Preview Test: Takehome Exam 2

Test Information

Description

Instructions

Multiple Attempts Not allowed. This test can only be taken once.

Force Completion This test can be saved and resumed later.

QUESTION 1 **2 points** Saved

What were/was the name of the scientist(s) that first used ribosomal RNAs to study the relationship between organisms and discovered the the third domain (aka Ur-kingdom) of life?

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

Arial 3 (12pt)

Carl Woese and George Fox

Path: p Words:5

QUESTION 2 **1 points** Saved

Are viruses alive? Please include 2-4 points of evidence to back up your answer (simply a yes or no will not suffice).

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

Arial 3 (12pt)

Yes, they are part of a living system, and the machinery that produces new viruses in an infected cell - aka the virus factory - is as metabolically active as a bacterium. The virus capsid is the propagation unit.

or

No, while viruses have genetic material and can evolve, the lack other important aspects of life. Yes they are part of a living system, but that does not mean that they are alife themselves .

Path: p Words:72

QUESTION 3 **1 points** Saved

Evolution by natural selection requires which three things to occur?

A. Variation among offspring, a niche, and competition for resources.

B. Heredity, excess offspring, and a niche.

C. Excess offspring, competition for resources, and variation among offspring.

D. A niche, a human to naturally select the best offspring, and oxygen.

Question Completion Status:

QUESTION 4 **2 points** Saved

What were the names of the scientists who first proposed the Gaia hypothesis?

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

Arial 3 (12pt)

Lovelock and Margulis

Path: p Words:3

Click Save and Submit to save and submit. Click Save All Answers to save all answers.

Save All Answ

QUESTION 5

1 points Saved

What is the Gaia hypothesis?

A. Earth's plants control the planet's temperature by selection for flower color

B. All life on Earth descended from ONE common ancestor

C. The unit of life is the entire Earth and the entire biosphere is alive, because no single species can exist in complete isolation. The ecosystems on the Earth are protected by negative feedback loops that help maintain homeostasis.

D. Mars cooled faster than the Earth and therefore was a more habitable place for life earlier. Life arose first on Mars and traveled to Earth on meteorites

E. Large glaciers and ice ages result from a runaway cold-house, where the Earth gets colder because glaciers reflect more light from the surface

F. Zircon crystals in 3.8 billion year old rocks were produced by ancient life over 4 billion years ago. The zircon crystals are formed by running water and the bias in carbon isotope ratios indicates the presents of life.

QUESTION 6

1 points Saved

How might mutual aid be selected for?

A. Trick question: it cannot be selected for, because even if a stingy species is going extinct, it cannot decide to stop being stingy.

B.

When cooperation results in more offspring for both, the entire community thrives and spreads.

C. When cooperation is between close relatives, like siblings, helping each other survive leads to some of your own genes being passed on.

D. When one bird helps defends another bird's nest, that second bird will remember and return the favor when the first bird is under attack.

E. B-D.

QUESTION 7

1 points Saved

Inteins are composed of which of the following ?

A. Self-splicing domain

B. Walker motif

C. Nucleotide binding domain (GRASP)

D. Hydrolase domain

E. Helix-turn-Helix DNA binding domain

F. Homing endonuclease domain

G. A & B

H. A & F

I. A&C

QUESTION 8

6 points Saved

Match the terms on the left with the definitions on the right

E. 1. The process of making a protein from an RNA template

D. 2. A molecular parasite that splices itself out at the RNA leve

A.

A. Does Not Exist

B. intein

C. extein

D. Intron

E. Translation

F. tRNA

G. Transcription
H. mRNA
I. exon
J. rRNA
K. replication

3. A molecular parasite that splices itself out at the DNA level

G. 4. The process of making RNA from DNA

F. 5. RNA that binds an A.A. & matches it with mRNA triplet

B. 6. A molecular parasite that splices itself out at the protein level

H. 7. An RNA copy of a gene, used in the process of making proteins

I. 8. Part of a host gene's transcript left after RNA parasite is spliced out

I. 9. The host protein, which is spliced back together correct answer is C

J. 10. RNA that makes up the ribosome and catalyzes protein synthesis

K. 11. Process of creating a new DNA molecule, from DNA strand

QUESTION 9

1 points Saved

Sequences that do not show significant similarity-

A. are not homologous

B. might never-the-less be homologous

C. are homologous

QUESTION 10

1 points Saved

True/False Among Site Rate Variation (ASRV) means that some sites will undergo multiple substitutions while other sites do not undergo any

substitutions. Due to ASRV, protein and nucleotide sequences take longer to become saturated with substitutions than without ASRV.

- (•) True
- ( ) False

QUESTION 11

1 points Saved

True/False- The finding that the ribosomal protein alone is responsible for the catalysis of translation is an argument against the RNA world hypothesis.

- ( ) True
- (•) False

QUESTION 12

1 points Saved

True/False- When inteins first begin to decay they lose the DNA-binding domain first, while the protein-binding domain must stay functional or it will destroy the function of the host proteins.

- (•) A. True
- ( ) B. False

QUESTION 13

1 points Saved

_____ sequences reach saturation before _____ sequences reach saturation, so _____ sequences can be used to look further back in time.

- ( ) A. Nucleotide, protein, nucleotide
- ( ) B. Protein, nucleotide, nucleotide
- (•) C. Nucleotide, protein, protein
- ( ) D. Protein, nucleotide, protein
- ( ) E. None of the above

QUESTION 14

1 points Saved

The Jukes Cantor model describes the evolution of sequences. Which of the following are unrealistic assumptions that the this model makes

- [x] All sites have an equal probability to undergo a substitution event.
- [x] All possible transitions and transversions (in case of DNA) occur with the same frequency.
- [ ] Sequences divergence is not limited by saturation.
- [x] The frequency of the different nucleotides is the same

QUESTION 15

1 points Saved

Among Site Rate Variation (the fact that some sites in a sequence undergo substitution with a lower frequency) keeps divergent sequences recognizabl y similar.

- (•) True
- ( ) False