Contents

Volume 1

Part I Normative Features of Growth

1 The Concept of the “Size Set Point” and Implications for Organ Size During Growth .................................................. 3
Ben Z. Stanger

2 The Concept of Phenotypic Induction (‘Programming’) and Implications for Growth .................................................. 13
Jonathan C.K. Wells

3 Adult Height Prediction Models ................................................. 27
Hans Henrik Thodberg, Anders Juul, Jens Lomholt,
David D. Martin, Oskar G. Jenni, Jon Caflisch,
Michael B. Ranke, and Sven Kreiborg

4 Twin Studies on Anthropometrics: Exploring the Role of Genetic and Environmental Factors ............................................. 59
Karri Silventoinen, Yoshie Yokoyama, and Finn Rasmussen

5 Endocrine Control and Regulation of Growth Hormone: An Overview ............................................................................ 73
R. Coutant and N. Bouhours-Nouet

6 Intrauterine Growth Standards .................................................. 93
Mira A. Wehbe, Lama Charafeddine, and Khalid A. Yunis

7 Legal and Ethical Issues in Infant Growth .................................. 115
Akash Bang, Satish Tiwari, and R.K. Agarwal

Part II Intrauterine Growth Retardation, Low and Very Low Birth Weight Full-Term Infants

8 Non-placental Causes of IUGR .................................................... 133
Nancy Hendrix and Vincenzo Berghella
9 Intra-uterine Growth Restriction in Developing Countries: Impact on Child Mental Development and Behavior ............................................. 147
Susan P. Walker and Susan M. Chang

10 Risk Factors for Adverse Outcomes in Developed Countries: Role of Intrauterine Growth Restriction .................. 159
Pooja Bansil and Elena V. Kuklina

11 Children Born with Intrauterine Growth Restriction: Neuropsychological Outcome ................................. 177
Ronny Geva

12 Children Born with Intrauterine Growth Restriction: Neurodevelopmental Outcome .............................. 193
Ronny Geva, Yael Leitner, and Shaul Harel

13 Lipid Profile in Intrauterine Growth Restriction ............... 209
Irene Cetin and Gioia Alvino

14 Obesity in Pregnancy: Implications for Fetal and Postnatal Growth .......................................................... 221
Alexis J. Hure and Ian M.R. Wright

15 Drug Exposure and Intrauterine Growth ......................... 235
Sabrina D. Diaz and Lynne M. Smith

16 Brain Lesions in Intrauterine Growth Restriction Assessed by Ultrasound Imaging: Focus on US Technique and Periventricular Lesions ............................................. 263
Nelly Padilla, Goya Enriquez, Edgar Hernandez-Andrade, Angela Arranz, Ruthy Acosta-Rojas, and Eduard Gratacos

17 Cardiovascular Changes in IUGR ...................................... 275
Giancarlo Mari, Brian Brocato, and Roopali V. Donepudi

18 The Placenta in Noninfectious Causes of Fetal Intrauterine Growth Retardation: A Focus on Clinical Features and Placental Pathology .................................................. 299
Valerie A. Fitzhugh and Debra S. Heller

19 Low Birth Weight, A Marker of Intrauterine Stress and Adult Disease .............................................................. 325
Paolo F. Rinaudo, Luisa Delle Piane, and Alberto Revelli

20 Low Birth Weight in the Pathophysiology of Type 2 Diabetes: A Focus on Metabolic and Epigenetic Aspects ............ 343
Charlotte Brøns and Allan Vaag

