

NUTRITION

FIFTH EDITION

HANDBOOK OF VITAMINS

Within the last few years, knowledge about vitamins has increased dramatically, resulting in improved understanding of human requirements for many vitamins. This new edition of a bestseller presents comprehensive summaries that analyze the chemical, physiological, and nutritional relationships, as well as highlight newly identified functions, for all recognized vitamins. These include vitamins A, D, K, E, B₆, B₁₂, niacin, riboflavin, thiamine, pantothenic acid, biotin, folate, choline, and ascorbic acid.

Keeping the tradition of the previous volumes, the *Handbook of Vitamins, Fifth Edition* provides an updated, contemporary perspective on vitamins in human nutrition. Bringing together leading experts in molecular biology, biochemistry, and physiology, the book contains substantial revisions in every chapter, covering vitamin metabolism, including human requirements, clinical aspects of deficiency, vitamin-dependant cell signals and gene regulation, and roles as coenzymes.

The chapter on epigenetics has been updated and expanded to include novel findings about vitamins not previously considered in studies of nutrient-dependent epigenome modification. The book also contains a new chapter on genome stability, highlighting current understanding of vitamin-genome interactions in the evolution of the human genome and the functional consequences of human genetic variation. Maintaining its status as a high-quality reference, this handbook incorporates new discoveries into an updated and revised fifth edition.



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GREGORY
STOVER

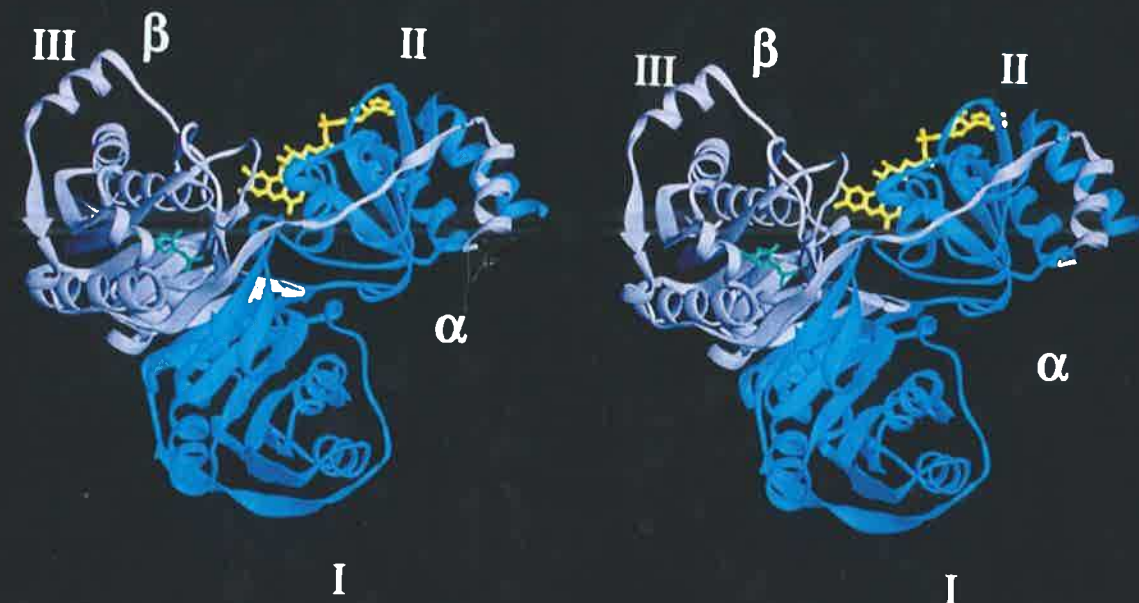
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EDITED BY
JANOS ZEMPLÉNI
JOHN W. SUTTIE
JESSE F. GREGORY III
PATRICK J. STOVER



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CRC Press
Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an Informa business

CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

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Printed on acid-free paper
Version Date: 20130220

International Standard Book Number-13: 978-1-4665-1556-7 (Hardback)

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Library of Congress Cataloging-in-Publication Data

Handbook of vitamins / editors, Janos Zemleni, John W. Suttie, Jesse F. Gregory, III, Patrick J. Stover. --
Fifth edition.
pages cm
"A CRC title."
Includes bibliographical references and index.
ISBN 978-1-4665-1556-7 (alk. paper)
1. Vitamins. 2. Vitamins in human nutrition. I. Zemleni, Janos, editor of compilation. II. Suttie, J. W. (John Weston), 1934- editor of compilation. III. Gregory, Jesse F., editor of compilation. IV. Stover, Patrick J., 1964- editor of compilation.

QP771.H35 2013
612.3'99--dc23

2013005015

Visit the Taylor & Francis Web site at
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<http://www.crcpress.com>

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Preface

In keeping with the tradition of previous editions, the fifth edition of the *Handbook of Vitamins* was assembled to update and provide contemporary perspectives on vitamins in human nutrition. One of the challenges in assembling this volume was to cover all aspects of vitamin metabolism, including human requirements, clinical aspects of deficiency, vitamin-dependent cell signals and gene regulation, roles as coenzymes, and molecular events in genome stability and the epigenome. Our goal was to assemble the best available reference text on vitamins for an audience ranging from basic scientists to clinicians to advanced students and educators.

We were fortunate that the true leaders in vitamin research accepted our invitation to contribute manuscripts in their areas of expertise. Their outstanding contributions are the sole reason for the *Handbook's* continued success. As editors, we were merely facilitating the review process. After long years of service on the editorial board, two of the previous members of the editorial board, Drs. Donald B. McCormick and Robert B. Rucker, decided to retire from the board after completion of the previous edition. They will be dearly missed and we wish to thank them for their continued help with manuscript writing and the review of individual manuscripts for this fifth edition. We are very pleased to have Drs. Jesse F. Gregory III and Patrick J. Stover agreeing to fill the vacant seats on the editorial board, starting with this fifth edition.

A number of meaningful changes have been made to this latest edition. A new chapter on genome stability has been added. The chapter on epigenetics has been completely rewritten. All vitamin chapters have been revised by at least 50%. The chapter on dietary reference intakes has been eliminated and intake recommendations are now embedded in the chapters of individual vitamins.

We would not have been able to complete this project without the help of colleagues such as Dr. Donald M. Mock, who helped by occasionally reviewing a manuscript, and Randy Brehm and Amy Blalock from the publisher's office who excelled in ensuring a smooth process in all aspects of assembling this fifth edition of the *Handbook of Vitamins*.

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