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Chapter 1 BIOLOGY AS BIOLOGICAL SCIENCE is a life science. Taken from the Greek language, biographies are the meaning of life and logos meaning science based on the level of organization: 1. Molecular level: Molecular Biology, Biochemistry, and Genetics 2. Cell level : Cytology 3. Network Level : Histology 4. Level of organ and organ system: Organology, anatomy, and physiology : - Human lungology : Cardiology : Human heart : Endocrinology : Human endocrine system - Neurology : Human nervous system 5. Individual level : Developmental Biology 6. Population level: population biology, biogeography and general population 7. Ecosystem level: Ecology, environmental sciences, toxicology, marine biology and limnology 8. Bioma level: Tropical bioma branch of biology that studies life in a group of organisms, among other things: 1. Taxonomics: Grouping based on equations and differences of organisms 2. Virology : Virus 3. Microbiology : Microorganism 4. Bacteriology : Bacteria 5. Myology : Fungus, yeast and mold 6. Botany : Plants. To. - Pterodology : Paku and Briology : Moss 7. The zoology: animals. Co: Entomology : Insects : Ictology : Fish - Herpetology : Reptiles and amphibians : Ornithology : Bird and mammology : Mammals Branch biology based on aspects of life : 1. Biology of development : Individual development of organisms 2. Embryology : Embryo Development 3. Anatomy : Internal structure of the body 4. Physiology : Functions that occur in the life of organisms Branch biology mixed and applied science group: 1. Biochemistry : Chemical processes in the life system 2. Biophysics : The process of physics in the system of life 3. Biotechnology : A technology that uses the body 4. Paleontology : Development of Life History Based on Fossil Record o Agricultural Field : Improving Food 1. More efficient planting methods 2. Cultivated plants with genetic engineering, capable of producing insecticides themselves 3. Tissue culture technique 4. Genetic engineering techniques, seed-free fruits on the field of livestock : Increase the production of farm animals 1. Artificial insemination (injectable mating) 2. In vitro fertilization, the production of embryos outside the uterus o Health field: Prevention of diagnosis, and treatment of various diseases and abnormalities 1. Organ Transplantation 2. Create 3 vaccines. Ivf 4 technique. Antibiotics o Industrial Field : 1. Use of microorganisms in the food industry 2. Using multiple types of microorganisms in the medical industry Scientific methods, stages: 1. Search for problems: Issues arising when looking at problem 2. Hypothesis: Hypothesis is a temporary answer to problems, a hypothesis based on knowledge and results of previous studies 3. Experiments : Check the validity of the hypothesis. Experiments should be planned before the experiments, which includes: Identify tools and materials : 1. Variables are characteristics of objects that can be measured quantitatively and have non-permanent values 2. Free variables are a modified factor 3. The associated variable is a factor that changes depending on the change of free variable 4. In biological experiments there were two groups: the processed group and the control group (a group that was not treated) 4. Conclusions : Contains the results of experiments that may or may not support the hypothesis made earlier Scientific reports, sequence: 1. Problem Formula and Hypothesis 2. Goal 3. Method 4. Result 5. Discussion: Must indicate whether kasil responded to the original hypothesis or not 6. Conclusion: Essence or results of experiments and language. Must answer the initial question posed before the trial of Chapter 2 CLASSIFICATION OF LIVING BEINGS Classification System: A System That Can Make It Easier for Us to Study and Recognize Taxonomic Living Creatures: The Branch of Biological Sciences that examines the grouping of living beings classification system of living beings was first pioneered for the first time for the first time by the Carolus Linnaeus Classification Process - living creatures are grouped based on equations and differences in characteristics 1. Natural classification system : grouping by morphological, anatomical and physiological characteristics Filogeni classification system: a grouping that takes into account the history of evolution 3. Artificial Classification System: Grouping based on morphological features that are easy to see the level of taxa of living beings: 1. Kingdom 2. Filum (for animals) or division (for plants) 3. 