11

Student: _____

1. Gene-splicing procedures may be performed with small loops of bacterial DNA that are not part of the main chromosome. These small DNA loops are called
   A. nucleotides.
   B. plasmids.
   C. translators.
   D. anticodons.

2. A eukaryotic cell that has had a prokaryotic gene inserted is called
   A. a genetically engineered cell.
   B. a GMO.
   C. a genetic recombinant.
   D. All of the choices are correct.

3. Using this technique it is possible to show the nucleotide sequence differences among individuals since no two people have the same nucleotide sequences.
   A. mutagenesis
   B. polymerase chain reaction
   C. genetic fingerprinting
   D. translocation

4. Recombinant DNA directly produces changes in
   A. cell wall.
   B. DNA.
   C. links between organisms.
   D. All of these answers are true.

5. Recombinant DNA is
   A. new nuclei.
   B. spliced DNA.
   C. a disease.
   D. All of these answers are true.

6. The laboratory procedure for copying selected segments of DNA is
   A. the polymerase chain reaction.
   B. translation.
   C. jumping genes.
   D. a point mutation.

7. DNA that contains "foreign" genes from another organism
   A. is called RNA.
   B. is called recombinant DNA.
   C. has experienced a point mutation.
   D. can no longer function as a genetic blueprint.

8. Genetic recombination involves the use of ____ enzymes to cut out segments of DNA.
   A. restriction endonuclease
   B. snurp
   C. ligase
   D. DNA polymerase

9. The term "recombinant DNA technology" refers to
   A. deliberately moving genes from one type of cell into another so that the new cell synthesizes that specific gene product.
   B. selective breeding.
   C. ensuring that a specific gene will be replicated over-and-over.
   D. synthesizing DNA from scratch.

10. Biotechnology expects to provide the following benefits:
   A. Improved agricultural crops.
   B. Control of human breeding.
   C. Cheaper medicines.
   D. Improved agricultural crops and cheaper medicines.

11. The structure of DNA was discovered in
   A. 1921.
   B. 1953.
   C. 1999.
   D. 2003.

12. This field is a collection of techniques that result in the ability to directly manipulate the genetic information of an organism.
   A. proteonomics.
   B. genomics.
   C. genetics.
   D. biotechnology.

13. Scientists don't look at all the possible fragments when performing this technique but focus on differences found in pieces of DNA that form repeating patterns in the DNA.
   A. DNA fingerprinting
   B. RNA sequencing
   C. amino acid sequencing
   D. protein fingerprinting

14. By focusing on these regions when doing DNA fingerprinting, it is possible to determine whether samples from two individuals have the same number of repeating segments.
   A. DNA fragments
   B. repeating nucleotide sequences
   C. nucleotide tandem clusters
   D. chain sequences

15. This procedure is a technique used to generate large quantities of DNA from minute amounts for analysis.
   A. variable number tandem repeat reaction (VNTR)
   B. polymerase chain reaction (PCR)
   C. DNA fingerprinting
   D. polymerization reaction

16. This enzyme drives the DNA replication process during the PCR.
   A. helicases
   B. ligase
   C. phosphorylase
   D. DNA polymerase

17. These are used as the basis of comparison when two samples of DNA are suspected of being from the same person.
   A. fingernail samples
   B. restriction enzymes
   C. variable number tandem repeats (VNTRs)
   D. restriction fragments

18. When these enzymes bind to a restriction site, they cut the DNA molecule into two molecules.
    A. polymerases
    B. ligases
    C. restriction enzymes
    D. helicases

19. In DNA fingerprinting, scientists look for different lengths of these DNA pieces as an indicator of differences in VNTRs.
    A. primer molecules
    B. point mutation
    C. Eco RI Restriction Sites
    D. restriction fragments

20. This process uses an electrical current to move DNA through a gel matrix based on size.
    A. gel electrophoresis
    B. PCR
    C. translocation
    D. gel transformation

21. When scientists work with small areas of DNA, this process allows them to isolate specific stretches of DNA for other applications.
    A. transformation
    B. electrophoresis
    C. DNA fingerprinting
    D. restriction enzyme analysis

22. These enzymes have the ability to cut DNA at places where specific sequences of nucleotides occur.
    A. restriction
    B. ligases
    C. helicases
    D. polymerases

23. In criminal cases, if 100% of the banding pattern matches a DNA fingerprint, it is
    A. unlikely that the suspect was at the scene of the crime and may be the guilty party.
    B. highly probable that the suspect was at the scene of the crime but unlikely that he/she is the guilty party.
    C. unlikely that the suspect was at the scene of the crime.
    D. highly probable that the suspect was at the scene of the crime and may be the guilty party.

