Honors Benchmark #1 Review Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| Topic/Question | Answer |
| Scientific Method    Independent/Dependent Variables – What are they? Where on a graph? | Make Observations, Ask a Question, Create a Hypothesis, Run an experiment, Collect and analyze data, Share Findings  A valid experiment only tests one variable at a time.  Hypothesis: IF \_Independent Variable\_, then \_\_Dependent Variable\_\_\_.  Independent Variable (Manipulated) – What the scientist changes  Dependent Variable (Responding) – What is measured  DRY MIX = Dependent(Responding) Variable Goes on the Y axis  Manipulated(Independent) Variable Goes on the X Axis |
| Characteristics of Living Things  Homeostasis  Stimuli    What is not a  characteristic? | Homeostasis – Maintaining a stable internal environment. Ex) you sweat when your internal temperature gets too hot. Cells Contain Buffers to control the internal pH.  Stimuli – Responding to external factors. Ex) Birds migrating at the change of seasons, Fight or flight response in animals, Plants bending towards the sun  Movement is commonly assumed to be a characteristics of living things, but it is not. |
| Viruses  Parts  Reproduction    Provirus (Prophage)  Dormant  DNA vs. RNA Virus  Vaccinations | Parts of a Virus – Inside (DNA or RNA, not both)  Outside (Protein Coat)  Two Reproductive Cycles: Lytic and Lysogenic  Related imageOnly found in the lysogenic cycle (One in the left cycle of this image), Viral DNA integrates itself into the host cell DNA, it is then replicated each time the host cell replicates itself.  During the lysogenic cycle  the viral DNA is dormant,  meaning it is not an active  virus  RNA virus is also called a  retrovirus, it has a higher  mutation rate and is more  difficult to create vaccines for.  (ex. HIV)  Vaccinations can be used for both viruses and bacterial infections. They introduce the immune system to disease causing agent so that they immune system is prepared should you be exposed to the illness. |
| Parts of a Prokaryote |  |
| Bacteria    Basics –  Reproduction/Energy  Bacterial Shapes  Uses  Endospore  Archaebacteria v.  Eubacteria  Cell Wall  Locations  Examples? | Unicellular Prokaryotes  Asexual Reproduction is called Sexual Reproduction is called  binary fission conjugation    Some Are Autotrophic and Some Are Heterotrophic  Coccus – Round, Bacillus – Rod, Spirillum – Spiral  Strepto – Chain, Staphlo – Cluster, Diplo - Two  Make Foods, Fuel, and Medicine, Decomposers Clean Up Dead Matter, Oil Spills    Protective Capsule Which Allows the Organism to Survive in Extreme Conditions  Archaebacteria Eubacteria  Cell wall without peptidoglycan Cell wall with peptidoglycan  Extreme Environments Everywhere  Methanogens and Halophiles E. coli and Streptococcus |
| Protists  Fungus Like  Animal Like    Plant Like  Special Structures – Cilia, Flagella, Contractile Vacuole, Pseudopods | Eukaryotic – May be unicellular or multicellular  May be autotrophic or heterotrophic  Heterotrophic decomposers  Classified by how they move  Heterotrophic, Unicellular ex) Sarcodina (Amoeba) – Use Flagella to Move  Sporozoan (Plasmodium) – Do not move  Cause Malaria  Ciliphora (Paramecium) – Use Cilia to Move  Classified by color (chlorophyll) –  Called Algae (Multicellular) or Phytoplankton (Unicellular)  Autotrophic, multi and unicellular, cell wall made of cellulose  ex) Chlorophyta (Green Algae)  Ancestor to Modern Plants  Rhodophyta (Red Algae)  Phaeophyta (Brown Algae)  Largest Algae (Kelp)  Bacilliophyta (Diatoms) – Cell Wall of Silicon  Euglenaphyta (Euglena)  Autotrophic and Heterotrophic    Cilia, Flagella, and Psuedopods are used for movement.  Contractile Vacuole pumps water out of unicellular protists |
| Fungi  Basics – Energy  Hyphae  Mycelium  4 Phylums  Common Name  Examples | Eukaryotic – Multicellular (except Yeast), Cell Wall Made of Chitin  Named based on how they produce spores asexually.  Heterotrophic Decomposers (Saprophytes – Release enzymes to breakdown food and then take in necessary nutrients)  Hyphae – Branching filaments Mycelium – Large Masses of Hyphae  Zygomycota – Common Molds – Bread Mold  Ascomycota – Sac Fungi – Yeast  Basidiomycota – Club Fungi – Mushroom  Deuteromycota – Imperfect Fungi – Penicillin (DO NOT REPRODUCE SEXUALLY – Asexual Only) |
