

Quiz 2 Key
BI-102, Winter '04-'05, Dr. C. S. Tritt

Each problem is worth the same amount. Try to keep your answers short and concise.

1. The Miller-Urey experiment involved exposing a high reducing atmosphere and water to electrical and UV energy and resulted in the formation of biologically important organic molecules. However, its results are no longer considered relevant to the origin of life. Explain why.

We now believe the early Earth atmosphere was not as reducing (hydrogen rich) as that used in the Miller-Urey experiment. Saying it was not repeatable -6,

2. Describe the major difference between prokaryotic and eukaryotic DNA.

Prokaryotes have loops of DNA and no organelles (incl. nucleus).

3. Name or describe two places you would expect to find phospholipid bilayers in and around eukaryotic cells.

Cell (or plasma) membrane (accepted cell wall, but this is technically wrong), the ER, around organelles (like the nucleus, mitochondria and chloroplasts). Saying only cell wall and plasma membrane -5 (they're the same thing).

4. Sketch the general chemical structure of a cell membrane phospholipid molecule.

G – phosphate ester (alcohol or acid accepted) (-5 if missing)

l
y
c – fatty acid
e
r
o
l – fatty acid

Accepted polar head, 2 non-polar tails sketch.

5. Describe or explain the fundamental feature of active transport.

It requires energy (or ATP, but this is not strictly true). Accepted moves substance against its electrochemical gradient. Just saying it involves a membrane protein -7.

6. Describe the general type of hormone molecules (polar or non-polar, hydrophilic or hydrophobic) that typically interact with **intracellular** receptors.

non-polar, hydrophobic

7. Name 2 common second messengers or second messenger like molecules.

cAMP, Ca⁺⁺, g-protein (not technically true), GMP