Ch 46.1 Notes

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Vocab

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Sexual Reproduction: A mode of reproduction that involves the fusion of gametes (sperm and egg) from two individuals to create offspring that have a combination of genetic material from both parents.

Egg: A female reproductive cell or gamete that is produced in the ovaries of female animals and is typically larger than a sperm cell.

Sperm: A male reproductive cell or gamete that is produced in the testes of male animals and is typically smaller than an egg cell.

Asexual Reproduction: A mode of reproduction that does not involve the fusion of gametes and typically results in offspring that are genetically identical to the parent.

Fission: A form of asexual reproduction in which an organism splits into two or more parts, each of which can grow into a new individual.

Parthenogenesis: A form of asexual reproduction in which an unfertilized egg develops into a new individual without the involvement of sperm.

Hermaphroditism: A condition in which an individual has both male and female reproductive organs and is capable of producing both sperm and eggs.

Ovulation: The process by which an egg is released from the ovary of a female animal into the reproductive tract, where it may be fertilized by sperm.

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Notes

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Both asexual and sexual reproduction occur in the animal kingdom

Zygote= fusion of haploid gametes

* Gametes formed by meiosis

Male vs female gamete

Asexual

* Form through mitosis

Mechanisms of asexual reproduction

Budding

* New organisms from outgrowths of original organism

Binary fission

* Splitting and separation of parent organism into individuals of approximately even size

Fragmentation

* Breaking of body into several pieces

Regeneration

* Regrowth of lost body parts

Parthenogenesis

* Egg develops without being fertilized
* Invertebrates
  + bees/wasps/ants
* Vertebrates
  + rare response to low population density

Variations in patterns of sexual reproduction

Hermaphroditism

* Common in stationary animals
* Both male/female parts
* Any two individuals (of same species) can mate
* SOME can self-fertilize

Sex reversal

* Start off as one sex and then change into another with changing pressures
* Goal= enhanced reproductive success

Reproductive cycles

Organisms that can do sexual or asexual may change depending on conditions

* Favorable conditions= asexual
* Unfavorable conditions= sexual

Cycles of hormones in all-female species with parthenogenesis

* Different behaviors when different hormones are elevated
* More “female-like” behavior when high levels of estradiol
* More “male-like” behavior when high levels of progesterone
* Ovulation stimulated by mating behavior

Sexual reproduction: an evolutionary enigma

Why have sexual if more offspring result from asexual?

* Assume each female can have two offspring

Benefits of sexual

* Unique combinations in gametes
* Favorable when environmental conditions change
* Speeds up adaptation