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TRG Gene Rearrangement

TCR Gamma gene rearrangements flanking the hypervariable antigen-binding region 3 *CDR3*

Indications for Molecular Testing

- Suspected clonal T lymphoid proliferation or neoplasm

Testing Methodology

PCR of the TRG gene detects both normal, polyclonal rearranged fragments and abnormal, clonal rearrangements. Two multiplex primer mixes target conserved regions within the variable (V) and the joining (J) regions that flank the hypervariable antigen-binding region 3 (CDR3). The PCR master mixes, which span the genomic TRG region, are used in separate reactions to distinguish the clonal rearrangement as different in size and prevalence from the normal, polyclonal DNA fragments and to minimize false negatives.

Interpretation of DNA analysis

Leukemia and lymphoma of T lymphoid lineage have clonal reproduction of the rearranged configuration of original tumor cell in contrast to normal, functional cells of T lineage that demonstrate patterns of diversity of antigen specificity and DNA rearrangement. Diagnostic for leukemias and lymphomas derived from T lymphoid hematopoietic cell precursors. Specific DNA rearrangements identified at diagnosis constitutes a tumor-specific marker that may be used to identify minimal residual disease post-treatment. When no distinct, abnormal-size peak can be distinguished, the specimen is interpreted as lacking in clonal TCRG gene rearrangement below the minimum level of detection (10%). Polyclonal or oligoclonal proliferation may be present as multiple peaks. A flat profile may be observed when no amplification has occurred (compare to control gene pattern) OR a non-T lymphoid cell population is analyzed.

Specimen Requirements

Frozen Tissue--10 mm^3 of fresh frozen tissue in sterile, plastic container. Forward frozen tissue on dry ice.
Separated Cell Pellets--1 x 10^6 nucleated cells. Freeze cells in a sterile plastic container. Forward promptly on dry ice.
Peripheral Blood--1 lavender-top (EDTA) tube. Invert several times to mix blood.
Bone Marrow--Place 1-2 mL of anticoagulated bone marrow in a lavender-top (EDTA) tube. Invert several times to mix bone marrow.
Formalin-Fixed, Paraffin-Embedded (FFPE) Tissue--Twenty 10 micron sections of FFPE tissue in a sterile, microcentrifuge tube.

Do not freeze blood, bone marrow, or FFPE, forward promptly at ambient temperature to the following address:

Molecular Diagnostic Laboratory
Barnes-Jewish Hospital, Institute of Health
Mail Stop 90-28-344
425 South Euclid Avenue, Room 5970
St. Louis, MO 63110

Clinical information must be provided with specimen referral in order to correctly interpret test results.

Current Pricing

Available from BJH Laboratory Customer Service at **314-362-1470**
CPT code: 81342

vanDongen JJL, Langerak AW, Bruggemann M, Evans PAS, Hummel M, et al. Design and standardization of PCR primers and protocols for detection of clonal immunoglobuling and t-cell receptor gene recombinations in suspect Lymphoproliferations: Report of the BIOMED-2 concerted Action BMH4-CT98-3936. Leukemia 2003; 17:2257-2317
InVivoScribe Technologies: TCRG Gene Clonality Assay, 1207002Xv7.40