Taxonomy and Classification Unit Notes

Name:

(DO NOT LOSE, BRING TO CLASS EVERYDAY)

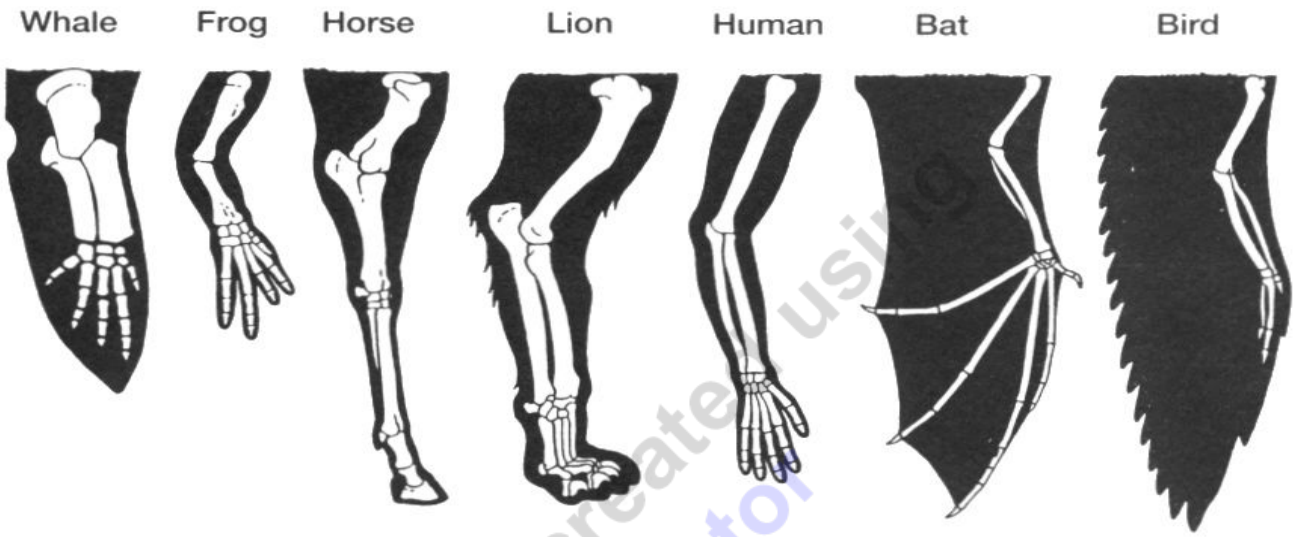
- Taxonomy: The science of _____.

- Classification is a very broad term which simply means putting things into _____.
  - Taxonomy means giving _____ to things.

- A species is…
  - A group of organisms with _____ characteristics.
  - Produce _____ offspring.
  - Similar _____.
  - Phylogeny -The history of a species as they change through _____. Who came from whom?

- Dichotomous key: A tool that allows the user to determine the _____ of items in the natural world.
- Based on _____ and uses process of comparison and elimination.

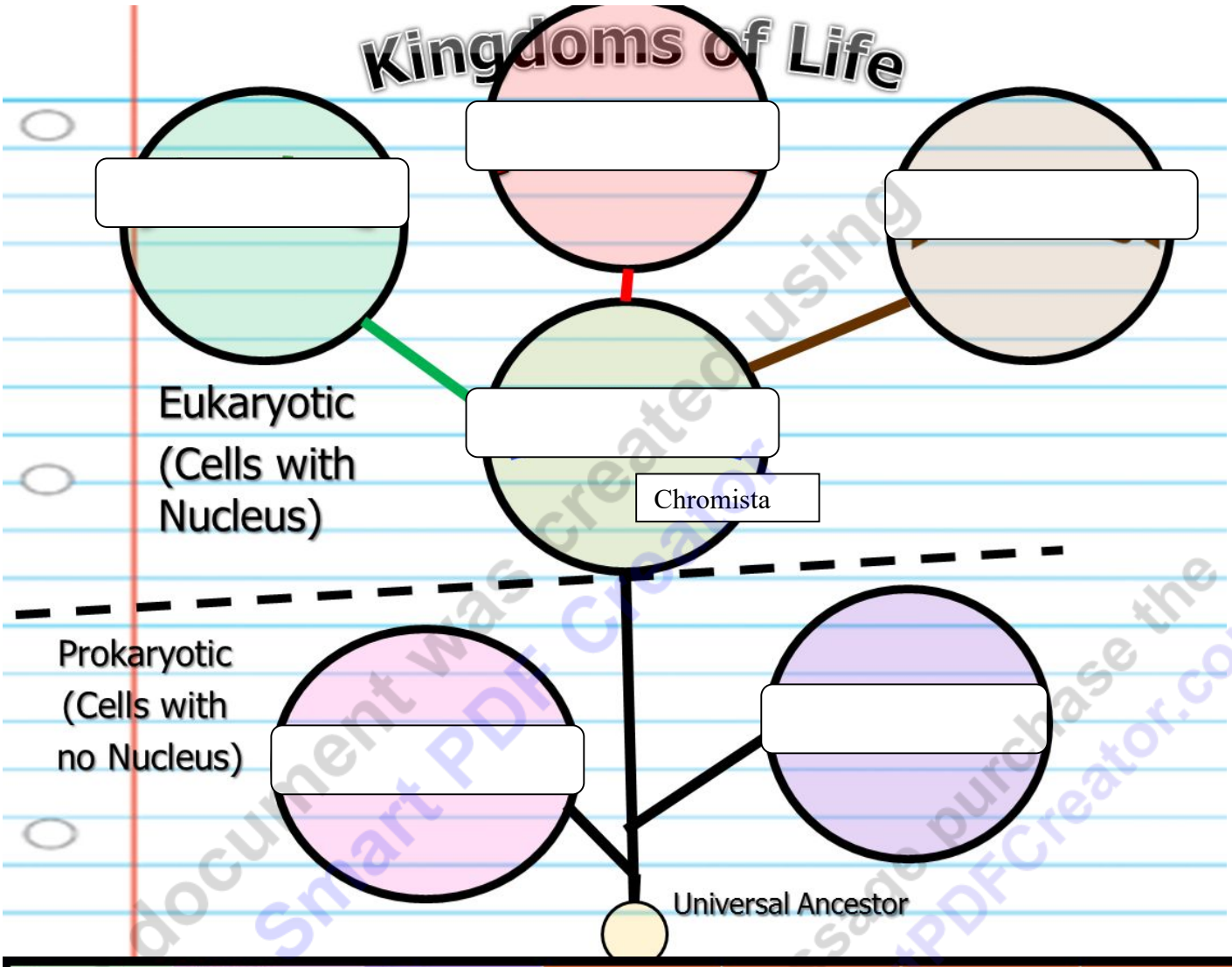
- Classification uses…
- Homology – _____ between organisms



- Adapted _____ may further subdivide species into subspecies. *Canis lupus articus.*

- The 3 domains of life. All life is either…
  - Archaea
  - _____
  - Eukarya

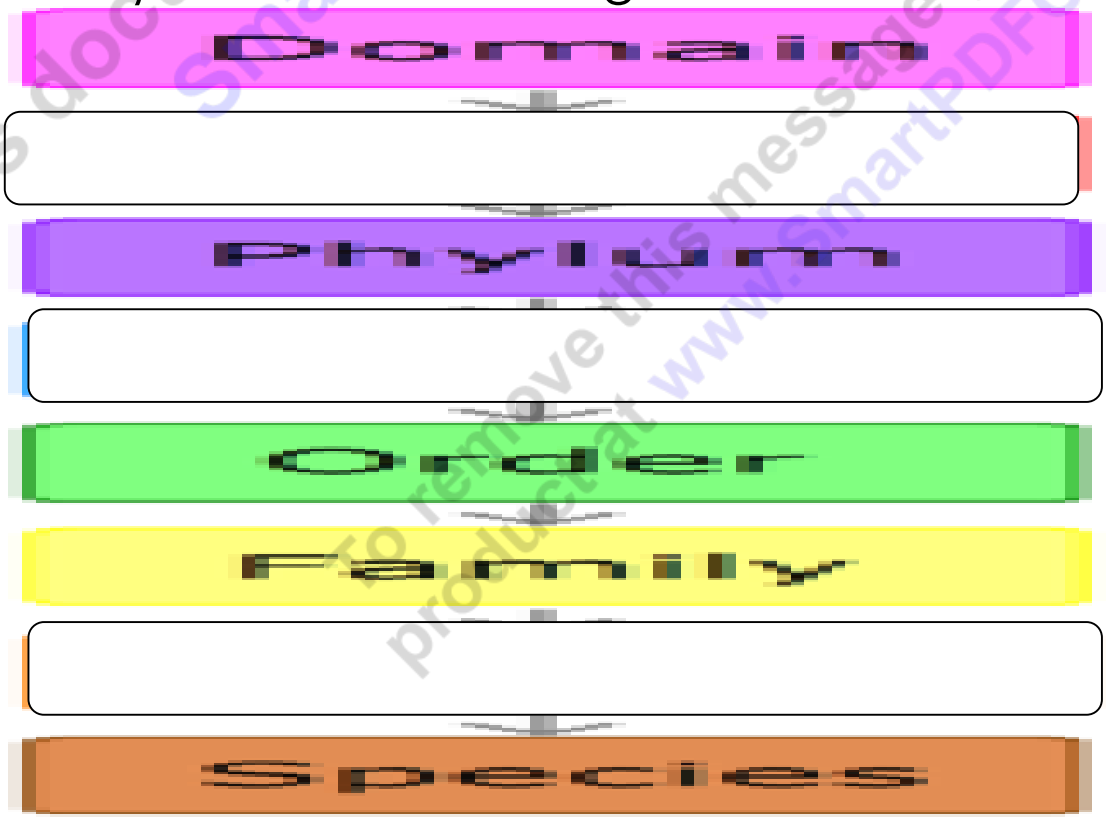
- The Kingdoms of life. All life belongs to one of these.



