Name: _____ Group: _____ Date: _____

Checkup • Chapter 8

1 What is a biotechnology? *(p. 236)*

1. What is the difference between technology and biotechnology?

_____

_____

_____

_____

_____

_____

2. What am I?

a) To replicate, I have to get into a cell and use its structures. _____

b) I help accelerate chemical reactions in the body. _____

c) I am a unicellular organism without a nucleus. _____

d) I am a unicellular mould. _____

e) I am a ring-shaped segment of genetic information. _____

f) I am a molecule containing an individual's genetic information. _____

2 Traditional biotechnologies *(pp. 237–239)*

3. When did human beings start using biotechnology?

_____

_____

_____

_____

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4. How is selective breeding different from natural breeding?

_____

_____

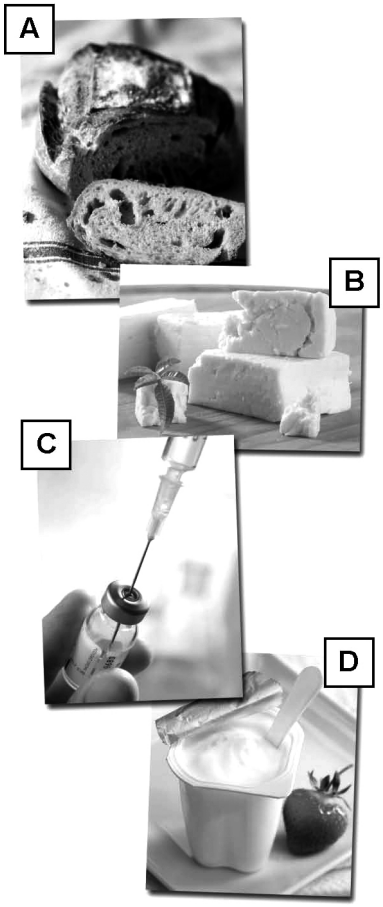
_____

_____

5. Brittany retrievers are great in finding and fetching game because they have been selected for their sense of smell and for their calm and cautious nature. Provide two examples of desired traits used when breeding Malamute huskies.

- _____
- _____
- _____
- _____

6. Look at the photos at right.



a) Identify the product(s) made using enzymes.

_____

_____

_____

b) Identify the product(s) made using yeast.

_____

_____

_____

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3 Modern biotechnologies

(pp. 239–248)

7. Give two reasons that explain the development of modern biotechnology.

- _____
- _____

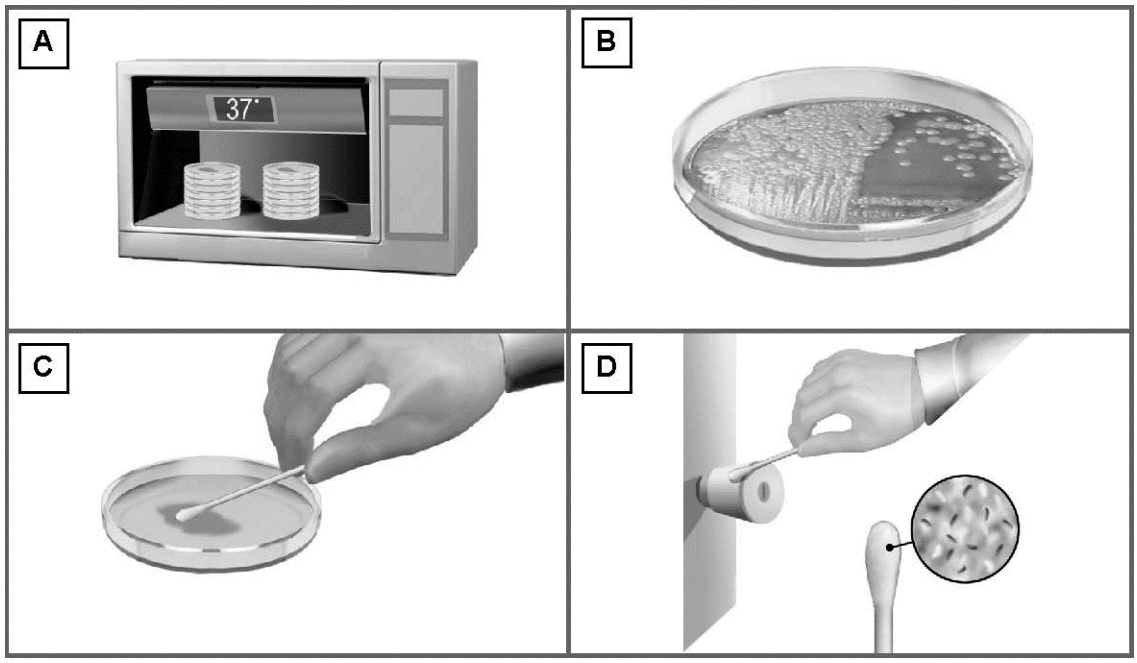
8. What is the meaning of the term *cell growth* in a cell culture?

