

# PLASMA CELL DYSCRASIAS



# Diagnostic Criteria of Multiple Myeloma\*

All diagnostic tests  
under one roof at  
MedGenome Labs

History and Physical Examination

CBC, differential, and platelet count

Peripheral blood smear

Serum BUN/creatinine electrolytes, liver function tests, albumin, calcium, serum uric acid, serum LDH, and beta-2 microglobulin

Creatinine clearance (calculated or measured directly)

Serum quantitative immunoglobulins, serum protein electrophoresis (SPEP), and serum immunofixation electrophoresis (SIFE)

24 hour urine for total protein, urine protein electrophoresis (UPEP), and urine Immunofixation Electrophoresis (UIFE)

Serum free light chain (FLC) assay

Whole body low dose CT scan or FDG PET/CT

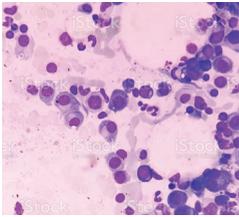
Bone marrow aspirate and biopsy, including immunohistochemistry (IHC) and/or multi parameter flow cytometry

Plasma cell fluorescence in situ hybridization (FISH) panel on bone marrow [del(13), del 17p13), t(4;14), t(11;14), t(14;16), t(14;20), 1q21 gain/1q21 amplification, 1p deletion]

Natriuretic Peptide Tests (BNP, NT-proBNP)

\*As per NCCN 2023

# Tests offered at MedGenome



Bone marrow aspirate showing plasma cell predominance

## Bone Marrow Examination

Proliferation of abnormal plasma cells in bone marrow aspirate and biopsy can be determined.

Test Name	Test Code	Sample Type And Container	Sample Volume	Methodology	Turn Around Time (TAT)
Bone Marrow Aspiration Morphology	MGM2629	Bone Marrow aspirate in EDTA	2 ml	Light Microscopy	2 Days

## Serum and Urine Protein Electrophoresis

- Quantitative Screening Test
- Demonstrates a single narrow peak in the Gamma/ Beta/Alpha regions (M Spike/ Protein)
- Both serum and 24 hour urine should be assessed for M protein.
- Helps in plasma cell disorder classification (MGUS, Smoldering Myeloma or Symptomatic myeloma)
- Establishes staging of symptomatic myeloma (stage I, II and III);
- Monitoring the increase of malignant disease or the evolution from a nonmalignant state to a malignant state
- Monitoring the treatment response.

Test Name	Test Code	Sample Type And Container	Sample Volume	Methodology	Turn Around Time (TAT)
Serum Protein Electrophoresis	MGM1974	Serum In Red/ Yellow Top Vacutainer	2-3 ml	Capillary Electrophoresis	7 Days
Urine Protein Electrophoresis	MGM2321	24 Hour Urine Sample In Sterile Container	24 hour Urine Sample	Capillary Electrophoresis	7 Days





Test Name	Test Code	Sample Type And Container	Sample Volume	Methodology	Turn Around Time
IGHV gene mutation analysis by NGS	MGM 1342	Bone Marrow Aspirate in EDTA	2-3 ml	Next Generation Sequencing	14 days
Leukemia Panel (SNVs, small INDELS and CNVs) by NGS	MGM 499	Bone Marrow Aspirate in EDTA	2-3 ml	Next Generation Sequencing	12 days
Leukemia Fusion Panel by NGS (Gene arrangements/ translocation)	MGM1824	Bone Marrow Aspirate in EDTA	2-3 ml	Next Generation Sequencing	10 days

## Disease Staging and Risk Stratification Systems for Multiple Myeloma\*

Stage	International Staging System (ISS)	Revised -ISS (R-ISS)
I	Serum beta-2 microglobulin <3.5 mg/L Serum albumin ≥3.5 g/dL	ISS stage I and standard-risk chromosomal abnormalities by FISH and serum LDH ≤ the upper limit of normal
II	Not ISS stage I or III	Not ISS stage I or III
III	Serum beta-2 microglobulin ≥5.5mg/L	ISS stage III and either high risk chromosomal abnormalities by FISH or serum LDH > the upper limit of normal

## Factors considered High Risk for Multiple Myeloma\*

Cytogenetic abnormalities	<ul style="list-style-type: none"> <li>t(4;14)</li> <li>t(14;16)</li> <li>Del(17p)/monosomy 17</li> <li>1q21 gain/1q21 amplification</li> </ul>	<ul style="list-style-type: none"> <li>MYC translocation</li> <li>TP53 mutation [with del(17p)]</li> <li>Tetrasomies</li> <li>Complex karyotype (when done) or karyotypic del(13)</li> </ul>
Other risk factors	<ul style="list-style-type: none"> <li>High risk gene expression signature</li> <li>Extramedullary disease</li> <li>Circulating plasma cells</li> <li>High plasma cell proliferation</li> <li>Frailty</li> </ul>	<ul style="list-style-type: none"> <li>Renal failure</li> <li>Thrombocytopenia</li> <li>High serum FLC</li> <li>Lymphopenia</li> <li>Immunoparesis</li> <li>Elevated LDH</li> </ul>

\*As per NCCN 2023

