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Nucleosides, Nucleotides and Nucleic Acids

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Preface

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PREFACE

This special issue of *Nucleosides, Nucleotides & Nucleic Acids* contains the Proceedings of The **International Symposium on Drug Regulation of Gene Expression** held in Bressanone/Brixen, Italy, August 31 to September 4, 1999.

The aim of the meeting was to bring together scientists from all over the world for a critical assessment of the pharmacological perspectives stemming from the increase in chemical and biochemical knowledge on the structure of the human genome and on the cellular regulation of gene expression.

The symposium was organized under the auspices of Italian learned and civic societies and with additional financial support from Isis, Novuspharma and Rhone-Poulenc. It was attended by about 100 scientists from 13 countries, including many young post-doctoral fellows.

This meeting was the latest in a series focussed chiefly on drug-DNA interactions, previously organized in Padova (Italy), Cambridge (UK), Aussois (France), Roscoff (France), Copenhagen (Denmark) and Ascona (Switzerland). The Organizing Committee included: M. Palumbo, Chairman, (University of Padova, Italy), C. Bailly (INSERM, Lille, France), G. M. Bonora (University of Trieste, Italy), G. Capranico (University of Bologna, Italy), D.M. Crothers (Yale University, New Haven, USA), W.A. Denny (University of Auckland, New Zealand), L.H. Hurley (University of Austin, USA), S. Neidle (University of London, UK) and M. J. Waring (University of Cambridge, UK).

Particular emphasis was given to the fundamental mechanisms of drug action and the molecular basis for gaining or enhancing drug selectivity, and the consequences in the treatment of cancer, AIDS and other genetic diseases.

Clearly the perspective was to evidenciate novel potential therapeutic approaches, corresponding to expectations widely diffused in the social community.

Meeting highlights included:

- mechanisms and dynamics of gene regulation, especially at the level of nucleic acid-protein interaction,
- specificity of drug binding to DNA related to peculiarities of its secondary/tertiary structure,
- aptamers which can be used as functional equivalents to antibodies,
- potentiation of nucleic acids alkylating and damaging agents, and recognition of abasic sites in DNA,
- hairpin polyamides targeted at specific HIV genes so as to drastically reduce virus replication,
- G-quadruplexes as targets for drugs designed to affect telomerase function, cell proliferation rates and chromosome stability,
- structural features and drug-induced trapping of topoisomerase I and II cleavage complexes with DNA and elucidation of the molecular determinants causing recognition by drugs
- rational design and exploitation of antisense/antigene oligonucleotides and peptide nucleic acid sequences aimed at single-stranded or double-stranded DNA targets,
- liquid-crystalline DNA-drug complexes as a background for the development of biosensor devices.

A more detailed report on the meeting was published by Prof. M.J. Waring in the October 1999 issue of *Investigational Drugs Weekly* on pages 57 – 59.

Manlio Palumbo,

Guest Editor