

Microbiology notes assignment



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Knowledge of Microorganisms (pretty recent) Allows humans to: prevent food spoilage and prevent disease occurrence Led to aseptic techniques to prevent contamination in medicine and in microbiology labs Naming and classifying Linnaeus established system of scientific nomenclature (binomial nomenclature) Each organism has two names: genus and specific epithet Are italicized or underlined Everything is "Latinized" Genus is capitalized Species is lowercased May be descriptive or honor a scientist *Escherichia coli* Honors discoverer Theodore Escherichia Describes bacterium's habitat- large intestine or colon *Staphylococcus aureus*

Describes the clustered (soot) spherical (cocci) cells Describes the gold-colored (areas) colonies Scientific Names After the first use the scientific names may be abbreviated with the specific epithet *Escherichia coli* and *Staphylococcus aureus* found in human body *E. coli* is found in the intestine while *S. aureus* is found in the skin Types of Microorganisms Bacteria Arched Fungi Protozoa Algae Viruses Multicultural animal parasites Prokaryote (before true nucleus) Pedagogical cell walls Binary fission For energy use organic chemicals, inorganic chemicals or photosynthesis Many "swim" Flagella Prokaryotic Lack pedagogical

Live in extreme environments Include Methanols (found where there is no oxygen) Extreme halides (salt loving) Extreme thermophiles (found in the deep sea vents in ocean) Not known to cause disease Eukaryote (true nucleus) Chitin cell walls Use organic chemicals for energy (absorb) Molds and mushrooms are multicellular consisting of masses of micelle, which are composed of filaments called hyphae Yeasts are unicellular Reproduce sexually or asexually Protozoa Eukaryote Cellulose cell walls use

photosynthesis for energy produce molecular oxygen and organic compounds unicellular or multicellular some can be parasitic

Cellular Consist of DNA or RNA core (never both) Core surrounded by a protein coat Coat may be enclosed in a lipid envelope (waxy material) Replicate only when they are in a living host cell Considered inert when outside host cell, and a parasite when in a host cell Eukaryote Multicellular animals Parasitic flatworms and roundworms are called helminths Microscopic stages in life cycles Classification of microorganisms Animal kingdom vs.. Plant kingdom (17th cent) 3 domains (Woese in 1978 cell organization) Eukaryote Protists (most versatile) Plants Animals Chapter 1 lecture day 2 Brief history of microbiology

Ancestors of bacteria were first life on earth Ex. Fossils, ancient disease (found in mummies), and acts of god First microbes were observed in 1763 First Observations 1665- Robert Hook reported that living things were composed of little boxes or cells 1858- Rudolf Virchow cells arise from preexisting cells Cell theory- all living things composed of cells and come from preexisting cells 1673-1723 Anton von Leeuwenhoek described live microorganisms Debate over Spontaneous Generation Spontaneous generation - living organisms arise from nonliving matter "vital force" forms life Biogenesis living organisms arise from preexisting life

Transport Movement of materials across membranes simple diffusion: movement of a solute from an area of high concentration to an area of low concentration equilibrium facilitated diffusion: solute combines with a transporter protein (Permease) in the membrane osmosis: the movement of

water across a selectively permeable membrane from an area of high water concentration to an area of lower water concentration osmotic pressure: the pressure needed to stop the movement of water cross the membrane

Movement of water across membranes through lipid layer aspirins (water channels) The principle of osmosis isotonic solution- no net movement of water hypotonic solution- water moves into the cell if the cell wall is strong, it contains the swelling.

If the cell wall is weak or damaged, the cell bursts (osmotic lysis)

hypertonic solution- water moves out of the cell causing its cytoplasm to shrink (plasmolysis) (crenation) Movement across membrane Active

transport- requires a transporter protein and ATP Uniform Anterior = An^+/K^+ pump Symptom (coupled) = called secondary active transport = An^+/I^-

asymptote Group ramifications: requires a transporter protein and PEP

(Phosphorescently) Chapter B Functional Anatomy of Prokaryote One circular, not in a membrane No histones No organelles Pedagogical cell walls if

Bacteria Pseudopodium cell walls if Arched Eukaryote u Paired chromosomes

in nuclear membrane Histones Organelles in membrane Polysaccharide cell

walls Mitotic spindles The Eukaryotic Cell Projections: contain cytoplasm infra have plasma membrane around them. Ex.

Cilia and Flagella Flagella and Cilia -Basal body' = misconstrues -tubular -9

pairs + 2 array Prokaryotic flagella = rotating motion Eukaryotic flagella =

wave like motion Flagella = Few, longer than cell size Cilia = numerous, short

The cell wall and Coaxially Cell wall -Plants, fungi, algae -Carbohydrates

Cellulose (plants, algae, and some fungi) Chitin (Some fungi and

coruscations) Gluten and Manna (yeasts) Coaxially = sticky! -Carbohydrates

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extending from plasma membrane -Bonded to proteins and lipids membrane
= Globetrotting and glycoside (strength) The Plasma Membrane Phosphoric
belayed Peripheral proteins Stereos= resist lysine only macrocosms
Coaxially carbohydrates= recognition sites or bacterial attachment sites.
Selective