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 FindingsA valid experiment only tests one variable at a time.Hypothesis: IF \_Independent Variable\_, then \_\_Dependent Variable\_\_\_.Independent Variable (Manipulated) – What the scientist changesDependent Variable (Responding) – What is measuredDRY 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 sunMovement 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 LysogenicRelated 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 cyclethe viral DNA is dormant, meaning it is not an active virusRNA 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 ProkaryotesAsexual Reproduction is called Sexual Reproduction is calledbinary fission conjugationSome Are Autotrophic and Some Are HeterotrophicCoccus – Round, Bacillus – Rod, Spirillum – SpiralStrepto – Chain, Staphlo – Cluster, Diplo - TwoMake Foods, Fuel, and Medicine, Decomposers Clean Up Dead Matter, Oil Spills Protective Capsule Which Allows the Organism to Survive in Extreme Conditions Archaebacteria EubacteriaCell wall without peptidoglycan Cell wall with peptidoglycanExtreme Environments EverywhereMethanogens and Halophiles E. coli and Streptococcus |
| Protists Fungus Like Animal Like   Plant LikeSpecial Structures – Cilia, Flagella, Contractile Vacuole, Pseudopods | Eukaryotic – May be unicellular or multicellular May be autotrophic or heterotrophicHeterotrophic decomposersClassified by how they moveHeterotrophic, Unicellular ex) Sarcodina (Amoeba) – Use Flagella to Move Sporozoan (Plasmodium) – Do not move Cause Malaria Ciliphora (Paramecium) – Use Cilia to MoveClassified 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 ChitinNamed 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 HyphaeZygomycota – Common Molds – Bread MoldAscomycota – Sac Fungi – YeastBasidiomycota – Club Fungi – MushroomDeuteromycota – 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 CelluloseBryophyta – Mosses Lack Vascular Tissue Are not tall due to this factPterophyta – Ferns Have Vascular Tissue but do not  produce seedsConiferophyta – Conifers (Pine Tree) Cone bearing trees, “naked seed”Anthophyta – Fruiting and Flowering Plants (Apple Tree, Blueberry Bush) Seeds are protected within a fruitPhototropism – Responds to Light (Plant Leaves Bend Towards the LightGeotropism(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 Pollinators2. 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 parts5. Anther – Contains Pollen6. Filament – Holds Anther Up7. 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 symmetryImage result for radial and bilateral symmetrySegments Body Plan – Has sections to the body ex) worm and insectsEndothermic – Can maintain their own internal body temperature  Only Aves and MammaliaNo Backbone (97% of Animals)Porifera(Sponges) - Asymmetrical, Filter Feeders, SessileCnidarians(Jellyfish and Corals) - Radial Symmetry, Stinging CellsPlatyhelminthes(Flat Worms – Tape Worm)Nematoda(Round Worms – Hook Worm)Annelida(Segmented Worms – Earth Worm)Arthropoda(Insects, Arachnids, Crustaceans) – Jointed Appendages, ExoskeletonMollusca(Gastropods, Bivalves, and Cephalopods) – Cephalization (Developed Head RegionEchinodermata(Sea Stars, Sea Urchins) – Radial Symmetry, Tube Feet, Water Vascular System3 % 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, SpeciesLargest Smallest Group2 Part Naming System (In Latin) – *Homo sapiens* Image result for dichotomous key2 Part Identification SystemAnswer: 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 LifeParts of an AtomElements that make up all living thingsTypes of Bonds found in compoundsWater’s chemical formulaPolar MoleculesHydrophilic vs hydrophobicProperties of water and examplespH scaleAcidsBases | Protons (Positive), Neutrons (Neutral), Electron (Negative)Protons + Neutrons in the nucleus Electrons in orbitals in the cloudsCarbon, Hydrogen, Oxygen, Nitrogen, Phosphorus, SulferCompounds – Bonding of Two or more elementsIonic Bonds – Transfer of Electrons Covalent – Sharing of ElectronsH20 – 2 Hydrogen and 1  OxygenHydrogen end is positively chargedOxygen end is negatively chargedWater 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. |