Application Note: TI-BIO-POL01-0208

# Peptide-Oligonucleotide-Conjugates

## Description

Molecules, where the N- or C-terminus of a peptide is covalently linked to the 3'- or 5'-terminus of an oligonucleotide, resulting in general, in a linear peptide-oligonucleotide-conjugate.

## Advantages

- facilitate transport of nucleic acids through cell membranes
- enable targeted transport of nucleic acids to cellular compartments (cytoplasm, nucleus, etc.) by using cellular translocation signals

## Applications

- antisense or gene silencing experiments
- *in-situ* hybridization
- targeted direction of nucleic acids into cells

**Please see back side for further information!**

## Product offering

### Standard peptide-oligonucleotide-conjugates are HPLC-purified and consist of

| | peptide | oligonucleotide |
|---|---|---|
| length | 6 - 15 amino acids | 8 – 40 DNA bases |
| purity | > 95% | HPLC-purified |
| coupling via | N- or C-terminal Cys | 3'- or 5'-terminal aminolink |
| restrictions | only one Cys per peptide allowed! | none |
| modifications | please inquire | combination possible with:<br>- PTO or LNA bases<br>- additional dye modification (such as Fluorescein or Cy3) |

### Standard peptide-oligonucleotide-conjugates are available in the following synthesis scales

| synthesis scale | 0.02 µmol | 0.04 µmol | 0.2 µmol | 1.0 µmol |
|---|---|---|---|---|
| conjugate yield in OD* | 1 | 2 | 5 | 10 |

* optical density at → = 260 nm

**Please note:** Peptides with several Arg and/or Lys residues carry a high positive electric charge. These peptides are likely to interact with the negatively charged DNA backbone, so overall yields of peptide-oligonucleotide-conjugates decrease drastically.

**Beside these standard conjugates we offer the following**

- coupling of siRNA to peptides
- coupling of LNA to peptides
- coupling of single amino acids to oligonucleotides
- coupling of peptides without Cys to oligonucleotides
- coupling of peptides with several Cys to oligonucleotides

please contact us at: services.biopolymers@thermo.com for an individual quotation.

## Literature


1. Harrison J.G. and Balasubramanian, S., (1998) *Synthesis and hybridization analysis of a small library of peptide-oligonucleotide conjugates*. Nucleic Acids Res. Vol. 26, No. 13, pp. 3136-3145.
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3. Zanta M.A., Belguise-Valladier P., Behr J-P., (1999) Gene delivery: *A single nuclear localization signal peptide is sufficient to carry DNA to the cell nucleus*. PNAS Vol. 96, pp. 91-96.
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5. Astriab-Fisher A. et.al., (2002) *Conjugates of antisense oligonucleotides with the Tat and antennapedia cell-penetrating peptides: effects on cellular uptake, binding to target sequences and biologic actions*. Pharm Res 19 (6), pp. 744-754.
6. Moulton HM. and Moulton JD. (2003) *Peptide-assisted delivery of steric-blocking antisense oligomers*. Curr Opin Mol Ther. 5(2), pp. 123-132.
7. Gait MJ. (2003) *Peptide-mediated cellular delivery of antisense oligonucleotides and their analogues*. Cell Mol Life Sci. 60(5), pp. 844-853





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