## CONTENTS

Contributors ix

Foreword Joseph Loscalzo xv

Preface Eric N. Olson xvii

SECTION I: RISK FACTORS: OLD AND NEW 1

1 Lipoproteins 3
   Ming-Lin Liu and Daniel J. Rader

2 Role of Dysglycemia in Atherosclerosis 15
   David R. Clemmons

3 Glycation, Inflammation and RAGE: Mechanisms Contributing to the Accelerated Atherosclerosis of Diabetes 27
   Ravichandran Ramasamy, Shi Fang Yan, and Ann Marie Schmidt

4 Inflammation 43
   Caitlin Collins, Ellie Tzima, and Cam Patterson

5 Homocysteine: A Controversial Cardiovascular Risk Factor 53
   Sanjana Dayal and Steven R. Lentz

6 Hypertension as a Risk Factor for Atherosclerosis 63
   Annet Kirabo and David G. Harrison

7 The Genetics of Atherosclerosis: From Polymorphisms to Populations 77
   Paul Johnson, Jack Kuritzky, and Marschall Runge
8 Life Style
Wayne E. Cascio

SECTION II: CELLULAR MECHANISMS

9 Endothelial Cells
G. Brandon Atkins, Gabriela Orasanu, and Mukesh K. Jain

10 Vascular Smooth Muscle Cells
Dario F. Riascos-Bernal and Nicholas E. S. Sibinga

11 Fibroblasts
Christopher Mack

12 Monocytes and Macrophages in Atherosclerosis
Shu Meng, Pu Fang, Xiaofeng Yang, and Hong Wang

13 Lymphocytes and Atherosclerosis
Anthony Virtue, Jietang Mai, Hong Wang, and Xiaofeng Yang

14 Stem Cells
Arjun Deb

15 Platelets
Jerry Ware and Adam Corken

16 Development and Use of Mouse Models of Atherosclerosis
Peggy Robinet and Jonathan D. Smith

SECTION III: MOLECULAR MECHANISMS

17 Mechanisms of the Renin Angiotensin System Influencing Atherosclerosis
Hong Lu and Alan Daugherty

18 The Role of Caveolae and Caveolins in Atherogenesis
Victor Rizzo

19 Lysosomal Molecular Derangements in Atherosclerosis
Pin-Lan Li and Yang Zhang

20 C-Reactive Protein and Its Pathophysiological Roles in Atherosclerosis
Jianglin Fan, Jifeng Zhang, and Yuqing Eugene Chen

21 Paraoxonases
Srinivasa T. Reddy

22 Prostanoids, Their Receptors, and Atherogenesis
Domenico Praticò
23 Extracellular Phospholipases: Role in Inflammation and Atherosclerotic Cardiovascular Disease
   Uwe J.F. Tietge

24 Apolipoprotein-B: The Crucial Protein of Atherogenic Lipoproteins
   Kevin Jon Williams and Edward A. Fisher

25 HDL Receptor Scavenger Receptor BI: A Multipurpose Player in Cholesterol and Steroid Metabolism in Mice and Man
   Ying Zhao, Menno Hoekstra, Suzanne J. A. Korporaal, Theo J. C. Van Berkel, and Miranda Van Eck

26 Pro and Anti-Inflammatory Cytokine Networks in Atherosclerosis
   Michael V. Autieri

27 ECM and Atherosclerosis
   Jie Du, Ying Wang, and Lixin Jia

SECTION IV: BIOCHEMICAL MECHANISMS

28 Effects of Nitric Oxide on Atherosclerosis
   Terrence Pong and Paul L. Huang

29 Protective Role of Heme Oxygenase-1 in Atherosclerosis
   William Durante

30 Roles of Reactive Oxygen Species in Physiology and Pathology
   Ping Song and Ming-Hui Zou

31 Hydrogen Sulfide: Role in Atherosclerosis, Mechanisms, and Therapeutic Potential
   Elvis A. Peter, Jai Varma, and Christopher G. Kevil

32 Methylation and Atherosclerosis
   Xin-Yu Xiong, Shu Meng, Xiaofeng Yang, and Hong Wang

33 Micromanaging Atherogenesis: Role of Micrornas in Atherosclerosis
   Shusheng Wang and Chastain Anderson

34 Posttranslational Modifications: Role in Atherosclerosis
   Justyna Fert-Bober, Ronald J. Holewinski, Joel A. Kooren, and Jennifer E. Van Eyk

35 Phosphorylation Regulation by Kinases and Phosphatases in Atherosclerosis
   Katherine J. Elliott and Satoru Eguchi

36 Effect of MMPs on Cardiovasculature and Blood Flow: Role of ROS, Mitophagy, and Antioxidants
   Thomas P. Vacek, Diana Neamtu, and Suresh C. Tyagi
SECTION V: CLINICAL MANAGEMENT

37 Impact of Preventive Therapies on Clinical Management and Outcomes

38 Risk Stratification in Clinical Practice
Phil Mendys, Golsa Joodi, and Ross J. Simpson, Jr.

39 Molecular Imaging
Arun K. Thukkani and Farouc A. Jaffer

40 Pharmacological Therapy in the Management of Acute Coronary Syndromes
Andrew J. Sampson, Timir Paul, and George A. Stouffer

41 Targeted Molecular Therapeutics for Atherosclerosis
Lantz C. Mackey and Jonathon W. Homeister

42 High-Density Lipoprotein Therapies—Then and Now
Henry J. Pownall, Corina Rosales, Baiba K. Gillard, and Antonio M. Gotto, Jr.

43 Stem Cell Therapeutics
Mei Mei Wong and Qingbo Xu

44 Advances in Surgical Revascularization
Stephen J. Forest, Ahmed Khan, and Joseph J. DeRose, Jr.

Index