4th grade. Order 5. Family 6. Gene 7. Species System Nosy living creatures: o Carolus Linnaeus in 1735 created a nothoheistic system o Use of Latin o Consists of two parts: 1. First part : Name Genus (starting with uppercase) 2. Part 2: Species name (lower register origin) o Both parts of the name are pronounced if written with a computer or stressed if a two-part handwritten naming system is called binomial nomenclature 1. Know Biodiversity 2. Familiarity with different species of living beings includes characteristics of living beings, kinship relationships, interactions between living beings and their surroundings 3. Knowing the superior characteristics of different species of living animals, we can use directly among other things to produce food, sandang, and board Some classification systems that have been developed by biological scientists: 1. System two kingdoms: Group of plants and animals group 2. Three systems of the kingdom: Protista, plantae and animalia 3. Four systems of the kingdom: Monera, protista, plantae and animalia 4. Five systems of the kingdom: Monera, protista, mushrooms, plantae, animalia 5. System 6 Kingdom: Eubacteria, Archaeobacteria, protista, fungi, plantae, and animalia Identification or definition to determine the name of an animal or plant correctly and place it in the classification system of animals and plants. How: 1. Memory: Definition is made to realize our knowledge or memory of plants or animals known to 2. Help others: Identifying plants/animals can be done by asking for the help of botanists, zoologists, or those who can help 3. Reference sample : Plant/animal identification is made by direct comparison with the reference sample, which has been identified and received etiquette with the inscription name 4. Library : Compare/relate the characteristics of plants, animals that will be defined with the library. It can also use an identification key or definition 5. Computer : A computer program that can store, and provide information about plants/animal Key dikotom : Key identification by tracking the path provided by irregular solutions with each option is binary (because there are only 2 alternatives) Chapter 3 VIRUS 1. Size and shape 1. 25-300 nm 2. The least polio virus. The first TMV 3 virus. Round : Influenza virus, HIV 4. Oval : Rabies Virus 5. Rod : Virus TMV 6. Polyhegral : Adenovirus 7. Letter T : Bacteriophage 2. Structure and function 1. It is not a cell (acellular), in the form of particles called virion 2. Nucleic acids: Molecules that carry genetic information. Only DNA/RNA course 3. Protein shell (capillary) : Nucleic acid wrapper consisting of a protein unit called kapsomer 4. Gives the form of the virus 5. Compost virus : Has parts of the head and tail. Example: Bacteriophage 6. The combination of nucleic acids and capsids is called nucleokapsid 1. Canning stage: When a viral particle (virion) attaches to an infected cell. The category is called receptor 2. Penetration stage: The stage of viral genetic material is included in the cytoplasm of the host cell 3. Replication and synthesis stage: the stage of reproduction of viral particles in the host cell. The host cell will be controlled so that the cell can create 4 viral components. Maturation stage: Preparation of nucleic acids and proteins in pristine viral particles 5. Release stage: The stage of viral particles exits the host cell, solving cell 6. Lytic cycle: Stage as above, maturation takes place quickly then breaks the cell until the host cell dies (lysis) 7. Lysogenic cycle: Viral DNA/RNA inserted on the host cell chromosome will multiply continuously. Produces many infected cells 1. Bacteria 2. Microorganisms 3. Eukaryotes (such as the simplest and hamir) 4. Plants : Enter through an intermediary insects (vectors) 5. Animals/people : Enter through food, drink, air, blood, wounds, or bites 1. Use of ICTV (International Committee on Virus Taxonomy) 2. 