Domain	Bacteria	Archaea		Eukarya		
Kingdom	Bacteria		Protista	Plantae		Animalia
Cell Type		Prokaryotic (No nucleus)		Eukaryotic (Nucleus)	Eukaryotic (Nucleus)	
Single or Multi-Cellular	Single (Unicellular)		Single (Unicellular)	Multicellular	Multicellular	Multicellular
Gets Energy from..	Varies	Varies	Varies		Absorbs	

- The 8 Taxonomic ranks. All living things have 8 names.
  - 1) Domain – D_____
  - 2) K_____ - King
  - 3) Phylum - _____
  - 4) _____ – Come
  - 5) Order - Over
  - 6) Family - For
  - 7) Genus - _____
  - 8) _____– Spaghetti

- Genus name is _____, species name is not. They are both italicized.
  - Ex) *Armadillidium vulgare*

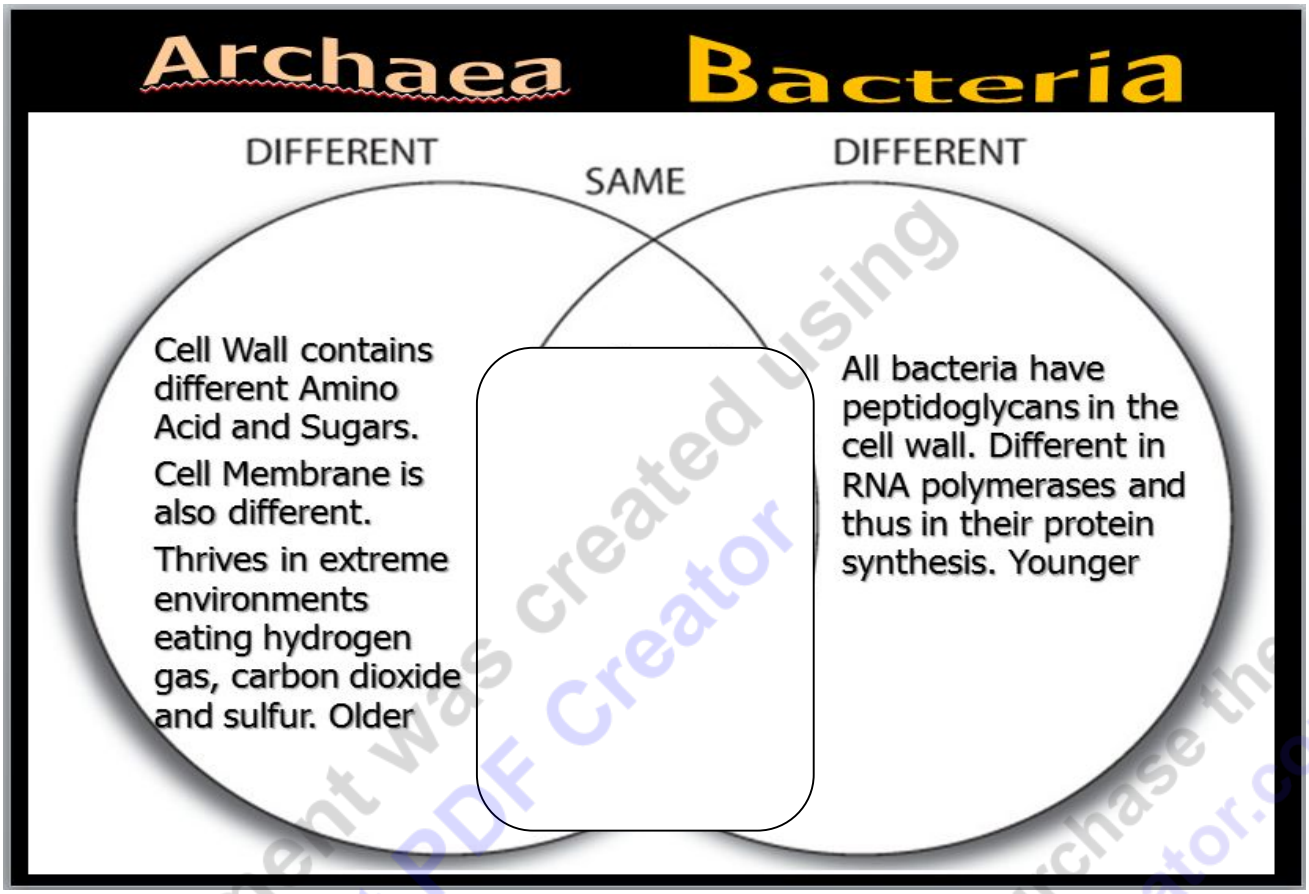


- Humans Taxonomic Classification
  - **-Domain - _____**
  - **-_____ - Animalia**
  - **-Phylum - Chordata**
  - **-Class - _____**
  - **-_____ - Primatdae**
  - **-Family - Hominidae**
  - **-Genus - _____**
  - **-Species – sapien**
    - **Subspecies - sapien**

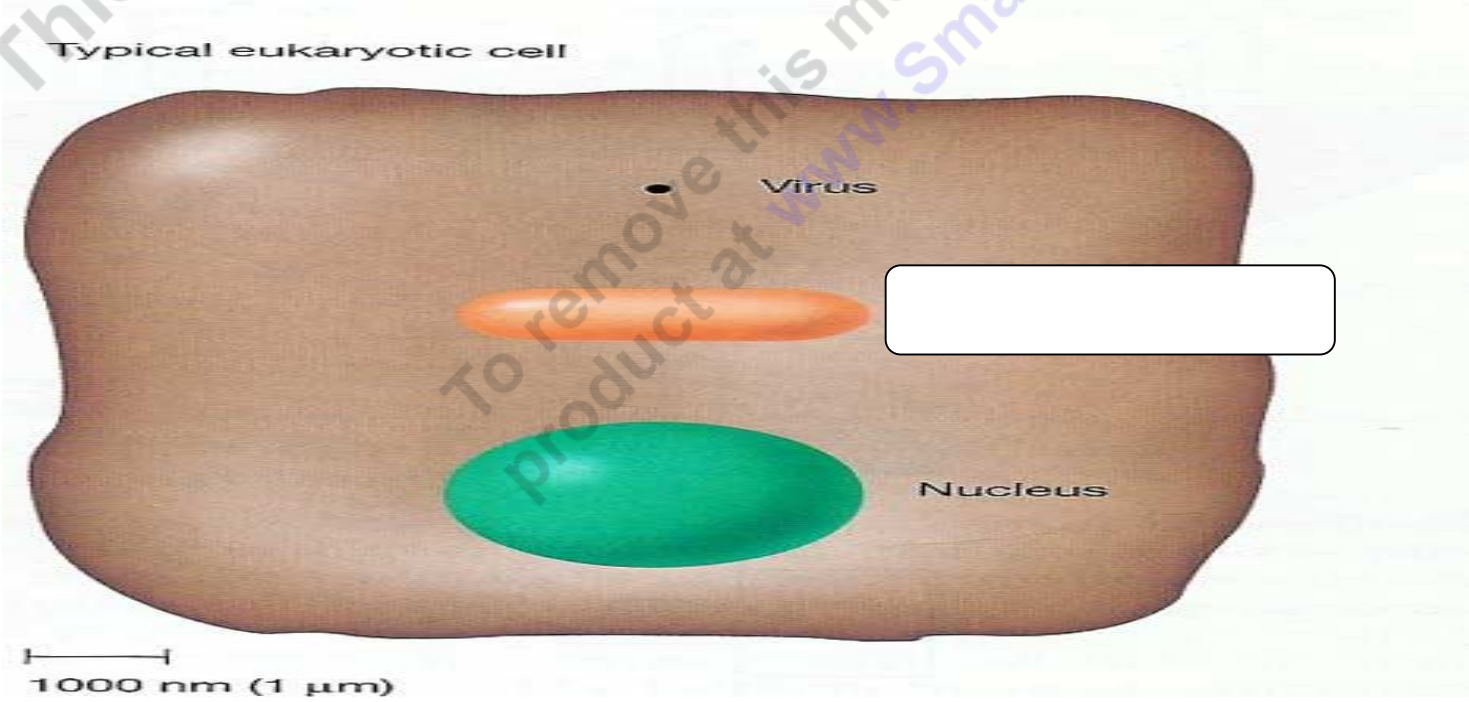
Area of focus: Archaea

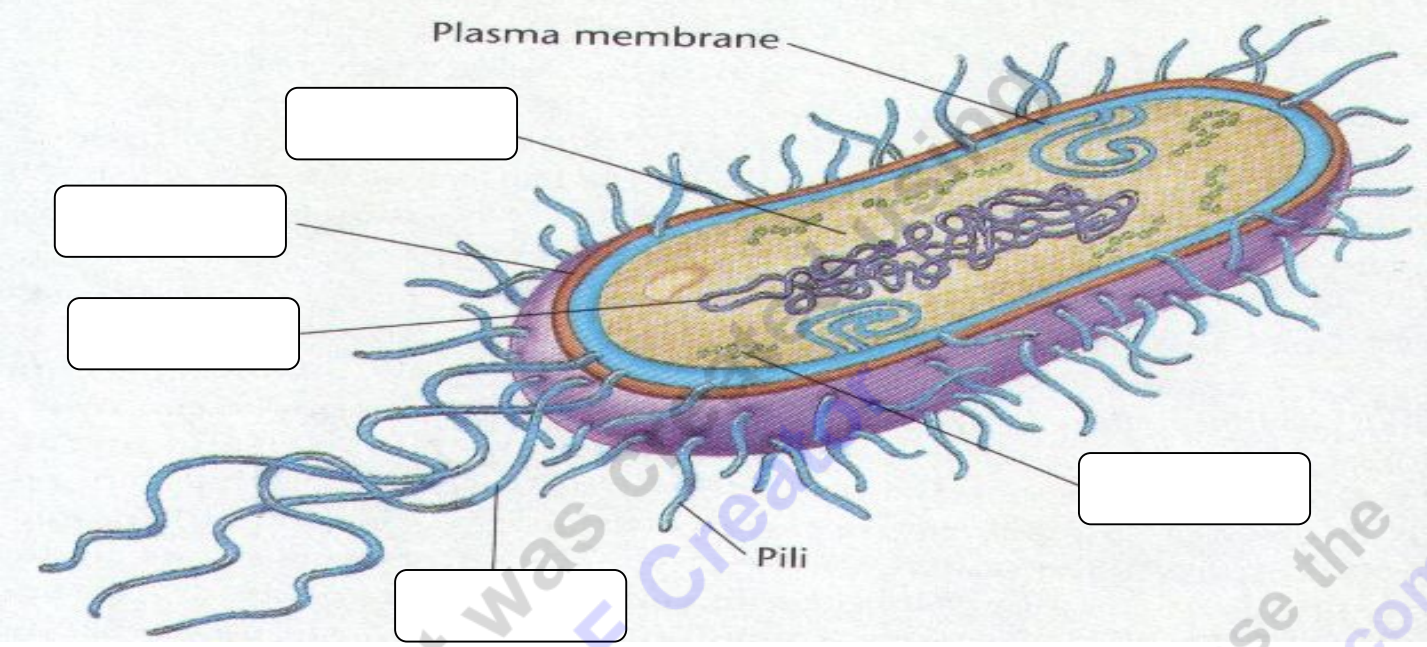
- Archaea: _____ microorganisms that is genetically different from bacteria and eukaryotes.
  - Often inhabiting _____ environmental conditions.

