Panel [CD11a/CD11b/CD11b/CD18/C D45]</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh Blood Maximum 48 hrs. At Room Temperature
69.	<b>Lymphocytes subsets test (CD3/CD4/CD8/CD16/CD56/C D19/CD45 )</b>	2-4.5 ml in EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh blood maximum 48 hrs. at room temperature
70.	<b>Measles (Qualitative By PCR)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>· 2 ml CSF in sterile Falcon tube</li> <li>· 2 ml body fluids in a sterile tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>
71.	<b>Mumps (Qualitative)</b>	<ul style="list-style-type: none"> <li>· 2 ml peripheral blood in lavender top (EDTA) tube</li> <li>· 2 ml CSF in sterile Falcon tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 24 hours; Under ice: 3 months</li> </ul>
72.	<b>Mycobacterium Tuberculosis (TB) by real-time PCR</b>	<ul style="list-style-type: none"> <li>· 1-2 ml CSF in sterile Falcon tube</li> <li>· 2-5 ml Broncho alveolar lavage (BAL) in sterile cup or Falcon tube</li> <li>· 1-2 ml pleural or peritoneal fluid or sputum in sterile Falcon tube</li> <li>· Paraffin-embedded tissue</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability-Ambient: 8 hours; Refrigerated: 24 hours; Under ice (excludes tissue): 3 months</li> </ul>

**CTAG Tests List & Specimens Collection Requirements (IPPLAB-GEN.02/R11 Attach I/R3)**

<b>#</b>	<b>Test Name</b>	<b>Collection Requirements</b>	<b>CTAG Section</b>	<b>Turn Around Time</b>	<b>Specimens Special Handling</b>
73.	<b>NRAS Mutation</b>	Formalin-fixed, paraffin-embedded (FFPE)	<b>MDI</b> (8:00 AM -3:00 PM)	7-10 Working Days	Ambient
74.	<b>Parvovirus B19 By PCR</b>	<ul style="list-style-type: none"> <li>· 2 ml EDTA blood tube "Lavender Top "</li> <li>· 2 ml CSF in sterile Falcon tube</li> <li>· 2 ml Vesicle fluid, synovial fluid or other body fluid (specimen source is required) in sterile cup or falcon tube</li> <li>· Tissue (specimen source is required)</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Stability Blood-Ambient: 8 Hours; Refrigerated: 24 Hours; Under ice Plasma: 3 Months</li> <li>· Stability Fluids-Ambient: 8 Hours; Refrigerated: 24 Hours; Under ice: 3 Months</li> </ul>
75.	<b>PML-RARA Translocation (PML- RARA) Qualitative</b>	<ul style="list-style-type: none"> <li>· 2 - 5 ml EDTA blood tube on ice, or</li> <li>· 2 ml bone marrow, EDTA on ice</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	Stability-Ambient: one hour; Refrigerated: 24 hours
76.	<b>PNH</b>	2-4.5 ml Marrow in Lavender top tube or EDTA blood tube "Lavender top" fill to mark	<b>Flow Cytometry</b> Sunday-Thursday: 8:00 am-3:00 pm Otherwise: Contact lab section	48 Hours	Fresh Blood Or Marrow Aspirate Maximum 48 hrs. At Room Temperature
77.	<b>Respiratory Viruses By PCR (H1N1,COR43, ADENO, MPNEU, FLUA , COR229, PARA3, PARA1, RSV A/B , COR63, PARA2, HUMPA/B, RHINO, PARECH, ENTERO, HBOV(BOCAVIRUS), PARA4, FLUB, COR HKU)</b>	<ul style="list-style-type: none"> <li>· Nasopharyngeal/ throat swab placed in universal transport media</li> <li>· Sputum in 1 ml sputum collection kit or a sterile, plastic container with a leak-proof cap</li> <li>· 2 ml BAL in sterile cup or Falcon tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	3-5 Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability swabs-Ambient: 8 hours; Refrigerated: 48 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 72 hours; Under ice: 2 months</li> </ul>
78.	<b>Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) by PCR</b>	<ul style="list-style-type: none"> <li>· Nasopharyngeal/ throat swab placed in universal transport media</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	1-2 Working Days	Stability Fluids-Ambient: 8 hours; Refrigerated: 72 hours

**CTAG Tests List & Specimens Collection Requirements (IPPLAB-GEN.02/R11 Attach I/R3)**

<b>#</b>	<b>Test Name</b>	<b>Collection Requirements</b>	<b>CTAG Section</b>	<b>Turn Around Time</b>	<b>Specimens Special Handling</b>
79.	<b>Single Antigen Class I By Luminex (Anti HLA)</b>	2 ml Peripheral Blood in plain tube	<b>MDI</b> (8:00 AM -3:00 PM)	<b>3-5</b> Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> </ul>
80.	<b>Single Antigen Class II By Luminex (Anti HLA)</b>	2 ml Peripheral Blood in plain tube	<b>MDI</b> (8:00 AM -3:00 PM)	<b>3-5</b> Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability blood-Ambient: 8 hours; Refrigerated: 24 hours</li> </ul>
81.	<b>TCR Gamma Gene Rearrangement, Clonality Screening</b>	<ul style="list-style-type: none"> <li>· 2 ml Peripheral blood (EDTA) or bone marrow Formalin-fixed, paraffin- embedded tissue</li> <li>· 2 ml CSF in sterile Falcon tube</li> <li>· Tissue (specimen source is required)</li> <li>· DNA</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	7-10 Working Days	<ul style="list-style-type: none"> <li>· Stability for FFPE- Ambient: Indefinitely; Refrigerated: Indefinitely</li> <li>· Stability blood and CSF- Ambient: 1 day; Refrigerated: 5 days</li> </ul>
82.	<b>TP53 Full genome Sequencing</b>	<ul style="list-style-type: none"> <li>· 2 - 5 ml EDTA blood tube under ice</li> <li>or</li> <li>· 2 ml bone marrow, EDTA on ice</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>20-30</b> Working days	<b>Stability blood and bone marrow: Ambient: 1 day; Refrigerated 1 week.</b>
83.	<b>Varicella Zoster (VZV) Qualitative</b>	<ul style="list-style-type: none"> <li>· 2 ml EDTA blood tube "Lavender Top"</li> <li>· 2 ml CSF in sterile Falcon tube</li> </ul>	<b>MDI</b> (8:00 AM -3:00 PM)	<b>3-5</b> Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability swabs-Ambient: 8 hours; Refrigerated: 48 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 72 hours; Under ice: 2 months</li> </ul>
84.	<b>Viral Encephalitis Panel (Mumps, HSV1, Enterovirus, HSV2, Parecho, VZV)</b>	CSF	<b>MDI</b> (8:00 AM -3:00 PM)	<b>3-5</b> Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability swabs-Ambient: 8 hours; Refrigerated: 48 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 72 hours; Under ice: 2 months</li> </ul>
85.	<b>Viral Vesicular Rash Panel</b>	2 ml Vesicle fluid or other body fluid (specimen source is required) in sterile cup or falcon tube• Swab	<b>MDI</b> (8:00 AM -3:00 PM)	<b>3-5</b> Working Days	<ul style="list-style-type: none"> <li>· Need sterile container</li> <li>· Stability swabs-Ambient: 8 hours; Refrigerated: 48 hours</li> <li>· Stability Fluids-Ambient: 8 hours; Refrigerated: 72 hours; Under ice: 2 months</li> </ul>