24. In a paternity case, bands from DNA fingerprinting that are common to both the biological mother and the child are identified and eliminated from further consideration. If the remaining bands can be matched to the presumed father,
    A. it is extremely likely that he is the father.
    B. it is extremely unlikely that he is the father.
    C. there is no doubt, he is the father.
    D. DNA fingerprinting cannot be used to determine paternity.

25. This was a 13-year effort to determine the normal or human DNA sequence.
    A. Embryo Cloning Project (ECP)
    B. Human Genome Project (HGP)
    C. Stem Cell Research Project (SRP)
    D. Gene Therapy Project (GTP)

26. DNA sequencing data from the Human Genome Project indicates that there are about _____ protein-coding genes.
    A. 100,000
    B. 140,000
    C. 20,000
    D. 30,000

27. From an evolutionary perspective, the advantage to the cell of having these is the ability to quickly create large amounts of gene product from these repeating genes.
    A. replication mutations
    B. tandem clusters
    C. repeating segments
    D. repeating clusters

28. These types of repeating genes are copied from one chromosome and moved as a set to another chromosome and allow for genetic back-ups of information.
    A. segmental duplications
    B. tandem clusters
    C. repeating clusters
    D. translocation mutations

29. Which is not true?
    A. Eukaryotic genomes are more complex than prokaryotic genomes.
    B. Humans possess roughly 100,000 genes.
    C. Genes found in humans and other eukaryotic organisms appear to have resulted from transfer of genes from bacteria to eukaryotes.
    D. Genes are equally distributed between chromosomes and equally distributed along the length of a chromosome.

30. Many noncoding sequences are involved with
    A. intron formation.
    B. regulation of gene expression.
    C. coding for antibody formation.
    D. tRNA synthesis.

31. This study involves the comparison of the genomes of different organisms and can help determine the relatedness and genes of different species.
    A. genomics
    B. transcriptomics
    C. proteomics
    D. cloning technology

32. This emerging field looks at when, where, and how much mRNA is expressed from a gene.
    A. genomics
    B. transcriptomics
    C. proteomics
    D. cloning technology

33. This field of biotechnology examines the proteins that are predicted from the DNA sequence from which scientists can identify gene families and how humans may have evolved at a molecular level.
    A. genomics
    B. transcriptomics
    C. proteomics
    D. cloning technology

34. This occurs when a cell gains new genetic information from its environment.
    A. genetic transformation
    B. translocation
    C. conjugation
    D. replication

35. When a DNA sequence is transferred into a host cell from another cell, the resulting new form of DNA is called
    A. a clone.
    B. GM organism.
    C. recombinant DNA.
    D. plasmid.

36. This term refers to the outcome, not the way that the results are achieved, when exact copies of biological entities such as genes, organisms, or cells are produced.
    A. GM organism
    B. plasmid
    C. plastid
    D. clone

37. This process reproduces many varieties of fruit trees and other plants by making cuttings of the plant and rooting the cuttings.
    A. cloning
    B. sexual reproduction
    C. meiosis
    D. somatic cell transfer

38. This is the more technical term used by scientists to describe the carrier DNA molecule used when cloning genes.
    A. plasmid
    B. vector
    C. plastic
    D. restriction fragment

39. This circular piece of DNA is an example of a vector that is used to carry DNA into bacterial cells.
    A. restriction fragment
    B. library
    C. variable number tandem repeat
    D. plasmid

40. Bacterial cells pick up a recombinant DNA by taking it in through their outer cell boundaries using a process called
    A. transformation.
    B. transduction.
    C. cloning.
    D. plasmid transfer.

41. This procedure makes possible the synthesis of large quantities of proteins.
    A. recombinant DNA technology
    B. stem cell transfer
    C. somatic cell transfer
    D. proteomics

42. There has been great success in using genetically modified bacteria to clean up oil spills and toxic waste dumps called
    A. gene cloning.
    B. biological amplification.
    C. transcriptomics.
    D. bioremediation.