- Achaea includes…
  - Halophiles (_____)
  - Methanogens (make _____ gas)
  - Thermophiles (Thrive in _____)
  - Psychrophiles (_____)

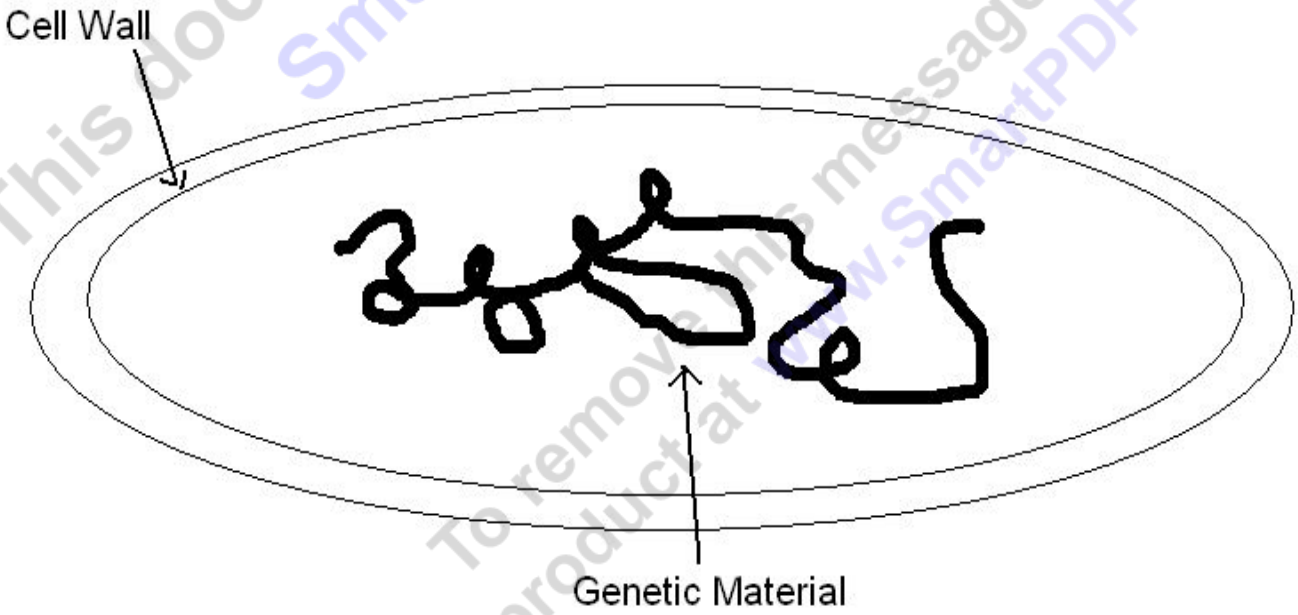


- Domain Bacteria is composed of microorganisms that are much more _____ than Archaea and live almost anywhere.





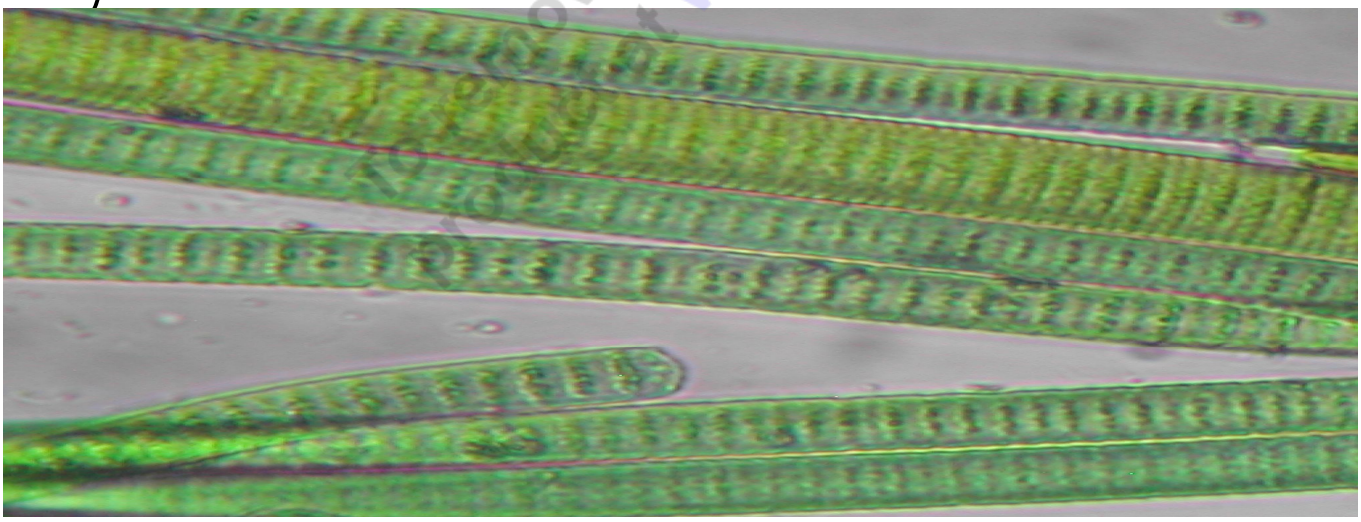
- Prokaryotic (No _____) and no internal organelles.



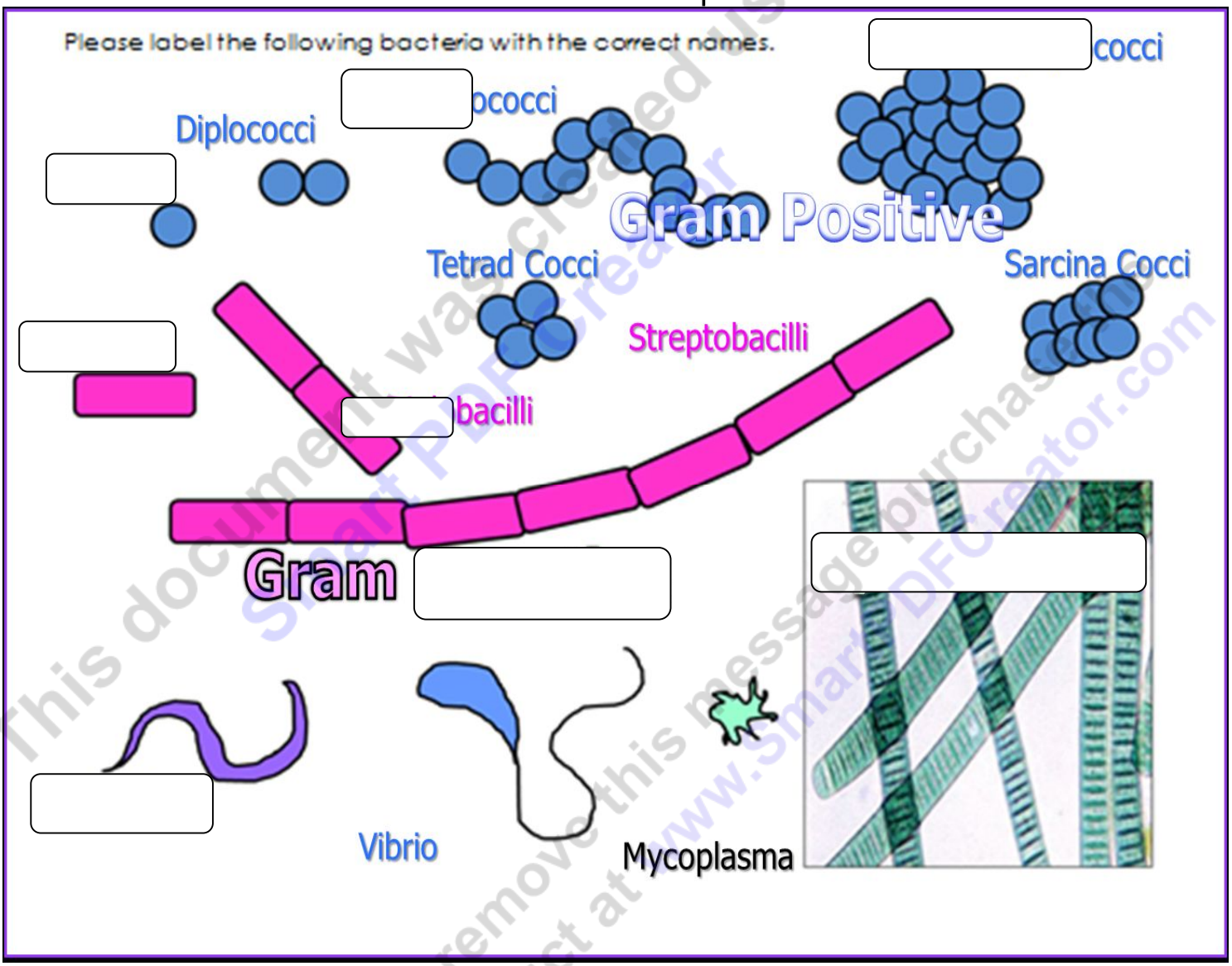
- Has a cell _____.
- DNA _____ in cell

- Two types:
  1.) Archaea – old (Can be *extremophile*)
  2.) Bacteria –true

- Bacteria – True bacteria, gets _____ from food or sun.

- Sphere (_____) Shaped – Cocci .
- R_____ shaped – Bacilli -
- Sp_____ shaped – Spirilla ~
- Vibrio: C_____ Shaped ,-
- Mycoplasma bacteria – _____ known life form (jagged and random).
- Diplo = _____ :
- Tetrad = Groups of _____ ::
- Sarcinae = Groups of _____ ::::
- Staphylo = Cluster
- Strepto = Chain ----------
- C_____bacteria (no longer blue green algae). It's _____ (gets energy from sun).
- 

- Gram staining: Technique used to _____ bacteria.
  - -Pink and Red: Gram Negative
  - -Gram Positive = Dark Purple



- Bacterial food borne illness can be _____ by….
  - -_____ the initial number of bacteria present.
  - -Refrigeration – _____ the small number of bacteria from growing rapidly.

