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.

LC Red 640 N

Category	Fluorescent Dyes
Modification Code	LC640-N
Reference Catalog Number	26-6677
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	0



Click here for a list of fluorophores.

This modification is a post synthesis conjugation to a primary amino group thus an additional modification with an amino group is required. A C3, C6 or C12 amino group can be placed at the 5' or for the 3' end a C3 or C7 amino and for internal positions an amino modified base is used, e.g Amino dT C6.

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: 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.

LC Red 640 NHS Ester is a fluorescent dye for labeling oligonucleotide hybridization probes used in LightCycler qPCR assays. LC Red 640 has an absorbance maximum of 625 nm and an emission maximum of 640 nm. LightCycler ("adjacent probe") assays require two single-stranded hybridization probes which bind to adjacent sites on a target strand. One probe is 3'-end-labeled with a donor fluorophore (typically fluorescein), while the other probe is 5'-end labeled with LC Red 640 as the acceptor fluorophore (and blocked at its 3'-end with phosphate). The distance between the 3' and 5'-ends of the respective probes, when hybridized to the target, is carefully chosen to ensure efficient fluorescence resonance energy transfer (FRET) between donor and acceptor fluorophores. When not hybridized to the target, that is, when they are "free-floating" in solution, no FRET should occur, and only the fluorescence of the donor fluorophore should be present. However, when both probes are hybridized to the target, FRET should occur, resulting in a decrease in donor fluorescence and increase in acceptor fluorescence (1).

LightCycler assay systems have been developed for SNP detection (2), allelic discrimination (3), gene copy determination (4), pathogen detection (5), viral load quantification (6), and gene expression analysis (7). Additional red dyes suitable for use as acceptor fluorophores, namely LC Red 610 and Cy5.5, permit LightCycler assays to be in multiplex format. **References**

1. Wittwer, C.T., Herrmann, M.G., Moss, A.A., Rasmussen, R.P. Continuous fluorescence monitoring of rapid cycle DNA amplification. *Biotechniques* (1997), **22**: 130-131.
2. Hiratsuka, M., Narahara, K., Kishikawa, Y., Ismail, H.S., Endo, N., Agatsuma, Y., Matsuura, M., Inoue, T., Tomioka, Y., Mizugaki, M. A simultaneous LightCycler detection assay for five genetic polymorphisms influencing drug sensitivity. *Clin. Biochem.* (2002), **35**:35-40.
3. Mangasser-Stephan, K., Tag, C., Reiser, A., Gressner, A.M. Rapid Genotyping of Hemochromatosis Gene Mutations on the LightCycler with Fluorescent Hybridization Probes. *Clin. Chem.* (1999), **45**: 1875-1878.
4. Ruiz-Ponte, C., Loidi, L., Vega, A., Carracedo, A., Barros, F. Rapid Real-Time Fluorescent PCR Gene Dosage Test for the Diagnosis of DNA Duplications and Deletions. *Clin. Chem.* (2000), **46**: 1574-1582.
5. Wellinghausen, N., Wirths, B., Franz, A.R., Karolyi, L., Marre, R., Reischl, U. Algorithm for the identification of bacterial pathogens in positive blood cultures by real-time LightCycler polymerase chain reaction (PCR) with sequence-specific probes. *Diagn. Microbiol. Infect. Dis.* (2004), **48**: 229-241.
6. Gulley, M.L., Fan, H., Elmore, S.H. Validation of Roche LightCycler Epstein-Barr virus quantification reagents in a clinical laboratory setting. *J. Mol. Diagn.* (2006), **8**: 589-597.
7. Frade, J.P., Warnock, D.W., Arthington-Skaggs, B.A. Rapid Quantification of Drug Resistance Gene Expression in Candida albicans by Reverse Transcriptase LightCycler PCR and Fluorescent Probe Hybridization. *J. Clin. Microbiol.* (2004), **42**: 2085-2093.