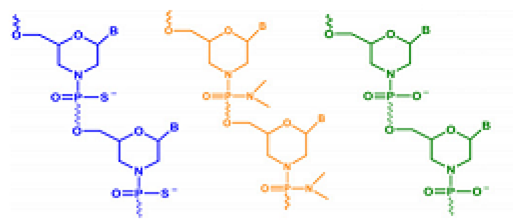
Thio-Morpholino Oligo A [TMO-A]

Category	Antisense
Modification Code	TMO-A
Reference Catalog Number	26-6645A
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	328.29



Thiomorpholino oligo TMO | Phosphorodiamidate morpholino oligo PMO | Morpholino Oligo 3'-phosphoramidate MO

Thio morpholino oligos modification has a setup charge of $250.00 per order for special synthesis reagents.

SPECIAL NOTE: Please note below the maximum number of sites that can be incorporated to achieve a reliable yield of the modified oligo.
TMO Sites. The maximum number of thiomorpholino oligo(TMO) sites is 8 per oligo. These sites can be spread out in the sequence and the preferred construct is (4+4); 4 sites at the 5' end and 4 sites at the 3' end.
MO Sites. The maximum number of MO sites is 8 per oligo. These sites can be spread out in the sequence and the preferred construct is (4+4); 4 sites at the 5' end and 4 sites at the 3' end.

Morpholino Oligos (PMO)

Phosphorodiamidate morpholino oligos (PMOs) are chemically modified oligonucleotides antisense oligonucleotides (ODN, ASO) wherein the 2'-deoxyribonucleosides and phosphate linkages of canonical DNA are substituted with morpholino rings and phosphorodiamidate linkages respectively. By replacing the standard ribose or deoxyribose sugar and the phosphodiester linkages with six-membered morpholino phosphorodiamidate linkages the anionic linkages become non-ionic. These morpholinos rings may provide higher conformational rigidity when incorporated into an oligonucleotide backbone

They have been researched extensively in oligonucleotide therapeutics as potential steric blocking agents for the treatment of various genetic disorders. PMOs exhibit high hybridization affinity to complementary RNA, possess excellent enzymatic stability both in vitro and in vivo and elicit low immunogenicity leading to acceptable toxicokinetic profiles in mammalian models. The ability of PMOs to effectively function as steric blockers arises from their ability to specifically bind complementary RNA both in vitro and in vivo. Morpholinos block small (~25 base) regions of the base-pairing surfaces of ribonucleic acid (RNA).
Morpholino oligos are specific, soluble, non-toxic, stable, and effective antisense oligonucleotide suitable for development as therapeutics and currently in clinical trials. Efficacy of Morpholino oligos in humans has been shown in clinical trials for Duchenne muscular dystrophy. The splice modifying Morpholino eteplirsen has partially restored function to the dystrophin protein, enough to show significant clinical benefit on a six-minute walk test versus the untreated control group.

Blocking translation- Morpholinos can bind to the 5'-untranslated region of messenger RNA (mRNA) and can interfere with progression of the ribosomal initiation complex from the 5' cap to the start codon.
Modifying pre-mRNA splicing- Morpholinos can prevent splice-directing small nuclear ribonucleoproteins (snRNP) complexes from binding introns of pre-mRNA, blocking the splice lariat structure, interfering with the binding of splice regulatory proteins such as splice silencers. [1] and splice enhancers [2] there by interfering with pre-mRNA processing steps.
Morpholinos can block miRNA activity [3][4] and maturation.[5] Fluorescein-tagged Morpholinos along with fluorescein-specific anti-bodies that could be used as probes for in-situ hybridization to miRNAs [6] Morpholinos can also block ribozyme activity. [7]
Gene knockdown by morpholino- The morpholino-modified antisense oligonucleotides are primarily used in animal embryonic systems for the 'knock-down' of gene function Intron retention using RNA-targeting thiomorpholino antisense oligonucleotides.[8]

Morpholino Oligos References

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12. Guide for Morpholino Users: Toward Therapeutics J Drug Discov Develop and Deliv. 2016; 3(2): 1023. Gene Tools, LLC, USA *Corresponding author: Moulton JD, Gene Tools, LLC, 1001 Summerton Way, Philomath, Oregon 97370, USA.