- -Destroying the bacteria by proper _____.
- -Avoiding re-contamination. _____cutting board immediately after use.

- Penicillin: _____ that destroys bacteria derived from penicillin mold (fungi).
- *Antiseptic* - agent that kills or inhibits the _____ of microorganisms on the external surfaces of the body.

- Plaque is the accumulation of _____ and micro-organisms on a tooth.
- Tartar is dental plaque that has _____. Tartar can form when plaque is not removed from the tooth surfaces.

- Binary F_____: The process by which a bacterium multiplies by splitting in _____.

- In asexual reproduction, one individual produces offspring that are genetically _____ to itself.
- Sexual Reproduction: Genetic material from two different individuals combines into a genetically _____ offspring.

Positives (+)	Negatives (-)
-Food Source	-Health Problems
-Recycling w_____	-Destroys _____
-Industrial	
-Decomposition	

New Area of Focus: Eukarya

Domain Eukarya; Have cells with a membrane bound _____ and membrane bound organelles.

New Area of Focus: Protista

- Protist – An organism with Eukaryotic _____ cell, or colonies. Lacking tissues and eats, makes, or decomposes for food.
- Plant-like Protists (_____ but no root stem or leaves)
  - -Green Algae

- -Brown Algae
- -R____ Algae
- -Diatoms
  - _____ shells made of glass.
- -Dino_____
- -Euglenoid

- Animal-like Protists (_____, eat food, some use sun)
  - -Ciliates
    - Cilia
    - -Cilium / Cilia: A _____ projection from the surface of a cell; provides locomotion.
  - -Am_____
  - -Flagellates
  - -Sporazoan (parasite)

- Fungus-like Protists (get energy from decomposing).
  - -Slime _____
  - -Water _____

Autotrophic – Makes its _____.
(Photosynthesis, Chemosynthesis)
Heterotrophic – Eats food
Mixotrophic - A mixotroph is an organism that can use a mix of different sources of _____ and carbon.

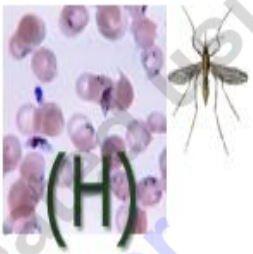
Saprotrophic - Feeding by extracellular (_____ of cell) digestion. Feeding on decayed organic matter

Green (A)

Green Algae, Photosynthetic, makes oxygen, uses carbon dioxide. Start of aquatic food chain.

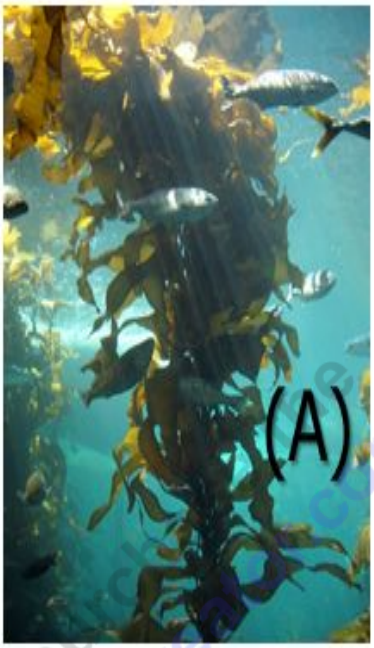
Amoeba, Eats food, uses pseudopods to engulf prey. Shape shifter.

(H)



(H)

Sporozoans, Can be parasitic. Malaria is caused by a Sporozoan.



(A)

Dinoflagellate. Red Tide. When dinoflagellates bloom in the ocean. Can have negative impacts. Kills fish and creates neurotoxin in shellfish if we eat them.

Can be (A) and (H)

Red (A)

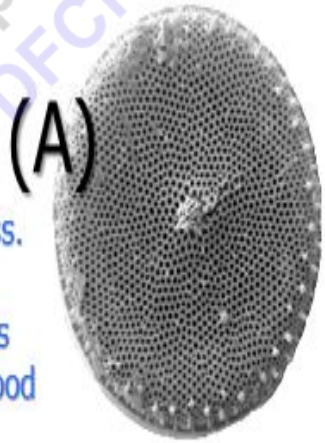
Red Algae

Ciliate, Has cilia to help it move. Mostly Heterotrophic.

Mostly (H)

(H)

Flagellate. Has Flagella



(A)

Diatom. Made of glass. "Biomineralization." Autotrophic. Produces oxygen. Part of the food chain.

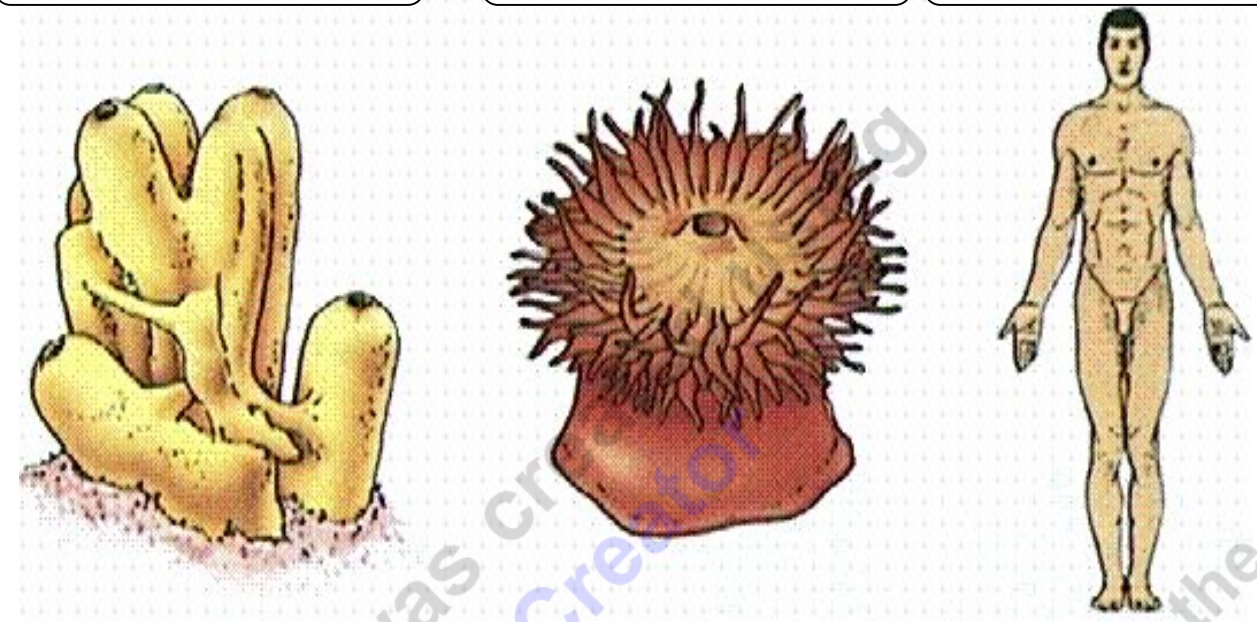
(H)

Slime Molds, Decomposes Food.

