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DNA-dependent Protein Kinase-targeting siDNA DT01

National Cancer Institute

Source

National Cancer Institute. *DNA-dependent Protein Kinase-targeting siDNA DT01*. NCI Thesaurus. Code C99165.

A proprietary preparation of small interfering DNA (siDNA) molecules with potential chemo/radiosensitizing activity. By mimicking DNA double strand breaks (DSBs), DNA-dependent protein kinase-targeting siDNA DT01 inhibits the non-homologous end joining (NHEJ) process, one of the main DNA repair mechanisms, via binding to and activating DNA-dependent protein kinase (DNA-PK), a core component of the NHEJ complex. DNA-PK activation causes hyper-phosphorylation of histone variant H2AX on DNA and results in a different phosphorylated pattern of H2AX upon ionizing radiation treatment. This ultimately interferes with the repair of DNA DSBs during chemo- or radiotherapy, thereby increasing tumor cell death. The enhanced ability of tumor cells to repair DSBs plays a major role in the resistance of tumor cells to chemo- and radiotherapy.