**Final Exam Study Guide**

1. Give an example of each of the following symbiotic relationships:
   1. Mutualism
   2. Commensalism
   3. Parasitism
2. Define and give an example of a habitat and niche for an organism.
3. Flower--🡪 Rabbit----🡪 Fox-----🡪 Bear What is that?\_\_\_\_\_\_\_\_\_\_\_ Producers?\_\_\_\_\_\_\_\_\_\_ Primary Consumer?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Secondary consumer?\_\_\_\_\_\_\_\_\_\_\_\_\_ What will secondary consumers always eat?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. If a person was to study the interactions between the hawk, frog, and fish, they would be studying what part of the biological organization?
5. How does primary and secondary succession occur?
6. What is a population that shows a J shaped curve? What is the population doing? What is an S shaped curve population? Why can’t it grow indefinitely?
7. What are the two types of reproduction strategies? Give an example of an animal or plant that shows each one.
8. Define carrying capacity. Why does this occur?
9. What is a life history?
10. What is biodiversity?
11. What are habitat fragmentation, degradation, and loss? Give examples of all three. Which one is the major threat to biodiversity?
12. Why does conservation biologist want to protect an endangered species from extinction? How do they protect the species? What is the difference between endangered and threatened species?
13. Acid precipitation is caused by what?
14. What chemical was used as a pesticide that caused carnivorous birds to produce fragile eggs?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Polymer | Carbohydrate | Lipid | Protein | Nucleic Acid |
| Monomer |  |  |  |  |
| Elements |  |  |  |  |
| Example |  |  |  |  |

1. How are polymers made? How are they broken down?

How many electrons can go on this outer ring?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. Label where the electron, neutron and proton are found in the atom.

Carbon

Atom

How many electrons can go on this inner ring?

\_\_\_\_\_\_\_\_\_\_

1. Draw the pH scale; make sure you label the numbers that are acidic and the ones that are basic.
2. What organelles do plant cells have that animal cells do not?
3. What are the 3 parts of the cell theory?

A.

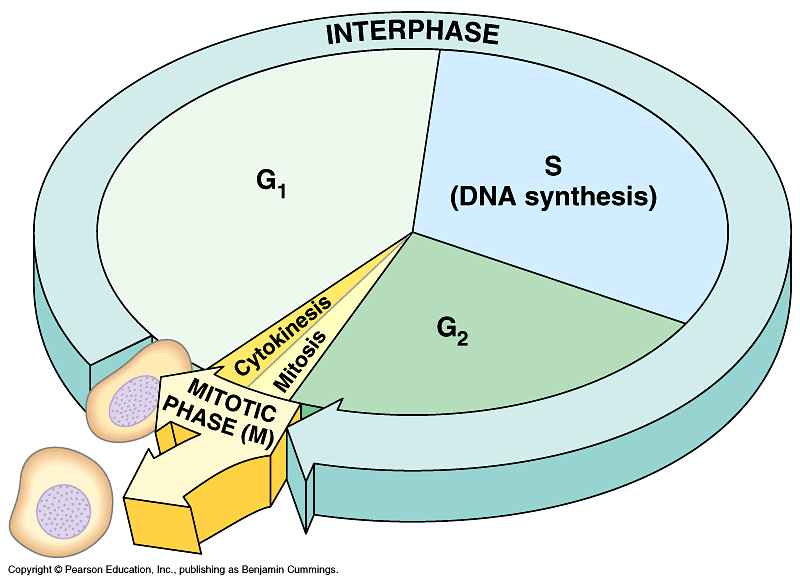
B.

C.

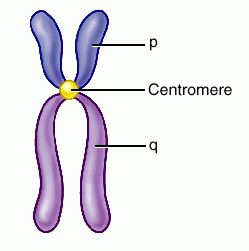
21. Put a check in the box if that cell has the item. Give the function of the structures.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Eukaryotic cell | Eukaryotic cell | Prokaryotic cell | Function of the organelle |
| Examples | Plant and fungi | Animal | bacteria |  |
| Nucleus |  |  |  |  |
| Cell wall |  |  |  |  |
| Ribosomes |  |  |  |  |
| Plasma membrane |  |  |  |  |
| Microtubules |  |  |  |  |
| DNA |  |  |  |  |

1. Which microscope has a higher magnification: electron or light?



22. In the cell cycle, what phase is the longest?

1. 

This is a chromatid.

The spindle fiber is attached to this structure. What is this structure called?

