





# Ion AmpliSeq Immune Repertoire Assay Plus, TCR $\beta$


Studies aimed at leveraging an individual's own immune system as a potential strategy toward the advancement of precision oncology has been a shared goal of scientists for many years. However, the complexities of tumor-immune interactions warrant a multidimensional approach to facilitate well-designed translational research studies and interpretation of results. Genomic analysis solutions based on next-generation sequencing (NGS) can be powerful tools to help gain significant insights in translational and clinical research.

## Harness the power of the immune repertoire with an Ion Torrent long-read NGS assay

Analyzing the immune repertoire to capture the diversity of T cell receptor (TCR) rearrangements can help you make significant progress in immuno-oncology research. The Ion AmpliSeq™ Immune Repertoire Assay Plus, TCR  $\beta$ , provides researchers with a rapid, long-read NGS tool for studying the complexity of cellular immunology. This comprehensive solution enables you to:

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**Discover immune response biomarkers**—accurately measure T cell repertoire diversity and clonal expansion, and identify antigen-specific T cells to accelerate translational research
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**Optimize the function and manufacture of potentially therapeutic T cells**—characterize TCR  $\beta$  chain sequences and optimize the manufacture of genetically engineered T cells
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**Investigate markers for immune-mediated adverse events (IMAEs)**—analyze all three complementarity-determining regions (CDR1, 2, and 3) for allele-specific polymorphisms that may be linked to autoimmune diseases and IMAEs

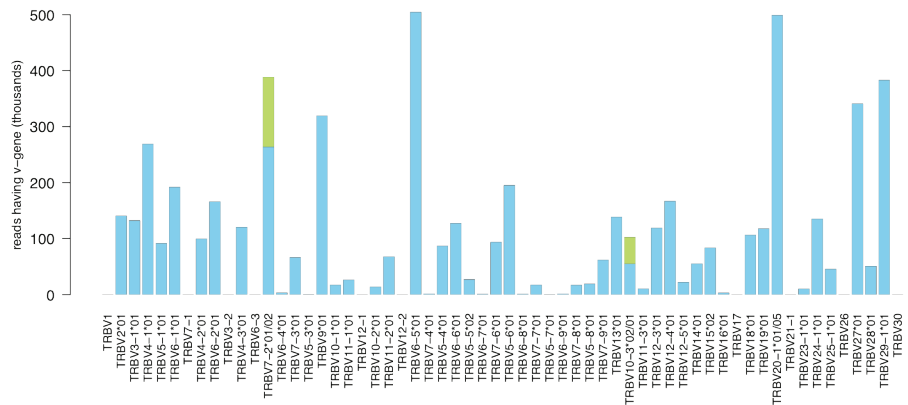




**Figure 1. Workflow overview.** Manual library construction is followed by automated template preparation using the Ion Chef™ System. Sequencing is performed on the Ion S5 System with data analysis using Ion Reporter Software.

## From complex to comprehensible—in just two days

Based on robust, highly referenced Ion AmpliSeq™ technology, our NGS solution has been carefully designed to significantly improve your turnaround time—go from sample to analysis in as little as 48 hours (Figure 1). The Ion AmpliSeq Immune Repertoire Assay Plus, TCR β, is comprehensive with up to 400 bp read-length amplicons for complete characterization of CDR1, CDR2, and CDR3 (Figure 2). It is highly accurate with mRNA-based sequencing and exerts extremely low PCR-driven primer bias.



**Figure 2. Stacked barplot indicating the representation of variable genes among clones identified in a sample.** Color segments within each bar indicate the frequency of particular variable gene alleles. IMGT™ annotation of identified alleles is indicated on the x-axis.



**Data security**—you have full control of your data (with no service model or additional fees) and full transparency in analysis, and your TCR sequences stay with you



**Accuracy**—with RNA as a starting point, you can interrogate productive rearrangement of TCR β chain genes and benefit from low substitution error rates achieved on the Ion S5 System



**Low input requirement**—create your Ion AmpliSeq library from a range of input amounts (10 ng–1 µg), depending on your sample constraints and application preferences

Find out more about our immunosequencing solution at [thermofisher.com/immune-repertoire](https://thermofisher.com/immune-repertoire)