Early Life Origins of Human Health and Disease

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Preface

The current epidemic in obesity, diabetes and the many related medical conditions presents one of our greatest ever challenges to global health. Evidence from epidemiologic, clinical and laboratory studies indicates that much of our predisposition to these chronic diseases of adulthood arises at the earliest times of life. Events before birth and environmental influences in childhood interact with our genome, modified by messages resulting from the health experiences of our ancestors. This book presents the latest evidence and concepts underpinning this exciting new field of health care. Topics include the general principles of how populations making rapid transitions to Western lifestyles are particularly at risk, how nutrition affects our development, the role of a polluted environment, implications for mental health, and the early life origins of individual diseases including obesity, diabetes and cancer. This book is essential reading for anyone interested in health care and the effects of modernisation on individuals, communities and global health.

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Abbreviations

11ßHSD2  11β hydroxysteroid dehydrogenase type 2
ACTH  Adrenocorticotrophin
AEC  Alveolar epithelial cell
APCs  Antigen presenting cells
ARC  Arcuate nucleus
BHR  Bronchial hyperresponsiveness
BMC  Bone mineral content
BMD  Bone mineral density
BMI  Body mass index
BPA  Bisphenol A
BPD  Bronchopulmonary dysplasia
CNS  Central nervous system
CpG  regions of DNA (cytosine-phosphate-guanine)
CRH  Corticotrophin-releasing hormone
CSS  Chromosome substitution strains
DES  Diethylstilbestrol
DHAS  Dehydroepiandrosterone
DOHaD  Developmental origins of health and disease
DR  Dietary restriction
DVD  Vitamin D deficiency
DXA  Dual-energy X-ray absorptiometry
FTO  Fat mass and obesity associated gene
GC  Glucocorticoid
GH  Growth hormone
GFR  Glomerular filtration rate
GR  Glucocorticoid receptor
GWAS  Genome wide association study
HDM  House dust mite
HIF  Hypoxia-inducible factors
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>HPA</td>
<td>Hypothalamo-pituitary-adrenal axis</td>
</tr>
<tr>
<td>ICM</td>
<td>Inner cell mass (blastocyst)</td>
</tr>
<tr>
<td>IR</td>
<td>Insulin receptor</td>
</tr>
<tr>
<td>IUGR</td>
<td>Intrauterine growth restriction</td>
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<tr>
<td>LBW</td>
<td>Low birthweight</td>
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<tr>
<td>LPD</td>
<td>Low protein diet</td>
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<tr>
<td>MDGs</td>
<td>Millennium development goals</td>
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<tr>
<td>PCOS</td>
<td>Polycystic ovarian syndrome</td>
</tr>
<tr>
<td>PPAR</td>
<td>Peroxisome proliferator-activated receptor</td>
</tr>
<tr>
<td>PMNS</td>
<td>Pune maternal nutrition study</td>
</tr>
<tr>
<td>POMC</td>
<td>Proopiomelanocortin</td>
</tr>
<tr>
<td>PR</td>
<td>Protein restriction</td>
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<tr>
<td>RCS</td>
<td>Recombinant congenic strains</td>
</tr>
<tr>
<td>QTL</td>
<td>Quantitative trait loci</td>
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<tr>
<td>SNP</td>
<td>Single nucleotide polymorphism</td>
</tr>
<tr>
<td>TAG</td>
<td>Triacylglycerol</td>
</tr>
<tr>
<td>TGFβ</td>
<td>Transforming growth factor β</td>
</tr>
<tr>
<td>TLR</td>
<td>Toll-like receptors</td>
</tr>
<tr>
<td>VDR</td>
<td>Vitamin D receptor</td>
</tr>
<tr>
<td>VYSE</td>
<td>Visceral yolk sac endoderm</td>
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