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Nota di contenuto	Bacterial Population Genetics in Infectious Disease; Contents; Foreword; Preface; Contributors; Part I: Concepts and Methods in Bacterial Population Genetics; Chapter 1: The Coalescent of Bacterial Populations; 1.1 BACKGROUND AND MOTIVATION; 1.2 POPULATION REPRODUCTION MODELS; 1.3 TIME AND THE EFFECTIVE POPULATION SIZE; 1.4 THE GENEALOGY OF A SAMPLE OF SIZE $n$ ; 1.5 FROM COALESCENT TIME TO REAL TIME; 1.6 MUTATIONS; 1.7 DEMOGRAPHY; 1.8 RECOMBINATION AND GENE CONVERSION; 1.9 SUMMARY; REFERENCES; Chapter 2: Linkage, Selection, and the Clonal Complex; 2.1 INTRODUCTION-HISTORICAL OVERVIEW; 2.2 RECOMBINATION, LINKAGE, AND SUBSTRUCTURE; 2.3 NEUTRALITY VERSUS SELECTION; 2.4 CLUSTERING TECHNIQUES; REFERENCES; Chapter 33: Sequence-Based Analysis of Bacterial Population Structures; 3.1 INTRODUCTION; 3.2 ALIGNMENTS; 3.3 PHYLOGENETIC METHODS; 3.4 MEASURES OF UNCERTAINTY; 3.5 BEYOND THE TREE MODEL; REFERENCES; Chapter 4: Genetic Recombination and Bacterial

Population Structure; 4.1 INTRODUCTION; 4.2 CONSTRAINTS ON LGT; 4.3 INFLUENCES OF LGT ON SEQUENCE ANALYSES; 4.4 THE DETECTION OF INDIVIDUAL LGT EVENTS; 4.5 THE ESTIMATION OF HOMOLOGOUS RECOMBINATION RATES  
4.6 PROPERLY ACCOUNTING FOR LGT DURING SEQUENCE ANALYSES 4.7 QUESTIONS RELATING DIRECTLY TO LGT; REFERENCES; Chapter 5: Statistical Methods for Detecting the Presence of Natural Selection in Bacterial Populations; 5.1 INTRODUCTION; 5.2 NATURAL SELECTION; 5.3 STATISTICAL METHODS FOR DETECTING THE PRESENCE OF NATURAL SELECTION; 5.4 STATISTICAL METHODS FOR BACTERIAL POPULATIONS; 5.5 AN EXAMPLE; 5.6 DISCUSSION AND PERSPECTIVE; REFERENCES; Chapter 6: Demographic Influences on Bacterial Population Structure; 6.1 BACTERIAL POPULATION SIZE; 6.2 MEASURES OF GENETIC DIVERSITY  
6.3 THE CONCEPT OF EFFECTIVE POPULATION SIZE 6.4 INFERRING PAST DEMOGRAPHY FROM GENETIC SEQUENCE DATA; 6.5 POPULATION SUBDIVISION; 6.6 WHAT IS A BACTERIAL POPULATION?; 6.7 CONCLUSION; REFERENCES; Chapter 7: Population Genomics of Bacteria; 7.1 INTRODUCTION; 7.2 CLASSICAL BACTERIAL POPULATION GENETICS; 7.3 THE GENOMICS ERA; 7.4 BACTERIAL POPULATION GENOMICS; 7.5 NEXT-GEN BACTERIAL POPULATION GENOMICS; 7.6 NEXT-GEN GENOMICS TECHNOLOGY; 7.7 NEXT-GEN GENOMIC DATA ANALYSIS; 7.8 CONCLUSIONS/FUTURE PROSPECTS; REFERENCES Chapter 8: The Use of MLVA and SNP Analysis to Study the Population Genetics of Pathogenic Bacteria 8.1 INTRODUCTION; 8.2 MLVA AND OTHER DNA FRAGMENT-BASED METHODS; 8.3 SNP AND DNA SEQUENCE-BASED METHODS; 8.4 CONCLUSION; REFERENCES; Part II: Population Genetics of Select Bacterial Pathogens; Chapter 9: Population Genetics of *Bacillus* :Phylogeography of Anthrax in North America; 9.1 INTRODUCTION; 9.2 HISTORY OF ANTHRAX IN NORTH AMERICA; 9.3 THE ANTHRAX DISTRICTS AFTER 1944; 9.4 MOLECULAR GENOTYPING OF *B. ANTHRACIS*; 9.5 GENOTYPES WITHIN THE ANTHRAX DISTRICTS IN NORTH AMERICA  
9.6 PHYLOGENETIC RESOLUTION WITHIN THE WNA LINEAGE

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#### Sommario/riassunto

This book is a unique synthesis of the major concepts and methods in bacterial population genetics in infectious disease, a field that is now about 35 yrs old. Emphasis is given to explaining population-level processes that shape genetic variation in bacterial populations and statistical methods of analysis of bacterial genetic data. A ""how to"" of bacterial population genetics, which covers an extremely large range of organisms Expanding area of science due to high-throughput genome sequencing of bacterial pathogens Covers both fundamental approaches to analyzing

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