3 levels of the tason: a. Family ends viridae, b. kind of terminated virus, c. The species uses English and stops the virus 3. Bacterial virus: Bacteriophage/phage, contains DNA 4. Eukaryotic Virus: Contains RNA, for example: Mycovirus 5. Plant Virus: Contains RNA, for example: TMV 6. Animal virus : Contains RNA/DNA, such as virus mouth and legs in viral cows that benefit: the area of genetic engineering, because it can be used to clone genes (identical DNA production). Co. : Insect growth control, human gene therapy 1. Viruses that cause diseases in humans : Influenza virus : Causes of influenza greetings : Human immunodeficiency virus (HIV) : Causes of AIDS, attacks of white blood cells such as lymphocytes B : Hepatitis B virus : Hepatitis B virus : Ebola virus : Smallpox disease : Smallpox disease : Polio disease : Polio virus : Herpes virus which cause diseases in animals - Rous sarcoma (RSV) : Causes of tumors in chickens - bovine papillomavirus : Causes of tumors in cows - Virus of oral diseases and foot diseases in cows - Tetelo disease virus in chickens (Newcastle disease) - Rabies virus : Causes of rabies in dogs, monkeys, cats and people 3. Viruses that cause diseases in plants - Tobacco Mosaic Virus (TMV) : Mosaic disease in tobacco and the citrus leprosy virus (CiLV) : Causes of disease in oranges and The Tungro virus : Diseases in rice plants - Viruses that attack ornamental plants Prevention against viruses : Administration of vaccines. Vaccines are substances containing pathogens that have been weakened to provide passive immunity. Example: o OPV (Oral polio vaccine) : Polio Vaccine o Vaccine against smallpox o MMR (measles, mumps, rubella) for smallpox, mumps and measles Chapter 4 EUBACTERIA AND ARCHAEBACTERIA A. Eubacteria eu (truth) and bacteria (bacteria). The bacteria Eubacteria (true bacteria) were first discovered by Anthony Van Leeuwenhoek Science, who studied bacteria bacteriology 1. Cell size and shape: 0.12 microns in diameter up to hundreds of microns. It can be seen with a light microscope and an electron microscope. There are 3 main forms: Cocus (round) - Basil (stem) - spipil (spiral) 2. Cell structure and function: - Cell walls: serves as a protector and gift of bacterial forms. Continued use of peptidoglycans, i.e. a combination of proteins and polysaccharides. Based on the thickness of the peptidoglycan layer: 1. Gram positive bacteria: Bacteria that have cell walls with a thick layer of peptidoglycan, color: purple, co : Vibrio cholerae 2. Gram-negative bacteria: Bacteria that have a cell wall with a thin coating of peptidoglycan, color: pink/ red, together : E.coli plasma membrane: Dissing the cytoplasm. It consists of phospholipid layers and proteins. Permeable selectively and works regulate metabolism between cells and the environment : Cytoplasm : Cell fluid. Contains ribosomes, DNA and ribosome storage pellets : Very small organel and is a place of protein synthesis aided by RNA and DNA : Genetic material carrier information : Storage pellets : Serves to store food stocks - Capsules or layer of mucus : layer outside the cell wall. Thick layer of capsule/thin mucus. Serves to help bacterial cells attach to the surface/with other bacterial cells, protective bacteria from phagocytes cells, and protect bacterial cells while experiencing dryness and Flagelum : Whiplash 1. One : Monotric 2. Many flagelum on one side: Lofotrik 3. 1/many flagelum on two sides: Amphitric 4. Spread across the surface : Peritric Endospora : A form of rest (hidden) of several types of gram-positive bacteria Lifestyle: Based on how to get food about heterotroph bacteria: Bacteria whose food has organic compounds from other organisms. Divided into: 1. Bacteria Saprofit: Bacteria that get food from the remnants of other organisms/foods of other organisms. Decampopouloser 2. Parasitic Bacteria : Bacteria that receive food from their host. If it causes disease in its host, then it will be called pathogenic bacteria o Autotrophe bacteria: Bacteria that are able to make their own food based on the need for oxygen to overhaul food to generate energy. o Aerobic bacteria: Oxygen is required to generate energy about anaerobic bacteria: No oxygen is needed to generate energy. The