



## Product Specifications

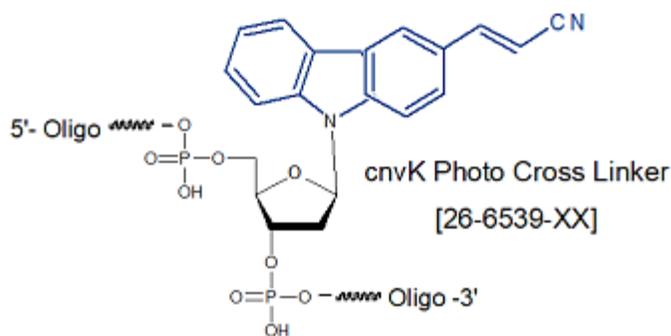
Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos, Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers, Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates Locked Nucleic Acids (LNA); 2'-5' linked Oligos

## Oligo Modifications

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

### cnvK Photo Cross Linker

Category	Photo Cleavable
Modification Code	cnvK
Reference Catalog Number	26-6539
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	396.33



#### Nature Methods: Application Note: Light-Seq: light-directed in situ barcoding of biomolecules in fixed cells and tissues for spatially indexed sequencing.

Jocelyn Y. Kishi., Ninning Liu, Emma R. West, Kuanwei Sheng, Jack J. Jordanides, Matthew Serrata<sup>1</sup>, Constance L. Cepko, Sinem K. Saka, and Peng Yin.

Nature Methods | VOL 19 | 1394 November 2022 | 1393-1402 | [www.nature.com/naturemethods](http://www.nature.com/naturemethods)  
<https://doi.org/10.1038/s41592-022-01604-1>

Oligonucleotide incorporated with a 3-cyanovinylcarbazole nucleoside ( $\text{CNV}_K$ ) can be induced to undergo rapid photo cross-linking to the complementary strand at one wavelength and rapid reversal of the cross-link is possible at a second wavelength. Neither wavelength has the potential to cause significant DNA damage. Irradiation of a duplex containing a single incorporation of  $\text{CNV}_K$  at 366nm led to 100% cross-linking to thymine base in 1 second, although complete cross-linking to cytosine takes 25 seconds (1) A 30 second irradiation time should cover all situations. In addition, it was demonstrated that the purine bases were unreactive to cross-linking, allowing differentiation between pyrimidines and purines at the target site. The authors also determined the effect of sequence contexts around the  $\text{CNV}_K$  site and demonstrated that the identity of bases on either side of the cross-linking site has little effect on the reaction. Once cross-linked, the UV melting temperature of the duplex was raised by around 30 degree C relative to the duplex before irradiation. Complete reversal of the cross-link takes place at 312nm in 3 minutes. This facile reversal reaction is, therefore, accomplished with no damage to normal DNA.

In a later publication, a further application of this cross-linking technique was investigated (2); when  $\text{CNV}_K$  was cross-linked with a dC residue in duplex DNA, heating at 90 degree C for 3.5 hours led to deamination of the cytosine base to form uracil in the complementary strand. Reversal of the cross-link at 312nm led to a DNA strand in which dC had been converted to dU. The authors showed that this transformation is specific for the dC residue opposite the  $\text{CNV}_K$  and any further adjacent dC residues are unaffected.

Similarly, the authors have shown that <sup>CNV</sup>K can be cross-linked to an adjacent RNA strand (3).

**Recommended Further Reading**

Glen Report 30.21: CNVK and CNVD-Ultrafast Reversible Photo-Crosslinkers for DNA or RNA.

**References**

- (1) Y. Yoshimura, and K. Fujimoto, Org Lett, 2008, 10, 3227-30.
- (2) K. Fujimoto, K. Konishi-Hiratsuka, T. Sakamoto, and Y. Yoshimura, ChemBioChem, 2010, 11, 1661-4.
- (3) Y. Yoshimura, T. Ohtake, H. Okada, and K. Fujimoto, ChemBioChem, 2009, 10, 1473-6.