43. Researchers have shown that turnips can produce interferon (an antiviral agent) and tobacco plants can create antibodies to fight human disease as a result of controlled genetic alteration. Such plants are known as
    A. Genetically Manipulated (GM) organisms.
    B. cloned organisms.
    C. Genetically Modified (GM) organisms.
    D. vector organisms.

44. This field of biotechnology involves inserting genes, deleting genes, or manipulating the action of genes in order to cure or lessen the effect of genetic diseases.
    A. gene therapy
    B. DNA librarian
    C. genetic counseling
    D. genetic therapeutic medicine

45. The technique used to accomplish cloning in vertebrates is called
    A. gametic cell nuclear transfer.
    B. somatic cell nuclear transfer.
    C. recombinant technology.
    D. *in vitro* fertilization.

46. This is the process a cell goes through to select which genes it will express.
    A. differentiation
    B. somatic cell transfer
    C. discrimination
    D. determination

47. This is the process a cell goes through to become a particular cell type, based on the proteins that it expresses and is more-or-less a permanent condition.
    A. differentiation
    B. somatic cell transfer
    C. discrimination
    D. determination

48. These cells have not yet completed determination or differentiation. They have the potential to develop into many different cell types.
    A. germinal cells
    B. core cells
    C. stem cells
    D. red marrow cells

49. The ability to control these processes may allow manipulation of an organism's cells or insertion of cells into an organism to allow the regrowth of damaged tissues and organs in humans.
    A. vector and somatic cell transformation
    B. mitosis and meiosis
    C. determination and differentiation
    D. transformation and transduction

50. These stem cells are able to become the many different types of cells found in our blood — red blood cells, white blood cells, platelets.
    A. hematopoietic
    B. RBC/WBC
    C. germinal
    D. omnipototential

51. The first goal of the Human Genome Project was to
    A. construct chromosome maps for the entire human genome.
    B. understand the meiotic process.
    C. cure all human genetic diseases.
    D. determine the structure of DNA.

52. A process of making exact copies of the cells of animals such as cats in the laboratory is technically known as
    A. somatic cell nuclear transfer.
    B. artificial insemination.
    C. in vitro fertilization.
    D. co-mingling.

53. New bacterial characteristics are being produced by splicing strands of
    A. mRNA.
    B. carbohydrates.
    C. tRNA.
    D. DNA.

54. The most important applications of this technology involves the insertion of genes the make a crop plant
    A. resistant to herbicides.
    B. generate more cells.
    C. produce medicines.
    D. produce alcohol for fuel.

55. The primary application of this technology is to put herbicide resistance genes into crop plants.
    A. Somatic cell transfer
    B. GM
    C. PCR
    D. Electrophoresis

56. *Bacillus thuringiensis israeliensis* (Bti) produces a protein that causes the destruction of the lining of the gut of insects that eat it and is therefore
    A. a natural insecticide.
    B. a GM organism.
    C. the result of somatic cell transfer.
    D. all the above are true.

57. Embryonic stem cells reach an intermediary level of determination at which they are committed to becoming a particular _____ type, but not necessarily a particular ____ type.
    A. cell/tissue
    B. tissue/organ
    C. tissue/cell
    D. organ/tissue

58. The procedure provides the most detailed look that we are able to have of the organism's genetic information.
    A. PCR
    B. cloning
    C. genetic modification of organisms
    D. DNA sequencing

11 Key

1. Gene-splicing procedures may be performed with small loops of bacterial DNA that are not part of the main chromosome. These small DNA loops are called
   A. nucleotides.
   B. plasmids.
   C. translators.
   D. anticodons.

Blooms Level: 1. Remember
Enger - Chapter 11 #1
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

2. A eukaryotic cell that has had a prokaryotic gene inserted is called
   A. a genetically engineered cell.
   B. a GMO.
   C. a genetic recombinant.
   D. All of the choices are correct.

Blooms Level: 1. Remember
Enger - Chapter 11 #2
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

3. Using this technique it is possible to show the nucleotide sequence differences among individuals since no two people have the same nucleotide sequences.
   A. mutagenesis
   B. polymerase chain reaction
   C. genetic fingerprinting
   D. translocation

Blooms Level: 1. Remember
Enger - Chapter 11 #3
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.02
Topic: Biotechnology

4. Recombinant DNA directly produces changes in
   A. cell wall.
   B. DNA.
   C. links between organisms.
   D. All of these answers are true.