21 Postnatal Weight Increase and Growth Velocity of Preterm Very Low Birth Weight Infants: Perspectives on Absolute Velocity Charts ......................................................... 365
Enrico Bertino, Luisa Boni, Alessandra Coscia, Luciana Occhi, and Silvano Milani
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Zinc and Low Birth Weight and Subsequent Growth</td>
<td>377</td>
</tr>
<tr>
<td></td>
<td>Rafael Jiménez and Ronoel Peñalver</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Artificial Nutrition in Very Low Birth Weight Newborns and Impact on Growth: Practical Methods to Avoid and Treat Malnutrition in Stable and Unstable Neonates</td>
<td>387</td>
</tr>
<tr>
<td></td>
<td>Gianluca Terrin and Annalisa Passariello</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Anaemia in Defects in Growth Exemplified by Very Low Birth Weight Infants</td>
<td>421</td>
</tr>
<tr>
<td></td>
<td>Heike Rabe, Fiona Ringholz, and Phil Amess</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Cerebral Metabolism in the Very Low Birth Weight Infant</td>
<td>435</td>
</tr>
<tr>
<td></td>
<td>Eugene M. Dempsey</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Part III</strong> Preterm Infants</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>The Relationship Between Growth and Perinatal Factors in Preterm Infants</td>
<td>451</td>
</tr>
<tr>
<td></td>
<td>Monique Rijken</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Monitoring the Growth of Preterm Infants During and After Their Stay in the Neonatal Intensive Care Units: A Focus on WHO Growth Curves After Discharge</td>
<td>465</td>
</tr>
<tr>
<td></td>
<td>Shripada C. Rao and Sanjay Patole</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Early and Aggressive Nutritional Strategy in the Very Low Birth Weight Premature Infants: Preventing Extrauterine Growth Restriction</td>
<td>481</td>
</tr>
<tr>
<td></td>
<td>Néstor Alejandro Dinerstein, Claudio Solana, Ricardo Nieto, Gastón Perez, and Horacio Osiovich</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Development of Oral Feeding Skills in the Preterm Infant</td>
<td>499</td>
</tr>
<tr>
<td></td>
<td>Chantal Lau</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Iodine and the Effects on Growth in Premature Newborns: A Focus on the Role of Thyroid Hormones in Neurodevelopment and Growth</td>
<td>513</td>
</tr>
<tr>
<td></td>
<td>Susana Ares, Belen Saenz-Rico, José Quero, and Gabriela Morreale de Escobar</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Development of Cerebral Cortex in Prematurey Born Infants: Cell Proliferation, Differentiation, and Maturation of Neurons and Myelination in the Archi- and Neocortex</td>
<td>523</td>
</tr>
<tr>
<td></td>
<td>Hajnalka Ábrahám</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Visual and Visuocognitive Development of Children Born Very Prematurely</td>
<td>543</td>
</tr>
<tr>
<td></td>
<td>Janette Atkinson and Oliver Braddick</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Effect of Necrotizing Enterocolitis on Growth and Development in Preterm Neonates</td>
<td>567</td>
</tr>
<tr>
<td></td>
<td>Sanjay Patole and Girish Deshpande</td>
<td></td>
</tr>
</tbody>
</table>
Part IV  Postnatal and Infant Growth in Normal and Abnormal Situations

34 The New WHO Growth Reference in the First 6 Months of Life and Breastfeeding .............................................. 587
Colin Binns and Mi Kyung Lee

35 Optimal Infant Feeding and Its Effects on Growth: An Indian Perspective .......................................................... 597
R.K. Agarwal, Akash Bang, and Satish Tiwari

36 Postnatal Growth Failure and Z-Score ........................................ 611
Haydi Al-Wassia and Prakesh S. Shah

37 Defining the Expected Growth of the Preterm Infant ............. 625
William R. Riddle and Susan C. DonLevy

38 Postnatal Hippocampal Growth in Health and Prematurity: Modulation and Implications ................................. 643
Deanne K. Thompson

39 The Postnatal Endocrine Surge and Its Effects on Subsequent Sexual Growth .................................................... 663
Debbie Guatelli-Steinberg and Jennifer Boyce

40 Child Growth in Karamoja, Uganda: Effects of Armed Conflict, Subsistence Change, and Maternal Behavior ............ 681
Sandra Gray

41 The Growth of Children in Institutions .................................. 709
Laurie C. Miller

42 Psychological Adjustment and Quality of Life in Impaired Growth ............................................................ 721
Meinolf Noeker, John Eric Chaplin, and Monika Bullinger

43 Postnatal Immune Dysfunction and Its Impact on Growth Parameters ....................................................... 741
Jamie C. DeWitt and Rodney R. Dietert

44 Environmental Pollutants and Postnatal Growth ..................... 757
Peter D. Sly

45 Blood Pressure and Postnatal Growth in Preschool Children: Korean Perspectives ............................................ 769
JungWon Min and Hyesook Park

46 Relationship Between Birth Weight and Cardiovascular Risk in Childhood ...................................................... 783
Patricia Helen de Carvalho Rondó

47 Idiopathic Short Stature .......................................................... 797
Meinolf Noeker, Ingo Franke, and Joachim Wölffe