| Plants    Characteristics of Each  Division      Tropisms | Image result for PLant CladogramEukaryotic, Autotrophic, Multicellular, Cell Wall Made of Cellulose  Bryophyta – Mosses  Lack Vascular Tissue  Are not tall due to this fact  Pterophyta – Ferns  Have Vascular Tissue but do not  produce seeds  Coniferophyta – Conifers (Pine Tree)  Cone bearing trees, “naked seed”  Anthophyta – Fruiting and Flowering Plants (Apple Tree, Blueberry Bush)  Seeds are protected within a fruit  Phototropism – Responds to Light (Plant Leaves Bend Towards the Light  Geotropism(Gravitropism) – Responds to Gravity (Seeding Roots Go Down, but the Rest Grows Up)  Thigmotropism – Responds to Touch (Vines Climb Us Surfaces) |
| Flower Parts and Functions | 1. Petal – Attract Pollinators  2. Ovary – Contains Ovules, Becomes the fruit one fertilized.  3. Stigma – Sticky top that pollen grains attach to. (Style is not labelled, but is in between the stigma and the ovary)  4. Carpel (Pistil) – Contains all the female reproductive parts  5. Anther – Contains Pollen  6. Filament – Holds Anther Up  7. Stamen – Contains all the male reproductive parts.  (Do not worry about 8 and 9)  10. Sepal – Protective covering of the developing flower bud. |
| Animal  Basics  Radial, Bilateral, or  Asymmetrical  Segmented Body Plan  Endothermic  Invertebrates (8)    Phylum Chordata  Vertebrates (7) | Eukaryotic – Heterotrophic, Multicellular, No Cell Wall  Radial Bilateral Asymmetrical – No symmetry  Image result for radial and bilateral symmetry  Segments Body Plan – Has sections to the body ex) worm and insects  Endothermic – Can maintain their own internal body temperature  Only Aves and Mammalia  No Backbone (97% of Animals)  Porifera(Sponges) - Asymmetrical, Filter Feeders, Sessile  Cnidarians(Jellyfish and Corals) - Radial Symmetry, Stinging Cells  Platyhelminthes(Flat Worms – Tape Worm)  Nematoda(Round Worms – Hook Worm)  Annelida(Segmented Worms – Earth Worm)  Arthropoda(Insects, Arachnids, Crustaceans) – Jointed Appendages, Exoskeleton  Mollusca(Gastropods, Bivalves, and Cephalopods) – Cephalization (Developed Head Region  Echinodermata(Sea Stars, Sea Urchins) – Radial Symmetry, Tube Feet, Water Vascular System  3 % of Organisms – Dorsal Nerve Cord, Notocord, Gill Slits  Agnatha – Jawless fish (Lamprey)  Chondrichthyes – Cartilage Fish (Sharks and Rays)  Osteichthyes – Bony Fish (Trout, Salmon)  Amphibia – Live the Double Life, Return to Water to Reproduce (Frogs)  Reptilia - Amniotic Egg Allows for Reproduction on Land, Breath using only lungs. (Alligator)  Aves – Endothermic, Amniotic Egg, Scales on Legs, Feathers (Penguin)  Mammalia – Nurse Young with Mammary Glands, Hair (Humans, Bear) |
| Classification Basics  Taxonomic Levels    Binomial  Nomenclature  Dichotomous Key | Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species  Largest Smallest Group  2 Part Naming System (In Latin) – *Homo sapiens*  Image result for dichotomous key  2 Part Identification System  Answer: Araneae |
| Scientific Tools  Cladograms | Read from base to top.  Derived characteristics  are shown on the  “truck” of the tree.  Ex) Lungs and Fur |
| Chemistry of Life  Parts of an Atom  Elements that make up all living things  Types of Bonds found in compounds  Water’s chemical formula  Polar Molecules  Hydrophilic vs hydrophobic  Properties of water and examples  pH scale  Acids  Bases | Protons (Positive), Neutrons (Neutral), Electron (Negative)  Protons + Neutrons in the nucleus Electrons in orbitals in the clouds  Carbon, Hydrogen, Oxygen, Nitrogen, Phosphorus, Sulfer  Compounds – Bonding of Two or more elements  Ionic Bonds – Transfer of Electrons Covalent – Sharing of Electrons    H20 – 2 Hydrogen and 1  Oxygen  Hydrogen end is positively charged  Oxygen end is negatively charged  Water molecules are bonded together by weak hydrogen bonds.  Cohesion – Bonding of water molecules together.  Adhesion – Bonding of water molecules to other molecules.  Surface Tension – Thin film on the surface of water that allows materials to float on top of the water, caused by cohesion.  Capillary Action – Movement of water up a small tube using both adhesion and cohesion. Plants use this process to move water from the roots to the leaves of the tree.  Acids – Greater concentration of H+ ions then OH- ions.  Bases – Greater concentration of OH- ions then H+ ions. |