

1. Record Nr.	UNINA9910143581803321
Autore	Vaccari David A. <1953->
Titolo	Environmental biology for engineers and scientists [[electronic resource] /] / David A. Vaccari, Peter F. Strom, James E. Alleman
Pubbl/distr/stampa	Hoboken, N.J., : Wiley-Interscience, c2006
ISBN	1-280-23570-5 9786610235704 0-470-36104-2 0-471-74179-5 0-471-74178-7
Descrizione fisica	1 online resource (955 p.)
Altri autori (Persone)	StromPeter F AllemanJames E
Disciplina	570 577
Soggetti	Biology Electronic books.
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.
Nota di contenuto	ENVIRONMENTAL BIOLOGY FOR ENGINEERS AND SCIENTISTS; CONTENTS; Preface; 1 Perspectives on Biology; 1.1 Why Environmental Engineers and Scientists Should Study Biology; 1.2 Present Perspectives on Environmental Engineers and Scientists; 1.3 Past Perspectives on Environmental Engineers and Scientists; 1.4 Ambiguity and Complexity in Biology; 1.5 Conservation and Environmental Ethics; 1.6 Guidelines for Study; Problems; References; 2 Biology as a Whole; 2.1 What Is life?; 2.2 The Hierarchy of Life; 2.3 Evolution; 2.4 Taxonomy; 2.5 Interaction of Living Things with the Environment 2.6 Brief History of Life Problems; References; 3 The Substances of Life; 3.1 Basic Organic Chemical Structure; 3.2 Chemical Bonding; 3.3 Acid-Base Reactions; 3.4 Physicochemical Interactions; 3.5 Optical Isomers; 3.6 The Composition of Living Things; 3.6.1 Carbohydrates; 3.6.2 Lipids; 3.6.3 Proteins; 3.6.4 Nucleic Acids; 3.6.5 Hybrid and Other Compounds; 3.7 Detection and Purification of Biochemical Compounds; Problems; References; 4 The Cell: The Common Denominator of Living

Things; 4.1 Prokaryotes and Eukaryotes; 4.2 The Biological Membrane; 4.3 Membrane Transport  
4.4 Eukaryotic Cell Structure and Function4.5 Cell Reproduction; Problems; References; 5 Energy and Metabolism; 5.1 Bioenergetics; 5.1.1 Some Basic Thermodynamics; 5.1.2 Oxidation-Reduction; 5.1.3 Phosphate Compounds and ATP; 5.1.4 Reaction Coupling; 5.2 Elementary Kinetics; 5.3 Enzyme Kinetics; 5.3.1 Single-Substrate Kinetics; 5.3.2 Multiple Substrates; 5.3.3 Effect of pH; 5.3.4 Effect of Temperature; 5.3.5 Other Considerations; 5.4 Biochemical Pathways; 5.4.1 Glycolysis; 5.4.2 Fermentation; 5.4.3 Respiration; 5.4.4 Oxidation of Fats and Amino Acids; 5.4.5 Photosynthesis; 5.4.6 Biosynthesis ProblemsReferences; 6 Genetics; 6.1 Heredity; 6.1.1 Mendel's Experiments; 6.1.2 Sex Chromosomes; 6.1.3 Genetic Disease; 6.2 Molecular Biology; 6.2.1 Protein Synthesis; 6.2.2 Gene Regulation; 6.2.3 Mutations; 6.2.4 DNA Repair; 6.3 Genetic Engineering; 6.3.1 DNA Analysis and Probes; 6.3.2 Cloning and Recombinant DNA; 6.3.3 Polymerase Chain Reaction; 6.3.4 Genetic Engineering and Society; 6.4 Genetic Variation; 6.5 Sexual Reproduction; Problems; References; 7 The Plants; 7.1 Plant Divisions; 7.2 Structure and Physiology of Angiosperms; 7.2.1 Water and Nutrient Transport  
7.2.2 Plant Growth and Control7.2.3 Plant Nutrition; Problems; References; 8 The Animals; 8.1 Reproductive Strategies; 8.2 Invertebrate Phyla Other Than Arthropods; 8.3 Mollusks, Segmented Worms, Arthropods,; 8.3.1 Mollusks; 8.3.2 Annelids; 8.3.3 Arthropods; 8.3.4 Lesser Protostomes; 8.4 Deuterostomes (Starfish, Vertebrates, etc.); 8.4.1 Echinoderms; 8.4.2 Chordates, Including the Vertebrates; Problems; Reference; 9 The Human Animal; 9.1 Skin; 9.2 Skeletal System; 9.3 Muscular System; 9.4 Nervous System; 9.4.1 Nerve Signal Transmission; 9.4.2 Synaptic Transmission  
9.4.3 Nervous System Organization

---

#### Sommario/riassunto

The growth of the environmental sciences has greatly expanded the scope of biological disciplines today's engineers have to deal with. Yet, despite its fundamental importance, the full breadth of biology has been given short shrift in most environmental engineering and science courses. Filling this gap in the professional literature, Environmental Biology for Engineers and Scientists introduces students of chemistry, physics, geology, and environmental engineering to a broad range of biological concepts they may not otherwise be exposed to in their training. Based on a graduate-level co

---