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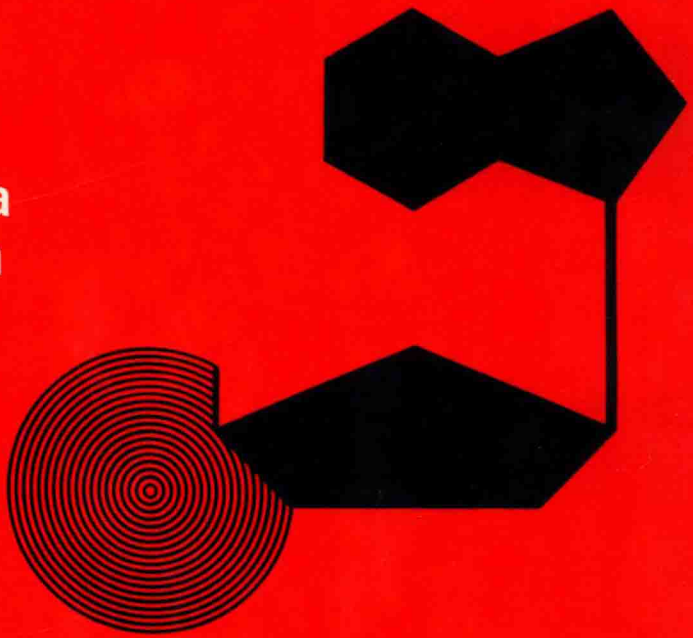

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ADVANCES IN SECOND MESSENGER
AND PHOSPHOPROTEIN RESEARCH

Volume 25

formerly *Advances in Cyclic Nucleotide and Protein Phosphorylation Research*

The Biology of Cyclic Nucleotide Phosphodiesterases

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Preface

The Proceedings of an International Symposium on Cyclic Nucleotide Phosphodiesterases was published in 1984 as Volume 16 in *Advances in Cyclic Nucleotide and Protein Phosphorylation Research*. Since then, the area of cyclic nucleotide phosphodiesterase research has undergone such extensive progress that a second comprehensive monograph devoted to this topic is not only timely but long overdue.

Advances have occurred in the characterization and definition of biochemical and physicochemical properties of at least five distinct forms of cyclic nucleotide phosphodiesterase with varying substrate affinities and specificities and regulatory properties. Several other related isoforms of the enzyme system, belonging to distinct families of isozyme forms that share certain characteristics, have been identified in various tissues and organisms. Relatively selective pharmacological agents have now been developed, which have contributed to the many advances made on this enzyme system. The availability of these agents, along with the selectivity of their effects on specific isozymes, has generated renewed interest by the pharmaceutical industry in the use of these drugs in the treatment of cardiovascular and pulmonary diseases, endocrine and metabolic perturbations, and neurological and psychiatric disorders. Future development and application of computer-assisted drug design systems as a technique to model sites of interaction between the drugs and catalytic and regulatory sites will undoubtedly lead to further advances. Similarly, investigations into the molecular genetic features of the enzyme system have progressed rapidly. Sequence homologies and differences have been revealed, and the transfection of the yeast gene for a specific isozyme of phosphodiesterase into mammalian cells has been accomplished. Such studies improve our understanding of the key structural and regulatory features of this family of isozymes and help in the development of novel therapeutic strategies.

This book links together current investigations in the field of cyclic nucleotide phosphodiesterase research. Both the novice and seasoned investigator interested in the biochemistry, molecular enzymology, and clinical implications of this enzyme system will find useful material here.

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