

Preface

This book was made possible by the contributions of leading experimental scientists and clinicians from newly upcoming and interdisciplinary fields of research concerning the common molecular and clinical features of chronic diseases. Chronic disease represents the main cause of mortality in developed countries. The increase in its prevalence is associated with changes in lifestyle habits and related risk factors such as tobacco use, physical inactivity, overweight and obesity, and poor nutrition. Collectively, cardiovascular diseases, cancer and diabetes/metabolic syndrome – ranking first among the ten leading causes of death – are responsible for more than 25 million deaths in the Western world each year. Much of this disease burden could be prevented, however, by controlling the modifiable risk factors.

The present trend of progressively lengthening lifespan in all social groups of Western societies reflects the changing pattern of mortality from formerly untreatable infectious diseases to chronic (degenerative) diseases. Predictions for the continuing lengthening of the lifespan of the class of 2005 and succeeding classes may be jeopardized by the alarming increase in obesity, for example, which worsens the incidence of cardiovascular disorders, diabetes and cancer.

The recent discoveries of epidemiological and molecular links between the diabetes/metabolic syndrome and cancer originated from interdisciplinary-oriented researchers revealing roles in biological processes that are likewise varied. The diabetes/metabolic syndrome is like the wolf in sheep's clothing – by the time it has been diagnosed, most subjects might already have an established chronic disease, like cardiovascular disease and cancer. The most recent findings suggest a connection between inflammation and chronic disease, such as insulin resistance associated with diabetes and cancer, which had not or only inadequately been appreciated previously.

The following distinguished authors guarantee that this book is at the forefront of experimental and clinical research in diabetes and cancer, and offers the reader novel insights into the interdisciplinary approaches of tomorrow: F. Thévenod (Witten, Germany) introduces the state of the art of the pathophysiology of type 2 diabetes. M. Gotthard (Nijmegen, The Netherlands) addresses new issues of in vivo imaging of the β -cell and insulinoma. B. Gallwitz (Tübingen, Germany) reviews the most advanced therapy strategies embarking on incretins and DPP4 inhibitors. K. Masur (Witten, Germany) bridges on a molecular level diabetes and cancer with specific reference to glucose and glucose-regulating hormones. R. Gatenby (Moffitt Cancer Center, Tampa, Fla., USA) clearly demonstrates that the 'Warburg effect' has to be reconsidered to understand the energetic metabolism of tumor cells. A. Schürmann (Potsdam-Rehbrücke, Germany) describes the glucose transporter systems and shows their abnormalities and significance in type 2 diabetes and cancer. K.S. Zänker (Witten, Germany) summarizes the epidemiology and molecular epidemiology of type 2 diabetes and cancer. I. Wolf (Tel-Hashomer, Israel) points at the increased risk of breast cancer in relationship to type 2 diabetes. J. LaValle (Pittsburgh, Pa., USA) describes the metabolic spiral, which leads to chronic disease. Finally, the editors of this book (K.M., F.T., K.S.Z) advocate the efforts of Beaglehole et al. [Lancet 2007;370:2152–2157] who have established the Chronic Disease Action Group to encourage, support, and monitor action on the implementation of an evidence-based effort to promote global, regional, and national action to prevent and control chronic disease.

This book should encourage scientists and physicians – working separately on various aspects of the illnesses with the highest predicted mortality in the 21st century – to come together and combine their therapies and strategies. Since the health problems mentioned may be merged with the overall topic 'metabolic syndrome', the common goal should be early detection at the first signs indicating the onset of a metabolic imbalance in order to prevent the consecutive cascades which lead to metabolic syndrome, resulting in the so-called diseases of modern civilization – cancer, diabetes and hypertension.

This volume of *Frontiers in Diabetes, 'Diabetes and Cancer – Epidemiological Evidence and Molecular Links'*, demonstrates why that it is necessary to reflect on the different aspects of an illness and that it is worthwhile checking for metabolic derangements in order to find an early therapy combining approaches devised by specialists working in different fields.

The Editors of this book are grateful to Karger Publishers, Switzerland, and to F.M. Matschinsky (Philadelphia, Pa., USA) and M. Porta (Turin, Italy), the Editors-in-Chief of the long-standing and well-recognized series of *Frontiers in Diabetes*, for publishing this volume.

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