Convertible dG (2-F-dI)

2-Fluoro-deoxyinosine (2-F-dI) is classified as a convertible dG nucleotide. After incorporation into an oligo, reaction of the 2-fluorine on the inosine base with a primary amine displaces the fluorine atom, and converts the nucleotide into a N2-substituted dG. Oligos containing 2-F-dI modifications are useful precursors in studies requiring cross-linking, at G position(s), between oligos, or between an oligo and an enzyme. For example, 2-F-dI modified oligos have been reacted with disulfide-containing diamines (1) or thiopropylamines (2) in order to subsequently form disulfide-crosslinked DNA duplexes. Such oligos have also been reacted with bis-(3-aminopropyl)disulfide dihydrochloride, and the disulfide-containing oligo intermediate coupled to a short-lived HIV-1 reverse transcriptase kinetic intermediate to form stable enzyme-oligo complexes. The ability to synthesize such complexes have enabled deeper study of the DNA translocation mechanism of HIV-1 RT (3).

In order to minimize the possibility of unwanted side reactions with the exocyclic amines of other bases of the oligo, it must be fully protected and still attached to the synthesis solid support when reacted with the primary amine. Consequently, for customers ordering 2-F-dI-modified oligonucleotides, Gene Link supplies the oligo attached to a solid support for subsequent conversion to the appropriate N2-modified dG by the enduser.

Protocol for conversion of 2-FI (convertible G) to the appropriate N2-modified dG.

References