Cell Division

Genome - entire DNA
Chromatin - Fiber Dna
Chromosome - Condense single DNA
cycle cycle = cell growth + cell division
G1 phase: increase cell mass, 2x proteins, organelles, cytoplasm. DNA: chromatin (10h)
S phase: 2x DNA content (cell is still 2N). DNA: Sister chromatids (9h)
G2 phase: enzymes required for mitosis, complete growth (4h)
M phase: Mitosis + cytokinesis (1h)
Prophase: Chromosomes condense (appear as 2 sister chromatids)
Centrosomes move apart, mitotic spindle forms
Prometaphase: Nuclear envelope fragments and disappears
spindle microtubules attach to kinetochore at centromere
Metaphase: Chromosomes lined at the equator of the cell (metaphase plate)
Anaphase: Kinetochore microtubule shorten; spindle poles move apart
Sister chromatids separated and move to opposite poles of the cell
Telophase: Nuclear envelope reform, chromosome less condensed
contractile ring form, spindle microtubules depolymerised
Cytokinesis: Contractile ring pinches cell into 2, each with a nucleus
cytoplasm divided into 2
chi test: (o -e)^2/e
df = phases - 1

Meiosis

2n -> 4 daughter cells with n
Genetic variation: -independent assortment of homologous chromosome at metaphase I
-Crossing over between homologous chromosome at prophase I
-Random fertilisation
Non-disjunction: spindle fibres fail to separate sister chromatids or homologous chromosomes
monosomy: 2n -1
trisomy : 2n + 1
ds = trisomy 21
turner = X
triplex = XXX
klinefelter = XXY
Jacob = XYY

Mode of inheritance

Locus: Location of a specific gene in a chromosome
Allele: alternative version of the same gene
Determines contrasting traits of the same character
Character: heritable features that varies among individuals
Trait: variant for each character
Reciprocal Cross: To test the role of parental sex on a given inheritance pattern
Parent organism must be true breeding
c1: wt f x m m c2: m f x wt m