## Asexual Reproduction: Cell Cycle

| Interphase | Mitosis | Cytokinesis |
|---|---|---|
| Cell grows and develops & does normal functions, longest cell cycle phase, late interphase DNA replication occurs | Prophase: Nucleolus disappears, spindle fibres form & attach to centromeres | Cell divides into 2 daughter cells |
| Dna molecule unwinds with help of enzyme, bases pair up= 2 genetically id DNA molecs. | Metaphase: Spindle fibres lineup at equator of cell | For both binary and cell cycle |
| Mitosis: Anaphase: Spindle fibres pull sis. chromatids to opp. poles | Telophase: Nuclear membrane reappears around sis chromatids | |

Eukaryotic cells use cell cycle

## Sexual Reproduction Cell Cycle

| Meiosis 1 | Meiosis 2 |
|---|---|
| Prophase 1: Nucleolus dissolves, Nucleolus dissolves, spindle fibres form, homologous chromosomes pair, spindle fibres attach to centromeres, DNA condenses to chromosomes. Pro 2= same no homo | |
| Metaphase: Spindle fibres push chromosomes to equator (middle) on 2 sides of equator | same no homo |
| Anaphase: Homo chromosomes move to opposite sides of cell (spindle fibres pull) | Sister chromatids separate |
| Telophase: spindle fibres disappear, nuclear membrane comes back, two nuclei form, after telo cell divides at cleavage furrow, 2 cells | Same, cell later divides after, 4 cells |

Still Interphase and Cytokinesis. Homologous

## Binary Fission

Cell splits to two daughter cells with id DNA

Some bacteria reproduce through binary fission cause they don't have a nucleus

## Binary Fission (cont)

Mutation may occur during dna rep. or when chromosomes don't move to 2 dtr. cells

Prokaryotic cells only. Barrier forms between daughter cells as they split

## Plant Reproduction

| male rep. org: stamen | female rep. org: pistil |
|---|---|
| releases m. gamete | gamete carried to stigma |
| anther: pollen stored&produced | Stigma: sticky&captures male gamete |
| Pollen grains contain male gamete | style: where the pollen tube is |
| filament supports anther | ovary: contains ovules |
| | Ovules: surround female gamete |

Seed germination=a seed developing to plant

## Sexual Reproduction

| Mating: When sperm & egg meet | Fertilization: When gametes fuse to form zygote | Development: When organism develops into embryo |
|---|---|---|

Embryo: is unborn/unhatched offspring in development process

Fertilization: sperm breaks into egg cell and penetrates the cell membrane, then fusses with egg nucleus making zygote

Internal fertilization gametes join outside of parents.

External is when gametes join inside parents, embryo inside mom

| Internal: | External: |
|---|---|
| Embryo is protected | Not protected |
| More energy | little energy |
| Produces less | Produces more |
| More competition for food | Less competition |
| More likely to survive | Many are not fertilized |

Zygote eventually turns into embryo, which eventually makes a complete individual

Morula>Blastula>Gastrula

Morula= End of week 1 (ball of cells) Blastula= End of week 2 (hollow ball of cells, cells can develop into any type of cell) Gastrula= 3 distinct layers of cells (Ectoderm= skin & nerves, Mesoderm= Muscles & bones, Endoderm= lungs, liver, and digestive system lining)

Gametes=sperm/egg. Sperm cells have flagella & are mobile

| Asexual vs Sexual Reproduction | |
|---|---|
| Rep. Purpose: Produce a offspring, continue species | |
| Cell Theory: "New cells are formed through the division of existing cells." | |
| Every species has different method of rep. | |
| Asex. rep. | sex. rep. |
| Asex. 0->0 0 (parent is now daughter cell) | Sex. 0+0= 0 (Zygote) (parents usually stay alive) |
| 1 Parent | 2 parents/ Gametes= sperm, egg |
| All parent DNA | Offspring genetically different/ Half Dad DNA, Half Mom DNA |
| Genetically Identical | Genetic diversity= better immunity |
| Clones are natural, but can also be artificial | |
| DNA is made of many nucleoids liked together | |
| 4 types of nucleoids: Adenine-Thymine,Cytosine-Guanine | |
| DNA coil into condensed form: chromatin | More condensed to chromosome, when the cell is ready to reproduce |
| DNA looks like long spiral ladder called double helix | Sides of ladder are made up of sugar & phosphate |
| If the genetic code messes up it causes genetic mutation. | |