Engraftment (Chimerism) Analysis for Allogeneic Hematopoietic Stem Cell

Test Code:  
4380  (Donor Pre-Transplant)  
4382  (Recipient Pre-Transplant)  
4386  (1st Post Transplant)  
4388  (Post Transplant Chimerism)  
4390  (Sorted Cell Chimerism)

Department: Molecular Oncology

Test Synonyms:  
Pretransplant DNA storage;  
Post-transplant DNA for engraftment study;  
DNA from sorted cells for chimerism study

CPT Code(s): Per Specimen  
83890  
83900  
83901 x 8  
83909 x 10

Background:  
In patients who underwent allogeneic hematopoietic stem cell transplantation, engraftment (chimerism) studies are used to evaluate the level of donor versus recipient cells in post-transplant peripheral blood or bone marrow specimens (and/or specific sorted cell populations). In order to proceed with engraftment analysis, a pre-transplant specimen is obtained from the recipient and from the donor. DNA from each pre-transplant specimen is extracted and stored for future comparison with post-transplant specimens from the recipient. Engraftment studies are then sequentially performed post-transplant to monitor the level of donor and recipient cell chimerism. Donor and recipient cells are distinguished by PCR amplifying highly polymorphic Short Tandem Repeat (STR) markers, and analyzing the resulting products by capillary electrophoresis. The chimerism analysis is also often performed on flow-sorted purified T cells (often CD3+) and myeloid cells (often CD33+).

Clinical Utility:  
Post-transplant chimerism analysis provides valuable information on the kinetics of engraftment, and assists in the diagnosis of graft failure, rejection, and relapse. In certain clinical situations, evaluation of mixed chimerism in lineage-specific cells – for example, flow-sorted CD3+, or CD33+ cells, can provide useful prognostic information for long-term engraftment.

Methodology:  
DNA is extracted from sorted or unsorted cells, PCR amplified with a series of primers to 10 different polymorphic loci, and the PCR amplicons are analyzed by capillary electrophoresis. Engraftment analysis is based on the ABI Profiler Plus human identity test kit.

Specimen Requirements:  
- 5-10 mL of blood or bone marrow — yellow (ACD) or purple (EDTA) tube (unspun)  
- Deliver to lab at shipping address above within 24 hours of collection, if sample cannot arrive within 24 hours, refrigerate until sample can be transported.

A REQUISITION FORM MUST ACCOMPANY ALL SAMPLES. Please include detailed clinical information.
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Test Performed (Days):
Daily

Turnaround Time:
1 week for post-transplant engraftment analysis.

Shipment Sensitivity Requirements:
Package and ship specimen to remain cold, but not frozen. Ship via overnight express, using the FedEx priority overnight label provided. Contact Client Services for shipping kits and instructions at (855) 535-1522.

Reference: