

Advances in Anatomy Embryology and Cell Biology

Vol. 146

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The Pineal Organ, Its Hormone Melatonin, and the Photoneuroendocrine System

With 31 Figures



Springer

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ISBN 978-3-540-64135-3 ISBN 978-3-642-58932-4 (eBook)
DOI 10.1007/978-3-642-58932-4

Library of Congress-Cataloging-in-Publication Data

Korf, H.-W. (Horst-Werner), 1952- . The pineal organ, its hormone melatonin, and the photoneuroendocrine system / H.-W. Korf, C. Schomerus, J.H. Stehle. p. cm. – (Advances in anatomy, embryology, and cell biology: V. 146) Includes bibliographical references and index.

1. Pineal gland-Physiology. 2. Melatonin-Physiological effect. I. Schomerus, C. (Christof), 1963- . II: Stehle, J.H. (Jörg H.), 1954- . III. Title. IV. Series. QL801.E76 Vol. 146 [QP188.P58] 573.8'374-dc21

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Originally published by Springer-Verlag Berlin Heidelberg New York in 1998

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Production: PRO-EDIT GmbH, D-69126 Heidelberg
SPIN: 10660179 27/3136-5 4 3 2 1 0 – Printed on acid-free paper

Preface

The present contribution on the pineal complex, its hormone melatonin, and the photoneuroendocrine system combines findings from comparative anatomy and physiology with results from cellular and molecular biology. The selection of the topics presented is necessarily subjective and far from complete. Nevertheless we hope to point out some major research developments in recent decades which confirm the functional significance of the pineal organ as an important component of the vertebrate photoneuroendocrine system and its usefulness as a model to study signal transduction mechanisms in neuroendocrine cells and neurons.

Several colleagues have helped us with the preparation of the manuscript. Our special thanks go to Prof. Andreas Oksche (Giessen), who not only provided us with previously unpublished photographs but has guided our research as stimulating mentor for several years. We are grateful to Prof. Hilmar Meissl (Bad Nauheim), Prof. Peter Redecker (Hannover), and Prof. Manfred Ueck (Giessen) for providing us with previously unpublished photographs, to Dr. Erik Maronde, Dr. Faramarz Dehghani, Dipl. Biol. Martina Pfeffer, Dipl. Biol. Charlotte von Gall, Dipl. Biol. Bernd Neeb, Dipl. Biol. Michael Kopp, and cand. med. Karin Brednow (all Frankfurt/Main) for contributing unpublished results. The technical assistance by R. Kühn, E. Laedtke, S. Leslie, G. Müller, and I. Szasz is gratefully acknowledged. Finally, we would like to express our gratitude to Prof. Theodor H. Schiebler for his encouragement to prepare this contribution.

Our own research has been supported by the Deutsche Forschungsgemeinschaft.

Frankfurt am Main, September 1997

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Abbreviations

ACh	Acetylcholine
AChE	Acetylcholinesterase
AP-1	Activator protein-1
CRE	Cyclic AMP response element
CREB	Cyclic AMP response element binding protein
HIOMT	Hydroxyindole- <i>O</i> -methyltransferase
ICER	Inducible cyclic AMP early repressor
IEG	Immediate early gene
LHRH	Luteinizing hormone releasing hormone
NAT	Serotonin- <i>N</i> -acetyltransferase
NE	Norepinephrine
NPY	Neuropeptide Y
OT	Oxytocin
PACAP	Pituitary adenylate cyclase-activating peptide
PCR	Polymerase chain reaction
pCREB	Phosphorylated CREB
PHI	Peptide N-terminal histidine and C-terminal isoleucine
PKA	Protein kinase A
SCG	Superior cervical ganglion
SCN	Suprachiasmatic nucleus
TPH	Tryptophan hydroxylase
TRE	Serum response element
VIP	Vasoactive intestinal peptide
VP	Vasopressin