LymphoTrack® TRG Assay - MiSeq, Product Flyer

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This research use only assay identifies clonal TRG V-J rearrangements, the associated V-J region DNA sequences, and provides the frequency distribution of V region and J region segment utilization using the Illumina MiSeq® platform.

**Assay Uses**
This LymphoTrack TRG Assay - MiSeq represents a significant improvement over existing clonality assays using fragment analysis as it efficiently detects the majority of TRG gene rearrangements using a single multiplex master mix, and at the same time identifies the DNA sequence specific for each clonal gene rearrangement. Therefore, this assay has two important and complementary uses: it both aids in the detection of initial clonal populations and identifies sequence information required to track those clones in subsequent samples.

**Background**
The human T Cell Receptor Gamma (TRG, previously known as TCRG) gene locus on chromosome 7 (7q14) includes 14 V (variable region) genes (Group I, II, III, and IV), 5 J (joining region) gene segments, and 2 C (constant region) genes spread over 200 kilobases.

Lymphoid cells are different from the other somatic cells in the body. During development, the antigen receptor genes in lymphoid cells undergo somatic gene rearrangement (Tonegawa S. et al., 1983). For example, during T-cell development genes encoding the TRG molecules are assembled from multiple polymorphic gene segments that undergo rearrangements and selection, generating V-J combinations. Since leukemias and lymphomas originate from the malignant transformation of individual lymphoid cells, all leukemias and lymphomas generally share one or more cell-specific or “clonal” antigen receptor gene rearrangements. Therefore, tests that detect TRG clonal rearrangements can be useful in the study of B- and T-cell malignancies.

**Specimen Requirement**
50 ng of genomic DNA.

**References**

**Method**
This LymphoTrack TRG Assay - MiSeq represents a significant improvement over existing clonality assays using fragment analysis as it efficiently detects the majority of TRG gene rearrangements using a single multiplex master mix, and at the same time identifies the DNA sequence specific for each clonal gene rearrangement. Therefore, this assay has two important and complementary uses: it both aids in the detection of initial clonal populations and identifies sequence information required to track those clones in subsequent samples.

Our single multiplex master mixes target all conserved regions within the variable (V) and the joining (J) region genes described in lymphoid malignancies. This is critical for comprehensive analysis of samples, as some T-cell lymphoproliferative disorders involve V and J segments that would not be identified with existing assays or Vy and Jy primer sets. Primers included in the master mixes are designed with Illumina adapters and 24 different indices. This allows for a one-step PCR reaction and pooling of amplicons from several different samples for loading on the MiSeq flow cell. The average size of the TRG gene rearrangement PCR amplicons generated using this assay was designed to be compatible with testing fragmented DNA isolated from more challenging samples (e.g., FFPE sections). The associated LymphoTrack MiSeq Software provides a simple and streamlined analysis and visualization of data for generated from this assay.

**Ordering Information**

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<th>Catalog #</th>
<th>Products</th>
<th>Quantity</th>
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<td>7-227-0019</td>
<td>LymphoTrack TRG Assay Kit A - MiSeq</td>
<td>8 indices - 5 reactions each</td>
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<td>7-227-0029</td>
<td>LymphoTrack TRG Assay Kit B - MiSeq</td>
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<td>LymphoTrack TRG Assay Kit C - MiSeq</td>
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<td>LymphoTrack TRG Assay Panel - MiSeq</td>
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<td>7-500-0009</td>
<td>LymphoTrack MiSeq Software*</td>
<td>1 CD</td>
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*only available with purchase of a LymphoTrack MiSeq Assay

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