_____

_____

_____

9. Illustrated below are the steps to follow when culturing unicellular organisms. The steps are not in the correct sequence. Name them and order them correctly.



A _____

B _____

C _____

D _____

Name: _____ Group: _____ Date: _____

10. A culture medium must have all the elements necessary for cell growth.

a) What are the seven main parameters that must be considered when preparing a culture medium?

1. _____

2. _____

3. _____

4. _____

5. _____

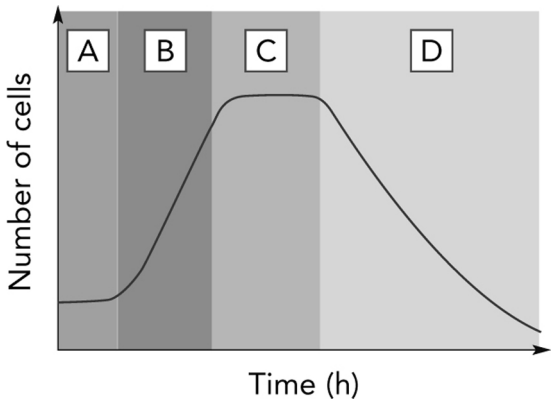
6. _____

7. _____

b) What are the two types of culture media?

- _____
- _____

11. The diagram at right illustrates the growth curve of a typical cell culture. Name and describe each of the four phases.



A _____

_____

B _____

_____

C _____

_____

D _____

_____

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12. Why should lab equipment be sterilized before and after use in a cell culture?

13. The following statements describe various methods used to sterilize lab equipment. Name the methods described in each statement.

a) This method destroys microorganisms using an oven.

b) This method destroys microorganisms using irradiation.

c) This method destroys microorganisms using a flame.

d) This method destroys microorganisms using a liquid solution or a gas.

e) This method destroys microorganisms using pressure and high temperature.

14. GMOs are spoken of and written about frequently these days.

a) What does GMO stand for?

b) What process makes it possible to create GMOs?

c) Describe the six steps needed to obtain a GMO.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

6. _____

_____

15. Cloning is a controversial issue.

a) What is cloning?

_____

_____

_____

_____

b) What is artificial cloning?

_____

_____

_____

_____

c) What is the difference between reproductive cloning and therapeutic cloning?

_____

_____

_____

_____

_____

_____

d) What is Canada's position on human cloning?

_____

_____

16. Cloning also occurs naturally.

a) Give an example of natural clones in plants.

_____

b) Give an example of natural clones in animals.

_____

17. Why do breeders use artificial insemination rather than natural reproduction methods to increase the size of their herds?

_____

_____

_____

4 Agro-food applications

(pp. 249–253)

18. GMOs are a controversial subject.

a) Give three examples to illustrate the benefits of GMOs.

- _____
  _____
- _____
  _____
- _____
  _____

b) Identify three concerns associated with the use of GMOs.

- _____
  _____
  _____
- _____
  _____
  _____

- _____

19. Name three traits that have been added to plants to improve crop yield.

- _____
- _____
- _____

20. Why do farmers prefer growing herbicide-resistant genetically modified plants?

_____

21. Name three genetically modified crops that are grown in significant quantities in Québec.

- _____ • _____ • _____

22. Why is it easier to genetically modify a plant rather than an animal? Give two reasons.

- _____
- _____

23. Pasteurization is a treatment process applied to some foods.

a) What is the purpose of pasteurization?

_____

_____

_____

b) How is pasteurization carried out?

_____

_____

_____

c) Why do we pasteurize some types of food and not others?