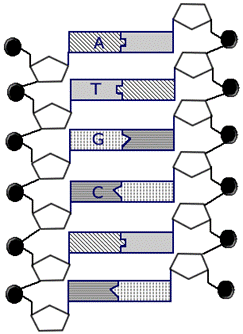
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Arrange these structures by least complex to most complex: organ, cell, tissue, organ system
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is the theme that gradual change in the characteristics of species over time.
3. Seven Characteristics of Living Things are:  
   1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-maintain equilibrium  
   2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-are made up of these  
   3. Growth And Development  
   4.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-have this type of nucleic acid in their nucleus  
   5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-produce more of their own kind  
   6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-an example of this would be when you put your hand on a hot surface and pull it away  
   7. Need and use energy
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is the study of standards for what is right and wrong.
5. If someone wanted to test their hypothesis (a possible explanation for a question) they would perform an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. How does carbon dioxide enter our atmosphere? Name 3.
7. What is chlorophyll? Where is it found? What does it do?
8. What is the chemical equation for photosynthesis?
9. What is the chemical for respiration? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ What is created in the absence of oxygen?\_\_\_\_\_\_\_\_\_\_\_\_\_ What is this process called?\_\_\_\_\_\_\_\_\_\_\_\_
10. Match the following with the genetics vocabulary term from the word bank. (Not all will be used)

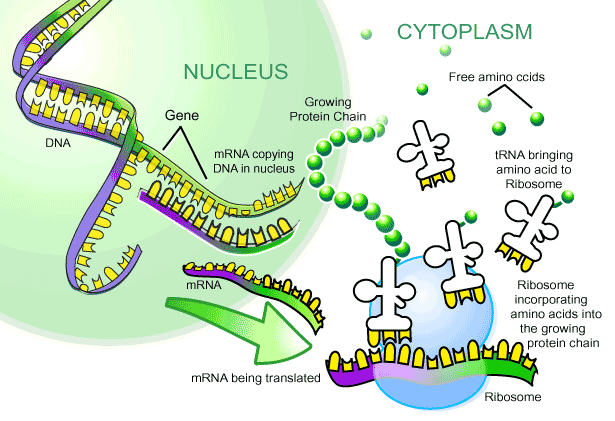
**Word bank**: Homozygous dominant, heterozygous, homozygous recessive, crossing over, genetics, heredity, hybridization, sperm, egg, zygote, gametes,

* 1. When an area of a chromatid is exchanged with the matching area of another\_\_\_\_\_\_\_\_\_
  2. The sides of the Punnett square are represented by the parent’s \_\_\_\_\_\_\_\_\_\_\_\_\_
  3. This is a way to predict different genotypes in offspring \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  4. Passing genes from parent to offspring\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  5. Gamete with mother’s genes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  6. Gamete with father’s genes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  7. BB\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  8. Bb\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  9. Bb\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Mitosis
   1. Definition:
   2. Types of cells: Body or Sex cells (gametes)
   3. Define diploid.
2. Meiosis.
   1. Definition:
   2. Types of cells: Body or Sex cells (gametes)
   3. Define haploid
3. DNA: Label the sugar phosphate backbone and color it blue. Match up the bases and fill in the missing bases. Who discovered the shape of this molecule? \_\_\_\_\_\_\_\_\_\_\_&\_\_\_\_\_\_\_\_\_\_\_\_ What did they call it? \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_



1. Label the diagram below. Color all tRNA light blue, mRNA dark blue, and the amino acids red. Word Bank: Transcription, mRNA, Ribosome, tRNA , Amino Acids, Protein



6.

5.\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

4.\_\_\_\_\_ with amino acid attached

3.\_\_\_\_\_\_\_\_\_\_

2.\_\_\_\_\_\_\_\_\_\_\_\_ is the place

1.\_\_\_\_\_\_\_\_\_\_\_\_ is the process

1. What are the steps in gene expression?
2. Gene Technology
   1. List concerns of using DNA technology.
   2. What are advantages of gene cloning? Why is it better than just using proteins from pigs?
   3. What is the Human Genome Project?
3. Define and give an example of adaptive radiation.
4. List the types of evidence can help scientists study evolution? Circle the most conclusive
5. What does the fossil record show?
6. Comparative anatomy: Describe and give an example
   1. Analogous structures
   2. Homologous structures:
7. Isolation: Describe and give an example
   1. Behavioral
   2. Habitat:
   3. Temporal:
   4. Mechanical:
   5. Infertility
8. Describe the differences between artificial and natural selection
9. Indicate whether the statement is true or false. If false, change the underlined word to create a true statement.
   1. Earth is approximately 4.6 million years old
   2. Fossils are usually found in sedimentary rocks
   3. There are many ways fossils can be formed
   4. Fossil insects preserved in amber may not contain ancient DNA
10. In term of evolution, put the following organisms from oldest to youngest.