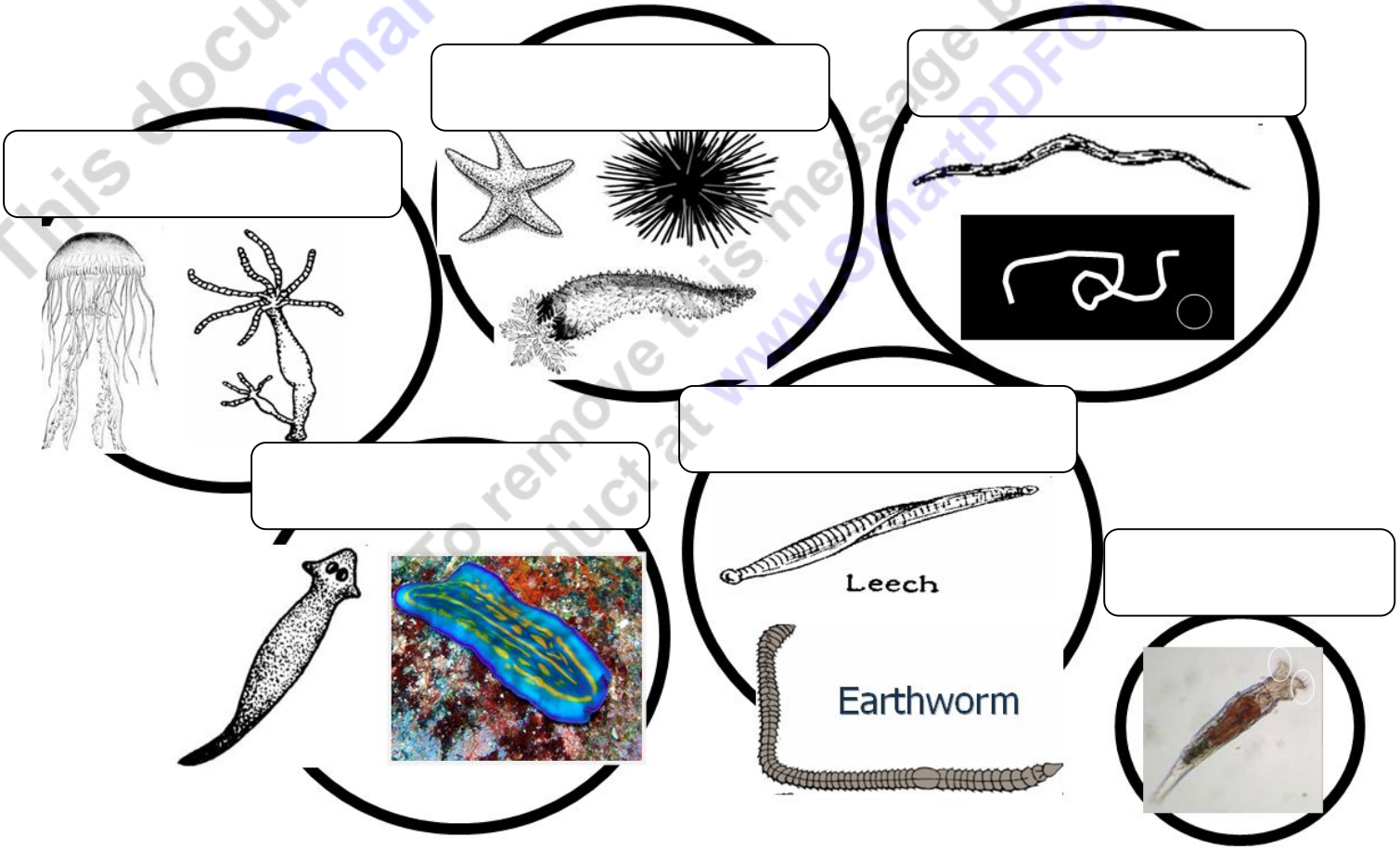
- New Area of Focus: Animalia

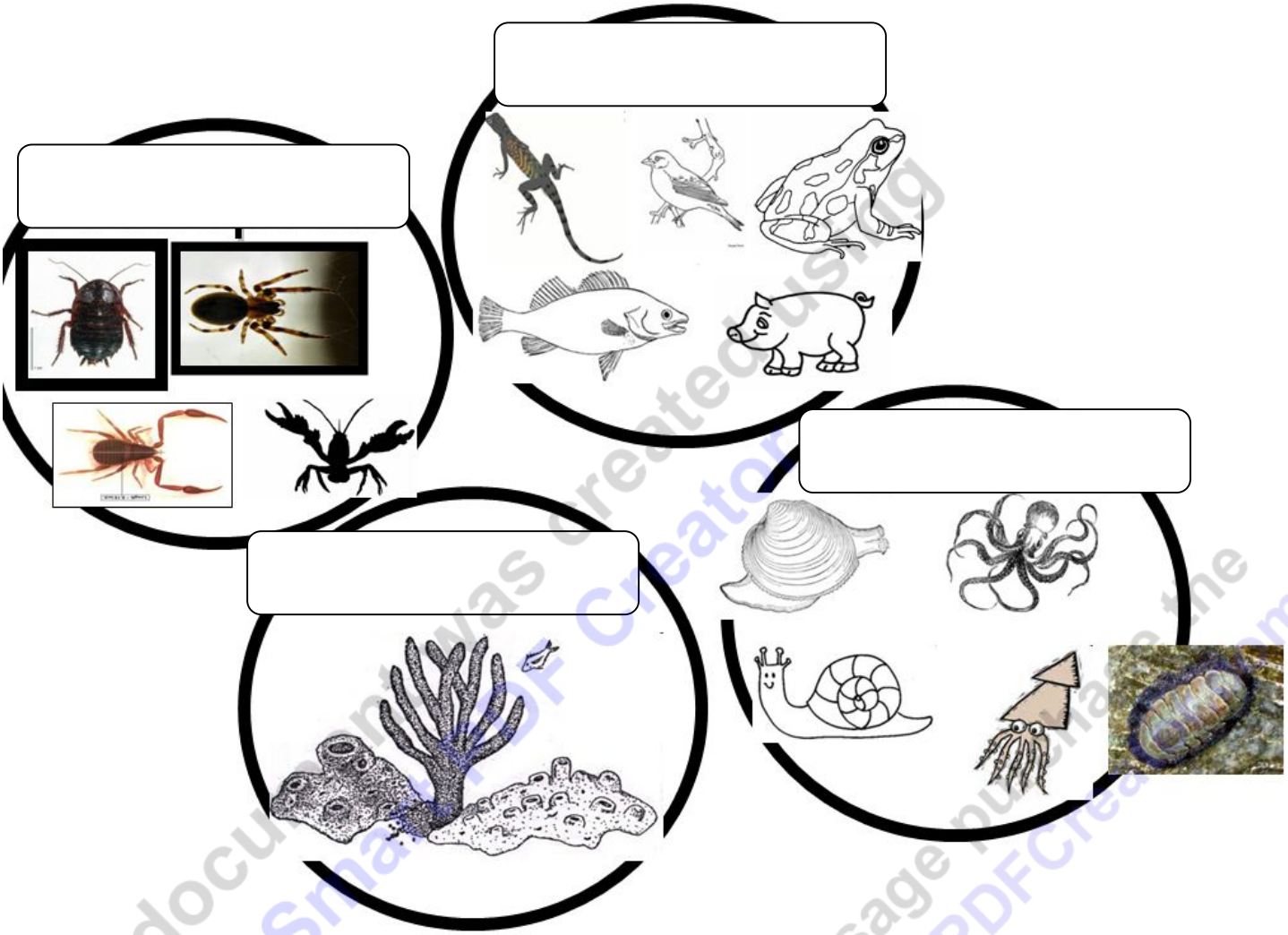
- Characteristics of Animalia.
  - -No _____ walls.
  - -Animals have a period of _____ development.
  - -Animals eat _____.
  - -Animals _____.
  - -Animals have nervous and muscle _____.
  - -Animals have diplontic life cycle. Genetic information can come from a mother and _____. (Many species)

- Animals have three types of symmetry.
  - -Bilateral symmetry.
    - Same on _____ sides.
  - -Radial Symmetry.
    - Arranged equally in _____ directions from a central point.
  - -Asymmetrical.
    - Having _____ symmetry.
  -



- New Area of Focus: Learning the Phylums and Animalia.





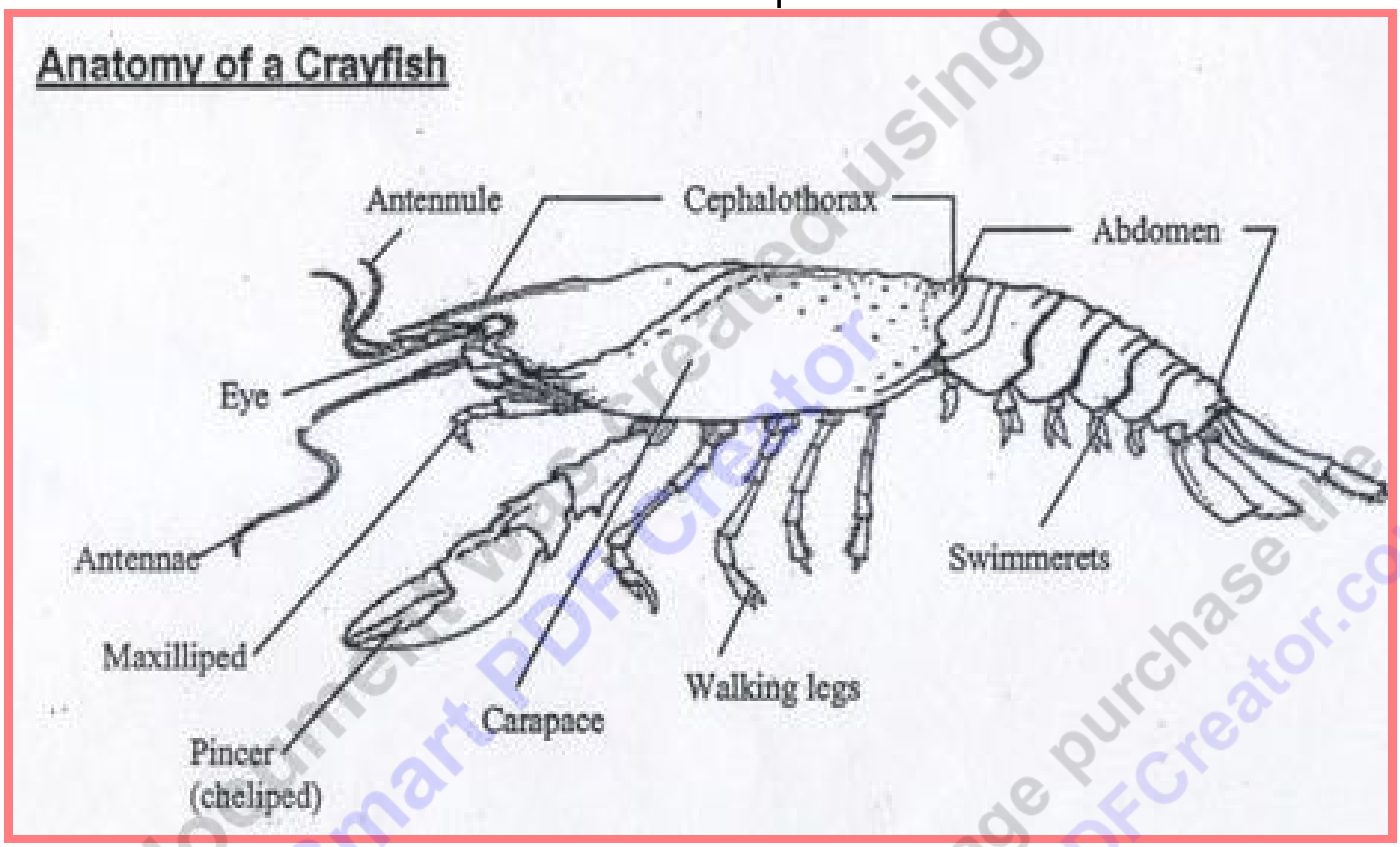
- Common Phylums of the Kingdom Animalia.
  - -Phylum Mollusca
    - Soft _____ and some have shells.
  - -Phylum Echinodermata – S_____ skinned organisms.
    - Radial symmetry
  - -Phylum Cnidaria – S_____ cells.
    - Silent C (ni dérree ən).
    - _____ symmetry.
  - Phylum Porifera – Sponges
    - As_____.
  - Phylum Rotifera

- Wheeled organisms
- (Draw in journal somewhere on page).

- -Phylum Nematoda
  - The R_____worms.
- -Phylum Platyhelminthes.
  - The F_____.
- -Phylum Annelida
  - The s_____ worms.
- -Phylum Arthropoda
  - Segmented joints, _____skeleton, bilateral symmetry.
- The Classes of the Phylum Arthropoda.
  - In_____
  - Crustacea
  - A_____
  - Chilopoda
  - Diplopoda

  - -Class Insecta
    - ____ legs.
    - _____ body pats.
    - Head, thorax, _____.
    - Compound eyes.
    - ____ antennae.
    - Only _____ arthropod.
  - -Class Crustacea
    - Head and a_____

- Some have _____ legs (8+) with many jobs.
- Most are aquatic



- Class Arachnida
  - _____ legs.
  - No antennae or wings.
  - _____ body parts.
  - Head and sensory.
  - Abdomen.
  - _____ live on land.
- Class Chilopoda
  - Head and trunk
  - Many legs per segment
  - _____ wings
  - Antennae

- Class Diplopoda
  - Millipedes. They are scavengers.

