

Early Nutrition Programming and Health Outcomes in Later Life

Obesity and Beyond

ADVANCES IN EXPERIMENTAL MEDICINE AND BIOLOGY

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 Springer

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Preface

At first, the evidence for early nutrition programming in humans, with its emphasis on low birth weight babies and fetal growth restriction, suggested that the concept might have only a limited application to a small group of the population. It appeared unable to offer any remedies for current health problems such as the dramatic increase in the prevalence of obesity and its consequences. More recently however, the observation that fetal overnutrition may lead to the same outcomes as fetal undernutrition in terms of increased risk of obesity, hypertension, insulin resistance and CVD in adult life, implied that programming effects are seen across the nutritional spectrum and this has led to the search for a common mechanism. The role of accelerated growth, either due to catch-up growth after fetal growth restriction or to faster growth rates in formula fed infants has been suggested as a unifying factor and is one possible common mechanism which is being investigated. Furthermore, the possibility that maternal obesity might programme fetal growth and metabolism to be more susceptible to weight gain in later life gives rise to the potential for an intergenerational cycle of obesity which can only make matters worse. These insights have greatly extended the scope and potential impact of the early nutrition programming concept and have shown that it is of huge contemporary relevance with major public health significance.

This volume contains recent findings presented at the International Conference on Early Nutrition Programming and Health Outcomes in Later Life: Obesity and Beyond – a satellite meeting of the 15th European Congress on Obesity, held in Budapest in April 2007. Basic scientific research, data from epidemiological studies and clinical trial results were all presented during the programme. This volume includes articles discussing the evidence for an effect of early nutrition programming on later obesity and cardiovascular risk; the growing evidence for an intergenerational cycle of obesity; the role of maternal leptin in programming appetite; possible cellular mechanisms for altered energy balance, including mitochondrial programming and the effects of regulators of metabolism; and how epigenetic changes might be the fundamental underlying mechanism explaining programming effects. Consumer understanding of the concept of early nutrition programming and the extent to which early nutrition programming is taken into account in infant feeding policies are also discussed.

The conference attracted more than 250 scientists from over 30 countries around the world. European scientists were well represented but there were also many participants from outside the EU including the US, Australia and New Zealand, Japan, the Middle East and Russia. The conference was a joint meeting between the Early Nutrition Programming Project and the European Academy of Nutritional Sciences and was organised by the University of Munich, Germany and the University of Pécs, Hungary. We are very grateful to the Directorate General Research of the European Commission which provided major financial support to hold the conference, and also to Martek Biosciences Corporation, the Nestlé Research Centre, Merck Darmstadt and DSM Nutritional Products Ltd for their generous co-sponsorship of the meeting, as well as to Ordesa and Novalac United Pharmaceuticals for their sponsorship of Young Investigators travel grants. We would also like to thank Professor Peter Aggett, the president of the European Academy of Nutritional Sciences, and the members of the scientific committee for their help in developing the scientific programme; the conference speakers for their thoughtful contributions; Dr. Hans Demmelmair and Dr. Julia von Rosen for their efficient organising of the conference; Dr. Margaret Ashwell and Rhonda Smith for their effective dissemination of the conference information; Anne de la Hunty for editing these proceedings and Isabelle de Froidmont-Görtz from the EC Directorate General Research for her sympathetic support for the Early Nutrition Programming Project.

It is our hope that these proceedings will help stimulate further progress in research and lead to improved nutrition policies for reversing the current rise in obesity levels in Europe.



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