Blooms Level: 1. Remember
Enger - Chapter 11 #4
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

5. Recombinant DNA is
   A. new nuclei.
   B. spliced DNA.
   C. a disease.
   D. All of these answers are true.

Blooms Level: 1. Remember
Enger - Chapter 11 #5
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

6. The laboratory procedure for copying selected segments of DNA is
A. the polymerase chain reaction.
B. translation.
C. jumping genes.
D. a point mutation.

Blooms Level: 1. Remember
Enger - Chapter 11 #6
Learning Outcome: Describe the advantage of PCR.
Section: 11.02
Topic: Biotechnology

7. DNA that contains "foreign" genes from another organism
A. is called RNA.
B. is called recombinant DNA.
C. has experienced a point mutation.
D. can no longer function as a genetic blueprint.

Blooms Level: 1. Remember
Enger - Chapter 11 #7
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

8. Genetic recombination involves the use of ____ enzymes to cut out segments of DNA.
A. restriction endonuclease
B. snurp
C. ligase
D. DNA polymerase

Blooms Level: 1. Remember
Enger - Chapter 11 #8
Learning Outcome: Describe the use of restriction enzymes.
Section: 11.02
Topic: Biotechnology

9. The term "recombinant DNA technology" refers to
A. deliberately moving genes from one type of cell into another so that the new cell synthesizes that specific gene product.
B. selective breeding.
C. ensuring that a specific gene will be replicated over-and-over.
D. synthesizing DNA from scratch.

Blooms Level: 1. Remember
Enger - Chapter 11 #9
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

10. Biotechnology expects to provide the following benefits:
A. Improved agricultural crops.
B. Control of human breeding.
C. Cheaper medicines.
D. Improved agricultural crops and cheaper medicines.

Blooms Level: 2. Understand
Enger - Chapter 11 #10
Learning Outcome: Identify potential medical treatments based on DNA technology.
Section: 11.01
Topic: Biotechnology

11. The structure of DNA was discovered in
A. 1921.
B. 1953.
C. 1999.
D. 2003.

Blooms Level: 1. Remember
Enger - Chapter 11 #11
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.01
Section: 11.02
Topic: Biotechnology

12. This field is a collection of techniques that result in the ability to directly manipulate the genetic information of an organism.
A. proteonomics.
B. genomics.
C. genetics.
D. biotechnology.

Blooms Level: 1. Remember
Enger - Chapter 11 #12
Learning Outcome: Identify potential medical treatments based on DNA technology.
Section: 11.01
Topic: Biotechnology

13. Scientists don't look at all the possible fragments when performing this technique but focus on differences found in pieces of DNA that form repeating patterns in the DNA.
A. DNA fingerprinting
B. RNA sequencing
C. amino acid sequencing
D. protein fingerprinting

Blooms Level: 2. Understand
Enger - Chapter 11 #13
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.02
Topic: Biotechnology

14. By focusing on these regions when doing DNA fingerprinting, it is possible to determine whether samples from two individuals have the same number of repeating segments.
A. DNA fragments
B. repeating nucleotide sequences
C. nucleotide tandem clusters
D. chain sequences

Blooms Level: 2. Understand
Enger - Chapter 11 #14
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.02
Topic: Biotechnology

15. This procedure is a technique used to generate large quantities of DNA from minute amounts for analysis.
A. variable number tandem repeat reaction (VNTR)
B. polymerase chain reaction (PCR)
C. DNA fingerprinting
D. polymerization reaction

Blooms Level: 1. Remember
Enger - Chapter 11 #15
Learning Outcome: Describe the advantage of PCR.
Section: 11.02
Topic: Biotechnology

16. This enzyme drives the DNA replication process during the PCR.
A. helicases
B. ligase
C. phosphorylase
D. DNA polymerase

Blooms Level: 1. Remember
Enger - Chapter 11 #16
Learning Outcome: Describe the advantage of PCR.
Section: 11.02
Topic: Biotechnology

17. These are used as the basis of comparison when two samples of DNA are suspected of being from the same person.
A. fingernail samples
B. restriction enzymes
C. variable number tandem repeats (VNTRs)
D. restriction fragments

Blooms Level: 2. Understand
Enger - Chapter 11 #17
Learning Outcome: Describe the advantage of PCR.
Section: 11.02
Topic: Biotechnology

18. When these enzymes bind to a restriction site, they cut the DNA molecule into two molecules.
A. polymerases
B. ligases
C. restriction enzymes
D. helicases