Plants, dinosaurs, mammals, cyanobacteria

1. Define the following terms and give examples of each.
   1. Divergent Evolution
   2. Convergent Evolution
   3. Vestigial Structure
2. Circle the terms that increase genetic diversity for evolution.

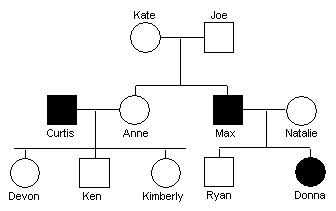
Polyploidy mutations asexual reproduction biogenesis

Spontaneous generation crossing over sexual reproduction

1. Cell Chart

|  |  |  |
| --- | --- | --- |
| Organelle | Description | Plants/ Animals or both |
| Ribosome |  |  |
| Lysosome |  |  |
| Cell Membrane |  |  |
| Chloroplast |  |  |
| Mitochondria |  |  |
| Nucleus |  |  |

1. Define the following words
   1. Mutualism
   2. Parasitism
   3. Food web
   4. Scavenger
   5. Autotrophs
   6. Heterotrophs
2. If you were genetics, who would your father be?



1. Using the pedigree above, is this trait dominant or recessive?
2. What are the genotypes of each individual?
3. If Donna were to marry a homozygous recessive man, what is the probability their children will also be homozygous recessive?
4. How is colorblindness inherited? Who is more likely to have it? Why?
5. Fill in the table appropriately

|  |  |  |  |
| --- | --- | --- | --- |
| **Type of Dominance** | **Definition** | **Genotype** | **Phenotype** |
| **Complete** |  |  |  |
| **Incomplete** |  |  |  |
| **Codominant** |  |  |  |

1. In fruit flies, the gene for wing shape has an unusual allele called ‘curly’ (designated ‘Cy’). The normal (wild type)

allele is designated ‘cy.’ A fly homozygous for cy (cy cy) has normal, straight wings. The heterozygote (Cy cy) has

wings which curl up on the ends (and, incidentally, can’t really fly). The homozygote for the Cy allele (Cy Cy)

never hatches out of the egg. In other words, this allele is lethal in the homozygous condition. If two curly

winged flies are mated, and the female lays 100 eggs, predict the following, showing appropriate work:

a. How many eggs will produce living offspring?

b. How many straight winged flies do you expect among the living offspring?

c. What percentage of the living offspring do you expect to be curly winged like the parents?

1. If a pure‐breeding (homozygous) black (dominant), long‐haired (recessive) cat is mated to a pure‐breeding

Siamese, short‐haired cat, and one of their male offspring is mated to one of their female offspring, what is the

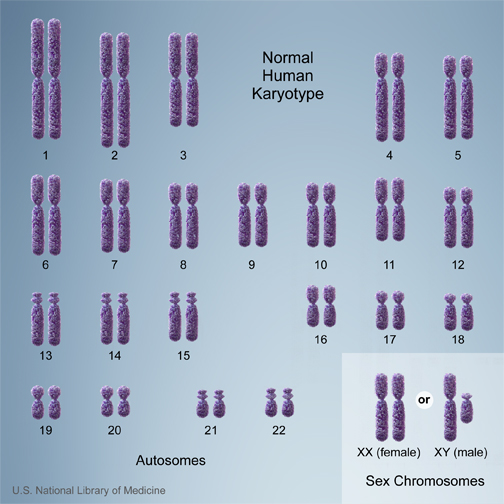
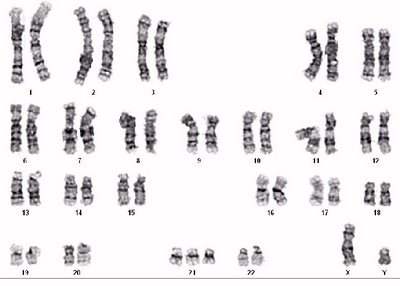
chance of producing a Siamese colored, short‐haired kitten?

1. In fruit flies (*Drosophila*), one eye color gene is X‐linked, with a recessive white allele and a dominant red allele.

If white‐eyed female flies are bred to red‐eyed male flies, describe the expected offspring (assume all parental

flies are true‐breeding).

1. Mr. Halldorson and his wife just had baby girl number three! What is their probability of having girl number four? Why?

1. What is the difference between these two karyotypes?