
Preface

Atherosclerosis and associated cardiovascular disease (CVD), most prominently manifesting as myocardial infarction or stroke, constitute the main cause of morbidity and mortality in industrialized countries. In spite of major advances in our understanding of the genetic, molecular, and cellular determinants of CVD, its incidence and prevalence are expected to increase significantly over the coming decades owing to the progressive aging of our societies (aging is the dominant cardiovascular risk factor) and the consequences of modern unhealthy lifestyle habits, such as a high-fat diet, smoking, and lack of physical exercise. Moreover, many manifestations of CVD are not predicted by “traditional” cardiovascular risk factors. It is therefore of the utmost importance to increase our knowledge about the genetic, molecular, and cellular mechanisms involved in atherosclerosis, in order to improve the prevention, diagnosis, and treatment of the disease. In this necessary basic and preclinical research, genetically modified mouse models continue to be an essential tool in many laboratories due to their relatively short life-span, ease of handling, and low cost.

This book begins with introductory chapters that briefly review the available mouse models of atherosclerosis, basic aspects of disease initiation and progression, and the visualization of atherosclerotic lesions with invasive and noninvasive techniques that are widely used both in basic research and in the clinic. Subsequent chapters catalogue a wide range of in vitro and in vivo experimental methods used for atherosclerosis research, including thorough protocols and valuable notes based on the authors’ personal wet lab experience. We hope that this book will be a valuable working guide for researchers performing mouse-based atherosclerosis studies.

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