RECEPTORS FOR REPRODUCTIVE HORMONES

ADVANCES IN EXPERIMENTAL MEDICINE AND BIOLOGY

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Bert W. O'Malley and Anthony R. Means • 1973

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Edited by
Bert W. O'Malley
and **Anthony R. Means**

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PREFACE

We are especially grateful to Dr. Philip Corfman and his colleagues of the Population and Reproduction Grants Branch of NICHD for making this Conference possible. The format of this volume follows in general the order in which the papers were presented during the Conference. The Conference was divided into four sessions, each of which was presided over by a capable and distinguished scientist. Each of these chairmen, Drs. T. H. Hamilton, G. A. Puca, R. L. Vande Wiele and H. G. Williams-Ashman provided valuable discussion and for their services we are most appreciative.

The Editors are indebted to Mr. Robert Colligan for his help in organizing and in redacting the manuscripts. A special commendation is also extended to Ms. Mary Jane Fowler who cheerfully and efficiently typed this entire volume.

Finally, we express thanks to the individual participants of the Conference for their cooperation and prompt submission of the manuscripts and to the Plenum Press for ensuring the rapid publication of this volume.

Anthony R. Means, Ph.D.

Bert W. O'Malley, M. D.

March, 1973

FOREWORD

This book emanates from the Conference on Receptors for Reproductive Hormones supported by the Center for Population Research, National Institutes for Child Health and Human Development and held at Vanderbilt University in July, 1972, in conjunction with the second annual meeting of Directors of CPR-supported population research centers and program projects. The Conference theme of "Receptors for Reproductive Hormones" was considered to be a timely topic due to the intensity of current research interest in this field, the abundance of new data and mechanistic concepts, the significant amount of support provided by the Center for Population Research to a large number of investigators in this area, and the relevance of this field to design and development of new contraceptive agents.

The program of speakers included many of the major international investigators in this field and dealt with both sex steroid and gonadotrophin receptors. It was quite evident from the presentations and discussions that current progress continues to be both rapid and imaginative. New data were presented for open discussion and criticism on: equilibrium kinetics for the relocation of the sex steroid receptor from the target cell cytoplasm to nucleus; binding of nuclear receptor to chromosomal proteins and DNA, including specific roles for receptor subunits; alterations in nuclear RNA synthesis induced by receptors; correlation of nuclear receptor content with biologic effects; recycling of receptors in target cells; elucidation of gonadotrophin receptor sites on target cell membrane; uterine adenylate cyclase and cAMP responsive systems; activation of adenylate cyclase by the interaction of gonadotrophins with their membrane receptors; and mathematical theories of hormone-receptor interaction. Comparisons were made for estrogens, progestins, androgens, and gonadotrophins in normal and neoplastic cells of multiple target tissues and in a number of animal species, including human.

The known attitude of investigators in this field of "Receptors and Hormone Action" to discuss current data and concepts in a frank and friendly manner was again as evident at this meeting as on previous occasions. We honestly feel that the warm relationships developed over the past decade among workers in this area of investigations cannot help but facilitate more rapid scientific progress.

In summary, the conference seemed to clearly point out the level of progress achieved in this field over the past decade and the biological relevance of receptors to the mechanism of action of sex steroids and gonadotrophins. It appeared quite probable that continued scientific advancement in this area may not only lead to a better understanding of basic aspects of cell and reproductive biology but in addition, may provide new insights for antihormones and development of new contraceptive compounds.

Bert W. O'Malley, M. D.

Anthony R. Means, Ph.D.

March, 1973

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