

Forum of Nutrition

Vol. 63

Series Editor

Ibrahim Elmadfa Vienna



Frontiers in Eating and Weight Regulation

Volume Editors

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28 figures, 1 in color, and 4 tables, 2010

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Library of Congress Cataloging-in-Publication Data

Frontiers in eating and weight regulation / volume editors, Wolfgang
Langhans, Nori Geary.

p. ; cm. -- (Forum of nutrition, ISSN 1660-0347 ; v. 63)

Includes bibliographical references and indexes.

ISBN 978-3-8055-9300-7 (hard cover : alk. paper)

1. Appetite. 2. Body weight--Regulation. 3. Neuroendocrinology. 4.
Gastrointestinal hormones. I. Langhans, Wolfgang. II. Geary, Nori. III.

Series: Forum of nutrition, v. 63. 1660-0347 ;

[DNLM: 1. Eating--physiology. 2. Obesity--metabolism. 3.

Adiposity--physiology. 4. Body Weight--physiology. W1 B1422 v.63 2010 / WD
210 F935 2010]

QP136.F76 2010

612.3'9--dc22

2009043618

Bibliographic Indices. This publication is listed in bibliographic services, including Current Contents® and PubMed/MEDLINE.

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www.karger.com

Printed in Switzerland on acid-free and non-aging paper (ISO 9706) by Reinhardt Druck, Basel

ISSN 1660-0347

ISBN 978-3-8055-9300-7

e-ISBN 978-3-8055-9301-4

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Preface

Scientific interest in the physiology of eating and body weight regulation has grown rapidly in recent years. There are both purely scientific and wider, cultural reasons for this development. The scientific reason relates to the advent of molecular genetics. The discovery of the adipose tissue hormone leptin by Jeffrey Friedman and his colleagues at Rockefeller University just 16 years ago revealed an important new neuroendocrine signaling pathway involved in the control of eating, energy expenditure and weight regulation and, more generally, made clear the power of molecular genetic techniques to help illuminate brain-behavior relationships. The influence, and the promise, of applying these tools to the study of eating and body weight regulation can hardly be overestimated. The cultural reason relates to the ongoing pandemic of obesity and of obesity-related health problems. The scale of the individual and societal costs of this pandemic have become clear only in the last 10–15 years. Unfortunately, equally clear is the current lack of effective strategies to control eating and body weight. The development of preventive and therapeutic options is a tremendous challenge to the science of eating and weight regulation in all its forms, from basic physiology to cognitive and social psychology.

Like previous advances in scientific technique and thought, the explosive growth in knowledge during the initial years of the molecular genetic revolution has been followed by a somewhat more intellectually critical phase, characterized by attempts to integrate new data and concepts with existing approaches. This is evident in the increasing numbers of studies in which cutting-edge molecular methodologies are combined with sophisticated traditional behavioral or physiological methods or with other new techniques, for example, functional imaging. In our view, the science of eating control and body weight regulation seems to be well into this synthetic period. As a result, the current scene is not dominated by a single type of methodology or single mode of thought. Rather, the wide boundary of the unknown is being pushed back in different ways and at different levels, often most successfully when different sorts of methods are combined.

Our book attempts to capture the spirit of this exciting era in the physiology of eating and weight regulation as well as its significance to the alleviation of the affliction of obesity. Together with the editors at Karger Publishers, we conceived a fresh approach to the usual volume of a collection of review articles. Our concept has two novelties: First, the main content of the book is a collection of brief, expert descriptions of recent developments in 15 examples of the important research frontiers in the physiology of eating, especially as it relates to weight regulation and adiposity. The intent of this format is to reflect several exciting recent developments in our area in an accessible form, so as to help inform and influence research in the coming years. To highlight the necessity of this continuing research, the book begins with a brief, expert introduction to the currently employed strategies for the treatment of obesity and their mostly disillusioning outcomes. The book's second unusual feature is that the frontier chapters are preceded by a general overview of the physiology of eating control and weight regulation. This overview chapter is meant both to provide requisite background information for the frontier chapters in an accessible way for readers for whom this is useful and to introduce an overarching conceptual and critical framework for the frontier chapters. As well, this chapter touches on several further active research areas that are not represented in the frontier chapters, such as new work on the satiating effect of glucagon-like peptide-1, advances in unraveling the complex role of brain serotonin in the control of eating, and the effects of bariatric surgery on physiological controls of eating and weight regulation, to name just three.

We hope that this approach has resulted in a book that is useful to students and newcomers to the field, to basic researchers engaged in the area, and to researchers and clinicians interested in the bidirectional translational dialog between bench and bedside. We have the optimistic view that the steady progress now visible in both basic and clinical research will generate increasingly effective treatments for disordered eating and body weight regulation. We hope that this book will facilitate this process. Last, but not least, we want to thank the editors at Karger Publishers for their patience and flexibility. Without their continuing support and understanding this book would not exist.

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