Microbiology Services Section Front Page

Microbiology is the study of microscopic organisms, such as bacteria, viruses, archaea, fungi and protozoa. This discipline includes fundamental research on the biochemistry, physiology, cell biology, ecology, evolution and clinical aspects of microorganisms, including the host response to these agents.

Application:

many microbes are also responsible for numerous beneficial processes such as industrial fermentation (e.g. the production of alcohol, vinegar and dairy products), antibiotic production and as vehicles for cloning in more complex organisms such as plants.

The Autoplate is perfect for testing for pathogens and spoilage bacteria in food and dairy products. In the Pharmaceutical industry it can be used for Preservative Challenge testing (PET), Kill Curves, and susceptibility testing with SGE. The Agriculture and Environmental industries utilize spiral platers for biopesticide challenges, frost prevention and leaf studies. Anaerobic bacteria are common causes of infection and will be completely missed in clinical diagnosis unless special precautions are taken for their isolation and culture. With anaerobic culture, microbiologists are not only challenged with obtaining a good specimen, but also with ensuring that the specimen does not come in contact with air3.

Anaerobic and micro-aerophilic bacteria can also be beneficial to humans. These bacteria are used as "waste digesters" by industry to clean oil spills, methane gas production in waste management, and can actually be a culprit in the spoilage of beer. Environmental microbiology - The study of the function and diversity of microbes in their natural environments. This involves the characterization of key bacterial habitats such as the rhizosphere and phyllosphere, soil and groundwater ecosystems, open oceans or extreme environments (extremophiles). This field includes other branches of microbiology such as: microbial ecology (microbially-mediated nutrient cycling), geomicrobiology, (microbial diversity), water microbiology (the study of those microorganisms that are found in water), aeromicrobiology (the study of airborne microorganisms) and epidemiology (the study of the incidence, spread, and control of disease). Medical microbiology is the study of the pathogenic microbes and the role of microbes in human illness. This includes the study of microbial pathogenesis and epidemiology and is related to the study of disease pathology and immunology.

Challenges:

The first challenge is for microbiology to firmly embrace the new techniques available for both the automatic identification and enumeration of micro-organisms. Many pharmaceutical companies are still not utilising rapid methods (RMMs) despite the considerable savings in time they offer and in many cases, increases in enumeration accuracy.The third challenge is for microbiologists to champion the introduction of new technology in manufacturing of sterile products, particularly those using aseptic filtration. Many of the new products resulting from biotechnology over the last 20 years have been sterile injections. In the main, these are protein based or protein/carbohydrate based and so the use of heat (moist or dry) or irradiation (gamma or e beam), is precluded due to damage inflicted on the molecular structure which is inherent to the biological activity. Industry watchers are predicting the long hoped for boom in biopharmaceuticals as our understanding of disease at the molecular level increases and our ability to manipulate cell lines improves.

Future Persceptive:

Microbiological research will continue to flourish during the coming decade, becoming even more diverse in scope, approach. microbiologist will continue to fascinated by the diverse of cells and microrgnisma and will use innovative approaches to satisfy their curioity. they will discover novel organism from normal cell and from unique sites and will continue to probe the function of cell at various levels. The boundaries of miocrobiology as a discplines have faded as plant and animal are manipulated by different microbiological technique and micobial entites are used to alter many palnts and animals.

Market Demand:

Microbial cultures play a major role as key tools in biological, medical, or biotechnology research. Pharmaceutical microbiology has witnessed major developments in the last decade. The number of tests have increased significantly along with major modifications in terms of testing procedures. With improved GMP facilities being set up globally, microbiological testing of a product, environment, and equipment has become obligatory. Therefore, usage of microbiology consumables, such as culture media, has increased. This has opened new avenues for the microbiology culture market. Key factors driving the global microbiology culture market are high demand for improved antibiotics, increasing food microbiology, rising life science research funding, and high prevalence of foodborne and other infectious diseases. Moreover, the microbiology culture market is witnessing strong growth due to rising food safety concerns, increasing number of food recalls, evolving pathogens, growing press coverage and public awareness, and increasing demand in other industries. Additionally, the industry is expected to expand at a rapid rate due to increased food sourcing due to rise in global food demand and supply. This, in turn, would require advanced culture methods and media for fast and accurate microbial analysis. Microbiology culture methods are the principal diagnostic methods used to determine the cause of infectious diseases by culturing the pathogen in a preset medium. [(Key

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