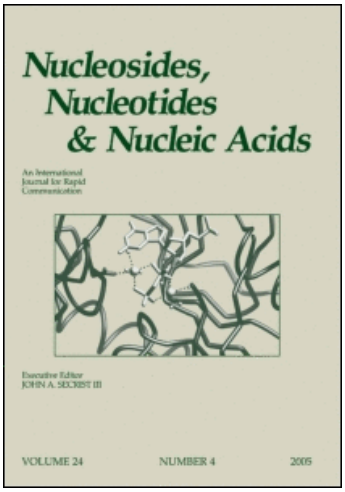

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New Photoreactive RNA Analogues

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NEW PHOTOREACTIVE RNA ANALOGUES

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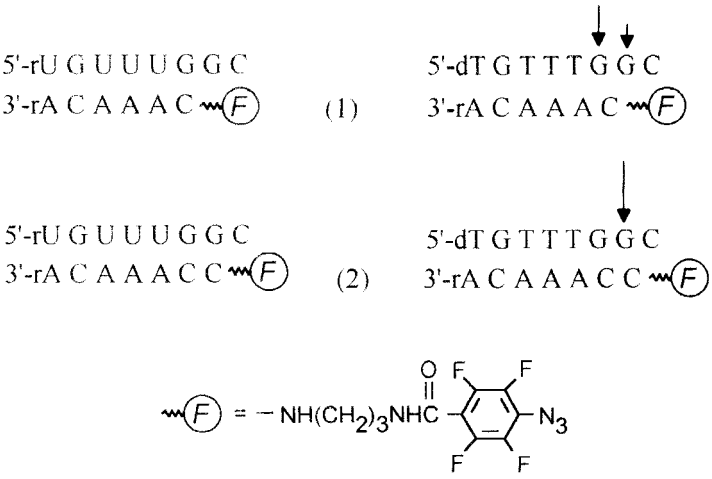
ABSTRACT The synthesis and study of hybridization and modification ability of the new oligoribonucleotide derivatives bearing *p*- azidotetrafluorobenzoic acid residue at the 5'-terminal phosphate is described.

The photoactivatable oligonucleotide derivatives are of great interest for the site-specific modification of nucleic acids. It was shown recently[1] that oligodeoxyribonucleotides conjugated with perfluoroaryl azide are effective and site-specific reagents for the photomodification of both deoxyribo- and ribo-targets.

The present communication is devoted to the synthesis and study of hybridization and modification ability of the oligoribonucleotides bearing *p*-azidotetrafluorobenzamide group. Modified hexa(1)- and hepta(2)ribonucleotides with *p*-azidotetrafluorobenzoic acid residue coupled to the 5'-terminal phosphate *via* diaminopropane linker were synthesized by analogy with the recent work[1].

The comparative study of the thermal stability of the duplexes formed by the new oligoribonucleotide derivatives F~pCAAACA (1) and F~pCCAAACA (2) with complementary octaribonucleotide 3'-CGGUUUGU-5' and its deoxyribo-analogue was fulfilled. The positive influence of the incorporated *p*-azidotetrafluorobenzamide group on the duplex stability was confirmed. The photomodification of the RNA- and DNA-targets by reagents (1) and (2) has been investigated. Irradiation of the complexes (4°C, 5 min, high pressure Hg-lamp, $5 \times 10^{-4} Wcm^{-2}$; λ 303-365nm; buffer 0,16 M KCl, 0,02 M Na_2HPO_4, 0.1 mM EDTA (pH 7.4); target 1×10^{-6} M, reagent 1×10^{-5} M) induced cross-

linked products. The results obtained show that modification efficiency depends on the length of oligonucleotide reagent and type of target. The maximum extent of the cross-linked product formation (60%) was obtained for the reaction of the DNA-target with reagent (2). In the case of RNA-target the limited extent of photomodification by both reagents (1) and (2) was high enough (40 and 46% respectively). In the case of DNA-target and reagents (1) and (2) the irradiated reaction mixtures were treated with piperidine. The target was shown to cleave at G^6 and G^7 residues for reagent (1) and at G^7 preferentially for reagent (2).



The results presented show that the 5'-perfluoroarylazide oligoribonucleotide derivatives are effective modifiers of both RNA and DNA.

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