

問答題

1. (20分) Please describe the functions of the following items.
 - (a) Chromosome
 - (b) Ribosome
 - (c) Mitochondrion
 - (d) Chloroplast
 - (e) Cytoskeleton
2. (10分) List the 4 major types of organic compounds in the living organism.
3. (10分) List the similarities and the differences between prokaryotic and eukaryotic cells.
4. (10分) List the major components of a modern optical microscope and explain their functions.
5. (10分) Please describe Photosynthesis in detail.
6. (10分) Please explain the procedure to make proteins from DNA.
7. (15分) Labrador Retrievers (拉布拉多犬) are registered in three colors: Black, Yellow, and Chocolate. Color is determined primarily by two genes. The first gene (the B locus) determines the density of the coat's pigment granules: dense granules result in a black coat (B), sparse ones give a chocolate coat (b). The second (E) locus determines whether the pigment is produced at all. A dog with the recessive (e) allele will produce little pigment and will be yellow regardless of its genotype at the B locus. (For example, BBEE(Black), BBee(Yellow), bbEe(Chocolate)) Please estimate the number ratio of puppies' color if their parents both have the BbEe genes.
8. (15分) Most of the cells are in the size of micron. What is the limitation of the cell size? Could a cell be much bigger or much smaller? Use your knowledge of dimension, diffusion, nutrient transportation and mechanical support to discuss the limitation of the cell size.

參考用