energy is produced by fermentation. Dear in: 1. Anaerobic obligat: Can only live if there is no oxygen 2. Fake anaerobic: can live if there is oxygen or no oxygen 1. Asexual : Binary division (each cell is divided into 2) 2. Sexual : Conversion of nude DNA into bacterial cells and alteration of the properties of bacterial cells and transduction : Transfer of genetic material 1 bacterial cell to other bacterial cells with the mediator of other organisms, namely bacteriophage and conjugation : Transfer of genetic material directly through cell contact by forming a bridge-like structure between 2 bacterial cells adjacent to the habitat: Wet or somewhat humid environment with a temperature of 25-37 degrees Celsius Classification of Eubax: 5 filum 1. Proteobacteria : purple bacteria photoautotroph/photoheterotrophe and proteobacteria chemoautrophe/chemotetroph 2. Cyanobacteria : - Has chlorophyll - has no motion device, but can perform photosynthesis and solitary/colony life. Colony threads, sheets or hollow balls. In the form of a filament there are 3 types of basic cells: 1. Heterokista: Thick cell walls that are useful for binding to nitrogen, 2. Akinet: Thick cell walls that serve for self-defense, 3. Baeosit: Small round cells of reproductive results, useful for photosynthesis. Has no nucleus (prokaryoit) - contains chlorophyll, carotene, phycosianine (blue), and ficoeritrin (red) - Autotrof - Produces oxygen : Asexual : Binary division, fragmentation and formation of akinets (spoo) 3. Spirochetes : Spiral form 5-250 microns long. These are gram-negative bacteria. It has a unique structure called a naya thread: a kind of fiber along the body, inside the veil, but outside the cell wall, serves to make 4 rotating movements. Chlamydia: life is like a parasite. It has two cell forms in its life cycle, namely: Basic body: Enters the host cell and begins into the original body : Originally the body : Grows and divides, then forms the basic body back and released into the host cell by the co-host cell 5. Gram-positive bacteria: Some gram-positive bacteria form endosporas when the environment is poor for B foods. A group of archeacteria bacteria, the cell walls of which do not contain peptidoglycans, but plasma

membranes of which contain lipids, live in extreme conditions based on their extreme environment, Archabacteria are divided by 3:1. Metanogenic bacteria: Bacteria that produce methane from hydrogen gas and carbon dioxide/ acetic acid. Methane is also called biogas. All life is swamped like a parser. Co: Metanobaciler 2. Bacteria of halophililia : Bacteria that live in an environment high in salt. Co..... Thermoaziphil bacteria: live in extreme hot and acidic environments. Optimal condition: temperature 60-80 degrees Celsius with pH 2-4. This bacterium is found in areas containing sulphuric acid, such as volcanic craters. Co : Sulfolobus and Thermoplasm C. Bacteria in Human Life Favorable Bacteria : 1. Eubacteria : - Decay of the remains of living beings. Co. : E. Coli - Production of fermented food and beverages. Co. : Acetobacter : The production of acetic acid, Lactobacillus bulgaricus : Yogurt solutions and plays a role in the nitrogen cycle as nitrogen-binding bacteria. To. Rhizobium leguminosarum - soil cleaning. Co. : Nitrocoxoc and a generator of antibiotics. Co. : Bacillus polymixa : Polymyxin B - Genetic Engineering Research - Chemical Manufacturing. To. : Clostidia acetobutylykum 2. Archaeobacteria : Plays a role in the process of decaying animal waste and faeces to produce energy methane in the form of biogas. Co: Metanobaciler 1. Eubacteria : - The breakdown of food. Co. : Clostridium botulinum - Causes of disease in humans. Co : Mycobacterium tuberculosis (tuberculosis), Vibrio cholerae (cholera / muntaber), Clostridium tetani (tetanus) - Causes of disease in animals. Co : Bacillus anthracis (anthrax in cows) - Causes of disease of cultivated crops. Co..... Archaeobacteria : Causes of food damage saved with salty countermeasures against bacteria: 1. Food preservation and treatment 1. Sweetening 2. Drying 3. Evaporation 4. Salt 5. Cooling 6. Pasteurization : Heating with a temperature of 63-72 degrees Celsius for 15-30 minutes. It is carried out on milk to turn off