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HPV16-E7-T512

National Cancer Institute

Source

National Cancer Institute. *HPV16-E7-T512*. NCI Thesaurus. Code C151958.

A transcription activator-like effector nucleases (TALEN)-edited plasmid targeting human papillomavirus (HPV) type 16 (HPV16) epitope E7, with potential antineoplastic activity. Upon administration of TALEN-edited HPV16 E7 T512, the TALEN targets and binds to a specific site on genomic HPV16 E7, and cleaves the DNA sequences encoding E7. This causes double-strand DNA (dsDNA) breaks within the viral DNA, which prevents the transcription and translation of E7. Inhibition of E7 expression restores and increases the expression of tumor suppressor genes, such as retinoblastoma 1 (RB1), and promotes downstream signaling. Altogether, TALEN-based HPV editing increases cell cycle arrest, induces apoptosis, reduces viral replication and load, eliminates HPV and inhibits tumor cell proliferation of HPV-driven cancer cells. HPV16 E7 is an oncogene that is vital to viral function and HPV infection, and promotes carcinogenesis.