

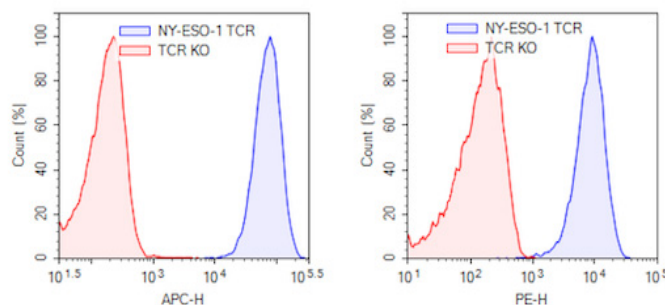
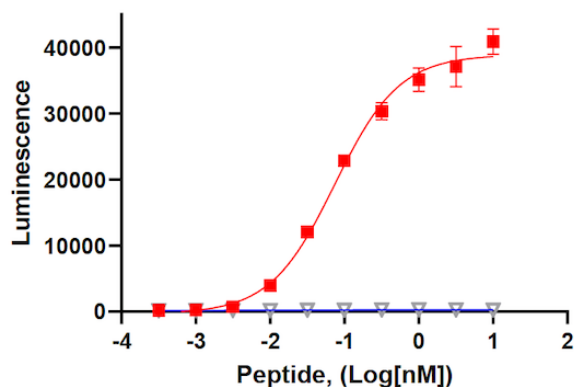
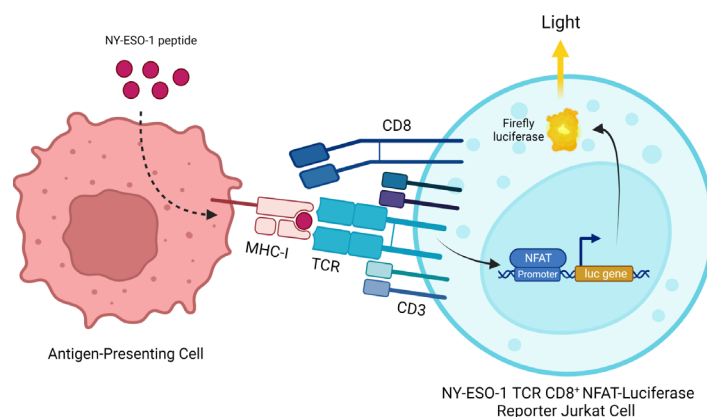
TCR-Engineered T Cells

TCR-engineered T cells represent a promising therapeutic strategy mobilizing T cells against cancer through recognition of a specific neoantigen present on the surface of the tumor cells. These new T cell receptors, also termed immunomobilizing monoclonal TCRs against cancer (ImmTAC), are generated by modifying the variable regions of the TCR α and β chains, while the CD3 complex is left intact.

Developing TCR-engineered T cells is a complex endeavor. Downstream of the engineering process, the cells must be validated for TCR expression, specific antigen binding, activation of downstream signaling pathways, cytokine release, and cytotoxicity towards cancer cells. BPS Bioscience offers a unique suite of tools and services to support each step of this development process.

Off-the-shelf TCR-engineered T cells

As an example, the NY-ESO-1 TCR NFAT Luciferase Receptor Jurkat cell line (CD8⁺) specifically recognizes tumor antigen NY-ESO-1 (New York esophageal squamous cell carcinoma 1, also known as Cancer/testis antigen 1). Binding of the ImmTAC-expressing Jurkat cells to NY-ESO-1/MHC-I complex present at the surface of antigen-presenting cells triggers NFAT-dependent induction of a luciferase reporter gene, which can be followed by measuring luciferase activity. *Illustration created with BioRender.com*



Left panel: NY-ESO-1 TCR (c259) CD8⁺ NFAT Luciferase Reporter Jurkat cells were co-cultured for 6 hours with T2 cells loaded with increasing concentrations of NY-ESO-1 peptide (BPS Bioscience #78758). Luciferase activity was measured using ONE-Step™ Luciferase Assay System. Results are shown as raw luminescence signal. The CD8⁺TCR-Knockout NFAT Luciferase Reporter cell line was used as a negative control. **Right panels:** Flow cytometry analysis of cells stained with APC-conjugated MHC-I Dextramer (left) or PE-conjugated anti-human TCR antibody (right). NY-ESO-1 TCR (c259) CD8⁺ NFAT Luciferase Reporter Jurkat cells are shown in blue and negative control CD8⁺ TCR knockout NFAT Luciferase Reporter Jurkat cells are shown in red.

