1. Record Nr. UNINA9910782658703321

| | |
|---|---|
| Autore | McArthur J. Vaun |
| Titolo | Microbial ecology [[electronic resource] ] : an evolutionary approach / / J. Vaun McArthur |
| Pubbl/distr/stampa | Amsterdam ; ; Boston, : Elsevier, AP, c2006 |
| ISBN | 1-282-55248-1<br>9786612552489<br>0-08-051154-6 |
| Descrizione fisica | 1 online resource (429 p.) |
| Disciplina | 579/.17 |
| Soggetti | Microbial ecology<br>Surface chemistry |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | Description based upon print version of record. |
| Nota di bibliografia | Includes bibliographical references (p. [371]-393) and index. |
| Nota di contenuto | Front cover; Title page; Copyright page; Table of contents; Preface; Section I: Ecology and Evolution; 1: Core Concepts in Studying Ecology and Evolution; The Beginnings of Microbiology; Viruses; Bacteria; Photosynthetic Bacteria; Gliding Bacteria; Sheathed Bacteria; Budding and Prosthecate Bacteria; Spirochetes; Spiral and Curved Bacteria; Strictly Aerobic Gram-Negative Rods; Facultative Anaerobic Gram-Negative Rods; Strictly Anaerobic Gram-Negative Rods; Nonphotosynthetic Autotrophic Bacteria; Gram-Negative Cocci; Gram-Positive Cocci; Endospore-Forming Bacteria<br>Non-Spore-Forming, Gram-Positive RodsBranching Bacteria; Obligate Intracellular Bacteria; Ecology Becomes a Science; Evolution; Natural Selection; Patterns of Selection; Evolutionary Ecology; 2: Molecules and Origins of Life; Chemistry of Life; Water; Biological Elements; Early Atmosphere and the Beginnings of Life; Miller Flask Experiment; Which Molecule Came First?; Genes-First Models; Proteins-First Models; Dual-Origin Models; 3: Species Concepts and Speciation; Universal Species Concept; Biological Species Concept; Phenetic and Related Species Concepts; Evolutionary Species Concept<br>Phylogenetic Species ConceptBacterial Taxonomy; Bacterial Species Concepts; Application of the Phenetic Species Concept to Bacteria; Application of the Phylogenetic Species Concept; Speciation; Bacterial |

Speciation; Mismatch Repair as a Speciation Mechanism; Rapid Speciation?; Operons; Genome Economization and Speciation; Hypermutation; Genome Reduction; Section II: Ecology of Individuals; 4: The Individual; What Is an Individual?; Study of Individuals; Study of Individual Microorganisms; Genetic Individuals; Ramets; Ecological Individual; Niche; Abiotic Constraints; 5: Growth and Feeding
Growth and Surface-to-Volume RatiosEcology of Feeding; Metabolic Energy; Role of Carbon; Microbial Feeding Strategies; Costs of Feeding; Generalists and Specialists; Optimal Foraging and Microbes; Cheating; Free-Living Microorganisms; Food Chains and Webs; Fermentations; 6: Ecology of Sex; Reproductive Ecology; Microbial Reproduction; Conjugation; Transposons; Transformation; Transduction; Advantages and Disadvantages of Sex; Rate of Reproduction; Plasmids and Extrachromosomal DNA; When Would Plasmids Be Favorable?; Genes on Plasmids; Plasmids in Streams; Plasmids in Lakes
Hot Spots for Plasmid TransferTransformation in Nature; Section III: Living Together in Populations; 7: Fundamentals of Microbial Population Ecology; Populations in Ecology; Properties of Populations; Density; Natality and Fecundity; Mortality, Longevity, and Senescence; Immigration and Emigration; Microbial Population Ecology; Population Growth; Density Dependence and Independence; r and K Selection; 8: Metapopulations, Multicellularity, and Modular Growth; Metapopulations; Dispersal; Modularity; Source and Sinks; Population Ecology of Genes; Sources of Phenotypic and Genotypic Variation
Sources of Genic and Chromosomal Genetic Variation

Sommario/riassunto

Based on the thesis that insights into both evolution and ecology can be obtained through the study of microorganismsm, Microbial Ecology examines microbiology through the lens of evolutionary ecology. Measured from a microbial perspective, this text covers such topics as optimal foraging, genome, reduction, novel evolutionary mechanisms, bacterial speciation, and r and K selection.  Numerous aspects of microbial existence are also discussed and include: species competition, predation, parasitism, mutualism, microbial communication through quorum sensing and other . The result is a cont