- Phylum Chordata
  - Having a b_____ or notocord.
- -Classes of Chordata (The Big 5)
  - Mammalia - Hair
  - Reptilia – Sc_____
  - Amphibia – Double life, land and water, toads, frogs, salamaders
  - Aves - B_____
  - Fish – See below

Superclass Agnatha (_____less)

- Class Myxini – h_____
- Class Cephalaspidomorphi - lampreys

Superclass Gnathostomata with _____

- Class Chondrichthyes (cartilagineous fish - _____ and rays)
- Class Osteichthyes (bony fish), which has two subclasses:
  - Actinopterygii (ray-_____ fish)
    - Ray-finned with spikes and spines.
    - Makes up _____ of all vertebrae species
  - Sarcopterygii (lobe-finned fish)

- New Area of Focus: Learning about the Order Mammalia.

- 3 subclasses of mammals
  - -Eutheria: P_____ Mammals.
  - -Metatheria (Marsupials).
  - -Prototheria / Monotremes (_____ laying mammals).

- Characteristics of Mammals
  - -Have _____.
  - -Warm-bloodedness.
  - -Mammary Glands: Nourish young with _____.
  - -Circulatory system: 4 chambered _____.
  - -Respiratory system: Lungs are very _____.
  - -Reproductive system: Young live _____ in an embryo.
  - -Fat and energy _____.
  - -Brain: _____in the animal world.
  - -Digestive system: Salivary glands are present.
  - -S_____ Bones in ear
  - -Sweat Glands (Most Mammals).
  - -Teeth: Heterodonty - specialized for feeding/diet.
  - -Musculature system: Highly _____ for high speed locomotion.
  - -Hinged lower _____.

- New Area of Focus: Kingdom Fungi.

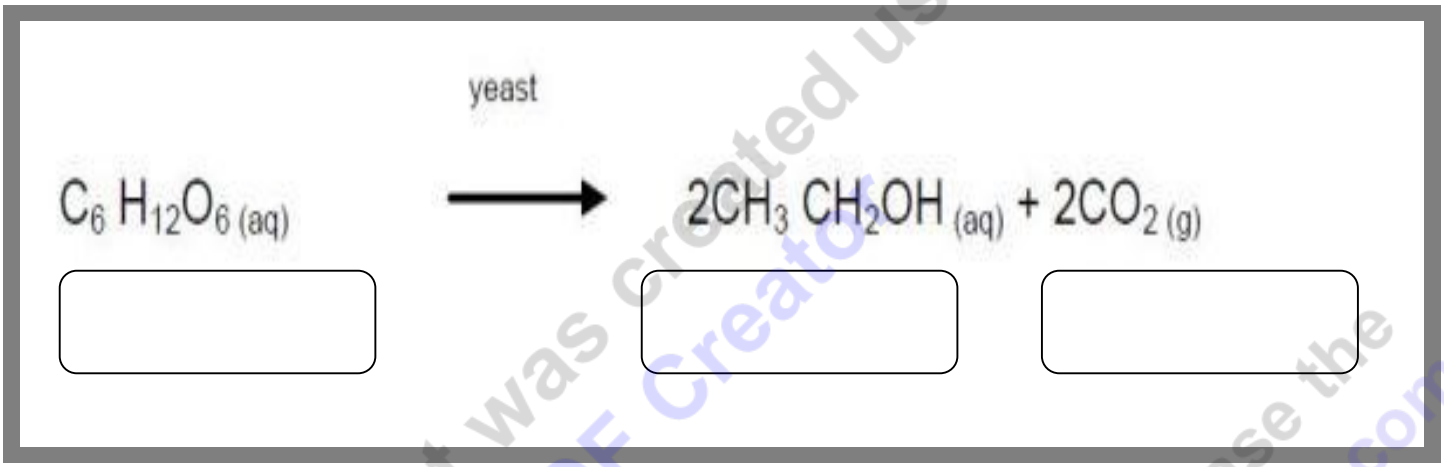
- Kingdom Fungi: Multi-cellular (_____ celled) organisms that ingests food by absorption and reproduces using _____.
  - Fungi also have cell walls consisting largely of _____ instead of cellulose.

- Positives and Negatives of Fungi

Positives	Negatives
-They help _____-symbiosis -They recycle nutrients -A _____ source -Pollution remediation -Penicillin can fight bacteria	-Cause _____– Parasitic -D_____ food and property -Drug use? - Magic mushrooms, -Can make you sick if the wrong kind is eaten.

- Divisions of Fungi
  - -Chytridiomycota / Primitive Fungi
    - Live on _____ and water.
    - Great decomposers.
  - -Zygomycota / Molds
    - Mycorrhizal fungi in _____.
  - -Ascomycota / Sac Fungi:
    - 75% of all Fungi.

- Yeast.
- Fermentation -The anaerobic (_____ oxygen) conversion of _____ into carbon dioxide and alcohol by yeast.



- Jock Itch
- Truffles.

- -Mycophycophyta / Lichens:
  - Fungi and algae live together (symbiotic)

Lichen: Algae (_____) and _____ growing together in a symbiotic relationship.

- The fungi extract _____ from the environment, while the _____ are photosynthetic. This is mutualistic symbiosis.

The three types of lichens

- Crustose: Forms a _____, difficult to remove without crumbling.

- Foliose: L_____, can be peeled off rock with knife.
- Fruticose: Forms shrubby _____. Easily removed by hand.

- -Deuteromycota / Imperfect Fungi:
  - The leftovers ☹.
  - Includes A_____ foot.
- -Basidiomycota / Club Fungi:
  - Mushrooms.
  - Decomposition of _____.
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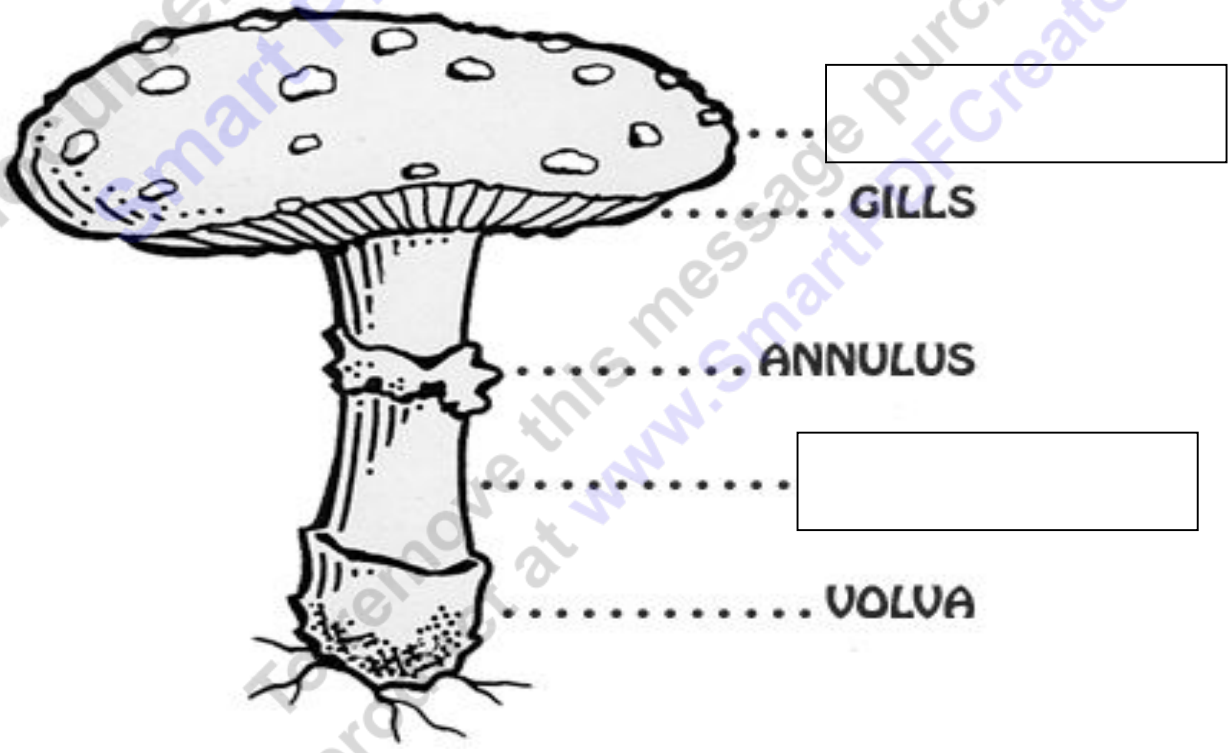


- The 3 Roles of Fungi
  - -Mutualistic symbionts – Fungus _____ organisms (plants) grow.

- -Hyphae / Part of the Mycelium- The part of the fungus that feeds, grows, and ultimately may produce a _____.
- -Saprobic- _____ dead things…logs, feces, corpses, and recycles nutrients.
- -Parasitic- Fungi absorbs nutrients (SPONCH) from _____ cells.

- A few final thoughts on Fungi.
  - _____ prevention.
  - Fermentation.

- Asexually, Fungi reproduce by
  - -Budding / Splitting in _____.
  - -Fragmentation / Break off and grow.
  - -Sporulation / releases spores which are tiny _____ bodies.

Some fungi reproduce sexually, where two haploid _____ form a diploid.

- - Spores are microscopic and travel through the _____. Storage containers help but spores will always enter.

- To prevent mold growth …
  - Limit m_____
  - Limit warm temperatures (refrigerate food)

- Limit spores (use _____ and containers)
- Limit available _____ sources (remove moldy food from the group.)

- New Area of Focus: Kingdom Plantae.

- Plants: Have cells _____ and make their own food (_____), and lack the power of locomotion.