pathogenic bacteria and maintain the distinctive taste and aroma of milk 7. Sterilization : Heating using hot air/high-pressure hot water vapor. Use the oven at 170-180 degrees Celsius. Sterilize glassware. Tool : Autoclave 2. Clean and Personal Health and Environment 1. Keep the environment clean 2. Keep the body clean 3. Eat healthy food 4. Just rest for five. Sport 3. Immunization 1. Cholera Vaccine : Cholera 2. Typhoid Vaccine : Typh 3. BCG Vaccine : Tuberculosis 4. DPT Vaccine: Diphtheria, Tetanus, Cough Chapter 5 PROTISTA 1. Eukaryotic cells 2. Single cell/multicellular 3. It does not have the actual tissue of the protist, which resembles a fungus: 1. It is a parasitic and predatory fungus that produces spores. Parasitic fungi are single-cell decaying water fungi that live in water. Predatory/phagocyte mushrooms tear up the slimy mushrooms that live to resemble amoeba 2. Similarities to fungi are: - There are structures that produce spores and heterotroph and parasites /decomposition 3. Water fungus (Oomycota) : - Freely living and getting nutrients from plant residues in ponds, lakes and streams of water living in dead tissues in plants - Parasites in aquatic organisms - Pathogens in plants - Sexual reproduction : Combining male and female gametes - For example: Saprolegia (parasites in aquatic animals), viticula plasmodium (in grapes) Mucus mucus (Myxomycota) called amoeboids and phagocytic predators due to bacterial inching, pests, spores and various organic components: Dictyostelium discoideum Protista, resembling animals: Known as the Simple 2. Single-celled and heterotrophic 3. Eukaryotic 4. microscopic size, 10-200 microns 5. Asexual reproduction : Binary cleavage 6. Sexual reproduction : Conjugation 7. Macroule nucleus : Regulates metabolism 8. Micro-nuclear core : Conjugation 9. Vakuola Nutrition : Digest 10. Vakuola contractile : Osmoregulator 11. If the environment is dry, it will constitute a 12 crystal. Motion-based classification: Rhizopoda : 1. Device movement : Pseudopoda (pseudo foot) 2. Ectoamoeba (free) : Foraminifera : Soil globigerina (oil indicator) - Ameba and Radiolaria : Soil radiolaria (scraping material) Entamoeba (parasites) : th Ginggivalis : Gums and Dysentriae : Dycentric and coli : In the colon 4. It has no fixed form 5. Cytoplasm consists of ectoplasm and endoplasm and flagellates : 1. Motion tool: Flagellum (whip pen) 2. Free : - Euglena : Euglenita - Voluax - Noctiluka Miliaris : Sea fireflies 3. Parasites : In human blood : 1. Leishmania donovani : Salazar 2. Triponosoma Cruisei : Anemia 3. Triponosoma Gambia : Sleep in the intestines of man : 1. Giordialamblia : Diarrhea : In the genitals : 1. Trichomonas vaginalis - In the blood of cattle : 1. Trypanosoma evansi : Surra and Cillia : 1. Mobility : Celia (hair shake) 2. Balantium stick 3. Vorticella : Bell Shape 4. Stentor : Tube Form 5. Paramecia 6. Suctoria 7. Didinum 8. Stylonichia and Sporozoa : 1. Has No Motion Device 2. Toxoplasma gondii : Toxo in the fetus 3. Plasmodium : Falchivaraum : Tropical (1 x 24 hours) - Vivax : Tertiana (2 x 24 hours) - Malaria and Oval : Guantana (3 x 24 hours) 4. Vegetative reproduction : Binary cleavage 5. Generative reproduction : The formation of The Gamete is then beyond the union of male and female gamets 13. The role of the simplest in human life: Favorable : 1. Foraminifera, its shell, or skeleton is the key in the search for oil, natural gas and mineral resources 2. Radiolaria, its skeleton if installed on the seabed in the soil radiolaria - Unfavorable : 1. Entamoeba histolytica : Diarrhea 2. Trypanosoma brucei : Sleep disease in Africa 3. Leishmania : Kala-azar disease 4. Trichomonas vaginalis : Parasites, on female genitalia and ducts Man 5. Toxoplasma gondia : Toxoplasmosis 6. Plasmodium : Protista malaria disease which resembles plants: 1. Single-celled algae are single living and some in real live colonized two. Multicellular algae there are strands/sheets 3. The indistinguishable structure between roots, stems and leaves is called thalus 4. Eukaryotics, has chloroplasts (organal containing colored substances (pigments) used for photosynthesis 5. Pigments in chloroplasts serve to absorb solar energy, which is useful for photosynthesis