

## 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.

## Cv5-3'

Category Fluorescent Dyes Cy5-3 Modification Code Reference Catalog Number 26-6549 5 Prime Ν 3 Prime Υ Internal Ν oww.Oligo-5′ Molecular Weight(mw) 533.63 3'-Cy5 Label OH [26-6549]

## Click here for a list of fluorophores.

Cyanine 5 (Cy5) is a fluorescent dye that belongs to the Cyanine family of synthetic polymethine dyes. Cy5 is reactive, water-soluble, and has an absorbance maximum of 649 nm and an emission maximum of 670 nm. It is available as both a phosphoramidite and an NHS ester, and is used to fluorescently label oligonucleotides at either the 5'or 3' end, or internally. Cy5 plays a particularly important role in real-time PCR applications, being used as a reporter moiety in TaqMan probes (1), Scorpion primers (2) and Molecular Beacons (3). For such probes, Cy5 is most commonly paired with the dark quencher BHQ-3, as the two have excellent spectral overlap.

Cy5 can also be used to label DNA oligos for use as hybridization probes in other applications, such as Fluorescent In-Situ Hybridization (FISH). In 2010, Stoeckler and co-workers (4) reported that Cy5 double-labeling of FISH probes (at both ends) that were specific to ribsosomal RNA targets in microorganisms at least doubles FISH signal intensity without affecting specificity. This Double Labeling of Oligonucleotide Probes for Fluorescence In Situ Hybridization (DOPE-FISH) strategy may provide an effective solution to the problem of low signal intensity, which is commonly observed when using corresponding singly-labeled FISH probes for microbe identification. As an added benefit, Cy5-doubly labeled probes were shown to increase the in situ accessibility of rRNA targets sites in microbes, which allows for greater probe design flexibility.

Near Infrared Fluorophore Spectral Data & Quencher Selection Guide

Fluorophore Name

Absorbance Max, nm +/-10

Emission Max, nm +/-10

Extinction Coefficient\*

Color\*\*

Quencher



genelink.com/newsite/products/mod_detail.asp?modid=27">Cy5 650 665 250,000
IRDye 650 NHS 650 665 230,000
AZ647 NHS 655 680 191,800
AZ680 NHS 678 701 185,000
Cy5.5 684 710 198,000
IRDye 700 NHS 684 710 288,000
AZdye700 NHS 696 719 192,000
Atto 700 NHS 700 716 120,000

Atto 725 NHS 728 751 120,000
Atto 740 NHS 743 763 120,000
Cy7 NHS 740 773 199,000
IRDye 750 NHS 756 776 260,000
cy7.5 NHS 788 808 223,000
IRDye 800 NHS 795 819 240,000
$^*$ Extinction coefficient at $\lambda$ (max) in cm-1M-1. ** Typical emission color seen through the eyepiece of a conventional fluorescence microscope with appropriate filters. Near-IR region Human vision is insensitive to light beyond ~650 nm; it is not possible to view near-IR fluorescent dyes.
Click here for a list of fluorophores.
Click here for list of quenchers. References 1. Livak, K.J., Flood, S.J.A., Marmaro, J., Giusti, W., Deetz, K. Oligonucleotides with fluorescent dyes at opposite ends provide a quenched probe system useful for detecting PCR product and nucleic acid hybridization. PCR

Methods Appl. (1995), 4: 1-6.

- 2. Thelwell, N., Millington, S., Solinas, A., Booth, J., Brown, T. Mode of action and application of Scorpion primers to mutation detection. *Nucleic Acids Res.* (2000), **28**: 3752-3761.
- 3. Tyagi, S., Kramer, F.R. Molecular beacons: probes that fluoresce upon hybridization. Nat. Biotechnol. (1996), 14: 303-308.
- 4. Stoecker, K., Dorninger, C., Daims, H., Wagner, M. Double Labeling of Oligonucleotide Probes for Fluorescence In Situ Hybridization (DOPE-FISH) Improves Signal Intensity and Increases rRNA Accessibility. *Appl. Environ. Microb..* (2010), **76**: 922-926.

