

Contents

*List of Contributors*   vii  
*Preface*           xi

Section I   Overview

1   **Overview and Introduction to the Second Edition of *Developmental Origins of Health and Disease***   1  
    Lucilla Poston, Keith M. Godfrey, Peter D. Gluckman and Mark A. Hanson

Section II   Exposures Driving Long-Term DOHaD Effects

2   **The Evolutionary Basis of DOHaD**   7  
    Felicia M. Low, Peter D. Gluckman and Mark A. Hanson

3   **Timing: Critical DOHaD Windows with Lifelong Effects**   16  
    Keith M. Godfrey, Judith Stephenson, Kathryn Woods-Townsend, Mary Barker, Tom P. Fleming, Mark H. Vickers, Frank Bloomfield and Rachael Taylor

4   **Long-Term Effects of Food Insecurity and Undernutrition in Early Life**   27  
    Sophie E. Moore

5   **Short- and Long-Term Effects of Maternal Obesity and Dysglycaemia for Women and Their Children**   38  
    Jodie M. Dodd, Amanda J. Poprzeczny, Andrea R. Deussen and Jennie Louise

6   **Long-Term Effects of Prenatal Maternal Stress and Mental Health**   46  
    Matthias Schwab and Florian Rakers

7   **Environmental Exposures in Early Life: Effects of Air Pollution, Chemicals and Climate Change on Human Health and Wellbeing**   56  
    Kirsten R. Poore, Marie Pedersen and Sibylle Ermler

8   **Developmental Programming and the Microbiome: How the Maternal Environment and Early Life Shape the Infant Gut Microbiome Pathway(s) and Risk of Disease**   66  
    Kameron Y. Sugino and Jacob E. Friedman

9   **Influence of Assisted Reproductive Technologies: Exposures Driving Long-Term DOHaD Effects**   75  
    Daniel R. Brison, John C. M. Dumoulin, Hannah L. Morgan, Tessa J. Roseboom and Adam J. Watkins

Section III   Outcomes

10   **Cardiometabolic and Renal DOHaD Outcomes in Offspring of Complicated Pregnancy**   85  
    Dino A. Giussani, Rebecca M. Reynolds, Paul Leeson, Karen M. Moritz, John F. Bertram and Susan E. Ozanne

11   **Developmental Origins of Chronic Respiratory Diseases**   100  
    Liesbeth Duijts, Annemiek Mian, Tarik Karamass and Vincent W. V. Jaddoe

12   **Early Life Adversity and Female Reproductive Outcomes: How Growth, Diet, and Nutrition Impact Reproductive Function and Accelerated Reproductive Ageing**   111  
    Patrycja A. Jazwiec and Deborah M. Sloboda

13   **Developmental Programming of Ageing Induced by Poor Maternal Nutrition: Evidence from Rodent Studies**   121  
    Elena Zambrano and Peter W. Nathanielsz

Contents

Section IV Mechanisms

- 14 **Visualizing Structural Underpinnings of DOHaD** 133
- Kent L. Thornburg, John F. Bertram,  
Jacob E. Friedman, David Hill, Kevin Kolahi  
and Christopher Kroenke
- 15 **Molecular and Epigenetic Mechanisms of DOHaD** 146
- Richard Saffery, Amanda Vlahos and Toby Mansell
- 16 **The Role of the Placenta in DOHaD** 166
- Rohan M. Lewis and Amanda N. Sferruzzi-Perri

Section V Interventions

- 17 **Interventions to Prevent DOHaD Effects in Pregnancy** 177
- Lucilla Poston

- 18 **Interventions to Prevent DOHaD Effects in Infancy and Early Childhood** 189
- Bartłomiej Mateusz Zalewski, Bernadeta  
Patro-Gołąb, Barbara Bożek, Maciej Kołodziej, Kathryn  
V. Dalrymple, Lucilla Poston and Hania Szajewska

Section VI Public Health and Policy  
Implications of Interventions

- 19 **Education and Science Communication: Translation of DOHaD Evidence for Health Benefit** 203
- Jacquie L. Bay and Suzanne A. Trask
- 20 **DOHaD: Engaging with New Global Issues to Inform Policy** 213
- Peter D. Gluckman and Mark A. Hanson

*Index* 221