Introduction

BCMA (B-Cell Maturation Antigen), also known as TNFRSF17 (Tumor Necrosis Factor Receptor Super Family member 17), is a cell surface receptor preferentially expressed in mature B lymphocytes. It is activated by two ligands, APRIL and BAFF, which reduce proliferation and apoptosis in the regulation of B cell development and survival. BCMA plays a role in tolerance, lymphomas, and multiple myelomas. For example, upregulation of BCMA or APRIL is frequently observed and correlates with disease burden and worse prognosis in multiple myeloma. It has been shown that activation of BCMA by APRIL promotes tumor growth, chemoresistance and immunosuppression in the bone marrow microenvironment. Therefore, BCMA represents an attractive therapeutic target.

Several therapeutic approaches aim at engaging the BCMA pathway, two of which have been approved for the treatment of multiple myelomas, with many more undergoing clinical trials.

- Anti-APRIL (Drug-Drug Conjugate), including FDA-approved Belolenab malodil-bmv (BLRMDP). Glasserman (2019) comprised of a humanized anti-BCMA monoclonal antibody conjugated to cysteine protease MMP7 by a protease-resistant linker
- CAR-T cell therapy, including FDA-approved Idecavatarnine (BlaBlastin B2)
- Anti-BCMA and anti-APRIL monoclonal antibodies
- BiTEs (Bi-specific Antibodies)

Bite and TriTe Antibodies

Pharmacological biologics known as BiTEs (Bi-specific T cell Engagers) are multifunctional antibodies that bind to a cell surface tumor-specific antigen from one end, and to the other end to T-cell-specific molecule such as CD3, a T cell activator. By physically linking T cells and tumor cells, a BiTE engages T-cell mediated cytotoxicity toward the tumor cells.

Our anti-BCMA anti-CD3 is a recombinant human BiTE tested for specific activity against BCMA. This bispecific antibody binds simultaneously to BCMA on cancer cells and to CD3 on T cells, thus bringing the binding of the antibody to CD3 at the T cell and the expression of the T cell to the cell cancer and induces direct cytotoxicity against BCMA-expressing tumor cells.

BCMA-based Assays

The triplex assay is used to confirm the expression of BCMA in court, CHD, and CHO cells. The triplex assay was generated using increasing amounts of triplex antibody in the presence of CHO and CHO cells, CHO and CD9, CHO and CD9.

Services

BPS offers customized services for generating BiTE or TriTe constructs, producing specific antibodies, measuring the efficacy of antibody binding to an antigen using ELISA-based assay or immunofluorescence (Gatex™ Probe Line), and assessing T cell activation using cell-based reporter assays. Over 2,000 cell lines expressing tumor antigens (cancer cells, CHO, and HEK293 cells) are available, such as CHO-CD9 cell line and several reporter cell lines. These include FACS profiles and image data. Anti-BCMA and anti-CD3 reporter cell lines, which are useful for the evaluation of BiTE or TriTe constructs in cell-based assays.

Conclusion

Designing new therapeutic strategies requires the generation of appropriate tools, which can use considerable time and resources. BPS Bioscience has generated a varied portfolio of validated immuno-ontological tools to support drug development efforts as well as basic research projects, allowing the scientific community to focus on critical questions. These tools include anti-BCMA antibodies for BCMA detection, BiTEs and TriTEs, BCMA cell lines, CHO and CD9 reporter genes, biochemical assays, and BCMA lentivirus. Thus, BPS supports researchers at all phases of drug discovery to accelerate the development of new treatments for human diseases.