

Microbiology / Active Lecture Questions

Chapter 8 – Microbial Genetics

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2 Transfer of DNA from a donor to a recipient cell by a bacteriophage.

- a. conjugation
- b. transcription
- c. transduction
- d. transformation
- e. translation

3 Transfer of DNA from a donor to a recipient as naked DNA in solution.

- a. conjugation
- b. transcription
- c. transduction
- d. transformation
- e. translation

4 Feedback inhibition differs from repression because feedback inhibition

- a. is less precise.
- b. is slower acting.
- c. stops the action of preexisting enzymes.
- d. stops the synthesis of new enzymes.
- e. all of the above

5 Bacteria can acquire antibiotic resistance by all of the following except

- a. mutation.
- b. insertion of transposons.
- c. conjugation.
- d. snRNPs.
- e. transformation.

6 Suppose you inoculate three flasks of minimal salts broth with E. coli. Flask A contains glucose. Flask B contains glucose and lactose. Flask C contains lactose. After a few hours of incubation, you test the flasks for the presence of  $\beta$ -galactosidase. Which flask(s) do you predict will have this enzyme?

- a. A
- b. B
- c. C
- d. A and B
- e. B and C

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7 Plasmids differ from transposons because plasmids

- a. become inserted into chromosomes.
- b. are self-replicated outside the chromosome.
- c. move from chromosome to chromosome.
- d. carry genes for antibiotic resistance.
- e. none of the above

8 Mechanism by which the presence of glucose inhibits the lac operon.

- a. catabolite repression
- b. DNA polymerase
- c. induction
- d. repression
- e. translation

9 The mechanism by which lactose controls the lac operon.

- a. catabolite repression
- b. DNA polymerase
- c. induction
- d. repression
- e. translation

10 Two daughter cells are most likely to inherit which one of the following from the parent cell?

- a. a change in a nucleotide in mRNA
- b. a change in a nucleotide in tRNA
- c. a change in a nucleotide in rRNA
- d. a change in a nucleotide in DNA
- e. a change in a protein

11 Which of the following is not a method of horizontal gene transfer?

- a. binary fission
- b. conjugation
- c. integration of a transposon
- d. transduction
- e. transformation

12 A sequence of nucleotides in DNA that codes for a functional product refers to a(n)

Gene

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13 In DNA replication, the newly added nucleotide is joined to the growing DNA strand by

- a. DNA polymerase
- b. RNA polymerase
- c. DNA ligase
- d. DNA gyrase

14 Which of the following enzymes joins DNA strands and joins Okazaki fragments and new segments in excision by forming covalent bonds?

- a. DNA polymerase
- b. RNA polymerase
- c. DNA ligase
- d. DNA gyrase

15 What carries the coded information for making specific proteins from DNA to ribosomes?

- a. mRNA
- b. rRNA
- c. tRNA
- d. RNA polymerase

16 A group of three nucleotides is called a(n)

- a. Codon
- b. Anticodon
- c. Exon
- d. Intron

17 Of the 64 codons, how many are sense codons?

- a. 48
- b. 60
- c. 61
- d. 52

18 Perhaps 60–80% of genes are not regulated, but are

- a. Constitutive
- b. Continuous
- c. Degenerative
- d. Repressed

19 A set of operator and promoter sites and the structural genes they control is defined as

- a. a corepressor
- b. An operon
- c. An inducer
- d. cAMP

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20 The regulation of the lactose operon depends on the level of the following substance in the medium:

- a. DNA polymerase
- b. RNA polymerase
- c. Glucose
- d. Galactose

21 Ionizing radiation causes

- a. DNA to break
- b. Bonding between adjacent thymines
- c. Nitrogenous base substitutions
- d. The formation of highly reactive ions

22 What is the most common type of mutation involving single base pairs?

- a. Frameshift mutation
- b. Nonsense mutation
- c. Missense mutation
- d. Base substitution

23 Approximately what percentage of substances found by the Ames test to be mutagenic have been found to be carcinogenic in animals?

- a. 85%
- b. 75%
- c. 95%
- d. 90%

24 A bacteriophage is involved in

- a. Conjugation
- b. Transduction
- c. Transformation
- d. Transcription

25 The process in which bacterial DNA is transferred from a donor cell to a recipient cell inside a bacteriophage is called

- a. Conjugation
- b. Transduction
- c. Specialized transduction
- d. Transformation

26 What did Griffith's experiment demonstrate?

- a. Conjugation
- b. Transduction
- c. Transformation
- d. Transcription

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27 The best definition of a gene is?

- a. 3 nucleotides that code for an AA
- b. A segment of DNA
- c. A sequence of DNA that codes for a functional product
- d. A sequence of RNA that codes for a functional product
- e. A transcribed unit of DNA

28 What does transcription make?

- a. mRNA
- b. tRNA
- c. rRNA
- d. DNA

29 Which of the following is mismatched?

- a. RNA polymerase- makes RNA from an RNA template
- b. DNA polymerase- makes DNA from a DNA template
- c. DNA gyrase- twists DNA
- d. Transposase- insertion of DNA segments into DNA