

Preface

The aim of this book is to review metabolomics research. The information is presented in a way that allows the reader to view the subject of metabolomics from a broad perspective. Creative and progressive research on metabolomes began in Japan and Germany in the 1990s and ranged from the development of specialized chemical analytical techniques to the construction of databases and methods for metabolic simulation. The authors have been directly involved in the development of all the subject areas that are discussed in this book, including research related to capillary electrophoresis, liquid chromatography, mass spectrometry, metabolic databases, and metabolic simulation. As the title suggests, the latest cutting-edge research projects are presented here. In addition, a selected group of applied cases, representative of likely future scenarios, is presented.

It is our hope that this book will generate further metabolomic research across a broad range of life-science disciplines, and that hitherto unforeseen applications and innovative technologies will arise from such efforts. It is especially important that medical institutions and venture enterprises should actively participate in metabolomic research, thus ensuring that it matures into a discipline offering practical medical benefits. To promote the application of metabolomic research, a number of key issues will require breakthroughs; these include the popularization of chemical analytical techniques, the development of simple but stable specialized analyzers, the parallel processing and miniaturization of such devices, and the advancement of metabolic systems biology. Researchers, technicians, and university students are urged to take on these challenges to advance metabolomic research.

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