Product Specifications

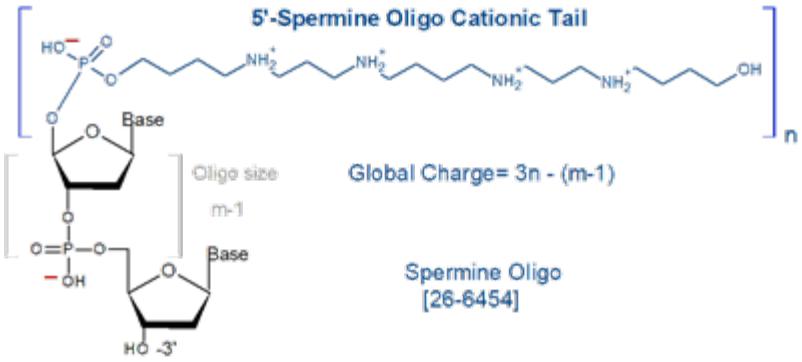
Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos, Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers, Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates Locked Nucleic Acids (LNA); 2′-5′ linked Oligos

Oligo Modifications

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

Spermine Oligo

Category	Duplex Stability
Modification Code	Spm
Reference Catalog Number	26-6454
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	408.52



Solubility of oligos with 4-40 Spermine sites (ZNA Oligos). Gene Link supplies all oligos as lyophilized/dried state. Oligos with more than 4 spermine sites have lower solubility in aqueous solutions. Reconstitute these oligos in 100 mM Ammonium hydroxide. Spermine oligos with more solubility concerns may be resolved by adding 50 mM ammonium hydroxide drop wise until the ZNA goes into solution in water OR by dissolving the ZNA in concentrated phosphate buffer saline.

Spermine phosphoramidite is used to produce oligospermine-oligonucleotide conjugates - Zip Nucleic Acids (ZNA) Oligos. The name reflects the presumed mode of action. The conjugates are believed to use the oligospermine to seek out and move along (scan) oligonucleotide strands until the probe complementary sequence is located. The oligospermine then performs the function of stabilizing the formed duplex by reducing electrostatic repulsion, thereby leading to significantly increased binding affinities. ZNA Oligos have found use in the following applications: Multiplex PCR; PCR of AT-rich Regions; RT qPCR; Detection of MicroRNA; Improved SNP Discrimination; and Antisense and Antigene Effects. Spermine phosphoramidite is simple to use in oligonucleotide synthesis and can be added multiple times at the 3' or 5' terminus. Deprotection and isolation are also straightforward. HPLC analysis of the conjugates requires high pH to suppress the ionization of the spermine residues.
By selecting the number of cationic units, the global charge of the ZNA molecules can be modulated which defines their field of applications. When negatively charged, ZNA are potent tools for molecular biology and diagnostic applications. Their design is essentially based on the expected and predictable Tm of the oligonucleotide which depends on the number of conjugated cationic units. When positively charged, the cationic conjugates become self-delivering oligonucleotides into cells and resistant to nucleases which make them very attractive molecules for antisense or RNA interference applications.
With an increase in spermine content, the solubility of ZNA oligonucleotides may be noticeably less than unmodified DNA or RNA counterparts. This is typically observed when re-dissolving dried-down purified ZNA in water. In this case, drop wise addition of 50 mM ammonium hydroxide brings ZNA molecules into solution. Alternatively, dissolving ZNA oligos in concentrated phosphate buffered saline (2.5x PBS, pH 7.

4) has also been found to resolve solubility issues.

Recommended Further Reading

Glen Reports GR24-11. Spermine Phosphoramidite: A potent modification with many applications.
Glen Reports GR24-11. Zip Nucleic Acids (ZNA) are powerful cationic oligonucleotides for molecular biology, diagnostic and therapeutic applications.

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