48 Height Velocity Curves in Normal and Abnormal Situations: Relationships Between Diseases – Achondroplasia, Cystic Fibrosis, Growth Hormone Deficiency and Hypothyroidism .................. 813
Julie Hoover-Fong, Kerry Schulze, and John McGready
<table>
<thead>
<tr>
<th>Part V</th>
<th>Catch-Up Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>Catch-Up Growth and Supine Length/Height in Very Low Birth Weight, Small for Gestational Age Preterm Infants</td>
</tr>
<tr>
<td></td>
<td>Ingeborg Brandt, Elisabeth J. Sticker, Ruth Gausche, and Michael J. Lentze</td>
</tr>
<tr>
<td>50</td>
<td>Testicular Catch-Up Growth</td>
</tr>
<tr>
<td></td>
<td>Nicola Zampieri</td>
</tr>
<tr>
<td>51</td>
<td>Cholestatic Syndromes in Childhood and Catch-Up Growth</td>
</tr>
<tr>
<td></td>
<td>Joanna Pawlowska, Piotr Socha, and Irena Jankowska</td>
</tr>
<tr>
<td>52</td>
<td>Catch-Up of Bone Mineral Density in Osteoporosis-Pseudoglioma Syndrome</td>
</tr>
<tr>
<td></td>
<td>Régis Levasseur</td>
</tr>
<tr>
<td>53</td>
<td>Catch-Up Growth and Corticosteroids: A Focus on Mechanisms and Clinical Conditions</td>
</tr>
<tr>
<td></td>
<td>Raimo Voutilainen and Sirpa Tenhola</td>
</tr>
<tr>
<td>54</td>
<td>Thyroid Function During Catch-Up Growth: A Focus on the Growth Plate</td>
</tr>
<tr>
<td></td>
<td>Seminara Salvatore, Stagi Stefano, and Nanni Laura</td>
</tr>
<tr>
<td>55</td>
<td>Pharmacogenomics of GH-Induced Catch-Up Growth in Prepubertal Short Children. The Role of the Exon 3-Deleted/Full-Length Growth Hormone Receptor Polymorphism</td>
</tr>
<tr>
<td></td>
<td>Antonio Carrascosa and Laura Audí</td>
</tr>
<tr>
<td>56</td>
<td>Catch-Up Growth: Role of GH–IGF-I Axis and Thyroxine</td>
</tr>
<tr>
<td></td>
<td>Ashraf T. Soliman and Ahmad ElAwwa</td>
</tr>
<tr>
<td>57</td>
<td>Catch-Up Growth in Patients with Congenital or Acquired Growth Hormone Deficiency After GH Replacement: Clinical Features and Hypothalamic–Pituitary Imaging</td>
</tr>
<tr>
<td></td>
<td>Luciani R. Carvalho, Ivo J.P. Arnhold, Berenice Bilharinho Mendonca, Everlayny Fiorot Costalonga, Aline Pedrosa Otto, Claudia da Costa Leite, Leandro Tavares Lucato, and Mirella Maccarini Peruchi</td>
</tr>
<tr>
<td>58</td>
<td>Serum Adiponectin Levels, Insulin Resistance, and Lipids in Catch-Up and No Catch-Up Growth</td>
</tr>
<tr>
<td></td>
<td>Vasileios Giapros and Styliani Andronikou</td>
</tr>
<tr>
<td>59</td>
<td>Inhaled Corticosteroids and Catch-Up Growth in Children with Asthma</td>
</tr>
<tr>
<td></td>
<td>Markku Turpeinen</td>
</tr>
<tr>
<td>60</td>
<td>Weight Requirements for Catch-Up Growth in Adolescent Girls with Eating Disorders</td>
</tr>
<tr>
<td></td>
<td>Ingemar Swenne</td>
</tr>
</tbody>
</table>
61 Nutritional-Induced Longitudinal Catch-Up Growth: A Focus on the Growth Plate, Growth-Related Genes, Autophagy, mTOR, and microRNAs. Galia Gat-Yablonski and Moshe Phillip


Volume 2

Part VI Sexual Maturation, Gender, and Adolescence

63 Genetic Regulation of Pubertal Timing: Implications for Growth. Elisabeth Widén

64 Issues in Sexual Growth: The Sebaceous Glands and Adrenocortical Growth and Development. Constantine A. Stratakis and Paraskevi Xekouki