Blooms Level: 1. Remember
Enger - Chapter 11 #18
Learning Outcome: Describe the advantage of PCR.
Section: 11.02
Topic: Biotechnology

19. In DNA fingerprinting, scientists look for different lengths of these DNA pieces as an indicator of differences in VNTRs.
A. primer molecules
B. point mutation
C. Eco RI Restriction Sites
D. restriction fragments

Blooms Level: 2. Understand
Enger - Chapter 11 #19
Learning Outcome: Describe the advantage of PCR.
Section: 11.02
Topic: Biotechnology

20. This process uses an electrical current to move DNA through a gel matrix based on size.
A. gel electrophoresis
B. PCR
C. translocation
D. gel transformation

Blooms Level: 1. Remember
Enger - Chapter 11 #20
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.02
Topic: Biotechnology

21. When scientists work with small areas of DNA, this process allows them to isolate specific stretches of DNA for other applications.
A. transformation
B. electrophoresis
C. DNA fingerprinting
D. restriction enzyme analysis

Blooms Level: 1. Remember
Enger - Chapter 11 #21
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.03
Topic: Biotechnology

22. These enzymes have the ability to cut DNA at places where specific sequences of nucleotides occur.
A. restriction
B. ligases
C. helicases
D. polymerases

Blooms Level: 1. Remember
Enger - Chapter 11 #22
Learning Outcome: Describe the use of restriction enzymes.
Section: 11.02
Topic: Biotechnology

23. In criminal cases, if 100% of the banding pattern matches a DNA fingerprint, it is
A. unlikely that the suspect was at the scene of the crime and may be the guilty party.
B. highly probable that the suspect was at the scene of the crime but unlikely that he/she is the guilty party.
C. unlikely that the suspect was at the scene of the crime.
D. highly probable that the suspect was at the scene of the crime and may be the guilty party.

Blooms Level: 3. Apply
Enger - Chapter 11 #23
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.02
Topic: Biotechnology

24. In a paternity case, bands from DNA fingerprinting that are common to both the biological mother and the child are identified and eliminated from further consideration. If the remaining bands can be matched to the presumed father,
A. it is extremely likely that he is the father.
B. it is extremely unlikely that he is the father.
C. there is no doubt, he is the father.
D. DNA fingerprinting cannot be used to determine paternity.

Blooms Level: 2. Understand
Enger - Chapter 11 #24
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.02
Topic: Biotechnology

25. This was a 13-year effort to determine the normal or human DNA sequence.
A. Embryo Cloning Project (ECP)
B. Human Genome Project (HGP)
C. Stem Cell Research Project (SRP)
D. Gene Therapy Project (GTP)

Blooms Level: 1. Remember
Enger - Chapter 11 #25
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.02
Topic: Biotechnology

26. DNA sequencing data from the Human Genome Project indicates that there are about _____ protein-coding genes.
A. 100,000
B. 140,000
C. 20,000
D. 30,000

Blooms Level: 1. Remember
Enger - Chapter 11 #26
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.02
Topic: Biotechnology

27. From an evolutionary perspective, the advantage to the cell of having these is the ability to quickly create large amounts of gene product from these repeating genes.
A. replication mutations
B. tandem clusters
C. repeating segments
D. repeating clusters

Blooms Level: 1. Remember
Enger - Chapter 11 #27
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.02
Topic: Biotechnology

28. These types of repeating genes are copied from one chromosome and moved as a set to another chromosome and allow for genetic back-ups of information.
A. segmental duplications
B. tandem clusters
C. repeating clusters
D. translocation mutations

Blooms Level: 1. Remember
Enger - Chapter 11 #28
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.02
Topic: Biotechnology

29. Which is not true?
A. Eukaryotic genomes are more complex than prokaryotic genomes.
B. Humans possess roughly 100,000 genes.
C. Genes found in humans and other eukaryotic organisms appear to have resulted from transfer of genes from bacteria to eukaryotes.
D. Genes are equally distributed between chromosomes and equally distributed along the length of a chromosome.

Blooms Level: 2. Understand
Enger - Chapter 11 #29
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.01
Section: 11.02
Topic: Biotechnology

30. Many noncoding sequences are involved with
A. intron formation.
B. regulation of gene expression.
C. coding for antibody formation.
D. tRNA synthesis.

