

# **Contents**

---

## **PART ONE**

### **FAT METABOLISM 1**

#### **CHAPTER 1**

**Intermediary Metabolism with an Emphasis on Lipid Metabolism,  
Adipose Tissue, and Fat Cell Metabolism: A Review 3**

PETER LÖNNROTH and ULF SMITH

#### **CHAPTER 2**

**Brown Adipose Tissue Metabolism 15**

JEAN HIMMS-HAGEN

## **PART TWO**

### **ASSESSMENT OF BODY COMPOSITION 35**

#### **CHAPTER 3**

**Assessment of Body Composition: An Overview 37**

STEVEN B. HEYMSFIELD, STEVEN LICHTMAN,  
RICHARD N. BAUMGARTNER, F. AVRAHAM DILMANIAN,  
and YAKOV KAMEN

#### **CHAPTER 4**

**New Approaches to the Clinical Assessment of Adipose Tissue 55**

ALEX F. ROCHE and WM. CAMERON CHUMLEA

#### **CHAPTER 5**

**Body Composition Assessment Using Impedance Methods 67**

HENRY C. LUKASKI

#### **CHAPTER 6**

**Isotope Dilution Methods 80**

DALE A. SCHOELLER

**PART THREE****ENERGY METABOLISM 89**

*Regulation of Energy Output (Chapters 7–12)*

**CHAPTER 7****Calorimetry in the Study of Obesity 91**

PAUL WEBB

**CHAPTER 8****The Biochemistry of Energy Expenditure 100**

J. P. FLATT

**CHAPTER 9****Evidence for Brown Adipose Tissue in Humans 117**

M. E. J. LEAN

**CHAPTER 10****Regulation of Thermogenesis and Nutrient Metabolism in the Human: Relevance for Obesity 130**

ERIC JÉQUIER

**CHAPTER 11****Energy Expenditure During Exercise 136**

BJÖRN EKBLOM

**CHAPTER 12****Metabolic-Control-Logic: Its Application to Thermogenesis, Insulin Sensitivity, and Obesity 145**

E. A. NEWSHOLME and R. A. J. CHALLISS

*Regulation of Energy Intake (Chapters 13–17)*

**CHAPTER 13****Calorie Restriction and Longevity 162**

EDWARD J. MASORO

**CHAPTER 14****Electrophysiological and Neurochemical Approach to a Hierarchical Feeding Organization 171**

LUIS HERNANDEZ, EURO MURZI, DAVID H. SCHWARTZ,  
and BARTLEY G. HOEBEL

**CHAPTER 15****Brain Neurotransmitters and Hormones in Relation to Eating Behavior and Its Disorders 184**

SARAH FRYER LEIBOWITZ

**CHAPTER 16**

- 
- Hibernation: A Model of Adaptive Hyperlipogenesis and Associated Metabolic Features**
- 206

