

Licensing opportunities at the Babraham Institute



Identifying VDJ recombination products

VDJ recombination, also known as somatic recombination, is a mechanism of genetic recombination in the early stages of immunoglobulin (Ig) and T cell receptor (TCR) production in the immune system. Scientists at the Babraham Institute have developed a novel method for identifying VDJ recombination products. 'VDJ-Seq' is a novel, high-throughput, next-generation sequencing assay that enables quantitative characterisation of primary recombination events in immunoglobulin and T cell receptor loci. This provides precise details about usage of individual V, D and J gene segments, and other diversity-inducing processes, in individual, unique, recombined VDJ genes.

The Technology

VDJ-Seq provides a number of advantageous features when compared with conventional techniques that rely on biased and non-quantitative PCR-based amplification of V gene families:

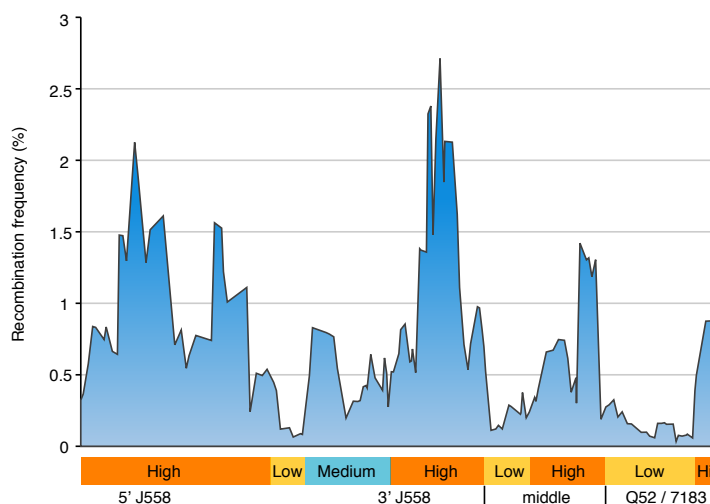
- High resolution, high-throughput interrogation of antigen receptor repertoires
- Enrichment of VDJ and DJ recombined sequences along with the generation of large unbiased libraries of recombined sequences
- Unambiguous identification of individual recombination events and complete details of V, D, J gene usage, N nucleotide addition etc.
- High resolution - VDJ-Seq has been used to identify a previously unknown recombination mechanism and chromosomal translocations
- High throughput - in one experiment approximately 100,000 unique VDJ recombinations were captured and identified, representing a 1,000-fold increase over existing low throughput methods
- Quantitative comparison usage of individual V genes unencumbered by PCR bias

Intellectual Property and Licensing:

Patent Application: PCT/GB2013/050516, Filed US, Europe and Japan

Inventors: Anne Corcoran, Andy Wood, Dan Bolland, Louise Matheson

Available for licensing worldwide



This figure depicts a smoothed view of the recombination frequency of the 195 individual V genes in the mouse Igh V region, combined with their geographical position in the 2.5Mb V region.