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PART ONE

Microbiology Methods

Microbiology is the study of microorganisms. The study of microbiology requires a knowledge of the structure and function of microorganisms, including their physiology and their interactions with their environment. Microorganisms are organisms that are too small to be seen with the naked eye. They can be unicellular or multicellular. The study of microbiology is important because microorganisms are everywhere and they play a role in many aspects of our lives. Some microorganisms are beneficial, while others are harmful. The study of microbiology is also important for the development of new drugs and vaccines.

Microorganisms are studied using various techniques. One of the most common techniques is microscopy. Microscopes allow us to see microorganisms at a much higher magnification than the naked eye. There are two main types of microscopes: light microscopes and electron microscopes. Light microscopes use visible light to illuminate the specimen, while electron microscopes use a beam of electrons. Electron microscopes provide much higher magnification and resolution than light microscopes.

Cultures of individual microorganisms are used for physiological and genetic studies. Growing and maintaining pure cultures of microorganisms is a fundamental technique in microbiology. Pure cultures allow us to study the characteristics of a single microorganism without the interference of other organisms. There are several methods for obtaining pure cultures, including streaking, serial dilution, and the pour plate method. Each method has its own advantages and disadvantages. The choice of method depends on the type of microorganism being studied and the specific requirements of the experiment.

One of the most important aspects of microbiology is the safe handling of microorganisms. As students of microbiology you will be handling concentrated amounts of microorganisms. The cultures with which you will be working will contain as many as a million viable microorganisms per milliliter. Essentially, microorganisms can cause disease under certain conditions and therefore you should treat all cultures of microorganisms with great care. You will be working with a variety of chemicals, including acids, bases, and antibiotics. It is important to observe certain safety rules in the laboratory to ensure that these materials do not pose a hazard to you or others. The following procedures should be observed at all times to ensure safety in the laboratory.

Safety Rules in the Microbiology Laboratory