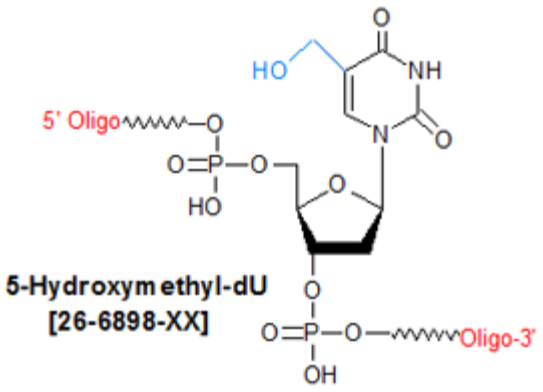
Oligo Modifications

5-hm dU

Category	Epigenetics
Modification Code	5-hm-dU
Reference Catalog Number	26-6898
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	320.19



5-Hydroxymethyl deoxyuridine (5-hm-dU) is a minor DNA base; its presence in DNA strands occurs by either oxidative attack via peroxide radicals, or ionizing radiation, on the 5-methyl group of thymine (1,2). Available evidence does not support 5-hm-dU being mutagenic; however, base excision repair enzymes specific to it (i.e., hydroxymethyluracil-DNA glycosylases) are known to exist in protists and animals (3), suggesting that this lesion nevertheless may have mutagenic potential. Incorporation of 5-hm-dU into synthetic oligos for use in studie into the molecular genetics and enzymology of DNA base excision repair pathways. However, because 5-hm-dU also appears as a deamination intermediate during the oxidative de-methylation of 5-methyl-dC to dC, 5-hm-dU can be used in studies into the role of 5-methyl-dC de-methylation in epigenetic regulation. **References**

1. Cadet. J., Berger, M., Douki, T., Ravanat, J-L. Oxidative damage to DNA : formation, measurement, and biological significance.*Rev. Physiol. Biochem. Pharmacol.* (1997), **131**: 1-87.
2. Teebor, G.W., Frenkel, K., Goldstein, M.S. Ionizing radiation and tritium transmutation both cause formation of 5-hydroxymethyl-2'-deoxyuridine in cellular DNA.*Proc. Natl. Acad. Sci. USA.* (1984), **81**: 318-321.
3. Levy, D.D., Teebor, G.W. Site directed substitution of 5-hydroxymethyluracil for thymine in replicating phiX-174am3 DNA via synthesis of 5-hydroxymethyl-2'-deoxyuridine-5'-triphosphate.*Nucleic Acids Res.* (1991), **19**: 3337-3343.