processes. The main pigment of photosynthesis is chlorophyll 6. Additional pigments: carotene and ficobiline 7. Pyrenoids serve as a place of storage of food stocks in algae such as sema 8. Autotrophic organisms by acting as manufacturers 9. Some species of algae in the form of talus, reproduction: Metagenensis (hereditary holiran). Metagenes originate between the sporophyte (sporofit/vegetative) generation and the gametofit 10 generation. How to reproduce in algae: 1. Isogamy : Combining 2 different gametes, but has the same shape and size 2. Anisogami : Combining 2 different gametes, has the same shape but a different size 3. Oogami : Combining 2 different gametes the shape and size of asexual reproduction: Binary division (single-celled algae), fragmentation (multicellular band in the form of strands and talus), and the formation of spores (single-celled algae and multicellular algae) Sexual reproduction : Combining 2 different types of goetha classification of algae : Discover and move to light 3. Single-celled, has no cell wall 4. Asexual reproduction: Binary cleavage 5. Example: Euglena - Golden Ganggan (chrysophitis) : 1. Dominant pigment: Santofil (golden) 2. Single single cell (co: Ochromonas) 3. Multicellular (co : Vaucheria) 4. Cell walls contain hemiselulose, silica and pectin 5. Asexual reproduction : Binary splitting and the formation of spores 6. Sexual reproduction : Combining 2 types of gamete 7. For example: Navicula, Synura, and Mischooccus - Fiery algae (pyrophyta/dinoflagellata) : 1. Opportunity to glow 2. This causes the onset of red tides that produce toxins that can kill fish and surrounding marine animals. In humans, people can brain damage in people who eat seafood contaminated with toxins 3. Pigments : chlorophyll A and C, santophil, dinosantin and ficobiline 4. Multicellular, single-celled 3. Accommodation in fresh water 4. For example: Ulva, Chlorella, Chlorococque, Chlamydomonas, Volvox, Gonius, etc. 5. Asexual reproduction : Cleavage, spores formation and fragmentation - Brown algae (phaeophyte) : 1. Dominant pigment: Fucosantin 2. Food supplies are stored in laminate 3. Asexual reproduction : Fragmentation 4. Sexual reproduction : Isogami, anisogams and ogs 5. For example: Sargassum, Laminaria, Turbinaria, fucus vesiculosus, Macrocystis, Nereocystis, and Hormosira - Red algae (rhodofite) : 1. Dominant pigment: Ficoeritrin 2. Food Stocks : Vitium Flour 3. Asexual reproduction : Controversy 4. Sexual reproduction : Ooghamy 5. Examples: Euchema spinosum, Gelidium robustum, Chondrus crispus, Gigartina mammosa, Gracillaria verrucosa et al. Benefits of ganganga for humans: Chlorella, Highly Nutrient Supplements - Ulva, Kaulerpa and Enteromorpha, Food Sources in the form of vegetables, red algae, producers of gelatin for the production of gelatin - Golden algae, explosives, scrubs, brown algae, agricultural fertilizers - Laminaria digitalis, producer of iodine for the disease - Doesn't have chlorophyll 3. Food is an organic material derived from the environment, either from other living things or from the remains of living things 4. Cell walls consist of chitin 5. Some of them have color substances such as Amanita muscaria 6. Multicellular mushrooms have elongated cells in the form of threads (gif) 7. Gif in some types of fungi has an intercellular bulkhead called septum 8. Hifa without sections : Hyphae senositik 9. Hiba mushrooms branch and intertwine the shape of mycelium 10. Vegetative mycelium : Absorbs food 11. Generative mycelium : Reproductive tools that produce spores 12. Performs extracellular digestion or outside the body of 13 mushrooms. Heterotroph Based on the Path Food : 1. Saprit: Getting organic matter from the remnants of dead organisms and unsyted materials. As the main decampoor 2. Parasites : Get organic matter from other living organisms. It harms the host organism because it can cause disease 3. Symbiotic reciprocity: living in mutual benefit with other organisms. For example: Symbiotic mushrooms with blue green algae form moss crust and fungi, which are symbiotic with high levels of plant roots forming mycorrhiza 1. Wet/wet place on earth 2. Organisms/remnants of organisms in the sea/fresh water 3. Acid Environment 4. High