

Lesson (3): Bacterial Genetics

1- Lysogenic conversion is caused by:

- a) Plasmids
- b) Prophage DNA
- c) Transposons
- d) Bacterial DNA
- e) Lytic bacteriophage

2- Genetic information in bacteria is carried on the following EXCEPT:

- a) Ribosomes
- b) Chromosome
- c) Transposons
- d) Plasmid
- e) Bacteriophage

3- All of the following about plasmids are true EXCEPT:

- a) Double stranded DNA molecules
- b) Replicate dependably on the bacterial chromosome
- c) Their length is about 1:50 of bacterial chromosome
- d) Ideal cloning vectors.

4- Genotypic variation can occur via all of the following EXCEPT:

- a) Conjugation
- b) Sporulation
- c) Transduction
- d) Transformation
- e) Mutation

5- One of the following requires cell contact:

- a) Transformation
- b) Conjugation
- c) Transduction
- d) Mutation

6- Plasmids are considered excellent vector in DNA recombinant technology because:

- a) Capable of independent replication
- b) Small in size
- c) Has a selectable marker (antibiotic resistance genes)
- d) All of the above

7- F- plasmid:

- a) Carry antibiotic resistance genes
- b) Contain a piece of bacterial chromosome
- c) Cannot be transferred by conjugation
- d) None of the above

8- The following are used for tracing the source of infection:

- a) Phage typing
- b) Plasmid
- c) Transposons
- d) None of the above

9- Bacterial mutation can be due to:

- a) Substitution
- b) Insertion
- c) Deletion
- d) All of the above

10- A segment of bacterial DNA that can move from place to place in the genome:

- a) Chromosome
- b) Transposons
- c) Plasmid
- d) Episom
- e) Bacteriophage

11- Gene transfer by sex pili between bacteria is called:

- a) Specialized transduction
- b) Transformation
- c) Generalized transduction
- d) None of the above

12- A change in the DNA nucleotide sequence of bacterial chromosome is called:

- a) Phenotypic variation
- b) Mutation
- c) Transformation
- d) None of the above

13- Uses of genetic engineering include the following:

- a) Gene therapy
- b) Production of human insulin
- c) Production of hepatitis B vaccine
- d) All of the above

14- In bacterial conjugation, the bacteria use:

- a) Flagella
- b) Bacteriophage
- c) Sex pili
- d) Capsule

15- Lysogenic cell is that:

- a) Contain prophage
- b) Contain inclusion bodies
- c) Lysed by complement
- d) Put in hypertonic solution

16- Transfer of genetic material by bacteriophage from one bacterium to another is:

- a) Mutation
- b) Conjugation
- c) Transformation
- d) Transduction

17- Phenotypic variation is:

- a) Heritable variation
- b) A form of mutation
- c) Reversible
- d) Not affected by environmental changes

18- Genotypic variation is:

- a) Due to gene transfer
- b) Reversible
- c) Affected by environmental changes
- d) Non heritable

19- F plasmid can be transferred from one bacterium to another by:

- a) Conjugation
- b) Transformation
- c) Transduction
- d) All of the above

20- R-factor of antibiotic resistance can be transmitted in bacteria by:

- a) Conjugation
- b) Transduction
- c) Transformation
- d) All of the above

21- During lysogeny, the bacteriophage:

- a) Causes lysis of the host cell
- b) Is latent in the host cell
- c) Has not yet infected the cell
- d) Induces the production of more viruses

22- Frequency of spontaneous mutation increase by:

- a) Ultraviolet rays
- b) Radiation
- c) Chemicals
- d) None of the above
- e) All of the above

23- Induced mutation is:

- a) None heritable variation
- b) Produced by plasmid transfer
- c) Produced by transduction
- d) Produced by X-rays

24- The generalized transduction is a process of gene transfer when:

- a) Free DNA is transferred to bacteria
- b) A transfer of a segment of donor DNA to recipient bacteria at random
- c) A specific bacteriophage transduces only a particular gene
- d) It occurs by temperate phage

25- When particular bacterial gene is transduced due to temperate phage, the process is called:

- a) Generalized transduction
- b) Abortive transduction
- c) Specialized transduction
- d) None of the above

26- Transduction is the transmission of gene from one bacterium to another through:

- a) Pili
- b) Bacteriophage
- c) Both
- d) Neither

27- Concerning bacterial mutation:

- a) The mutant properties are dependent upon genetic changes
- b) Rarely, mutation can occur spontaneously
- c) Mutagenic agents may be needed for occurrence of mutation
- d) All of the above

28- In transformation, the transferred genetic material is:

- a) Virulent bacteriophage
- b) mRNA
- c) Naked free DNA
- d) Transposon

29- Lysogenic bacteria may be induced to enter a lytic cycle by exposure to:

- a) Radiation
- b) Heat
- c) Certain chemicals
- d) All of the above

30- Bacterial conjugation:

- a) Requires the presence of sex pili
- b) Is mediated by bacteriophage
- c) Requires contact between the donor and recipient cell
- d) a & c

31- In lysogenic conversion, new properties are conferred in the bacterial cell by production of:

- a) Bacterial genes
- b) Sex factor genes
- c) Prophage genes
- d) All of the above

32- The following is NOT TRUE about bacteriophage:

- a) They are usually viruses infecting man
- b) May transfer drug resistance among bacteria
- c) May lead to production of toxins in certain bacteria
- d) Are used in bacterial typing

33- Antibiotic resistance can be induced by the following, EXCEPT:

- a) Plasmid transfer
- b) Genetic mutation
- c) Transduction
- d) Staining of the bacteria

34- The presence of the following is important for conjugation to occur:

- a) Bacteriophage
- b) Fertility factor
- c) Ultraviolet rays
- d) All of the above

35- The change of a non toxigenic strain into toxigenic cell is called:

- a) Conjugation
- b) Transduction
- c) Transformation
- d) Lysogenic conversion

36- Which of the following is/are essential for genetic engineering?

- a) Restriction endonucleases
- b) DNA ligase
- c) Plasmid vector/other vectors
- d) All of the above

37- The major application/s of genetic engineering is/are:

- a) In development of hepatitis B vaccine
- b) Production of human growth hormone
- c) Production of human insulin
- d) All of the above

38- Match:

- 1- Transformation
- 2- Transduction
- 3- Conjugation
- 4- Mutation

- a- Naked DNA is involved
- b- Part of bacterial genome is transferred by bacteriophage
- c- Permanent genotypic change
- d- Mediated by sex pili