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 Questions 3, 5, 6

3) How is the zygote, produce by sexual reproduction, different from daughter cells, produced by asexual reproduction?

ans: The zygote has a combination of genes from both parenets, while the cell that undegoes mitosis is identical to the parent.

5) Identify the type of asexual reproduction in each of the following situations:

(a) A multicellular algae is struck by a wave. The algae breaks up and each new piece grows into a new organism.

Ans: Fragmentation

(b) A new tree begins to grow from the root of a nearby tree

Ans: Vegetative reproduction

(c) A small cell begins to grow on the outside of another cell. Eventually, it breaks away from the larger cell and continues to grow.

Ans: Budding

6.

Asexual Reproduction	
Advantages	Disadvantages
Does not require a mate/partner	No genetic variability (disease kills all)
Good traits always passed on	Bad traits always passed on
rapid	rapid

Case Study p 202 Answers

**A) Mother Cell = the cell marked "a"
Daughter Cell = the cells marked "d"**

B) Through asexual reproduction, the new cells would be identical to the old ones in both genetic and physical comparisons.

C) Through **sexual reproduction** the new cells would have **half** the genetic material **from any one parent**.

D) **Sexual Reproduction**

- usually occurs in multicellular organisms
- offspring are not identical to parent cells
- requires genetic material from 2 cells

Asexual Reproduction

- usually occurs in simple organisms
- offspring exactly like parent cell
- genetic material comes from 1 cell

E) Organisms that reproduce sexually may adapt better because they are getting genetic info from 2 sources rather than 1. This gives the offspring more options in terms of what it can do.

F) Through conjugation bacteria can quickly pick up new genes that allow them to do new things. (they are upgrading)

G) Conjugation

- only pieces of genetic info are shared
- it occurs quickly

Sexual Reproduction (humans)

- half of any one parent's genetic info is shared
- slow process, approximately 9 months

H) Fertilizing other eggs varies the gene pool and provides more possibilities for each organism.

DanePaul is amazing, I love him .. Write this down, class.

i) Worms are slow, do not see well and live in the ground. Being hermaphroditic allows them to vary their gene pool.

**K) Internal occurs inside the female's body
External occurs outside their body**

L) 23 Chromosomes can be found in both the sperm and the egg.

M) Summertime brings more food and resources for reproduction, therefore being female in the summer makes use of these benefits.

N) No, asexual reproduction means they are exact copies of the original which in this case are females.

O) Reproducing sexually varies the gene pool.

ᵝ) Asexually is

- quick
- you don't have to find a mate
- It also guarantees what the offspring will be.

Sexually provides variability for the next year's generation.

BUT first do SMART NOTE 3. Growth & Hormones

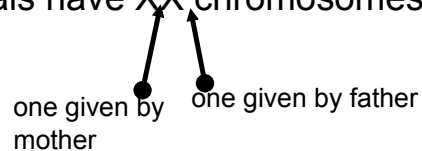
**Chapter 7:
Sexual Reproduction & the Diversity of Life**

Separate Sexes

Most complex animals and some plants have separate sexes (male / female)

Males - produce sperm cells (mammals have XY chromosomes)

Female - produce eggs cells (mammals have XX chromosomes)



Both Males & Females have a total of 46 chromosomes
(which is 23 pairs)

Animals with separate sexes use one of two different methods of fertilization

- 1) External Fertilization - sex cells unite outside the female's body
ex) Female Fish release egg cell , and male release sperm

- 2) Internal Fertilization- sex cells unite inside the female's body
ex) Humans

Meiosis

Human cells contain 46 chromosomes. Imagine what would happen if a human cell containing 46 chromosomes fertilized with another 46 chromosomes. The resulting cell would contain 92 chromosomes! If cells with 96 chromosomes united, the following offspring would have 184 chromosomes, and so on. For sexual reproduction to occur, there must be a way to reduce the number of chromosomes. This is why sex cells are formed with meiosis.

Meiosis produces sex cells that have half the number of chromosomes (Human sex cells have 23 chromosomes)



The 46 chromosomes is referred to as the diploid chromosome number. It is written $2n$. The 23-chromosome number is referred to as the haploid chromosome number and is given the symbol n .

Let's Try

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somatic → not a sex cell → Diploid

6) A muscle cell from a mouse has 22 chromosomes. How many chromosomes would you expect in

a) an unfertilized egg cell? 11

↳ sex cell → half the amount of chromosomes

b) a zygote? 22

↳ Baby

c) a brain cell? 22

↳

d) a sperm cell? 11