

Solutions to Practice Problems for Biochemistry, Session 1: Types of Organisms, Cell Composition

Question 1

You are given four test tubes, each tube contains cells from a different organism. One tube contains bacterial cells, one contains yeast cells (eukaryotic), one contains human cells and the last contains insect cells. Can you identify the cells from each tube if you are given a light microscope? Explain your answer.

With a light microscope you could easily distinguish the prokaryotic bacteria from the other cell types. The prokaryotic bacteria would not have a nucleus, the other cell types would. The yeast cell wall would distinguish yeast cells from human and insect cells. Distinguishing human and insect cells with a simple microscope may not be possible, as the two are very similar.

Question 2

Which of the following sequences is the best representation of the organizational hierarchy (from complex to simple) found in an individual animal?

Brain, Cerebellum, Nerve cell, Nervous tissue

Cerebellum, Nervous tissue, Molecule, Cell

Organism, Organ system, Tissue, Cell, Organ

Nervous system, Nerve cell, Brain, Cerebellum

Nervous system, Cerebellum, Cell, Molecule

*The best representation of a complex to simple organizational hierarchy in an animal would be:
Nervous system, Cerebellum, Cell, Molecule*

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