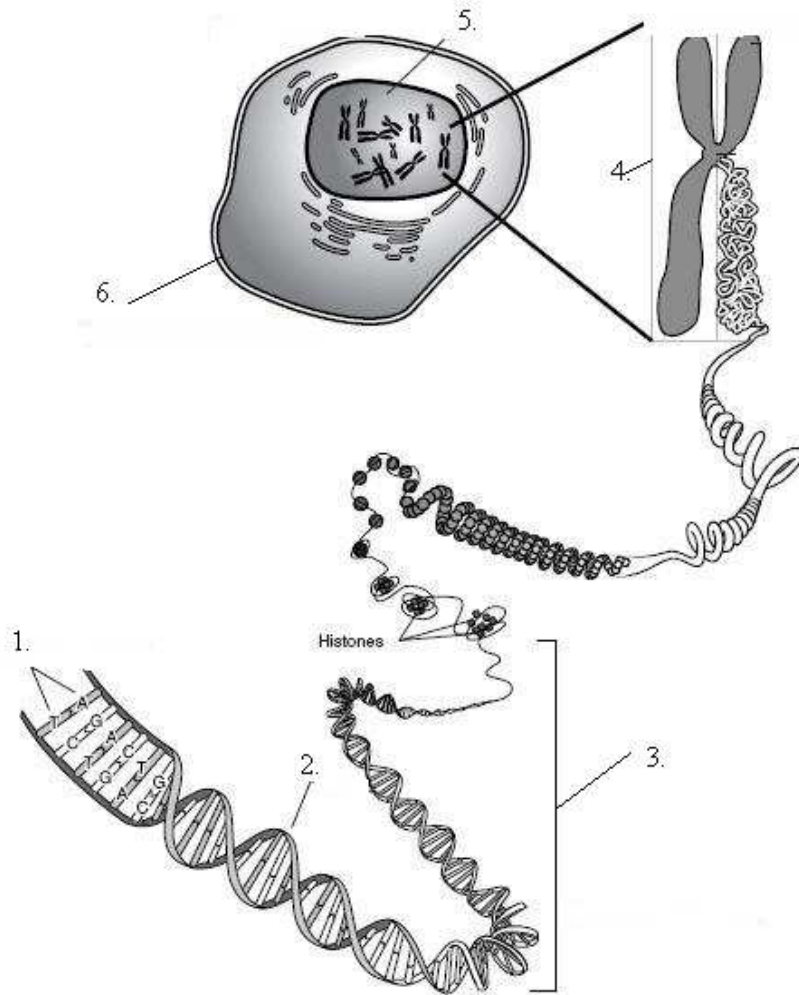


Nuclear Engineering 490
Homework 2

1. Match the following terms to the diagram below: Nucleus, DNA, base pair, cell, chromosome, chromosome, genes.



1. Base pair

2. Genes

3. DNA

4. Chromosome

5. Nucleus

6. Cell

2. Where is gene 17q12 located? I want you to explain the naming system.

This gene is on chromosome 17, on the long arm of the chromosome, in region #1, band #2

3. Which of the following are components of nucleotides?

- ☒ a. Deoxyribose
- b. Amino acids
- ☒ c. Phosphate
- d. Enzymes
- ☒ e. Organic bases

4. Which of the following represent a correct pairing of bases?

- ☒ a. Adenine with Thymine
- b. Adenine with Guanine
- c. Thymine with Adenine
- ☒ d. Guanine with Cytosine
- e. Thymine with Thymine

5. A 662-keV photon is Compton scattered at an angle of 120° with respect to its incident direction.

a) What is the energy of the scattered electron?

437 keV

b) What is the angle between the paths of the scattered electron and photon?

180°

6. In the case of an energetic electron traversing through an attenuator is the electron more likely to lose energy through excitations and ionization or bremsstrahlung?

bremsstrahlung

7. In the case of an energetic heavy charges particle traversing through an attenuator is the particle more likely to lose energy through excitations and ionization or bremsstrahlung?

excitations and ionizations

8. For a < 100 KeV photon are Photoelectric Effect or Compton interactions more likely in water.

Photoelectric effect

9. For a > 1 MeV photon are Photoelectric Effect or Compton interactions more likely in water.

Compton interactions