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Book Review

UNDERSTANDING MICROBES

An introduction to a small world

Jeremy W. Dale

WILEY – BLACKWELL Ed., John Wiley & Sons, Ltd.
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In the present book the reader will found much room dedicated to theoretical knowledge and discussions as well as to the application of this knowledge, including an up to date inspection of exploratory aspects. A further intent of this book is to have the reader engage in the examples and application of microbiological science rather than provide a rote applied microbiology text. The title is suggestive and the book, highly readable, is a concise introduction to the basic of microbiology.

The book ***Understanding Microbes - An introduction to a small world*** has been prepared and edited in 10 chapters to being useful for students across the biological, environmental and health sciences, healthcare providers, and especially for curious reader interested to learn more about the subject.

Chapter 1 – *Meet the cast* presents in the first part an historical perspective on the development of biological sciences including some aspects of the components parts of the microscope and microscopic observation techniques. The chapter is dedicated to the familiarization of the reader with the microorganisms and the related concepts which are both defined in larger means. The text provides some examples of each group of microorganisms and also stands as a justification of the research need in the field of basic molecular biology.

The next three chapters provide information on the microbes and health issues. The author presents the human body like an extremely complex ecosystem and insists not only on the normal flora of humans but also on the defense against infections. The very complex subject of the human defense possibilities is simplified by dividing into three classes: external barriers (mechanical and chemical), innate immunity and adaptive immunity and a brief description of each is presented.

The author leans his attention also on diseases of the past and on diseases of the present. From the diseases of the past some are mentioned: cholera caused by *V. cholerae*, tuberculosis caused by *Mycrobacterium tuberculosis* (illustrated with very interesting and exciting examples such as the history of Bronte family), leprosy caused by a related *Mycrobacterium leprae*. These are just a few examples from a long list of infectious diseases. However, the human are still faced with a large number of important infectious diseases which can be considered in three categories: diseases which have always been; opportunist infections which take the advantage of the ability of modern medicine to keep alive people with serious conditions that affect their resistance; new diseases or so called emerging infections. In a logical sequence the author offers, in chapter 4, some information about prevention and cure and the discussion is focusing on vaccines and antibiotics.

Chapter 5, *Microbes and food-friend and foe*, the author presents general aspects about how microbes can alter the food or on the contrary how can microbes be used to preserve or produce food. The discussion is interesting, with many examples and is focusing on food spoilage, food preservation,

fermented foods and food poisoning or food borne diseases.

The book explores also the importance of microbes in the environment and their applications in biotechnology. In the chapter 6 it is provided the basics on the scale of microbial activity and diversity in the environment covering a part of the environmental factors: water and soil. The author focuses on the interaction of microbes with plants and on biodegradation and bio corrosion processes which have in the same time positive and negative aspects and also practical uses in a contemporary context (amino-acids, antibiotics or other medical products, biofuels, oil spills, biological treatment and so one).

Chapters 8 and 9 contain information about microbial evolution and development. There are presented many aspects of horizontal gene transfer, variation in gene expression, cell division, bacterial sporulation, motility and multicellular behavior.

Chapter 10 is dedicated to the *controversies and speculation* on the evolution and the origins of life, assessment of risk and benefit, on the possibilities to create new life and the climate change.

The book encourages a better understanding of the microbial word with many practical implications in biotechnological phenomena that will be the foundation of the next years. Also, the book gives interesting information about the lessons from nature and presents excellent and suggestive illustrations.

In these conditions the book represents an introduction to a possible study of a large and difficult subject - the microorganisms.

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