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Abstract

This electronic textbook is a comprehensive guide of laboratory exercises in Biology and is addressed to students who want to acquire the basic laboratory knowledge in Cell Biology, Molecular Biology and Genetics. The guide includes eleven laboratory exercises in Cell and Molecular Biology topics and techniques, and two tutorial exercises in Genetics. In particular, the exercises introduce the use of the microscope and the basic principles of microscopy, the characteristics and differences between prokaryotic and eukaryotic animal and plant cells, the phenomenon of plasmolysis, the separation of the structural components of the cell and the morphology of subcellular organelles, the biochemical

process of photosynthesis and the chromatographic method for the separation of photosynthetic pigments, the life cycle of micro-organisms and the influence of various factors on it, the mechanisms of nuclear division and the morphology of chromosomes, the phenomena of cell differentiation and embryogenesis and, finally, the methodology and techniques of isolation of genetic material and electrophoresis for the separation of DNA and proteins. The tutorial exercises analyze the phenomena of heredity and the laws that govern them. All exercises have been enriched with original digital material (images, animations and videos) in order to meet the requirements of a modern interactive e-textbook.

