

Guest Editor's Introduction of Molecules (<http://www.mdpi.org/molecules/>) Special Issue: *Nucleic Acid Derivatives: Organic Chemistry*

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It had been deservedly forecasted by many prominent scientists that the recent era will belong to Biology, more specifically, to Molecular Biology. Indeed, the way this science has been shaping our past and present understanding of biological processes is truly amazing. Little had been said, however, about another discipline that is underlying beneath Molecular Biology: Organic Chemistry.

Molecular Biology is actually, in a simplistic way, the biology of Nucleic Acids. Sophisticated techniques based on manipulation of nucleic acids, DNA, RNA and the like have been developed over the time. These have led to elucidation of the nucleic acid base sequence of the entire human and other genomes, amplification of desired sequences of nucleic acids, transfer of genes from one organism to another and production of the desired proteins by bacteria, extensive screening of mutations in genome, discovery of catalytic nucleic acids and creation of novel catalytic activities (chemical evolution), screening of the expression of genes and errors in genes on oligonucleotide microarrays, and very recently, attempts to exploit fragments of nucleic acids in chemotherapy and as structural units in nanotechnology, only to mention a few examples.

It is not always fully appreciated that this development has largely been realised by means of Organic Chemistry. This fact is certainly associated with the unduly tarnished reputation of (Organic) Chemistry. For a chemist it is hard to accept that her/his science has been continuously mentioned, more often than necessary, in the context of environmental pollution, chemical weapons and other negative phenomena, while the achievements rendering our civilisation comfortable (drugs, plastics, feedstocks, dyes, novel materials *etc.*) are easily forgotten or taken for granted.

The purpose of this Special Issue of *Molecules* is give proper credit to Organic Chemistry of Nucleic Acids boosting Molecular Biology. All branches of Organic Chemistry (synthetic, analytical, physical organic, medicinal *etc.*), in relation to Nucleic Acid Derivatives, will be considered and prospective authors are encouraged to submit their papers for consideration. Along with its counterpart in the journal *IJMS*, special issue *Nucleic Acid Derivatives in Emerging Technologies*, this special issue in *Molecules (Nucleic Acid Derivatives: Organic Chemistry)* has the ambition to cover all important aspects of contemporary research in this dynamic field.

Selected Leading Papers

1. Heise, C.; Bier, F. F. Immobilization of DNA on microarray. *Top. Curr. Chem.* **2005**, *261*, 1-25.
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4. Rozners, E. Carbohydrate chemistry for RNA interference: Synthesis and properties of RNA analogues modified in sugar-phosphate backbone. *Curr. Org. Chem.* **2006**, *10*, 675-692.
5. Nawrot, B.; Sipa, K. Chemical and structural diversity of siRNA molecules. *Curr. Top. Med. Chem.* **2006**, *6*, 913-925.
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15. Pojarvi-Virta, P.; Lönnberg, H. Prodrug approaches of nucleotides and oligonucleotides. *Curr. Med. Chem.* **2006**, *13*, 3441-3465.
16. Robak, T.; Lech-Maranda, E.; Korycka, A.; Robak, E. Purine nucleoside analogs as immunosuppressive and antineoplastic agents: Mechanism of action and, clinical activity. *Curr. Med. Chem.* **2006**, *13*, 3165-3189.
17. Lu, Y. X. Recent advances in the stereocontrolled synthesis of antisense phosphorothioates. *Mini-Rev. Med. Chem.* **2006**, *6*, 319-330.

18. Barron, L. D. Structure and behaviour of biomolecules from Raman optical activity. *Curr. Opin. Struct. Biol.* **2006**, *16*, 638-643.
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21. Egli, M.; Lubini, P.; Pallan, P. S. The long and winding road to the structure of homo-DNA. *Chem. Soc. Rev.* **2007**, *36*, 31-45.

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