Trust our Quality: we are ISO9001:2015 certified

TCR-Engineered T Cells

Workflow Solutions

Our expertise in genetic engineering has resulted in a complete portfolio of viral tools and cell lines to use in ImmTAC studies.

- Off-the-shelf, high titer lentiviruses enable cDNA transduction and stable expression in a wide variety of cell lines, including primary cells. TCR CRISPR/Cas9 Lentiviruses are used to generate TCR-knockout cells.
- Transduce TCR-knockout/CD8⁺ Jurkat containing an NFAT-responsive luciferase reporter with a new ImmTAC construct, and measure TCR activation upon binding to an antigen-presenting cell.
- Measure the amounts of IFN- γ , IL-2, or IL-1 β released by your activated ImmTAC cells with Cytokine ELISA kits.
- Use off-the-shelf antigen-specific TCR/CD8⁺ NFAT-Luciferase Reporter Jurkat cells as control in functional assays.

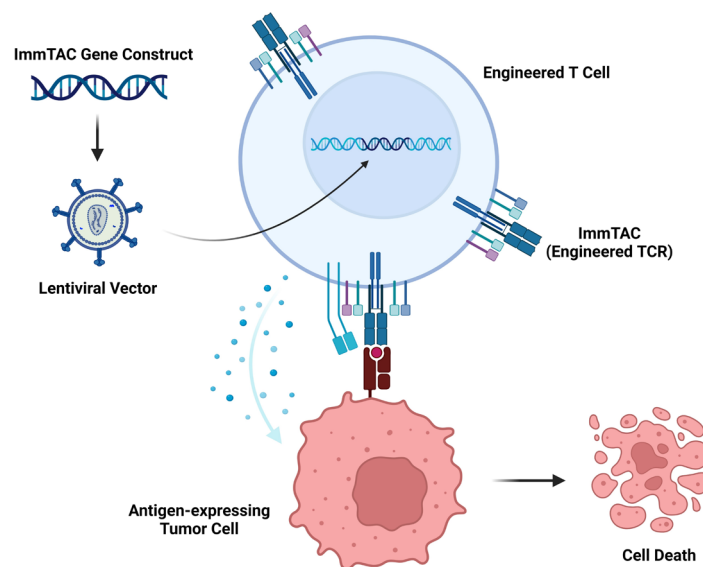


Illustration created with BioRender.com

Portfolio

Lentiviruses

NY-ESO-1 TCR (1G4)	78675
NY-ESO-1 TCR (c259)	78676
MART-1 TCR (DMF4)	78978
MART-1 TCR (DMF5)	78679
CD8a	78648
CD8a/CD8b	78650
TCR CRISPR/Cas9 (Integrating)	78055
TCR CRISPR/Cas9 (Non-Integrating)	78062
NFAT Luciferase Reporter	79579

Peptides

NY-ESO-1 (157-165)	78758
MART-1 (26-35)	78759
MART-1 (26-35) Leu27	78760
MART-1 Peptide (27-35)	78761

TCR Knockout Cells

TCR Knockout Jurkat Cell Line	78539
TCR/B2M knockout Jurkat Cell Line	78552
TCR Knockout NFAT-Luciferase Reporter Jurkat Cell Line	78556
CD8 ⁺ TCR Knockout NFAT-Luciferase Reporter Jurkat Cell Line	78757

CD8/NFAT Luciferase Reporter Jurkat cells

NY-ESO-1 TCR (1G4) CD8 ⁺ NFAT-Luciferase Reporter Jurkat Cell Line	78769
NY-ESO-1 TCR (c259) CD8 ⁺ NFAT-Luciferase Reporter Jurkat Cell Line	78771
MART-1 TCR (DMF4) CD8 ⁺ NFAT-Luciferase Reporter Jurkat Cell Line	78772

Services

To advance your research, BPS Bioscience offers full service custom cell development, from ImmTAC design to cellular functional validation and expansion. Our expertise in lentivirus production and cellular engineering will get you reliable results fast.