Test Definition: CSPCF

Plasma Cell Proliferative Disorder, Pre-Analysis
Cell Sorting, Bone Marrow

Overview

Useful For

Aiding in the diagnosis of new cases of multiple myeloma or other plasma cell proliferative disorders

Sorting plasma cells for fluorescence in situ hybridization analysis

Method Name

Only orderable as a reflex. See PCPDS / Plasma Cell Proliferative Disorder, High Risk with Reflex Probes, Diagnostic FISH Evaluation, Bone Marrow

Flow Cytometric Cell Selection

NY State Available

Yes

Specimen

Specimen Type

Bone Marrow

Specimen Required

Only orderable as a reflex. See PCPDS / Plasma Cell Proliferative Disorder, High Risk with Reflex Probes, Diagnostic FISH Evaluation, Bone Marrow

Specimen Type: Bone marrow
Preferred: Yellow top (ACD solution A or B)
Acceptable: Lavender top (EDTA) or green top (heparin)
Specimen Volume: 4 mL
Collection Instructions:
1. Invert several times to mix bone marrow
2. Send bone marrow specimen in original tube. **Do not aliquot.**

Specimen Minimum Volume

2 mL

Reject Due To

Gross hemolysis	Reject

Other	Fully clotted

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Bone Marrow	Ambient (preferred)	4 days	
	Refrigerated	4 days	

Clinical & Interpretive

Clinical Information

Multiple myeloma is a hematologic neoplasm that generally originates in the bone marrow and develops from malignant plasma cells. There are four main categories of plasma cell proliferative disorders: monoclonal gammopathy of undetermined significance (MGUS), monoclonal immunoglobulin deposition diseases (amyloidosis), plasmacytoma, and multiple myeloma. MGUS, which occurs in 3% to 4% of individuals over age 50 years, represents the identification of an asymptomatic monoclonal protein, yet approximately 1% per year will progress to multiple myeloma. Amyloidosis represents a rare group of deposition disorders including primary amyloidosis vs. light chain and heavy chain disease. Plasmacytomas represent isolated collections of bone or extramedullary plasma cells with a risk for development of multiple myeloma. Generalized bone pain, anemia, limb numbness or weakness, symptoms of hypercalcemia, and recurrent infections are all symptoms that may indicate multiple myeloma.

As myeloma progresses, the malignant plasma cells interfere with normal blood product formation in the bone marrow resulting in anemia and leukopenia. Myeloma also causes an overstimulation of osteoclasts, causing excessive breakdown of bone tissue without the normal corresponding bone formation. These bone lesions are seen in approximately 66% of myeloma patients. In advanced disease, bone loss may reach a degree where the patient suffers fractures easily.

Multiple myeloma is increasingly recognized as a disease characterized by marked cytogenetic, molecular, and proliferative heterogeneity. This heterogeneity is manifested clinically by varying degrees of disease aggressiveness. Multiple myeloma patients with more aggressive disease experience suboptimal responses to some therapeutic approaches; therefore, identifying these patients is critically important for selecting appropriate treatment options.

Reference Values

Only orderable as a reflex. See PCPDS / Plasma Cell Proliferative Disorder, High Risk with Reflex Probes, Diagnostic FISH Evaluation, Bone Marrow

An interpretive report will be provided.

Interpretation

Correlation with clinical, histopathologic and additional laboratory findings is required for final interpretation of these results. The final interpretation of results for clinical management of the patient is the responsibility of the managing physician.

Cautions
No significant cautionary statements

Clinical Reference
1 Swerdlow S, Campo E, Harris NL, et al. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues. 4th ed. IARC Press; 2017
2. Kumar SK, Rajkumar SV. The multiple myelomas-current concepts in cytogenetic classification and therapy. Nat Rev Clin Oncol. 2018;15(7):409-421. doi: 10.1038/s41571-018-0018-y
3. Rajkumar SV, Landgren O, Mateos MV. Smoldering multiple myeloma. Blood. 2015 May 14;125(20):3069-3075. doi:10.1182/blood-2014-09-568899
4. Muchtar E, Dispenzieri A, Kumar S et al. Interphase fluorescence in situ hybridization in untreated AL amyloidosis has an independent prognostic impact by abnormality type and treatment category. Leukemia. 2017;31(7);1562-1569. doi: 10.1038/leu.2016.369
5. Lakshman A, Paul S, Rajkumar SV et al. Prognostic significance of interphase FISH in monoclonal gammopathy of undetermined significance. Leukemia. 2018;32(8);1811-1815. doi: 10.1038/s41375-018-0030-3
6. Bochtler T, Hegenbart U, Kunz C, et al. Prognostic impact of cytogenetic aberrations in AL amyloidosis patients after high-dose melphalan: a long-term follow-up study. Blood. 2016;128(4):594-602. doi:10.1182/blood-2015-10-7
7. Treatment guidelines: multiple myeloma. mSMART 3.0. Accessed October 27, 2023. Available at www.msmart.org/mm-treatment-guidelines

Performance

Method Description
Selection of plasma cells using fluorescence activated cell sorting is the most direct and robust method of obtaining relatively pure plasma cell populations for fluorescence in situ hybridization assessment.(Instruction manual: BD FACSMelody Cell Sorter User's Guide. Revision 3. BD Biosciences; 03/2020)

PDF Report
No

Day(s) Performed
Specimens processed: Monday through Sunday
Results reported: Monday through Friday

Report Available
1 to 7 days

Specimen Retention Time
4 weeks

Performing Laboratory Location
Mayo Clinic Laboratories - Rochester Main Campus

Fees & Codes

Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

88184-Flow Cytometry; first cell surface, cytoplasmic or nuclear marker
88185 x 5-Flow Cytometry, additional cell surface, cytoplasmic or nuclear marker (each)

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
CSPCF	PCPDS Pre-Analysis Cell Sorting, BM	No LOINC Needed

Result ID	Test Result Name	Result LOINC® Value
607684	PCPDS Pre-Analysis Cell Sort	No LOINC Needed
607689	Final Diagnosis	No LOINC Needed