Contents

Foreword xv
Preface xvii
Acknowledgments xxi

1 The Evolutionary Background 1
   How Evolution Works 1
   Species and Subspecies 6
   Human Evolution 10

2 Race before Evolutionary Theory 17
   The Ancient World 17
   Medieval and Post-Medieval Europe 19
   Race in Enlightenment Thought 21
   Human Races in Early Zoology 24
   The Early Nineteenth Century 29

3 Race after Darwin 33
   Separate Origins 33
   Huxley, Wallace, and Darwin 35
   The Late Nineteenth and Early Twentieth Centuries 37
   Postwar Developments 41

4 Race in the Era of Genetics and Genomics 45
   Early Genetics 45
   Door to “Racial Science” Number One: Galton and Eugenics 46
# CONTENTS

Door to “Racial Science” Number Two: Garrod and Inborn Errors of Metabolism 47
Door to “Racial Science” Number Three: Blood Groups 48
Door to “Racial Science” Number Four: Human Allozyme Variation 48
Door to “Racial Science” Number Five: The 1960s and 1970s 50
Door to “Racial Science” Number Six: Mitochondrial Eve and Y Chromosomal Adam 54
Door to “Racial Science” Number Seven: Human Variation Panels 60
Science, Racial Science, and Racial Nonscience (Racism) 65

5 Variation among Genomes, and How Humans Took over the World 67
Early Molecular Studies of Human Variation 67
The Y-Adam and mt-Eve Stories 69
Paleogenomics 74
Genomic Shortcuts 81
The View from the Autosomes 86
Neanderthals, Denisovans, and a Third Mystery Lineage 90

6 Clustering and Treeing 93
Data Set Ascertainment 94
Treeing 95
Clustering 97
Structuring 100
PCAing 103
IBDing 107
The Bottom Line on -ing 109

7 Race in Medicine and Complex Phenotypic Studies 111
Some Background 111
The Red Herring 112
The Brick Wall 115
Tough Luck 119
## Table of Contents

### 8 Human Adaptations

- Human Variation 121
- Skin Color 122
- High Altitudes 125
- Lactase Persistence 128
- Athletic Prowess and Body Shape 131
- Concluding Thoughts about Human Adaptation 132

### 9 Science, Pseudoscience, and Race

- “Race Science” in Context 135
- Epistemological Pain: Misunderstandings of Science 137
- The Bottom Line 149

Summary of Common Misunderstandings 151

- References and Further Reading 155
- Figure Credits 166
- Index 168