Test Definition: BMTF

XX/XY in Opposite Sex BMT, FISH

Overview

Useful For

Evaluating engraftment success by determining the proportion of donor and recipient interphase cells present in opposite sex bone marrow transplant recipients

Monitoring the proportion of host and recipient cells over time may be useful to identify significant clinical changes

Reflex Tests

Test ID	Reporting Name	Available Separately	Always Performed
_PBCT	Probe, +2	No, (Bill Only)	No
_PADD	Probe, +1	No, (Bill Only)	No
_PB02	Probe, +2	No, (Bill Only)	No
_PB03	Probe, +3	No, (Bill Only)	No
_IL25	Interphases,	No, (Bill Only)	No
_I099	Interphases, 25-99	No, (Bill Only)	No
_I300	Interphases, >=100	No, (Bill Only)	No

Testing Algorithm

This test only includes a charge for professional interpretation of results and does not include charges for probe application or analysis.

This test includes a charge for application of the first probe set (2 FISH probes) and professional interpretation of results. Additional charges will be incurred all reflex probes performed. Analysis charges will be incurred based on the number of cells analyzed per probe set. If no cells are available for analysis, no analysis charges will be incurred.

Method Name

Fluorescence In Situ Hybridization (FISH)

NY State Available

Yes

Specimen

Specimen Type

Varies

Specimen Required

Provide a reason for referral with each specimen. The laboratory will not reject testing if this information is not provided, but appropriate testing and interpretation may be compromised or delayed.

Advise Express Mail or equivalent if not on courier service.

Submit only 1 of the following specimens:

Specimen Type: Blood

Container/Tube: Green top (sodium heparin)

Specimen Volume: 7-10 mL

Collection Instructions:

1. Invert several times to mix blood.

2. Other anticoagulants are not recommended and are harmful to the viability of the cells.

Specimen Type: Bone marrow

Container/Tube: Green top (sodium heparin)

Specimen Volume: 1-2 mL

Collection Instructions:

1. Invert several times to mix bone marrow.

2. Other anticoagulants are not recommended and are harmful to the viability of the cells.

Forms

If not ordering electronically, complete, print, and send a Hematopathology/Cytogenetics Test Request (T726) with the specimen.

Specimen Minimum Volume

Blood: 2 mL
Bone Marrow: 1 mL

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Ambient (preferred)		
	Refrigerated		

Clinical and Interpretive

Clinical Information

Bone marrow transplantation (BMT) continues to be an important treatment for patients with malignant hematologic

disorders and bone marrow failure syndromes. Conventional cytogenetic studies can be performed to evaluate a mixture of donor and recipient cells in opposite sex bone marrow transplants at a sensitivity of approximately 5%. Interphase FISH testing for X and Y chromosomes in opposite sex bone marrow transplant specimens results in an improved sensitivity of approximately 0.5%.

Reference Values

An interpretive report will be provided.

Interpretation

Residual XX host cells are present in female BMT recipients when the percent of XX interphase cells exceeds the cutoff (>0.6%XX).

Residual XY host cells are present in male BMT recipients when the percent of XY interphase cells exceeds the cutoff (>0.3%XY).

Cautions

This test is designed for opposite sex bone marrow transplants (BMTs) only; results are not useful for same sex bone marrow transplants.

Examination of the sex chromosome complement of interphase cells using FISH does not distinguish between malignant and normal cells. We strongly recommend using both FISH and cytogenetic studies to monitor patients.

A single X chromosome is sometimes lost in bone marrow cells of females, and the Y chromosome is sometimes lost in bone marrow cells of males, regardless of whether the specimen is from the donor, recipient, or a post-BMT patient.

Rare males may have an unusual Y chromosome that cannot be identified with these probes, but this finding should be readily apparent by analysis of metaphase cells using FISH.

Occasional patients may have chromosome polymorphisms that may hybridize with the Y probe, but this should be readily apparent by analysis of metaphase cells using FISH.

Supportive Data

A blinded study using the DXZ1/DYZ1 probe set was performed on a series of patients who had undergone opposite sex bone marrow transplant. Normal cutoff were calculated based on the results of testing 25 male and 25 female normal donor samples.

Clinical Reference

Dewald GW, Schad CR, Christensen ER, et al: Fluorescence in situ hybridization with X and Y chromosome probes for cytogenetic studies on bone marrow cells after opposite sex transplantation. Bone Marrow Transplant 1993;12:149-154

Performance

Method Description

This test is performed using a commercially available probe set including DXZ1 (X chromosome centromere) and DYZ1 (distal portion of the Y chromosome long-armÃ¢â‚¬â€œYq12). The probe set is hybridized to the sample and 2 technologists each analyze 250 interphase nuclei (500 total) with the results expressed as the percent of XX and XY nuclei.(Unpublished Mayo method)

PDF Report

No

Day(s) and Time(s) Test Performed

Samples processed Monday through Sunday.Results reported Monday through Friday, 8 a.m. to 5 p.m. CST.

Analytic Time

7 days

Maximum Laboratory Time

8 days

Specimen Retention Time

4 weeks

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. For assistance, contact Customer Service.

Test Classification

This test was developed using an analyte specific reagent. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information

88271x2, 88291 Ã¢â‚¬â€œ DNA probe, each (first probe set), Interpretation and report

88271x2 Ã¢â‚¬â€œ DNA probe, each; each additional probe set (if appropriate)

88271x1 Ã¢â‚¬â€œ DNA probe, each; coverage for sets containing 3 probes (if appropriate)

88271x2 Ã¢â‚¬â€œ DNA probe, each; coverage for sets containing 4 probes (if appropriate)

88271x3 Ã¢â‚¬â€œ DNA probe, each; coverage for sets containing 5 probes (if appropriate)

88274 w/modifier 52 Ã¢â‚¬â€œ Interphase in situ hybridization, <25 cells, each probe set (if appropriate)

88274 Ã¢â‚¬â€œ Interphase in situ hybridization, 25 to 99 cells, each probe set (if appropriate)

88275 Ã¢â‚¬â€œ Interphase in situ hybridization, 100 to 300 cells, each probe set (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
BMTF	XX/XY in Opposite Sex BMT, FISH	48684-5

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Result ID	Test Result Name	Result LOINC Value
51792	Result Summary	50397-9
51794	Interpretation	69965-2
51793	Result Table	93356-4
54529	Result	62356-1
CG653	Reason for Referral	42349-1
CG654	Specimen	31208-2
51795	Source	31208-2
51796	Method	49549-9
53427	Additional Information	48767-8
55273	Disclaimer	62364-5
51797	Released By	18771-6