65 Fat Storage in Women: From Puberty to the Menopause. Anthony J. O’Sullivan

66 Pubertal Growth and Sexual Maturation in Healthy Japanese Girls: Reference Values of Puberty After Cessation of Secular Trend and Relation Between Puberty and Growth. Toshiaki Tanaka

67 Disorders of Sexual Maturation. Dushyant Maharaj

68 Impact of Disorders of Gonadal Function in Childhood and Adolescence on Growth Patterns and Outcomes. Margaret Zacharin


70 Gonadotropin-Releasing Hormone Agonists and Sexual Growth in Precocious, Early, and Normal Puberty. Liora Lazar and Moshe Phillip

71 Peripheral Precocious Puberty: Interventions to Improve Growth. Nadine G. Haddad and Erica A. Eugster

72 Brain Development During Adolescence. Manzar Ashtari and Laura Cyckowski

73 Bone Growth in Rural Chinese Males and Females Aged 6–17 Years: A Prospective Twin Study. Lester M. Arguelles, Fengxiu Ouyang, and Xiaobin Wang
74 Growth Aspects of HIV-Infected Adolescents in South America
Cristina B. Hofer

Part VII Cells and Tissue Growth

75 Very Small Embryonic-Like Stem Cells (VSELs) and Importance in Growth
Dong-Myung Shin, Izabella Klich, Janina Ratajczak, Magda Kucia, and Mariusz Z. Ratajczak

76 The Role of Human Postnatal Bone Marrow-Derived Mesenchymal Stem Cells and Their Importance in Growth, Spinal Cord Injury and Other Neurodegenerative Disorders
Cecile King, Shyam A. Patel, and Pranela Rameshwar

77 The Role of Satellite Cells and Stem Cells in Muscle Regeneration
Yoh-ichi Kawabe and Michael A. Rudnicki

78 Growth of the Normal Human Heart
Vidu Garg

79 Peak Bone Mass and Peak Bone Strength
Qingju Wang

80 The Epiphyseal Growth Plate: The Engine That Drives Bone Elongation
Vickram Srinivas and Irving M. Shapiro

81 Postnatal Maturation and Growth of the Neonatal Oesophagus: Implications for Neonatal and Infants’ Feeding Problems
Sudarshan R. Jadcherla

Part VIII Sensory Growth and Development

82 Language Development in Normal Children and in Disease – An Interactional Approach to Typical Language Development and Children with Language Impairment
Charlotta Plejert and Christina Samuelsson

83 Development of Visual Sensorimotor Systems and Their Cognitive Mediation in Autism
Yukari Takarae, Beatriz Luna, and John A. Sweeney

84 Impaired Sensorineural Hearing Development in Infectious Disease: Congenital and Pediatric Infections
Brian D. Westerberg, Justin Chau, and Frederick K. Kozak

85 Growth Factors in Olfaction
R.I. Henkin
86 Hearing Growth Defects in Turner Syndrome .......................... 1437
Rosalba Bergamaschi, Cristina Bergonzoni, Laura Mazzanti,
Emanuela Scaranò, Francesca Mencarelli, Valentina Rosetti,
Francesca Messina, Lorenzo Iughetti, and Alessandro Cicognani

Part IX Country and Regional Aspects of Growth
and Growth Monitoring

87 Infant Feeding in 20 Developing Countries with Focus on
Infant Undernutrition in Cambodia ............................. 1447
Bernadette P. Marriott, Alan White, Louise Hadden,
Jayne C. Davies, and John C. Wallingford

88 Insulin-Like Growth Factor System in Different Ethnic
Groups and Relationship with Growth and Health .......... 1471
Krista Casazza, Lynae J. Hanks, and Anna Thalacker-Mercer

89 Childhood Obesity in Developing Countries: Facets of
Abnormal Growth .................................................. 1491
Nidhi Gupta, Kashish Goel, and Anoop Misra

90 Pubertal Growth and Adult Height According to Age at
Pubertal Growth Spurt Onset: Data from a Spanish Study
Including 540 Subjects (281 Boys and 259 Girls) ............. 1525
Antonio Carrascosa, Angel Ferrández, Laura Audí, and Elena Sánchez

91 Postnatal Growth in Very Low Birth Weight Infants: The
Malaysian Perspective ............................................... 1545
Nem-Yun Boo and Shareena Ishak

