

**Description**

The KRAS G12D Peptide (10-19, GADGVGKSAL) is a peptide corresponding to KRAS (Kirsten rat sarcoma virus) mutant G12D, amino acids 10-19. The KRAS G12D Peptide (10-19) can be used to stimulate human KRAS G12D-specific CD8<sup>+</sup> T cells.

**Background**

KRAS (Kirsten rat sarcoma virus) are GTPase proteins. They cycle between a GDP-bound inactive state and a GTP-bound (active) form, in a process regulated by two accessory proteins: GEF (guanine exchange factors) and GAPs (GTPase activating proteins). Once activated KRAS can bind to its effectors and regulate multiple signaling pathways, such as the RAF (rapidly accelerated fibrosarcoma)-MEK (mitogen activated protein kinase)-ERK (extracellular regulated kinase) or the PI3K (phosphoinositide 3-kinase)-AKT (protein kinase B)-mTOR (mammalian target of rapamycin) signaling pathways. KRAS mutations account for about 85% of all RAS mutations and are considered one of the main drivers of human cancer, such as in PDAC (pancreatic ductal adenocarcinoma). One of the amino acids frequently mutated is glycine 12, with the most common form being G12D. Since KRAS are intracellular proteins, they are not amenable to CAR (chimeric antigen receptor)-T cell-based therapies, and the development of inhibitors has also proved challenging. One strategy involves the use of TCR (T cell receptor)-T cells, targeting this antigen. Specific TCR clones have been identified, with a KRAS G12D-specific TCR (clone 9c) preferentially being reactive against KRAS G12D peptide (10-18, 9mer), in comparison with KRAS G12D peptide (10-19, 10mer) and being unable to recognize the wild-type KRAS peptides. On the other hand, a KRAS G12D-specific TCR (clone 10) is preferentially reactive against KRAS G12D peptide (10-19, 10mer), in comparison with KRAS G12D peptide (10-18, 9mer) and it does not recognize wild-type KRAS peptides. Results from a trial using a KRAS G12D HLA-C\*08:02 restricted TCR demonstrated the potential of this approach for the treatment of PDAC. The use of neoantigen specific TCR-T therapies, targeting single amino acid mutations, is thus an exciting and promising cancer therapy.

**Sequence**

GADGVGKSAL

**Species**

Human

**Supplied As**

Liquid, 100 µl

**Formulation**

1 mM peptide in DMSO

**Stability**

At least one year at -80°C.

**Storage**

Upon first thaw, aliquot and store at -80°C. Avoid repeated freeze-thaw cycles.

**Application**

Stimulation of human KRAS G12D-specific CD8<sup>+</sup> T cells.

**Related Products**

<i>Products</i>	<i>Catalog #</i>	<i>Size</i>
KRAS G12D-Specific TCR Lentivirus (Clone 10)	78937	2 x 500 µl
KRAS G12D-Specific TCR Lentivirus (Clone 9c)	78936	2 x 500 µl
KRAS Wild Type Peptide (10-19)	78970	100 µl
KRAS Wild Type Peptide (10-18)	78968	100 µl
KRAS G12D Peptide (10-18)	78967	100 µl

*Version 022824*