



Applied Microbiology Internship

Antimicrobial Resistance

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Antimicrobial resistance research focuses on understanding the mechanisms by which microorganisms develop resistance to antimicrobial agents and the impact of this phenomenon on public health. Researchers investigate strategies to combat antimicrobial resistance, including the development of new antimicrobial drugs, alternative therapies, and stewardship programs to promote responsible antimicrobial use.

Microbial Ecology

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Microbial ecology studies the interactions between microorganisms and their environment, including other microorganisms, plants, animals, and abiotic factors. Researchers in this area investigate microbial diversity, community structure, and ecological processes in various ecosystems. They also explore the roles of microorganisms in nutrient cycling, biogeochemical transformations, and ecosystem functioning.

Bioremediation

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Bioremediation involves the use of microorganisms to degrade, detoxify, or immobilize environmental pollutants, including organic and inorganic contaminants. Researchers in this field investigate microbial degradation pathways, environmental factors influencing bioremediation efficacy, and strategies to enhance microbial remediation capabilities. Bioremediation offers sustainable solutions for cleaning up contaminated soil, water, and air.

Genetic Engineering of Microorganisms

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Genetic engineering of microorganisms involves the manipulation of their genetic material to produce desired traits or compounds. Researchers in this field employ techniques such as gene cloning, gene editing, and metabolic engineering to modify microorganisms for applications in biotechnology, medicine, and environmental remediation. This area of research holds promise for the development of novel microbial strains with improved functionalities.

Microbial Pathogenesis

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Microbial pathogenesis focuses on understanding the mechanisms by which microorganisms cause disease in humans, animals, and plants. Researchers in this field investigate microbial virulence factors, host-pathogen interactions, and immune responses to infection. This knowledge is critical for the development of vaccines, diagnostics, and therapeutic interventions to prevent and treat infectious diseases.

Microbial Metabolism

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Microbial metabolism encompasses the biochemical pathways and processes by which

microorganisms obtain energy and nutrients, as well as produce metabolites. Researchers in this area investigate metabolic pathways, enzyme kinetics, and regulatory mechanisms governing microbial metabolism. Understanding microbial metabolism is essential for optimizing biotechnological processes, such as fermentation and bioremediation.

Microbial Diversity and Evolution

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Microbial diversity and evolution encompass the study of the vast array of microorganisms and their evolutionary relationships. Researchers in this field explore microbial phylogeny, speciation events, and adaptive mechanisms driving microbial evolution. Understanding microbial diversity and evolution provides insights into ecological interactions, biogeography, and the emergence of novel traits and functions in microorganisms.

Microbial Biosensors

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Microbial biosensors are analytical devices that utilize microorganisms to detect specific compounds or environmental conditions. Researchers in this area develop biosensor platforms based on microbial cells, enzymes, or genetic circuits engineered to produce measurable signals in response to target analytes. Microbial biosensors have applications in environmental monitoring, medical diagnostics, and food safety.

Microbial Symbiosis

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Microbial symbiosis explores the mutually beneficial interactions between microorganisms and other organisms, including plants, animals, and insects. Researchers in this field investigate symbiotic relationships, such as nitrogen-fixing bacteria in legume roots and gut microbiota in animals. Understanding microbial symbiosis contributes to agriculture, ecology, and human health research.

Microbial Biofilms

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Microbial biofilms are complex communities of microorganisms attached to surfaces and encased in an extracellular matrix. Researchers in this area study biofilm formation, structure, and function, as well as the roles of biofilms in microbial infections, biocorrosion, and environmental processes. Understanding microbial biofilms is crucial for developing strategies to control biofilm-related issues in various industries.

Microbial Communication (Quorum Sensing)

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Microbial communication, also known as quorum sensing, involves the regulation of gene expression in response to cell density and signaling molecules. Researchers in this field investigate quorum sensing mechanisms, signal molecules, and their roles in microbial physiology, virulence, and biofilm formation. Understanding microbial communication offers insights into microbial behavior and potential targets for antimicrobial interventions.

Microbial Stress Responses

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Microbial stress responses involve the adaptive mechanisms by which microorganisms cope with environmental stresses, such as temperature extremes, nutrient limitation, and exposure to toxins. Researchers in this area investigate stress response pathways, stress-induced changes in microbial physiology, and strategies to enhance microbial stress tolerance. Understanding microbial stress responses is important for biotechnological applications and environmental resilience.

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Microbial Communities in Extreme Environments

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Microbial communities in extreme environments, such as deep-sea vents, polar regions, and acidic hot springs, thrive under extreme conditions of temperature, pressure, pH, and salinity. Researchers in this field study the diversity, metabolic capabilities, and adaptations of microorganisms in extreme environments. Understanding extremophilic microorganisms provides insights into the limits of life on Earth and the potential for life in extraterrestrial environments.