92 Trends in the Prevalence of Low Birth Weight in Japan ... 1561
Colin Binns and Tomiko Hokama

93 Growth, Stunting, and Micronutrient Supplementation:
Perspectives from the South-East Asia Multi-country Trial
of Iron and Zinc Supplementation in Infants (SEAMTIZI) .... 1573
Frank T. Wieringa, Marjoleine A. Dijkhuizen, Pattanee
Winichagoon, Emorn Wasantwisut, Budi Utomo,
Nguyen X. Ninh, Adi Hidayat, and Jacques Berger

94 Effects of Antioxidants and Oxidative Stress on Pregnancy
and Infant Growth: Korean Perspectives ....................... 1585
Hyesook Park

95 Food-Based Complementary Feeding and Its Impact on
Growth: Southeast Asian Perspectives ......................... 1599
Umi Fahmida

96 Growth and Bone Mineral Accretion During Puberty
in Chinese Girls: A Focus on Calcium Retention and the
Role of Calcium .................................................. 1611
Kun Zhu

97 Growth and Childhood Obesity: Perspective
of Pacific Island Children in New Zealand .................... 1621
Elaine Rush and Sarah Bristow
98 Short Stature in Iran .................................................. 1635
Siamak Shiva and Afshin Ghalehgolab Behbahan

99 Growth of Infants Born to HIV-Infected Women: South
Africa Perspectives .................................................. 1647
Peter A. Cooper

100 The Oportunidades Program and Child Growth: Mexico
Perspectives ............................................................ 1659
Lynnette M. Neufeld

Part X Effects of Disease Conditions on Growth

101 Growth Charts for Children with Cerebral Palsy: Weight
and Stature Percentiles by Age, Gender, and Level of Disability ... 1675
Steven M. Day, Jordan Brooks, Sharon Shumway,
David Strauss, and Lewis Rosenbloom

102 Impaired Bone Growth and Mineral Density in Children
with Cerebral Palsy: Can It Be Corrected? .......................... 1711
Omar Ali

103 Vulnerability of Adolescent Brain Growth
to Cannabis .................................................................. 1723
Manzar Ashtari and Laura Cyckowski

104 Growth Monitoring on Psychotropic Medication ............... 1737
Alison S. Poulton

105 Growth in Asthmatic Children ...................................... 1755
Kostas N. Priftis, Michael B. Anthracopoulos,
and Anastasios Papadimitriou

106 Growth of Children with Cleft-Lip Palate from Birth to 10
Years of Age ............................................................... 1763
Ilza Lazarini Marques

107 Growth of Infants with Isolated Robin Sequence ............... 1779
Ilza Lazarini Marques

108 Orthognathic Surgery Considerations in the Young Patient
and Effects on Facial Growth .......................................... 1789
Larry M. Wolford and Daniel B. Rodrigues

109 Temporomandibular Joint (TMJ) Pathologies in Growing
Patients: Effects on Facial Growth and Surgical Treatment ... 1809
Larry M. Wolford and Daniel B. Rodrigues

110 Growth in Osteogenesis Imperfecta ................................. 1829
Lisa Samson-Fang

111 Growth Following Pediatric Heart Transplantation ............. 1841
Kenneth R. Knecht and W. Robert Morrow

112 Microtia and Sensory Defects in Growth .......................... 1853
Shin-ichi Ishimoto
Contents

113 Early-Onset Preeclampsia and HELLP Syndrome: An Overview ............................................. 1867
Nandor Gabor Than, Edi Vaisbuch, Chong Jai Kim, Shali Mazaki-Tovi, Offer Erez, Lami Yeo, Pooja Mittal, Petronella Hupuczi, Tibor Varkonyi, Sonia S. Hassan, Zoltan Papp, and Roberto Romero

114 Infectious Diseases and Growth: Chinese Perspectives ............... 1893
Huan Zhou, Ryutaro Ohtsuka, Qiaolan Liu, Hongyu Zhou, and Sean Robert Dickson

115 Growth of Infants with IgE-Mediated Cow’s Milk Allergy .......... 1911
Carlo Agostoni and Verduci Elvira

116 Aromatase Inhibitors and Growth Disorders ......................... 1921
Leo Dunkel and Matti Hero

117 Growth in Celiac Disease: Impact on Physical and Compartmental Growth ......................... 1933
Daniela Basso and Mario Plebani

118 Statural Growth in HIV-Infected Children .................. 1949
Edna S. Majaliwa, Paul Laigong, Nathan Tumwesigye, and Francesco Chiarelli

