

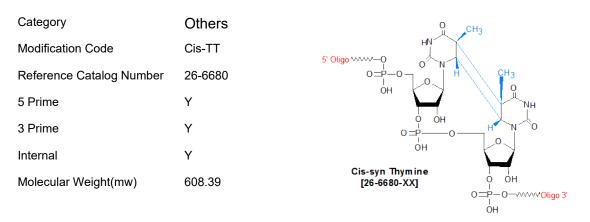
## Product Specifications

Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos, Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers, Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates Locked Nucleic Acids (LNA); 2'-5' linked Oligos

## **Oligo Modifications**

For research use only. Not for use in diagnostic procedures for clinical purposes.

## **Thymine Dimer Cis-syn**



Cis-syn thymine is classified as a cis-syn Cyclobutane Pyrimidine Dimer (CPD) of two thymine bases, and is primarily used in studies of UV-induced DNA damage and associated repair mechanisms. In the cell, cis-syn thymine dimer DNA lesions are primarily formed when two adjacent thymidine bases are irradiated by UV light (most commonly from sunlight). The result is the generation of a dimer in the form of a cyclobutane (1). This bulky adduct lesion causes large structural distortion in the double helix. While not mutagenic, they act as effective replication blocks; as such, they are potentially lethal to the cell (2). This lesion is repaired via one of two repair DNA repair mechanisms: direct reversal with the enzyme photolyase (which cleaves the dimer) (3) or by the nucleotide excision repair (NER) mechanism (4).

Oligos synthesized with cis-syn thymine dimer are stable for greater than 6 month when stored frozen, protected from light and preferably in an ethanol precipitated dried state. Reconstituted oligos should be preferably stored frozen in aliquots to avoid multiple freeze thaw cycles.

## References

1. Smith, C.A., Taylor, J-S. Preparation and characterization of a set of deoxyoligonucleotide 49-mers containing site-specific cis-syn, trans-syn-l, (6-4), and Dewar photoproducts of thymidylyl(3' to 5')-thymidine. *J. Biol. Chem.* (1993), **268**: 11143-11151.

2. Gentil, A., Le Page, F., Margot, A., Lawrence, C.W., Borden, A., Sarasin, A. Mutagenicity of a unique thymine-thymine dimer or thymine-thymine pyrimidone (6-4) photoproduct in mammalian cells. *Nucleic Acids Res.* (1996), **24**: 1837-1840.

3. Sancar, A. Structure and function of DNA photolyase and cryptochrome blue-light photoreceptors. *Chem. Rev.* (2003), **103**: 2203-2237.

4. de Laat, W.L., Jaspers, N.G.J., Hoeijmakers, J.H.J. Molecular mechanism of nucleotide excision repair. *Genes & Development.* (1999), **13**: 768-785.