Blooms Level: 1. Remember
Enger - Chapter 11 #30
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.02
Topic: Biotechnology

31. This study involves the comparison of the genomes of different organisms and can help determine the relatedness and genes of different species.
A. genomics
B. transcriptomics
C. proteomics
D. cloning technology

Blooms Level: 1. Remember
Enger - Chapter 11 #31
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.02
Topic: Biotechnology

32. This emerging field looks at when, where, and how much mRNA is expressed from a gene.
A. genomics
B. transcriptomics
C. proteomics
D. cloning technology

Blooms Level: 1. Remember
Enger - Chapter 11 #32
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.02
Topic: Biotechnology

33. This field of biotechnology examines the proteins that are predicted from the DNA sequence from which scientists can identify gene families and how humans may have evolved at a molecular level.
A. genomics
B. transcriptomics
C. proteomics
D. cloning technology

Blooms Level: 1. Remember
Enger - Chapter 11 #33
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.02
Topic: Biotechnology

34. This occurs when a cell gains new genetic information from its environment.
A. genetic transformation
B. translocation
C. conjugation
D. replication

Blooms Level: 1. Remember
Enger - Chapter 11 #34
Learning Outcome: Explain how DNA can be used to uniquely identify individuals.
Section: 11.03
Topic: Biotechnology

35. When a DNA sequence is transferred into a host cell from another cell, the resulting new form of DNA is called
A. a clone.
B. GM organism.
C. recombinant DNA.
D. plasmid.

Blooms Level: 1. Remember
Enger - Chapter 11 #35
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

36. This term refers to the outcome, not the way that the results are achieved, when exact copies of biological entities such as genes, organisms, or cells are produced.
A. GM organism
B. plasmid
C. plastid
D. clone

Blooms Level: 2. Understand
Enger - Chapter 11 #36
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

37. This process reproduces many varieties of fruit trees and other plants by making cuttings of the plant and rooting the cuttings.
A. cloning
B. sexual reproduction
C. meiosis
D. somatic cell transfer

Blooms Level: 1. Remember
Enger - Chapter 11 #37
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

38. This is the more technical term used by scientists to describe the carrier DNA molecule used when cloning genes.
A. plasmid
B. vector
C. plastic
D. restriction fragment

Blooms Level: 1. Remember
Enger - Chapter 11 #38
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

39. This circular piece of DNA is an example of a vector that is used to carry DNA into bacterial cells.
A. restriction fragment
B. library
C. variable number tandem repeat
D. plasmid

Blooms Level: 1. Remember
Enger - Chapter 11 #39
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

40. Bacterial cells pick up a recombinant DNA by taking it in through their outer cell boundaries using a process called
A. transformation.
B. transduction.
C. cloning.
D. plasmid transfer.

Blooms Level: 1. Remember
Enger - Chapter 11 #40
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

41. This procedure makes possible the synthesis of large quantities of proteins.
A. recombinant DNA technology
B. stem cell transfer
C. somatic cell transfer
D. proteomics

Blooms Level: 1. Remember
Enger - Chapter 11 #41
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.03
Topic: Biotechnology

42. There has been great success in using genetically modified bacteria to clean up oil spills and toxic waste dumps called
A. gene cloning.
B. biological amplification.
C. transcriptomics.
D. bioremediation.

Blooms Level: 1. Remember
Enger - Chapter 11 #42
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.03
Topic: Biotechnology

43. Researchers have shown that turnips can produce interferon (an antiviral agent) and tobacco plants can create antibodies to fight human disease as a result of controlled genetic alteration. Such plants are known as
A. Genetically Manipulated (GM) organisms.
B. cloned organisms.
C. Genetically Modified (GM) organisms.
D. vector organisms.

Blooms Level: 1. Remember
Enger - Chapter 11 #43
Learning Outcome: Explain how DNA from one organism is used in another organism.
Section: 11.03
Topic: Biotechnology

44. This field of biotechnology involves inserting genes, deleting genes, or manipulating the action of genes in order to cure or lessen the effect of genetic diseases.
A. gene therapy
B. DNA librarian
C. genetic counseling
D. genetic therapeutic medicine

Blooms Level: 1. Remember
Enger - Chapter 11 #44
Learning Outcome: Identify potential medical treatments based on DNA technology.
Section: 11.03
Topic: Biotechnology

45. The technique used to accomplish cloning in vertebrates is called
A. gametic cell nuclear transfer.
B. somatic cell nuclear transfer.
C. recombinant technology.
D. *in vitro* fertilization.

