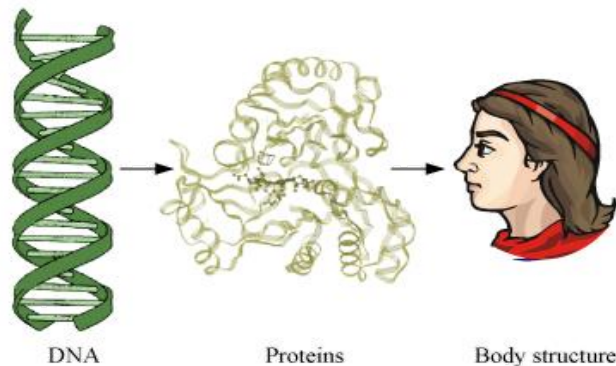


1. What is the importance of DNA copying in reproduction?

Ans. DNA (Deoxyribonucleic acid) is the genetic material found in the chromosomes, which are present in the nucleus of a cell. The DNA is the information site for making proteins and each specific type of protein leads to a specific type of body design.

Thus, it is the DNA molecule that determines the body design of an individual. Therefore, it can be concluded that it is the DNA that gets transferred from parents to offspring and makes them look similar.



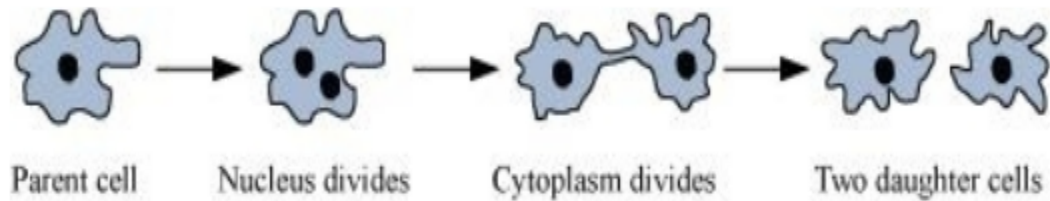
DNA determines body structure

2. Why is variation beneficial to the species but not necessarily for the individual?

Ans. Variations are beneficial to the species than individuals because sometimes for a species, the environmental conditions change so drastically that their survival becomes difficult. For example, if the temperature of water increases suddenly, then most of the bacteria living in that water would die. Only a few variants that are resistant to heat would be able to survive. However, if these variants were not there, then the entire species of bacteria would have been destroyed. Thus, these variants help in the survival of the species. However, all variations are not necessarily beneficial for individual organisms.

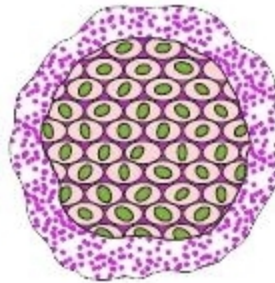
3. How does binary fission differ from multiple fission?

Ans. In binary fission, a single cell divides into two equal halves. Amoeba and Bacteria divide by binary fission.



Binary fission in Amoeba

In multiple fission, a single cell divides into many daughter cells simultaneously. Amoeba and Plasmodium divide by multiple fission.



Multiple fission in Plasmodium

4. How will an organism be benefited if it reproduces through spores?

Ans. There are many advantages if an organism reproduces through spores.

Advantages of spore formation.

- Large numbers of spores are produced in one sporangium.
- Spores are distributed easily by air to far-off places to avoid competition at one place.
- Spores are covered by thick walls to prevent dehydration under unfavorable conditions.

5. Can you think of reasons why more complex organisms cannot give rise to new individuals through regeneration?

Ans. Simple organisms such as Hydra and Planaria are capable of producing new individuals through the process of regeneration. The process of regeneration involves the formation of new organisms from their body parts. Simple organisms can utilize this method of reproduction as their entire body is made of similar kinds of cells in which any part of their body can be formed by growth and development.

However, complex organisms have an organ-system level of organization. All the organ systems of their body work together as interconnected units. They can regenerate their lost body parts

such as skin, muscles, blood, etc. However, they cannot give rise to new individuals through regeneration.

6. Why is vegetative propagation practiced for growing some types of plants?

Ans. Vegetative propagation is the ability of the plants to reproduce by producing new plants from the vegetative plant parts such as leaf, stem, or roots under appropriate conditions. This method is the only means of reproduction for some seedless plant varieties such as banana, rose, and jasmine. However, this method of reproduction is also used for agricultural purposes in the commercial production of some plants such as sugarcane, grapes, roses, etc.

7. Why is DNA copying an essential part of the process of reproduction?

Ans. DNA (Deoxyribonucleic acid) copying is an essential part of reproduction as it passes genetic information from parents to offspring. It determines the body design of an individual. The reproducing cells produce a copy of their DNA through some chemical reactions and result in two copies of DNA. The copying of DNA always takes place along with the creation of the additional cellular structure. This process is then followed by the division of a cell to form two cells.

8. How is the process of pollination different from fertilization?

Ans. Pollination is the process of transfer of pollens from anther to stigma. It occurs with the help of certain pollinators such as air, water, birds, or some insects.

Fertilization, on the other hand, is the fusion of the male and female gametes. It occurs inside the ovule and leads to the formation of a zygote.

9. What is the role of the seminal vesicles and the prostate gland?

Ans. The secretions from seminal vesicles and prostate glands lubricate the sperms and provide a fluid medium for easy transport of sperms. Their secretion also provides nutrients in the form of fructose, calcium, and some enzymes.

10. What are the changes seen in girls at the time of puberty?

Ans. Secondary sexual characteristics in girls.

- Increase in breast size and darkening of the skin of the nipples present at the tips of the breasts.
- The appearance of hair in the genital area.
- The appearance of hair in other areas of skin like underarms, face, hands, and legs.
- Increase in the size of the uterus and ovary.

- Beginning of menstrual cycle.

More secretion of oil from the skin, which results in the appearance of pimples.

11. How does the embryo get nourishment inside the mother's body?

Ans. The embryo develops inside the mother's body for about nine months. Inside the uterus, the outer tissue surrounding the embryo develops finger-like projections called villi. These villi are surrounded by uterine tissue and maternal blood. They provide a large surface area for the exchange of oxygen and nutrients. Also, there is a special tissue called the placenta, which is embedded in the uterine wall. The embryo receives the oxygen and nutrients from the mother's blood via the placenta. The waste materials produced by the embryo are also removed through the placenta.

12. If a woman is using a copper-T, will it help in protecting her from sexually transmitted diseases?

Ans. No. Using a copper-T will not protect from sexually transmitted diseases, as it does not prevent the entry of semen. It only prevents the implantation of the embryo in the uterus.