Asexual Reproduction

Cell Cycle	How eukaryotic cells divide asexually
Binary Fission	How prokaryotic cells divide asexually
Spore Formation	Parent cell produces spores that grow and develop under favourable conditions (i.e. yeast)
DNA Replication	DNA replicates, unwinds with the help of an enzyme, then attaches to a new base
DNA Location	Nucleus; in the form of chromatin
Nucleotide Pattern	AxT, CxG
Stages of Cell Cycle	Interphase, Mitosis, Cytokinesis
Asexual Reproduction Disadvantages	Negative mutations/bad conditions can wipe out colonies; offspring can compete for food/space
Asexual Reproduction Advantages	Lots of offspring, quickly; Colonies can form quickly and compete with others; No energy to find a mate

Sexual Reproduction

Sexual Reproduction Advantages	Genetic variety; ext. means little energy used to find a mate; Intrnl. means protection given to embryo/zygote

Sexual Reproduction (cont)

Sexual Reproduction Disadvantages	Intrnl.= more energy to find a mate; Intrnl.=less offspring; ext.= gametes/embryos/zygotes aren't protected
Gametes	Use meiosis to reproduce; have 23 chromosomes; are sex cells
Morula	Embryo at the end of week 1; a ball of cells
Blastula	embryo at the end of week 2; hollow ball of cells; these cells turn into gastrula later
Gastrula	3 layers of cells: ectoderm (skin/nerves), mesoderm (muscle/bones), endoderm (lungs/liver/digestive system lining)
Differentiation	Formation of organs and tissues from the cell layers of gastrula
Meiosis	How gametes reproduce; makes 4 cells
Embryo	The stage of a multi-cellular organism that develops from a zygote
Embryonic Development	The early development of an organism
Homologous Chromosomes	A pair of matching chromosomes (eye color, skin colour, etc.)

Sexual Reproduction (cont)

Fertilization	When an egg cell is penetrated by a sperm cell and the haploid genetic information of both male and female gametes combines
Angiosperms	Flowering plants that have seeds protected by an ovary or fruit
Gymnosperms	A plant with seeds unprotected by an ovary or fruit (i.e. conifers)
Crossing Over	Chromatids of chromosomes pairs cross over and exchange DNA segments, producing genetic variation (during prophase I)
Independent Assortment	Homologous pairs separate independently, creating different combinations of chromosomes in the daughter cells (during Metaphase I)

Genes

Gene Mutation	Substitution, deletion, addition; mutagens or viruses can cause them
Genetic Disorders	A disease caused by failed separation of chromosomes in Meiosis
Karyotype	How geneticists view someone's chromosomes

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Stages of Meiosis	
Meiosis I	Homologous chromosomes are involved
Prophase I	Spindle fibres form, pushing centrioles apart; nuclear membrane/nucleus dissolves; homologous chromosomes pair; crossing over occurs
Metaphase I	Spindle fibres guide chromosomes to the equator of the cell; homologous pairs line up on 2 sides of the equator
Anaphase I	Homologous pairs separate to opposite poles of the cell
Telophase I	2 nuclei/nuclear membrane forms; spindle fibres disappear; one chromosome from each homologous pair is at each pole of the cell
Meiosis II	2 cells separate again, resulting in 4 cells
Prophase II	Spindle fibres form; nuclear membrane/nucleus dissolves; There is 1 homologous pair in the cell (2 chromosomes in total)
Metaphase II	X-shaped chromosomes form 1 line at the equator of the cell
Anaphase II	Sister chromatids move to opposite poles of cell; sister chromatids are now considered a chromosome
Telophase II	Spindle fibres disappear; nuclear membranes form around each set of chromosomes

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