Microbial Nanotechnology

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Microbial nanotechnology involves the utilization of microorganisms or microbial products for the synthesis and manipulation of nanomaterials. Researchers in this field explore the diverse properties and applications of microbial nanoparticles, such as metallic nanoparticles produced by bacteria or viruses. Microbial nanotechnology holds promise for various biomedical, environmental, and industrial applications, including drug delivery, sensing, and catalysis.

Microbial Genome Editing

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Microbial genome editing involves the precise modification of microbial genomes using molecular tools such as CRISPR-Cas systems. Researchers in this area develop genome editing strategies to introduce desired genetic changes, such as gene knockouts, knock-ins, or point mutations, in microbial organisms. Microbial genome editing has applications in basic research, biotechnology, and biomedicine, enabling the engineering of microorganisms with improved traits and functionalities.

Microbial Forensics

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Microbial forensics involves the application of microbiological techniques to investigate and analyze evidence related to bioterrorism, biosecurity threats, and infectious disease outbreaks. Researchers in this field develop methods for the identification, characterization, and attribution of microbial agents, as well as the analysis of microbial signatures in environmental samples or clinical specimens. Microbial forensics plays a critical role in national security and public health preparedness.

Microbial Drug Discovery

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Microbial drug discovery involves the search for novel antimicrobial compounds produced by microorganisms, including bacteria, fungi, and actinomycetes. Researchers in this area screen microbial isolates or environmental samples for bioactive molecules with potential therapeutic properties. Microbial drug discovery contributes to the development of new antibiotics, antifungals, and antivirals to combat infectious diseases and overcome antimicrobial resistance.

Microbial Control of Plant Diseases

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Microbial control of plant diseases involves the use of beneficial microorganisms to suppress or manage plant pathogens. Researchers in this field explore the diversity and mechanisms of action of biocontrol agents, such as bacteria, fungi, and viruses, that can protect plants from diseases. Microbial control offers sustainable alternatives to chemical pesticides and contributes to integrated pest management strategies for agricultural crops.

Microbial Metagenomics

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Microbial metagenomics involves the study of microbial communities by analyzing their collective genetic material directly from environmental samples. Researchers in this field employ high-throughput sequencing and bioinformatics tools to characterize the composition, diversity, and functional potential of microbial communities in various ecosystems. Microbial metagenomics provides insights into microbial ecology, biogeochemical cycles, and interactions within complex microbial communities.

Microbial Immunology

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Microbial immunology focuses on understanding the interactions between microorganisms and the host immune system. Researchers in this field investigate microbial evasion mechanisms, host immune responses to infection, and the development of vaccines and immunotherapies against microbial pathogens. Microbial immunology contributes to the prevention and treatment of infectious diseases and the design of novel strategies for immune modulation.

Microbial Proteomics

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Microbial proteomics involves the study of the entire complement of proteins expressed by microorganisms under different conditions. Researchers in this area use mass spectrometry and bioinformatics tools to identify and quantify microbial proteins, characterize their functions, and elucidate protein-protein interactions and post-translational modifications. Microbial proteomics contributes to understanding microbial physiology, pathogenesis, and biotechnological applications.

Microbial Adaptation to Extreme Environments

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Microbial adaptation to extreme environments involves the study of microorganisms that thrive in habitats characterized by extreme conditions of temperature, pH, salinity, pressure, or radiation. Researchers in this field investigate the molecular mechanisms and physiological adaptations that allow microorganisms to survive and grow in extreme environments, providing insights into the limits of life and the potential for microbial life beyond Earth.

Microbial Interaction with Nanomaterials

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Microbial interaction with nanomaterials involves the study of how microorganisms interact with engineered nanoparticles or nanoscale materials. Researchers in this area investigate the impacts of nanomaterials on microbial growth, metabolism, and gene expression, as well as the potential for microorganisms to transform or degrade nanoparticles in the environment. Understanding microbial-nanomaterial interactions is important for assessing the environmental and biological implications of nanotechnology.

Microbial Source Tracking

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Microbial source tracking involves the identification and characterization of microbial sources responsible for contamination in environmental or clinical settings. Researchers in this field utilize molecular techniques, such as DNA fingerprinting and microbial genomics, to trace the origin of microbial pathogens or pollutants and assess their transmission routes. Microbial source tracking aids in understanding disease outbreaks, water quality management, and pollution control measures.

Microbial Bioinformatics

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Microbial bioinformatics involves the application of computational techniques to analyze and interpret large-scale biological data generated from microbial studies. Researchers in this area develop algorithms, databases, and software tools for the analysis of microbial genomes, metagenomes, and microbiome data. Microbial bioinformatics facilitates the discovery of novel microbial species, functional genes, and evolutionary relationships, advancing our understanding of microbial biology and ecology.

Microbial Community Engineering

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Microbial community engineering involves the manipulation and design of microbial communities to achieve desired functions or outcomes. Researchers in this field explore principles of community ecology, microbial interactions, and synthetic biology to engineer microbial consortia with specific metabolic capabilities or ecosystem services. Microbial community engineering holds promise for applications in biotechnology, environmental remediation, and ecosystem restoration.

