

# The Gazette

n.7 July 2024

## SHORT COURSE OF MICROBIOLOGY FOR ENVIRONMENTALIST

### TEXT FROM "THE SOCIETY FOR GENERAL MICROBIOLOGY U.K."

#### BASIC MICROBIOLOGY

<b><u>MICROBE</u></b>	An organism that can only be seen clearly under a microscopy
<b><u>EUKARIOTE</u></b>	An organism made of cells which contain membrane-bound organelles such as nuclei
<b><u>PROKARIOTE</u></b>	An organism made of a cell which lacks membrane-bound organelles such as nuclei, e, g. bacteria and archaea
<b><u>BACTERIUM</u></b>	A unicellular prokaryote with a cell wall made from peptidoglycan; bacteria (plural) make up one of the 3 domain life
<b><u>ARCHEAN</u></b>	A unicellular prokaryote similar to bacteria; archaea (plural) make up one of the 3 domains of life
<b><u>EUKARYA</u></b>	One of the 3 domain of life; contains all eukaryotes, including plants, animals, fungi and other organisms that were previously classified as Protocista in 5 kingdom system

<b><u>KINGDOM</u></b>	The highest rank in the hierarchy of the 5 kingdoms system are Prokariote, Animalia, Plantae, Fungi and Protocista
<b><u>DOMAIN</u></b>	A category of organisms; all organisms can be classified in one of 3 domains Eukarya, Prokarya and Archaea
<b><u>CLASSIFICATION</u></b>	The arrangement of organisms into groups
<b><u>TAXONOMY</u></b>	The process of naming and classifying organisms
<b><u>PHENETIC CLASSIFICATION</u></b>	A method of arranging organisms based on properties such as anatomy or morphology (i.e. the 5 kingdoms system)
<b><u>PHYLOGENETIC CLASSIFICATION</u></b>	A method of arranging organism based on evolutionary relationship between organisms (i.e. the 3 domains system)

<b><u>CHROMOSOME</u></b>	An organized structure of DNA (and often) protein); contains genes
<b><u>PLASMID</u></b>	A circular piece of DNA separate from the chromosome of a bacterium
<b><u>CONJUGATION</u></b>	The transfer of DNA from one cell to another via direct cell to cell contact
<b><u>ASEXUAL</u></b>	A type of reproduction that does not depend on sex cells or sex organs
<b><u>BINARY FISSION</u></b>	A type of asexual reproduction in which a single-celled organism divides to produce two daughter cells of the same size
<b><u>BUDDING</u></b>	A type of asexual reproduction in which a new cell or appendage is formed from an outgrowth of a cell; occurs in microbes such as yeast and some plants and animals

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<b><u>CAPSULE</u></b>	A protein or polysaccharide layer external to the cell wall; found in some prokaryotic cells
<b><u>ENDOSPORE</u></b>	A dormant non-reproductive structure formed inside some bacterial cells, often in response to environmental conditions; many are able to survive extreme temperatures, radiation and desiccation and will develop into bacterial cells when conditions become more favorable
<b><u>FLAGELLUM</u></b>	A long filament sticking out of a cell that enables movement; in bacteria it moves with a cork screw motion due to the rotation of a flagellar motor anchored in the cell membrane
<b><u>PILUS</u></b>	A protein filament protruding from the surface of some bacterial cells (similar to a fimbria); some are involved in conjugation
<b><u>FIMBRIA</u></b>	A protein filament protruding from the surface of some bacterial cells (similar to a pilus)
<b><u>RIBOSOME</u></b>	A structure made of protein and RNA, that is the site of protein synthesis

<b><u>PEPTIDOGLYCAN</u></b>	A polymer found in the cell walls of bacteria
<b><u>GRAM STAIN</u></b>	A method that stains bacteria differentially according to their cell wall structure
<b><u>GRAM-NEGATIVE</u></b>	Bacteria with cell walls made of 10% peptidoglycan plus an additional lipopolysaccharide layer; they stain pink or red with Gram's reagent
<b><u>GRAM-POSITIVE</u></b>	Bacteria with cell walls made of 90% peptidoglycan; they stain purple with Gram's reagent
<b><u>GLYCOCALYX</u></b>	Slim or gummy material secreted on the outside of some bacterial cells, e.g. a slime layer or capsule
<b><u>SLIME LAYER</u></b>	A gummy layer external to the cell wall that is found in some prokaryotic cells; unlike a capsule it is diffuse and easily removed

<b><u>FUNGUS</u></b>	A eukaryotic organism with a cell wall made from chitin; can be unicellular (e.g. yeast) or multicellular (e.g. molds)
<b><u>YEAST</u></b>	A unicellular fungus; used widely in biotechnology
<b><u>HYPHA</u></b>	A thread-like fungal filament which forms branching networks called mycelia
<b><u>MYCELIUM</u></b>	A mass of fungal filaments (hyphae)
<b><u>SPORE (FUNGAL)</u></b>	A single-celled or multicellular structure produced for dispersal, as a result of sexual or asexual reproduction or in response to adverse conditions
<b><u>FRUITING BODY</u></b>	A structure made by filamentous fungi in order to produce and release spores; they are commonly known as mushrooms and toadstool

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<b><u>VIRUS</u></b>	An acellular infectious agent consisting of a protein coat and nucleic acid core
<b><u>VIRION</u></b>	A virus particle consisting of a protein coat called a capsid and a core (containing a nucleic acid) called the nucleocapsid
<b><u>ENVELOP (VIRAL)</u></b>	A phospholipid bilayer on the outside of certain viruses
<b><u>CAPSID</u></b>	The protein coat that surrounds the nucleic acid genome of a virus
<b><u>NUCLEOCAPSID</u></b>	The core of a virus; contains the RNA or DNA genome
<b><u>LYTIC CYCLE</u></b>	The life cycle of a virus during which it replicates continually, destroying the host and releasing viral particles