119 Growth in Juvenile Idiopathic Arthritis ....................... 1959
Muferet Erguven, Sirin Guven, and Ozgur Okumus

120 Growth Velocity and Interleukin 6 Concentrations: Applications to Juvenile Idiopathic Arthritis .......... 1977
Sandra Helena Machado, Leticia S. Souza, and Ricardo Machado Xavier

121 Growth of Children in Conflict .................. 1989
John Whitehall and Yoga Kandasamy

122 Growth Failure in International Adoptees .................. 2003
Bradley S. Miller, Dana E. Johnson, Judith Eckerle Kang, and Anna Petryk

123 Maternal Depression and Child Growth in Developing Countries: A Focus on the Postnatal Period ............... 2023
Kristen M. Hurley, Pamela J. Surkan, and Maureen M. Black

124 Acromegaly and Changes in Growth Parameters: A Focus on Cardiovascular, Metabolic, Respiratory Abnormalities, Malignancies, and Bone Alterations ....................... 2047
Annamaria Colao, Ludovica F.S. Grasso, Renata S. Auriemma, Gaetano Lombardi, and Rosario Pivonello

125 Growth in Hemochromatosis .................. 2067
Yasuhiro Nagayoshi
## Volume 3

### Part XI Effects of Genetic Conditions on Growth

126 **Impairment of Body Growth in Mucopolysaccharidoses** .......................... 2091  
Shunji Tomatsu, Adriana M. Montaño, Hirotaka Oikawa,  
Roberto Giugliani, Paul Harmatz, Mary Smith,  
Yasuyuki Suzuki, and Tadao Orii

127 **Growth in Classical Galactosemia** .................................................. 2119  
M.E. Rubio-Gozalbo, B. Panis, and G.T. Berry

128 **Growth in Duchenne Muscular Dystrophy** ........................................ 2129  
Maria Grazia D’Angelo and Sandra Gandossini

129 **Growth and Development in Children and Adolescents with Klinefelter Syndrome (47,XXY)** .................................................. 2155  
Alexander Bolyakov and Darius A. Paduch

130 **Growth in Prader–Willi Syndrome: Anthropometric Patterns and Analysis** .................................................. 2175  
Merlin G. Butler and F. John Meaney

131 **Growth Defects in Noonan Syndrome** ............................................. 2201  
Alexsandra C. Malaquias and Alexander A.L. Jorge

132 **Longitudinal Growth in X-linked Hypophosphatemic Rickets** ............... 2217  
Marius Schumacher and Olaf Hiort

133 **Growth in Individuals with Down Syndrome** ...................................... 2231  
Deborah J. Fidler and Lisa A. Daunhauer

134 **Thalassemia Major and Its Impact on Growth: Clinical Manifestations and Management of the Growing Thalassemic Child** ........................................ 2247  
Meropi Toumba and Nicos Skordis

135 **Growth in Distal Arthrogryposes** .................................................. 2265  
Marco Castori

136 **Growth and Growth-Promoting Therapy in Turner Syndrome** ............... 2281  
Theo C.J. Sas and Sabine M.P.F. de Muinck Keizer-Schrama

137 **Short Stature Homeobox-Containing (SHOX) Gene Deficiency: Genetics and Growth Response to Growth Hormone Treatment in Comparison with Turner Syndrome** ........................................ 2299  
Christopher J. Child, Gudrun A. Rappold, and Werner F. Blum

138 **Zinc Transporter Mutations and Human Growth** ................................ 2319  
Benjamin P. Weaver and Glen K. Andrews

139 **Growth in Common Inherited Disorders – Cystic Fibrosis, Sickle Cell Disease and Phenylketonuria** .................................................. 2337  
Ruth Ayling
140 Growth in Thanatophoric Dysplasia .............................. 2349
   Elka Miller and Elysa Widjaja

141 Microarrays, Postnatal Analysis, and Implications for Growth Monitoring .......................... 2365
   Aaron Theisen and Lisa G. Shaffer

142 The Potential of Gene Therapy as a Treatment Strategy for Intra-uterine Growth Restriction .................... 2379
   Mounira Habli and Timothy M. Crombleholme

Part XII  Exercise, Sport, and Growth

143 Habitual Physical Activity and Bone Growth and Development in Children and Adolescents: A Public Health Perspective .................... 2395
   Fátima Baptista and Kathleen F. Janz