WILLIAM A. BAUMAN

**CHAPTER 17**

- 
- Determinants of Food Intake Regulation in Obesity**
- 220

JUDITH RODIN

**PART FOUR****ANIMAL MODELS OF OBESITY** 231**CHAPTER 18**

- 
- Genetic Models of Animal Obesity**
- 233

DAVID A. YORK

**CHAPTER 19**

- 
- Dietary Obesity Models**
- 241

ANTHONY SCLAFANI

**CHAPTER 20**

- 
- Neuroendocrinology of Type II Diabetes in Animal Models**
- 249

BERNARD JEANRENAUD, ISABELLE CUSIN,  
and FRANÇOISE ROHNER-JEANRENAUD**CHAPTER 21**

- 
- Obesity and Diabetes in Monkeys**
- 256

BARBARA C. HANSEN

**CHAPTER 22**

- 
- Animal Models of Obesity: Hypothalamic Lesions**
- 266

SHUJI INOUE

**PART FIVE****HUMAN OBESITY: GENERAL ASPECTS** 279**CHAPTER 23**

- 
- Obesity: Historical Development of Scientific and Cultural Ideas**
- 281

GEORGE A. BRAY

**CHAPTER 24**

- 
- An Approach to the Classification and Evaluation of Obesity**
- 294

GEORGE A. BRAY

**CHAPTER 25****Characteristics of Obesity 309**

ARTEMIS P. SIMOPOULOS

**CHAPTER 26****The Biocultural Evolution of Obesity: An Anthropological View 320**

PETER J. BROWN

**CHAPTER 27****Epidemiology of Obesity 330**

FREDERICK H. EPSTEIN and MILLICENT HIGGINS

**CHAPTER 28****Genetic Aspects of Human Obesity 343**

CLAUDE BOUCHARD

**CHAPTER 29****Psychological Aspects of Human Obesity 352**

ALBERT J. STUNKARD and THOMAS A. WADDEN

**CHAPTER 30****Body Weight, Morbidity, and Longevity 361**

THEODORE B. VANITALLIE

**PART SIX****HUNGER SATIETY AND MOOD 371****CHAPTER 31****Blood-Brain Barrier Regulation and Diabetes 373**

EAIN M. CORNFORD and MARCIA E. CORNFORD

**CHAPTER 32****Nutrients and the Biochemical Regulation of Brain Function 391**

CHRISTOPHER J. SCHMIDT and WALTER LOVENBERG

**CHAPTER 33****Effects of Brain-Gut Peptides on Satiety 399**

JAMES GIBBS and GERARD P. SMITH

**CHAPTER 34****Brain Serotonin, Food Intake Regulation, and Obesity 411**

JOHN D. FERNSTROM

**CHAPTER 35****Environmental Light, Mood, and Seasonal Affective Disorder 424**

DAN A. OREN and NORMAN E. ROSENTHAL

**CHAPTER 36****Anorexia Nervosa and Bulimia Nervosa 436**

MICHAEL J. DEVLIN and B. TIMOTHY WALSH

**CHAPTER 37****Management of Psychotropic Drug-Induced Obesity 445**

JERROLD G. BERNSTEIN

**CHAPTER 38****Effect of Exercise on Food Intake 454**

F. XAVIER PI-SUNYER

**PART SEVEN****ASSOCIATED HEALTH IMPAIRMENTS 463****CHAPTER 39****Obesity and Disease 465**

KEAVEN M. ANDERSON and WILLIAM B. KANNEL

**CHAPTER 40****Glucose Metabolism in Obesity and Type II Diabetes 474**

RICCARDO C. BONADONNA and RALPH A. DEFRONZO

**CHAPTER 41****Obesity and Hyperlipidemia: Results from the Prospective Cardiovascular Münster (PROCAM) Study 502**

GERD ASSMANN and HELMUT SCHULTE

**CHAPTER 42****Obesity and Atherosclerosis 512**

EDWIN L. BIERMAN and JOHN D. BRUNZELL

**CHAPTER 43****Obesity and the Heart 517**

VICKI SARA BLUMBERG and JONATHAN ALEXANDER

**CHAPTER 44****Hypertension in Obesity 532**

H. E. ELIAHOU, P. SHECHTER, and A. BLAU

**CHAPTER 45****Reproductive and Hormonal Alterations in Obesity 540**

JAMES R. GIVENS

**CHAPTER 46****Obesity in Pregnancy 550**

RONALD K. KALKHOFF

**CHAPTER 47****Obesity and Musculoskeletal Disease 563**

ALFRED JAY BOLLET

**CHAPTER 48****Altered Respiratory Function in Obesity: Sleep-Disordered Breathing and the Pickwickian Syndrome 568**

P. G. KOPELMAN

**PART EIGHT****HEALTH IMPAIRMENTS ASSOCIATED WITH ABDOMINAL DISTRIBUTION OF ADIPOSE TISSUE 577****CHAPTER 49****Regional Obesity 579**

PER BJÖRNTORP

**PART NINE****SPECIAL FORMS OF OBESITY 587****CHAPTER 50****Genetic Syndromes 589**

WILLIAM H. DIETZ

**CHAPTER 51****Polycystic Ovary Syndrome and Obesity 594**

ANDREA DUNAIF

**CHAPTER 52****Childhood Obesity 606**

WILLIAM H. DIETZ

**CHAPTER 53****Obesity Among North American Indians 610**

GAIL G. HARRISON and CHERYL K. RITENBAUGH

**CHAPTER 54****Obesity in Pacific Populations 619**

GARY DOWSE, PAUL ZIMMET, VERONICA COLLINS, and  
CAROLINE FINCH

**PART TEN****TREATMENT—NONPHARMACOLOGIC 641****CHAPTER 55****Indications for Treatment 643**

J. F. MUNRO and I. H. STOLAREK

**CHAPTER 56****Weight Cycling, Mortality, and Cardiovascular Disease: A Review  
of Epidemiologic Findings 653**

LAUREN LISSNER and KELLY D. BROWNELL

**CHAPTER 57****Treatment of Obesity: Conventional Programs and Fad Diets 662**

JOHANNA T. DWYER

**CHAPTER 58****Dietary Fiber and Obesity 677**

ANTHONY R. LEEDS

**CHAPTER 59****Very Low Calorie Diets 683**

BERNARD N. BRODOFF and ROSA HENDLER

**CHAPTER 60****Physical Exercise in the Treatment of Obesity 708**

PER BJÖRNTORP

**CHAPTER 61****Factors Determining the Long-Term Outcome of Obesity  
Treatment 712**

STEPHAN RÖSSNER

**CHAPTER 62****Anesthesia and Morbid Obesity 720**

ROBERT W. VAUGHAN

**CHAPTER 63****Surgical Treatment of Obesity 731**

JOHN G. KRAL

**PART ELEVEN****TREATMENT—PHARMACOLOGIC 743****CHAPTER 64****Pharmacologic Treatment of Obesity 745**

BERNARD N. BRODOFF and CHRISTINE NATHAN

**CHAPTER 65****Serotonin Agonists 751**

CHRISTINE NATHAN

**CHAPTER 66****Thermogenic Drugs 762**

M. A. CAWTHORNE

**Index 779**