Epitope Specific Antibodies and T Cell Receptors in the Immune Epitope Database

The Immune Epitope Database (IEDB) is a free public resource which catalogs experiments characterizing immune epitopes. To accommodate data from next generation repertoire sequencing experiments, we recently updated how we capture and query epitope specific antibodies and T cell receptors. Specifically, we are now storing partial receptor sequences sufficient to determine CDRs and VDJ gene usage which are commonly identified by repertoire sequencing. For previously captured full length receptor sequencing data, we have calculated the corresponding CDR sequences and gene usage information using IMGT numbering and VDJ gene nomenclature format. To integrate information from receptors defined at different levels of resolution, we grouped receptors based on their host species, receptor type and CDR3 sequence. As of August 2018, we have cataloged sequence information for more than 22,510 receptors in 18,292 receptor groups, shown to bind to more than 2,241 distinct epitopes. These data are accessible as full exports and through a new dedicated query interface. The later combines the new ability to search by receptor characteristics with previously existing capability to search by epitope characteristics such as the infectious agent the epitope is derived from, or the kind of immune response involved in its recognition. We expect that this comprehensive capture of epitope specific immune receptor information will provide new insights into receptor-epitope interactions, and facilitate the development of novel tools that help in the analysis of receptor repertoire data.