144 Impact Exercise for Optimal Bone Health in Growing Children: An Evidence-Based Approach to Exercise Prescription .......................... 2413
   Hawley C. Almstedt and Katherine B. Gunter

145 The Interaction of Exercise, Stress, and Inflammation on Growth .............................. 2427
   Ashley Peckett, Brian W. Timmons, and Michael C. Riddell

146 How Physical Activity Affects the Growth–Nutrient–Bone Relationship .............................. 2455
   Germán Vicente-Rodríguez, Luis Gracia-Marco, José A. Casajús, Luis A. Moreno, and José A.L. Calbet

147 Growth Hormone Response to Exercise: Implications for Body Growth .............................. 2473
   Pietro Galassetti and Pamela C. Pablico

Part XIII  Nutrition, Diet, and Regulation of Growth

148 Maternal Nutritional Status Dictates Neonatal Outcome ............. 2493
   Supriya D. Mahajan and Shailini S. Singh

149 Parenteral and Enteral Nutrition of the Low Birth Weight Infant ..... 2507
   David L. Schutzman, Rachel Porat, Agnes Salvador, and Michael Janeczko

150 Maternal Seafood Consumption and Fetal Growth: A Review of the Literature .................. 2523
   Peggy Drouillet-Pinard and Marie-Aline Charles

151 Vitamin D, Exercise and Body Composition in Young Children and Adolescents ........ 2539
   Leng Huat Foo

152 Dietary Exposures to Persistent Organic Pollutants and Fetal Growth .............................. 2559
   Thorhallur Ingi Halldorsson
<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>153</td>
<td>n-3 Polyunsaturated Fatty Acids and Foetal Growth</td>
<td>2579</td>
</tr>
<tr>
<td></td>
<td>Gudrun V. Skuladottir</td>
<td></td>
</tr>
<tr>
<td>154</td>
<td>Polyunsaturated Fatty Acids and Growth in Healthy Children and Some Rare Diseases</td>
<td>2597</td>
</tr>
<tr>
<td></td>
<td>Luis Aldámiz-Echevarría, Sergio Lage, José Angel Prieto, and Fernando Andrade</td>
<td></td>
</tr>
<tr>
<td>155</td>
<td>Folate and Fetal Growth</td>
<td>2619</td>
</tr>
<tr>
<td></td>
<td>Hidemi Takimoto and Tsunenobu Tamura</td>
<td></td>
</tr>
<tr>
<td>156</td>
<td>Early Life Nutrition and Nutrients’ Intake in Preschool Years in Relation to Growth and Obesity: Growth, Exercise and Nutrition Epidemiological Study In Preschoolers (GENESIS Study)</td>
<td>2629</td>
</tr>
<tr>
<td></td>
<td>Yannis Manios and George Moschonis</td>
<td></td>
</tr>
</tbody>
</table>