_____

_____

_____

5 Medical applications

(pp. 253–263)

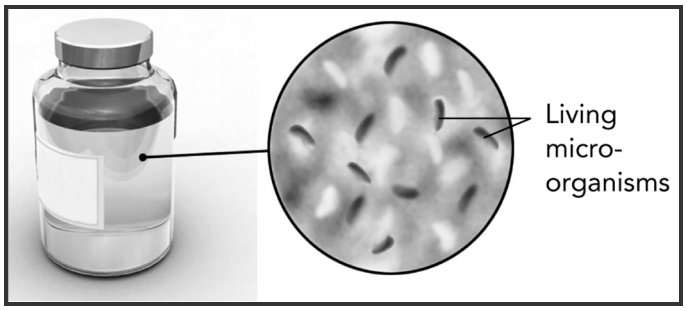
24. Vaccines strengthen immunity against several infectious agents. What is immunity?

_____

_____

_____

25. Study the following illustrations and name the type of vaccine shown in each case.



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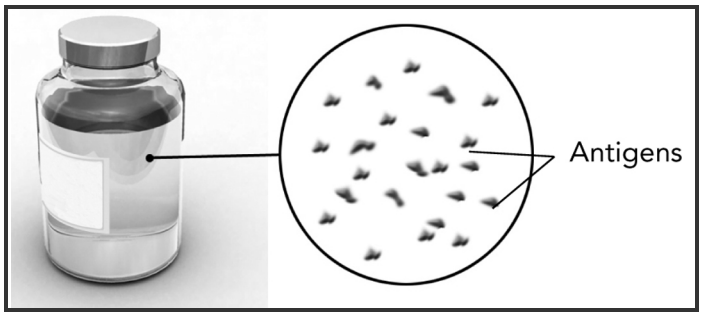


_____

26. According to Québec's regular vaccination schedule, all children must get an MMR vaccine.

a) Against what diseases does this vaccine develop protection?

_____

b) How many doses should a child receive and at what age?

_____

_____

27. What is assisted reproduction?

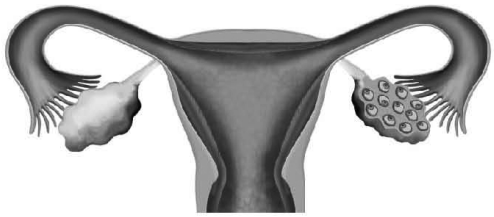
_____

_____

_____

28. Following are illustrations of four techniques used to treat infertility. Name them.

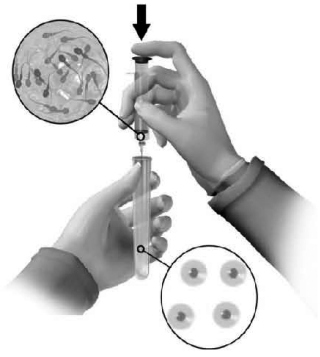
1



_____

_____

2



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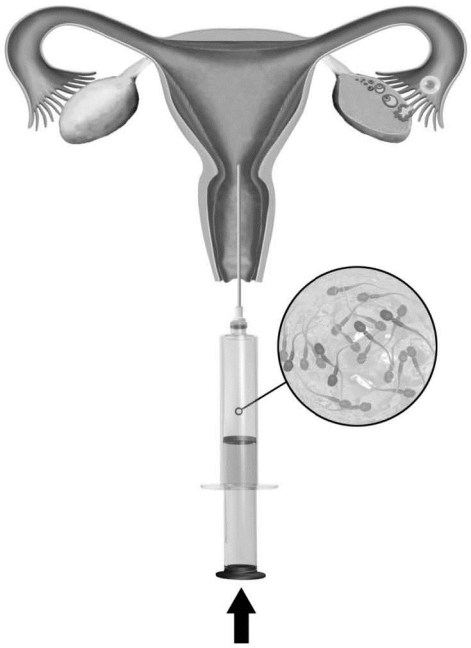
Name: _____ Group: _____ Date: _____

3



4

_____ _____

_____ _____

29. The human organism is made up of two types of cells: specialized cells and stem cells.

a) Describe each type of cell.

Specialized cell: _____

_____

_____

_____

Stem cell: _____

_____

_____

_____

b) Why is the culturing of stem cells so controversial?

_____

_____