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7 Genetic Epidemiology, Physical Activity, and Inactivity; 8 Role of Genetics Factors in Sport Performance: Evidence from Family Studies; 9 Twin Studies in Sport Performance; 10 Twin and Family Studies of Training Responses; 11 Ethnic Differences in Sport Performance; 12 Selection Experiments in Rodents to Define the Complexity and Diversity of Endurance Capacity; Part 3 Contributions of Specific Genes and Markers; 13 Genes and Endurance Performance; 14 Genes and Strength and Power Phenotypes; 15 Genes and Response to Training; 16 Genetic Determinants of Exercise Performance: Evidence from Transgenic and Null Mouse Models; 17 The ACE Gene and Performance; 18 The ACTN3 Gene and Human Performance; 19 Mitochondrial DNA Sequence Variation and Performance; 20 Genes, Exercise, and Lipid Metabolism; 21 Genes, Exercise, and Glucose and Insulin Metabolism; 22 Genes, Exercise, and Cardiovascular Phenotypes; 23 Genes, Exercise, and Protein Metabolism; 24 The Regulation of Physical Activity by Genetic Mechanisms: Is There a Drive to Be Active?; 25 Genes, Exercise, and Psychological Factors; Part 4 Systems Biology of Exercise and Training; 26 A Primer on Systems Biology, as Applied to Exercise Physiology and Metabolism; 27 Systems Biology Through Time Series Data-A Strength of Muscle Remodeling; 28 Proteomics in Exercise Training Research; 29 The Influence of Physical Exercise on Adult Stem Cells; Part 5 Ethical and Societal Implications; 30 Genetics and Ethics in Elite Sport; 31 Genes and Talent Selection; 32 Performance Enhancement by Gene Doping; 33 Bioethical Concerns in a Culture of Human Enhancement; Index; A; B; C; D; E; F; G; H; I; J; K; L; M; N; O; P; Q; R; S; T; U; V; W; XY; Z

Sommario/riassunto

This is the latest volume in the IOC Encyclopaedia of Sports Medicine series, summarizing the evidence from all relevant sources on the genetic and molecular basis of sports and other human physical performance. The initial chapters address the basic science of genomics and genetics and the regulation of gene expression. Additional chapters provide authoritative information on the genetics of complex performance phenotypes, the contributions of small animal research, family and twin studies, and ethnic comparisons. A final section addresses the issue of the contribution of specific