**Part XIV**  
Growth Factors, Endocrine Control, and Regulation of Growth

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>157</td>
<td>Endocrinology of Male and Female Puberty: An Overview</td>
<td>2651</td>
</tr>
<tr>
<td></td>
<td>Vidhya Viswanathan, Peter A. Lee, and Christopher P. Houk</td>
<td></td>
</tr>
<tr>
<td>158</td>
<td>Growth in Autoimmune Thyroiditis: Clinical Features, Controversies, and Outcomes in the Pediatric Population</td>
<td>2671</td>
</tr>
<tr>
<td></td>
<td>Susan Demartini and Mark D. DeBoer</td>
<td></td>
</tr>
<tr>
<td>159</td>
<td>Pseudohypoparathyroidism and Growth</td>
<td>2687</td>
</tr>
<tr>
<td></td>
<td>S. Semiz and F. Duzcan</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>Lifetime Growth Hormone (GH) Deficiency: Impact on Growth, Metabolism, Body Composition, and Survival Capacity</td>
<td>2699</td>
</tr>
<tr>
<td></td>
<td>Manuel Herminio Aguiar-Oliveira and Roberto Salvatori</td>
<td></td>
</tr>
<tr>
<td>161</td>
<td>Growth and the Insulin-Like Growth Factor-1 Receptor (IGF1R)</td>
<td>2711</td>
</tr>
<tr>
<td></td>
<td>Maria Belen Roldan Martin and Selma Feldman Witchel</td>
<td></td>
</tr>
<tr>
<td>162</td>
<td>Recombinant Insulin-like Growth Factor I in Growth Therapy</td>
<td>2723</td>
</tr>
<tr>
<td></td>
<td>Arlan L. Rosenbloom</td>
<td></td>
</tr>
<tr>
<td>163</td>
<td>Genetic Disorders of the Hypothalamic-Pituitary-GH/IGF-I Axis</td>
<td>2743</td>
</tr>
<tr>
<td></td>
<td>Arlan L. Rosenbloom</td>
<td></td>
</tr>
<tr>
<td>164</td>
<td>Growth and GH–IGF in Chronic Kidney Disease</td>
<td>2763</td>
</tr>
<tr>
<td></td>
<td>Elizabeth Ingulli, Richard Fine, and Robert Mak</td>
<td></td>
</tr>
<tr>
<td>165</td>
<td>Endocrine-Disrupting Compounds and Pubertal Development: The Effects of Environmental Compounds on the Timing of Puberty in Humans</td>
<td>2773</td>
</tr>
<tr>
<td></td>
<td>Mary M. Lee</td>
<td></td>
</tr>
<tr>
<td>166</td>
<td>C-Type Natriuretic Peptide (CNP) and Postnatal Linear Growth</td>
<td>2789</td>
</tr>
<tr>
<td></td>
<td>Timothy C.R. Prickett and Eric A. Espiner</td>
<td></td>
</tr>
<tr>
<td>167</td>
<td>Eph/Ephrin Signaling in Postnatal Epithelial Growth</td>
<td>2811</td>
</tr>
<tr>
<td></td>
<td>Hui Miao and Bingcheng Wang</td>
<td></td>
</tr>
</tbody>
</table>
168 The Role of Osteocrin and Its Interaction with the Natriuretic System in Bone Growth
   Gethin P. Thomas and Pierre Moffatt

169 The Importance of the Adiponectin and Leptin Relationship in In Utero and Infant Growth
   Anne M. Lenz and Frank Diamond

170 Roles of EGF Family of Growth Factors in Growth: Overview of Their Roles in Postnatal Growth and Development
   Cory J. Xian and Tetyana Shandala

171 Fibroblast Growth Factor Receptor (FGFR) and Bone: Implications for Human Growth
   Richard G. Boles and Valairat Dhamcharee

Part XV Assessment of Growth, Methods, Standards, and Comparative Data

172 Pilot Testing of WHO Child Growth Standards: India Perspectives
   Jarnail Singh Thakur and Shankar Prinja

173 The WHO Growth Curves and US Infants
   Frank R. Greer

174 Growth Standards for Turkish Children Under 5 Years of Age
   Gülbin Gökçay, Olcay Neyzi, and Andrzej Furman

175 Growth from 24 Weeks to 24 Months in Preterm Infants: Experience from a Swedish Population
   Aimon Niklasson

176 Bone Growth Estimation Using Radiology (Greulich–Pyle and Tanner–Whitehouse Methods)
   Khalid Khan and Avanikkha Shri Elayappen

177 Monitoring Bone Growth Using DXA and pQCT
   Ali Ghasem-Zadeh and Qingju Wang

178 Fetal Growth Disturbances and Doppler
   Alessandro Ghidini and Patrizia Vergani

179 Head Circumference Measurement and Growth: Application to Neurodevelopment
   Sara Jane Webb, Allison Ruppel Shell, Jason Cuomo, Guy Jensen, and Curtis K. Deutsch

180 Growth Velocity Curves: What They Are and How to Use Them
   Mauro Bozzola and Cristina Meazza

181 Limitation of Growth Chart Curves in Terms of Individual Growth Biology
   Michelle Lampl
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>182</td>
<td>Evidence-Based Guidelines for Growth Monitoring</td>
<td>Jan M. Wit, Paula van Dommelen, and Wilma Oostdijk</td>
<td>3029</td>
</tr>
<tr>
<td>183</td>
<td>Infant Growth Modelling and Assessment of Growth</td>
<td>Ken J. Beath</td>
<td>3045</td>
</tr>
<tr>
<td></td>
<td>Index</td>
<td></td>
<td>3057</td>
</tr>
</tbody>
</table>
Handbook of Growth and Growth Monitoring in Health and Disease
Preedy, V.R. (Ed.)
2012, CLXXI, 3164 p. 953 illus. In 3 volumes, not available separately., Hardcover