Blooms Level: 1. Remember
Enger - Chapter 11 #45
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.03
Topic: Biotechnology

46. This is the process a cell goes through to select which genes it will express.
A. differentiation
B. somatic cell transfer
C. discrimination
D. determination

Blooms Level: 1. Remember
Enger - Chapter 11 #46
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.03
Topic: Biotechnology

47. This is the process a cell goes through to become a particular cell type, based on the proteins that it expresses and is more-or-less a permanent condition.
A. differentiation
B. somatic cell transfer
C. discrimination
D. determination

Blooms Level: 1. Remember
Enger - Chapter 11 #47
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.03
Topic: Biotechnology

48. These cells have not yet completed determination or differentiation. They have the potential to develop into many different cell types.
A. germinal cells
B. core cells
C. stem cells
D. red marrow cells

Blooms Level: 1. Remember
Enger - Chapter 11 #48
Learning Outcome: Identify the ethical and moral implications of stem cells.
Section: 11.04
Topic: Biotechnology

49. The ability to control these processes may allow manipulation of an organism's cells or insertion of cells into an organism to allow the regrowth of damaged tissues and organs in humans.
A. vector and somatic cell transformation
B. mitosis and meiosis
C. determination and differentiation
D. transformation and transduction

Blooms Level: 2. Understand
Enger - Chapter 11 #49
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.03
Topic: Biotechnology

50. These stem cells are able to become the many different types of cells found in our blood — red blood cells, white blood cells, platelets.
A. hematopoietic
B. RBC/WBC
C. germinal
D. omnipototential

Blooms Level: 1. Remember
Enger - Chapter 11 #50
Learning Outcome: Identify medical treatments that can benefit from stem cells and explain why.
Section: 11.04
Topic: Biotechnology

51. The first goal of the Human Genome Project was to
A. construct chromosome maps for the entire human genome.
B. understand the meiotic process.
C. cure all human genetic diseases.
D. determine the structure of DNA.

Blooms Level: 1. Remember
Enger - Chapter 11 #51
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.02
Topic: Biotechnology

52. A process of making exact copies of the cells of animals such as cats in the laboratory is technically known as
A. somatic cell nuclear transfer.
B. artificial insemination.
C. in vitro fertilization.
D. co-mingling.

Blooms Level: 1. Remember
Enger - Chapter 11 #52
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.03
Topic: Biotechnology

53. New bacterial characteristics are being produced by splicing strands of
A. mRNA.
B. carbohydrates.
C. tRNA.
D. DNA.

Blooms Level: 1. Remember
Enger - Chapter 11 #53
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.02
Topic: Biotechnology

54. The most important applications of this technology involves the insertion of genes the make a crop plant
A. resistant to herbicides.
B. generate more cells.
C. produce medicines.
D. produce alcohol for fuel.

Blooms Level: 1. Remember
Enger - Chapter 11 #54
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.05
Topic: Biotechnology

55. The primary application of this technology is to put herbicide resistance genes into crop plants.
A. Somatic cell transfer
B. GM
C. PCR
D. Electrophoresis

Blooms Level: 1. Remember
Enger - Chapter 11 #55
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.05
Topic: Biotechnology

56. *Bacillus thuringiensis israeliensis* (Bti) produces a protein that causes the destruction of the lining of the gut of insects that eat it and is therefore
A. a natural insecticide.
B. a GM organism.
C. the result of somatic cell transfer.
D. all the above are true.

Blooms Level: 1. Remember
Enger - Chapter 11 #56
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.05
Topic: Biotechnology

57. Embryonic stem cells reach an intermediary level of determination at which they are committed to becoming a particular _____ type, but not necessarily a particular ____ type.
A. cell/tissue
B. tissue/organ
C. tissue/cell
D. organ/tissue

Blooms Level: 2. Understand
Enger - Chapter 11 #57
Learning Outcome: Identify medical treatments that can benefit from stem cells and explain why.
Learning Outcome: Identify the ethical and moral implications of stem cells.
Section: 11.04
Topic: Biotechnology

58. The procedure provides the most detailed look that we are able to have of the organism's genetic information.
A. PCR
B. cloning
C. genetic modification of organisms
D. DNA sequencing

Blooms Level: 1. Remember
Enger - Chapter 11 #58
Learning Outcome: Describe the purpose of sequencing DNA.
Section: 11.02
Topic: Biotechnology

11 Summary

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