sugar concentration 1. Formation of buds/shoots in single-celled fungus 2. Stopping hygienic filaments (mycelium fragmentation) in single-celled mushrooms 3. Formation of asexual spores (vegetative spores) in multicellular mushrooms. Asexual spores in the form: Sporangiospora : Produced from cell division mitosis in the spora field (sporangium) found at the end of sporangiofor (sporangiofor support structure) - Conductidiospora : As a result of cell division mitosis at the end of conductivity (support) Sexual reproduction: Formation (unification of different cells / types of gifs) based on the method of sexual reproduction : a) Sizyomikota : - Unscrupulous hyfa - Differentiated gifs form sporangium - Sexual reproductive tools : Sigosporangium thick-walled and blackish color - Not has a fruity body - Habitat : 1. Saprofit on food/on the plant and the animal remains 3. Parasites in humans and plants 4. Symbiosis is mutually beneficial with other organisms - His asexual reproduction: Fragmentation of mycelium or the formation of asexual spores (vegetative spores) produced by disputes : His role : 1. Rhizopus oryzae : Making tempeh 2. Mucor Javanicus : Solution Tape 3. Risopus Storoanifer, Rizopus nigrikans, Mukor Musedo, Pilobolus : Decomycota saproba decomposition of residual organisms / materials made from the body's products b) Ascomycota : - Mostly multicellular, Single Cell (Saccaromyces cerevisiae) Seal - His asexual reproductive tools : Differentiated forms of gif konidiofor - Tools for sexual reproduction : Askus - Fruit body on Ascomycota : Askokarp - His role : Saccharomyces cer etymosis : Baking and alcoholic beverages (conversion of alcohol) Neurospora crassa : Oncom and Morchella esculenta and Sarcoscypha coccinea : Fetal body can be eaten - Penicillium notatum and Penicillium chrysogenum : Antibiotic and penicillium camembertz and Penicillium roqueforti : Cheese c) Basidiomycota : mushrooms hello - Fetal body in Basidiomycota : Basidiokarp - Tools for sexual reproduction: Basidiospora - Asexual reproduction : Formation of spores konidia - His role : - Ear fungus (Auricularia polytricha), merang mushroom (Volvariella volvax and shitake mushroom (Lentinula edodes) fruit body - Wood mushroom (Ganoderma) : Adverse medicine/dietary supplements : - Rust fungus (Puccinia graminis) : Parasites on crop leaves - Punnicia arachidis : Parasites in bean crops - Ustilago maydis : Parasites in corn - Amanita ocreata and Amanita phalloides : Toxic and deadly - Amanita muscaria : Causes hallucinations when eaten d) Deuteromycetes : - Not the actual group of mushrooms in the classification of mushrooms - Every type of fungus has been identified, but not yet known that sexual reproduction is grouped into deuteromycetes (imperfect fungi) - If the breeding method of deuteromycetes is known, the fungus will be regrouped into members of one of the mushroom units of Sigomykota, Ascomykota, or Basidiomycota 1. Life forms are mutually beneficial between fungi and photosynthesis organisms 2. Mushrooms in moss bark are usually ascomycota and Basidiomycota, while photosynthetic organism cyanobacteria / single-celled green ganggan 3. Mushrooms receive the results of photosynthesis from cyanobacteria 4. Mushrooms are tasked with maintaining water availability for cyanobacteria 5. Cyanobacteria acquire nutrients for photosynthesis absorbed by fungi from the environment 6. Asexual reproduction : Fragmentation of the vegetative body (talus) or with soredia 7. Sexual reproduction: If symbiotic are Ascomycota and Basidiomycota, which produce Ascospora and basidiospora 1. Symbiosis of reciprocity between fungi and high-level plant roots 2. Mushrooms acquire organic compounds 3. Plants receive water and minerals (especially phosphorus) absorbed by fungi from the soil, mushrooms also provide certain growth hormones that protect plant roots from infection of microorganisms biologi sma kelas x - ruang lingkup biologi. biologi sma kelas xii. biologi sma kelas xi kurikulum 2013 pdf. biologi sma kelas x kurikulum 2013 pdf. biologi sma kelas x kurikulum 2013. biologi sma kelas xii kurikulum 2013 pdf. biologi sma kelas xi. biologi sma kelas x bab 5 protista

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