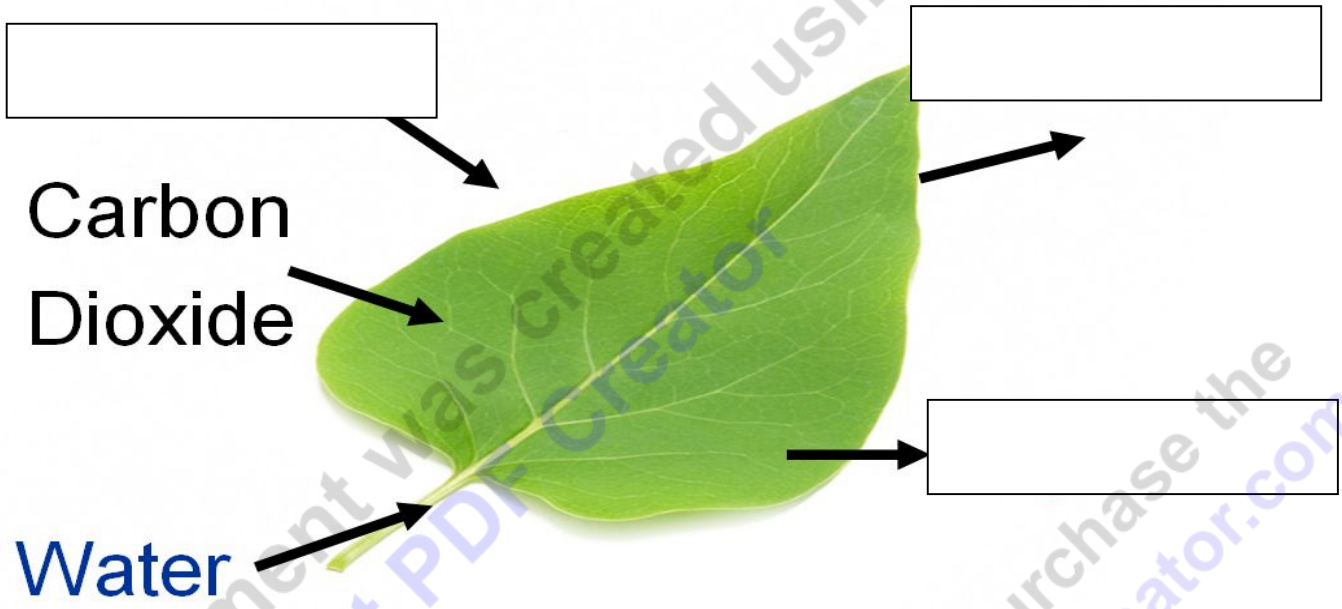
Photosynthesis – Plants make _____ from sunlight. Light energy is turned into chemical energy (_____ – carbon based).

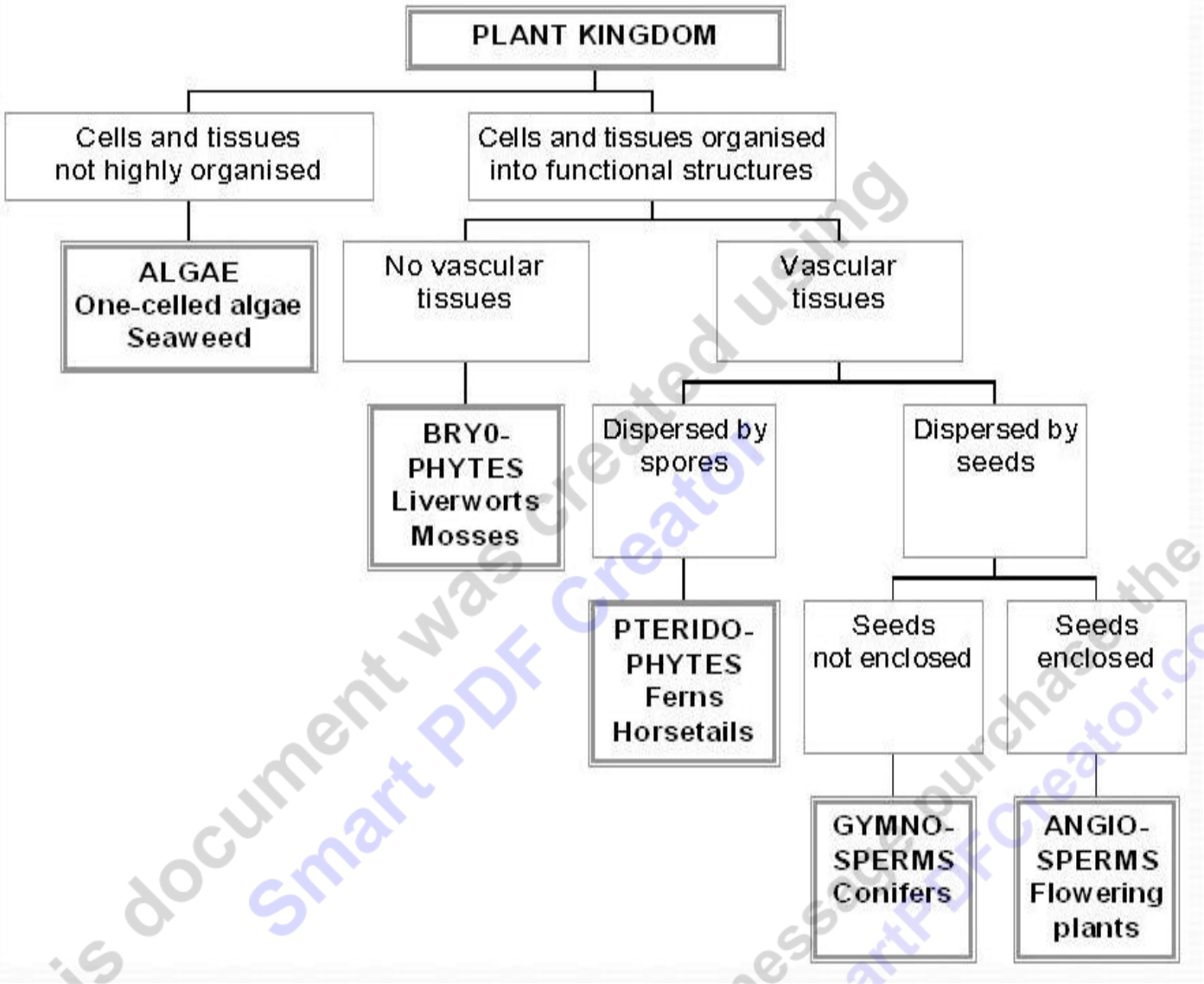
6_____ + $6H_2O$ + light energy = $C_6H_{12}O_6$ + 6_____

Photosynthesis

- Produces _____ from energy.
- Occurs only in _____ with chloroplasts.

- Oxygen is produced.
- _____ is used.
- Carbon dioxide is used.
- Occurs in _____.





Division 1: Bryophyta (Liverworts & Mosses)
Division 2: Psilophyta (Psilotum)
Division 3: Lycophyta (Club Mosses)
Division 4: Sphenophyta (Horsetails)
Division 5: Pterophyta (Ferns)
Division 6: Cycadophyta (Cycads)
Division 7: Ginkgophyta (Ginkgo)
Division 8: Gnetophyta (Gnetum & Welwitschia)
Division 9: Coniferophyta (Cone bearing trees & shrubs)
Division 10:Anthophyta (Flowering Plants)

Algae –Why they are important! They are food, and make_____.

- They are photosynthetic. They are P_____ not in the Kingdom Plantae.

New Area of Focus: Bryophytes / Non-Vascular Plants.

Non-vascular plants….

- Lacks _____ (vascular tissues) in the plant to bring _____ and food up and down.
- Do not produce _____ or flowers.
- Are very _____ because they lack the woody tissue necessary for support on land.
- Bryophytes: Division of non-vascular plants that have no _____, stems, or leaves and transport nutrients using diffusion.

Bryophytes include…

- M_____
- Liverworts
- Hornworts

New Area of Focus: Seedless Vascular Plants.

Ferns: Flowerless and seedless _____ plant, having true roots from a rhizome, and fronds that uncurl upwards; and reproduces with bisexual _____.

Seed Plants

Gymnosperm: Seed-bearing vascular plants, such as cycads, ginkgo, and conifers.

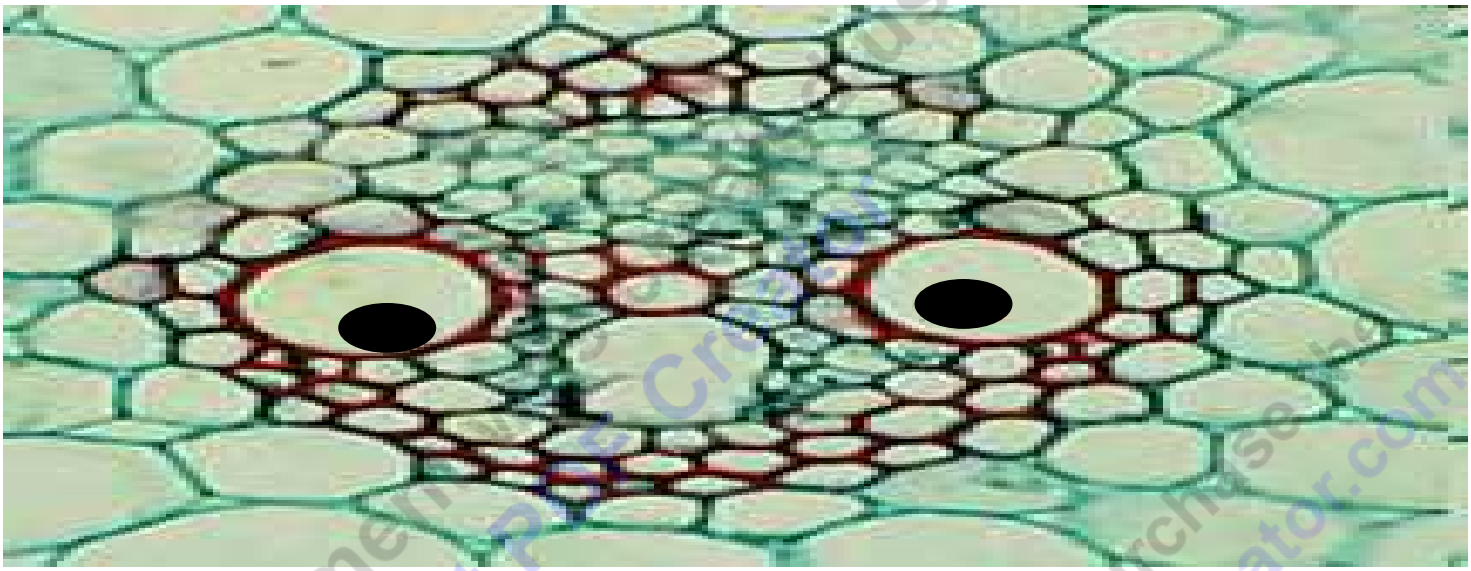
- The ovules or _____ are not enclosed in an ovary.