Microbial Evolutionary Dynamics

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Microbial evolutionary dynamics involves the study of evolutionary processes and patterns in microbial populations over time. Researchers in this area investigate genetic diversity, mutation rates, selection pressures, and gene flow in microbial communities. Understanding microbial evolutionary dynamics provides insights into the emergence of antibiotic resistance, virulence evolution, and microbial adaptation to changing environments.

Microbial Biosurfactants

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Microbial biosurfactants are surface-active molecules produced by microorganisms with applications in various industries, including bioremediation, agriculture, and cosmetics. Researchers in this field investigate the production, properties, and potential uses of microbial biosurfactants, such as their ability to enhance oil recovery, emulsify hydrophobic compounds, and solubilize contaminants. Microbial biosurfactants offer eco-friendly alternatives to synthetic surfactants and contribute to sustainable biotechnological processes.

Microbial Electrochemistry

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Microbial electrochemistry involves the study of interactions between microorganisms and electrodes, with applications in energy production, environmental remediation, and bioprocessing. Researchers in this field investigate microbial electron transfer mechanisms, electroactive biofilms, and microbial fuel cells for electricity generation or wastewater treatment. Microbial electrochemistry offers sustainable solutions for renewable energy generation and pollution control.

Microbial Degradation of Xenobiotics

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Microbial degradation of xenobiotics involves the ability of microorganisms to metabolize and detoxify synthetic compounds, such as pesticides, industrial chemicals, and pharmaceuticals. Researchers in this area investigate microbial degradation pathways, enzymes, and genetic determinants involved in the breakdown of xenobiotic pollutants. Microbial degradation offers a natural approach to remediate contaminated environments and mitigate the environmental impacts of chemical pollutants.

Microbial Volatile Organic Compounds (VOCs)

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Microbial volatile organic compounds (VOCs) are small molecules produced by microorganisms with applications in agriculture, healthcare, and industry. Researchers in this field study the biosynthesis, emission, and functions of microbial VOCs, such as their roles in plant-microbe interactions, microbial communication, and disease diagnosis. Microbial VOCs have potential as biocontrol agents, diagnostic biomarkers, and biotechnological products.

Microbial Flocculants and Bioflocculants

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Microbial flocculants and bioflocculants are polymers produced by microorganisms with applications in wastewater treatment, bioremediation, and bioprocessing. Researchers in this area investigate microbial strains capable of producing flocculating agents, as well as their production processes and efficiency in aggregating suspended particles. Microbial flocculants offer eco-friendly alternatives to chemical flocculants and contribute to sustainable water management practices.

Microbial Biomineralization

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Microbial biomineralization involves the formation of minerals through the activities of microorganisms, with applications in bioremediation, biomaterials synthesis, and geological processes. Researchers in this field investigate microbial mineral precipitation mechanisms, mineral-microbe interactions, and biologically induced mineralization in natural and engineered environments. Microbial biomineralization has potential in environmental remediation, carbon sequestration, and novel material synthesis.

Fee Structure

Note 1: Fee mentioned below is per candidate.

Note 2: Fee of any sort is NON REFUNDABLE once paid. Please cross confirm all the details before proceeding to fee payment

2 Days Total Fee: Rs 1800/-

Reg Fee Rs 540/-

5 Days Total Fee: Rs 3360/-

Reg Fee Rs 1008/-

10 Days Total Fee: Rs 3600/-

Reg Fee Rs 1080/-

15 Days Total Fee: Rs 5400/-

Reg Fee Rs 1620/-

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20 Days Total Fee: Rs 6360/-
Reg Fee Rs 1908/-
30 Days Total Fee: Rs 8894/-
Reg Fee Rs 2668/-
45 Days Total Fee: Rs 13553/-
Reg Fee Rs 4066/-
2 Months Total Fee: Rs 16800/-
Reg Fee Rs 5040/-
3 Months Total Fee: Rs 25600/-
Reg Fee Rs 5500/-
4 Months Total Fee: Rs 34000/-
Reg Fee Rs 5500/-
5 Months Total Fee: Rs 42800/-
Reg Fee Rs 5500/-
6 Months Total Fee: Rs 51200/-
Reg Fee Rs 5500/-
7 Months Total Fee: Rs 60000/-
Reg Fee Rs 5500/-
8 Months Total Fee: Rs 68400/-
Reg Fee Rs 5500/-
9 Months Total Fee: Rs 76800/-
Reg Fee Rs 5500/-
10 Months Total Fee: Rs 85600/-

Reg Fee Rs 5500/-

11 Months Total Fee: Rs 94000/-

Reg Fee Rs 5500/-

1 Year Total Fee: Rs 102800/-

Reg Fee Rs 5500/-

Please contact +91-9014935156 for fee payments info or EMI options or Payment via Credit Card or Payment using PDC (Post Dated Cheque).