



**Molecular Diagnostic Laboratory**  
Phone: (314) 454-8685; 454-7601  
FAX: (314) 454-7616  
<http://www.surgery.wustl.edu/bjcmdl/>



Barbara Zehnbaauer, PhD FACMG  
Laboratory Director

## **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**

Polymerase chain reaction (PCR) is used to identify clonal DNA rearrangements of the *TCR* Gamma constant region genes. 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*). Capillary gel electrophoresis is utilized to distinguish the clonal rearrangement as different in size and prevalence from the normal, polyclonal DNA fragments and to minimize false negative conclusions. (PCR is utilized pursuant to a license agreement with Roche Molecular Systems, Inc.)

### **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<sup>3</sup> of fresh frozen tissue in sterile, plastic container. Forward frozen tissue on dry ice.

**Separated Cell Pellets**--1 x 10<sup>6</sup> 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 North, Room 2320**  
**Mail Stop 90-35-709**  
**216 South Kingshighway**  
**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 codes: 83907, 83890, 83900, 83898, 83894, 83912.

vanDongen JLL, Langerak AW, Bruggemann M, Evans PAS, Hummel M, et al. Design and standardization of PCR primers and protocols for detection of clonal immunoglobulin 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 kit, 1-207-002Xv5.01, 2003.