Angiosperm: Flowering, covered seed, produce seeds enclosed in a _____ /ovary.

New Area of Focus: Monocots and Dicots.

Monocotyledons

- Seedling has _____ cotyledon
- Veins in leaf are parallel.
- Flower petals are in _____'s.
- Never _____.
- Vascular bundles are scattered.

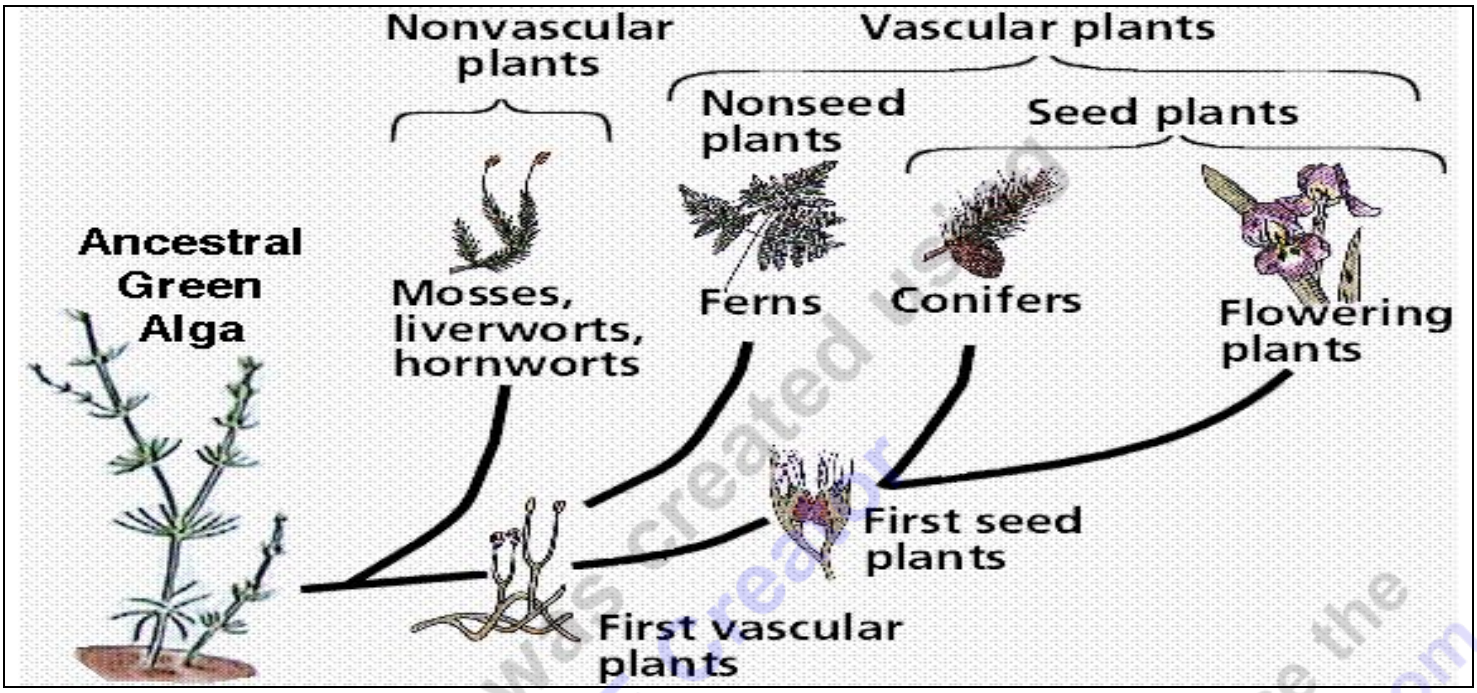


Monocot Man

Dicotyledons

- Veins on leaf are _____.
- Flower parts are groups of ____ to 5.
- Secondary growth can be woody.
- Vascular bundles are in a _____.

New Area of Focus: Evolution of Plants.



Seed Plant Life Cycles.

- All plants undergo sexual reproduction (two partners). When the sperm and _____ come together you get a zygote / baby plant.
- Gymnosperm: Non-flowering, seeds usually arranged on a _____.
- Angiosperm: Flowering, covered seed, produce _____ enclosed in a fruit /ovary.

Vegetable: _____ part of a plant that is not a sweet fruit or seed. Stalk, leaves, root, etc.

Flower: The reproductive _____ of a plant that makes the seed.

Area of Focus: Parts of a Flower.

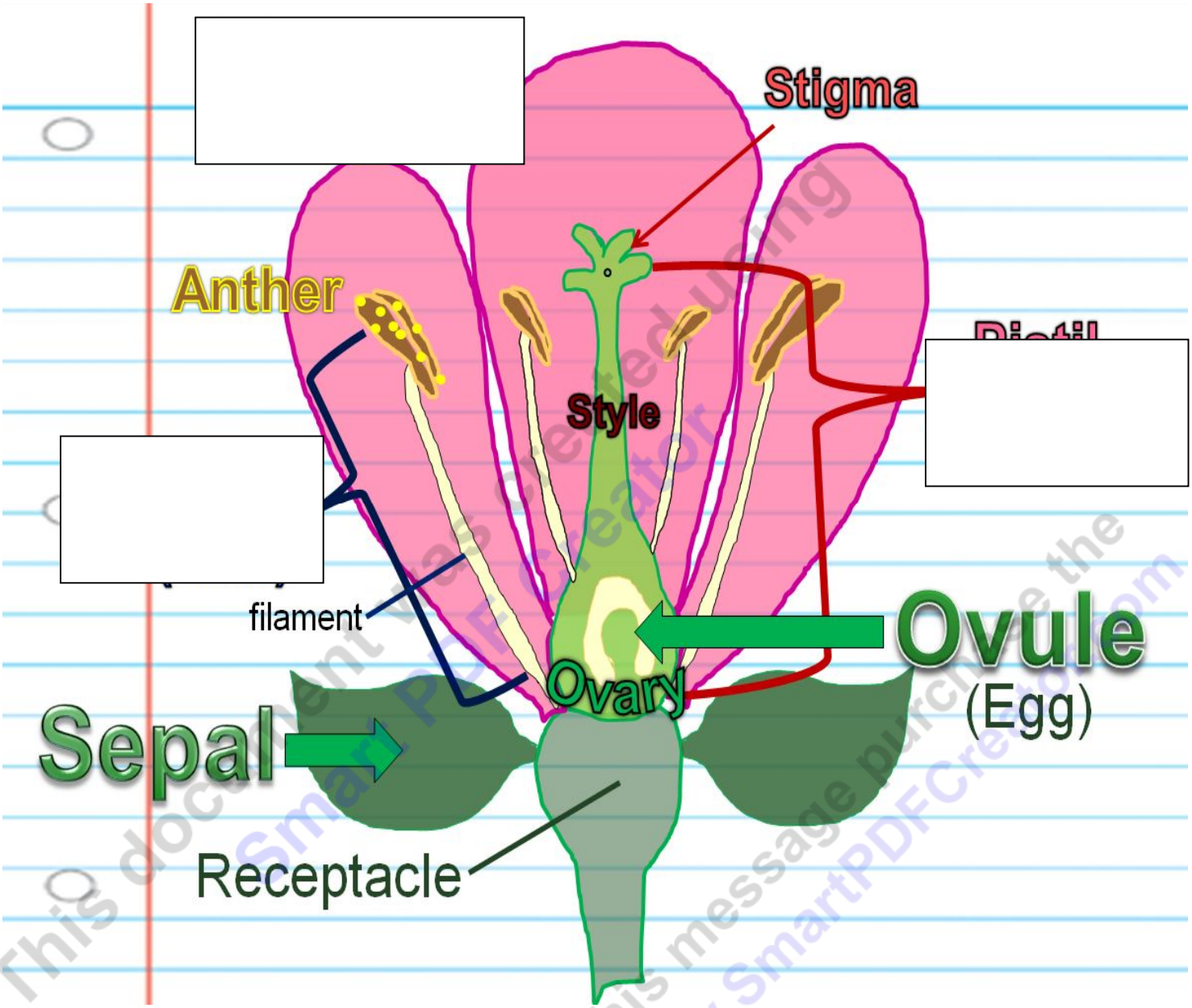
Stamen – M_____ part of flower (sperm).

- Filament: Supports the _____.
- Anther: Part of the stamen that holds the _____.

Pistil: Female part of flower (egg).

- Stigma: Sticky _____ in the center of the flower. Receives the _____ grains.
- Style: _____ stalk that the stigma sits on top of.
- Ovary: On _____ of the flower, has the seeds inside and turns into the fruit. Contains the ovules.
- Ovule: The part of the _____ that becomes the seeds.
- Petal: The colorful, often bright part of the flower. They attract _____ and are pretty .

- Sepal: Green leaves that cover the _____ of a flower bud to _____ the flower before it opens.



New Area of Focus: Matured Ovaries (Fruits)

Fruit: The matured _____ in the pistil. Contains the seed.

Parts of a fruit.

- Exocarp / Epicarp: O_____ covering of the fruit. “skin”
- Mesocarp: M_____ covering. “Flesh”
- Endocarp: I_____ covering, the stiff area around the seed. “Stone” “Pit”

Types of fruit

Fleshy Fruits

- Berry: A fleshy _____ that contains one to many _____. (No stony layer)
  - Tomato, Grape
- Drupe is a type of fleshy fruit that has a stony inner layer surrounding a single _____.
  - Plum, Peach
- Pome: This fruit has a _____ as the true fleshy fruit, and it’s surrounded by a fleshy good accessory layer.
  - Apple, Pear
- Fleshy Aggregate Fruits: Develop from _____ with many pistils.
  - Strawberry, Blackberry
- Fleshy Multiple Fruits: Form from a _____ of several flowers.
  - Pineapple, Fig

Dehiscent Dry Fruits: A _____ fruit that splits at maturity releasing the seeds.

- Legume (Dry Fruit): An elongated _____ splitting along two seams. (Beans)

Indehiscent Dry Fruits: Pericarp does not _____ open. These fruits usually contain only one seed (Nuts)