Product Specifications

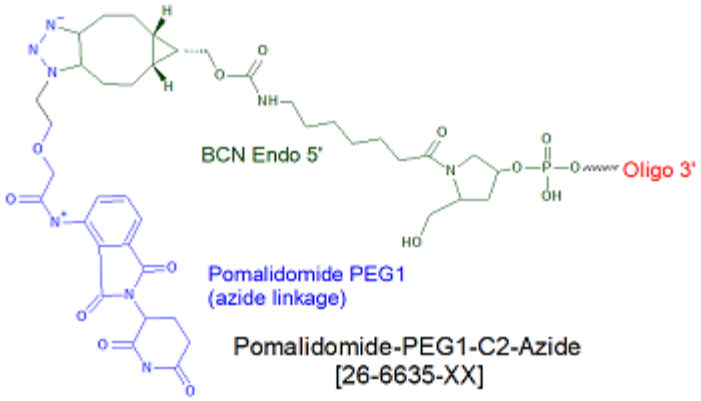
Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos, Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers, Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates Locked Nucleic Acids (LNA); 2′-5′ linked Oligos

Oligo Modifications

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

Pomalidomide-PEG1-C2-N3

Category	Affinity Ligands
Modification Code	PDM-PEG1-C2-N3
Reference Catalog Number	26-6635
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	1049



Pomalidomide-PEG1-C2-Azide
[26-6635-XX]

Gene Link offers two versions of Pomalidomide modification. 1. Pomalidomide-C3-NHS is for oligo modified with an amino group and this version contains a C3 linker. 2. Pomalidomide-PEG1-C2-N3 is a an azide for click chemistry to DBCO or BCN. At Gene Link we use BCN to conjugate the azide version to oligos.

The use of a Pomalidomide modification represents a shift in how we approach targeted protein degradation (TPD). Pomalidomide modification enables the creation of oligonucleotide-based PROteolysis Targeting Chimeras (Oligo-PROTACs) and aptamer-PROTAC conjugates. Pomalidomide acts as a highly effective recruitment ligand for the Cereblon (CRBN) E3 ubiquitin ligase, facilitating the ubiquitination and subsequent proteasomal degradation of target proteins. This modification is particularly valuable for engaging historically "undruggable" targets, such as transcription factors and RNA/DNA-binding proteins, by utilizing the programmable sequence recognition of the oligonucleotide.

By anchoring the pomalidomide payload to a targeting aptamer sequence, the degradation engine is effectively cloaked and selectively steered only to cells overexpressing tumor-specific surface biomarkers. This receptor-driven delivery logic ensures that the degrader remains inert until it internalizes into the target cancer cell, significantly boosting in vivo potency while sparing healthy tissues from unwanted side effects.

Tsujimura et al. (2023) utilized a 5' pomalidomide modification by linking this pomalidomide handle to a specialized DNA aptamer sequence targeting the estrogen receptor alpha (ERα). They engineered a bifunctional chimera capable of bringing the target protein and the cellular degradation machinery into close physical proximity. This targeted alignment successfully induces the selective ubiquitination and subsequent proteasomal destruction of the receptor, proving that pomalidomide-functionalized oligonucleotides can effectively expand the scope of targeted protein degradation to challenging intracellular targets.

Yield of Post Synthesis NHS, Maleimide & Click Ligand Conjugation* Oligo Scale of Synthesis Yield, nmols 50 nmol 2 nmol 200 nmol 5 nmol 1 umol 16 nmol 2 umol 30 nmol 5 umol 75 nmol 10 umol 150 nmol 15 umol 225 nmol * The yield will be lower for oligos longer than 50mer.

Click here for yield table of long oligos. * Click here for RNA Oligos scale of synthesis and yield. **NHS Ligand conjugation** requires a primary amino group. Gene Link offers a wide selection of amino modifications for 5', 3' and internal sites.
Click here for a list of conjugation chemistry modifications. **Maleimide Ligand conjugation** requires a thiol group. Gene Link offers a wide selection of thiol modifications for 5', 3' and internal sites.
Click here for a list of conjugation chemistry modifications. **Click Chemistry Ligand conjugation** requires a corresponding Click modification; examples Alkyne:Azide, Azide:DBCO, BCN:Azide,
BCN:Tetrazine and TCO:Tetrazine. Gene Link offers a wide selection of click modifications for 5', 3' and internal sites. Click here for a list of click chemistry modifications.

References

He, S., Dong, G., & Sheng, C. (2021). Aptamer-PROTAC Conjugates (APCs) for Tumor□Specific Targeting in Breast Cancer. Angewandte Chemie International Edition, 60(43), 23299-23305. Watanabe, D., Terauchi, H., Osawa, H., & Demizu, Y. (2025). Phosphorothioate-modified DNA aptamer-based PROTACs for targeted degradation of estrogen receptor α. Bioconjugate Chemistry. Advance online publication. Tsujimura, H., Naganuma, M., Ohoka, N., Inoue, T., Naito, M., Tsuji, G., & Demizu, Y. (2023). Development of DNA aptamer-based PROTACs that degrade the estrogen receptor. ACS Medicinal Chemistry Letters, 14(6), 827-832.