



# Product Specifications

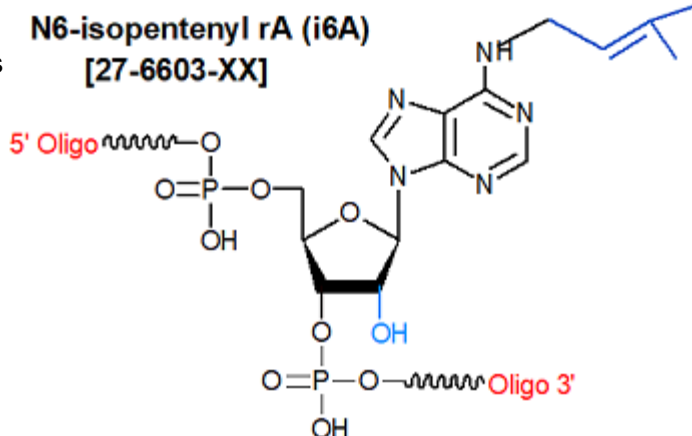
Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos, Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers, Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates Locked Nucleic Acids (LNA); 2'-5' linked Oligos

## Oligo Modifications

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

### N6-isopentenyl-rA (i6a)

Category	RNA Oligo Synthesis
Modification Code	N6-i6A
Reference Catalog Number	27-6603
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	398.33



N6-isopentenyladenosine (i6A), a naturally occurring modified nucleoside, inhibits the proliferation of human tumor cell lines *in vitro*, but its mechanism of action remains unclear. Among the over 100 base modifications occurring in tRNA, many target the anticodon stem loop, in particular base 34 reading the wobble base and the dangling base 37 3'-adjacent to the anticodon. Base modifications present at base 37 include mostly bulky additions to adenosine, i.e. N6-isopentenyladenosine (i6A), 2-methyl-thio i6A (ms2i6A), 6-hydroxy ms2i6A (ms2io6A), N6-threonylcarbamoyladenine (t6A), ms2t6A, and modification of guanosine, to N1-methylguanosine (m1G) or wybutosine (yW). The i6A modified base was one of the first hypermodified bases identified and has been found in bacteria and eukaryotes, but not in archaea. (1)

The enzyme tRNA-isopentenyltransferase-1 (E.C. 2.5.1.75), encoded by the putative tumor suppressor gene TRIT1 (1), catalyzes the transfer of an isopentenyl group from isopentenyl diphosphate to the adenosine in position 37 of selenocysteine-specific transfer RNA (tRNA) [2,3]. The resulting isopentenyladenosine-tRNA (i6A-tRNA) improves the reading frame maintenance during the synthesis of selenoproteins [4]. N6-isopentenyladenosine (i6A), which is a breakdown product of i6A-tRNA turnover, is found in mammalian cells and is excreted in the urine (1-4) References

- Schweizer U, Bohleber S, and Fradejas-Villar N. The modified base isopentenyladenosine and its derivatives in tRNA. *RNA Biology*. 14 (2017) 1197–1208.
- Spinola M., Galvan A., Pignatiello C., Conti B., Pastorino U., Nicander B., Paroni R., Dragani T.A. Identification and functional characterization of the candidate tumor suppressor gene TRIT1 in human lung cancer. *Oncogene*, 24 (2005) 5502-5509.
- Golovko A., Hjälml G., Sitbon F., Nicander B. Cloning of a human tRNA isopentenyl transferase. *Gene*, 258 (2000) 85-93
- Fradejas N., Carlson B.A., Rijntjes E., Becker N.P., Tobe R., Schweizer U. Mammalian Trit1 is a tRNA[ser]sec-isopentenyl transferase required for full selenoprotein expression. *Biochemical Journal*, 450 (2013), pp. 427-432