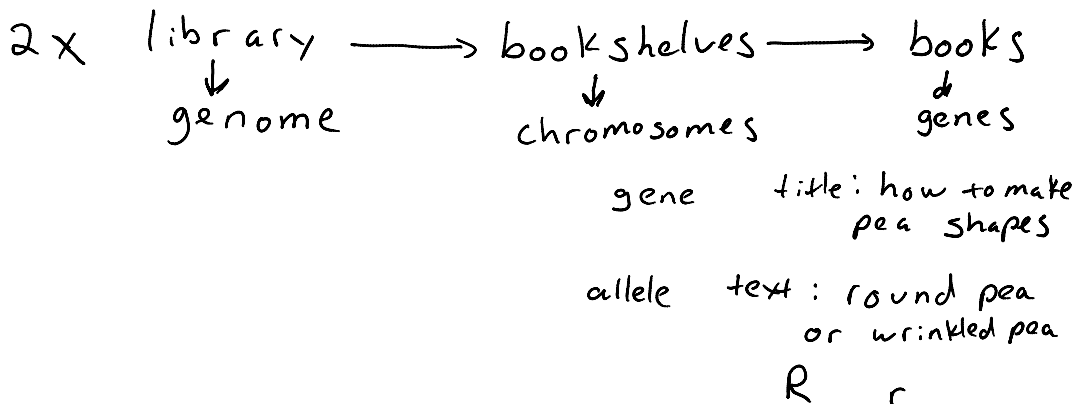


Genetics 3

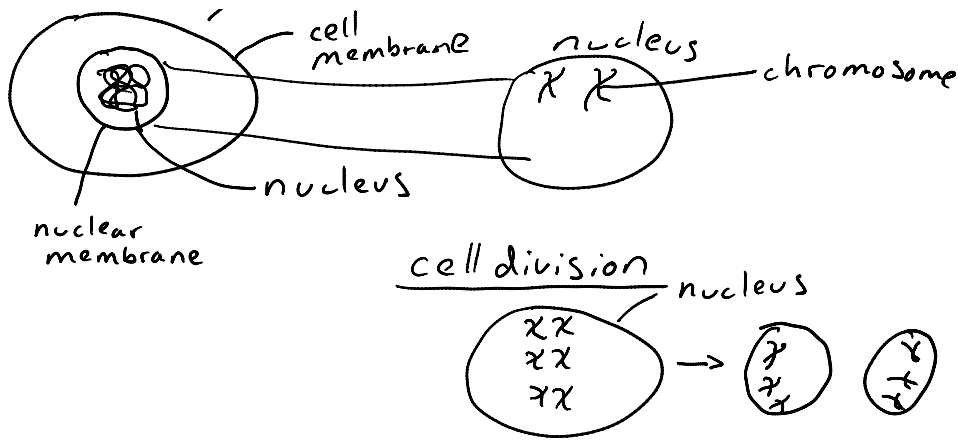
- Send answer to iClicker 3A now
 - Genetics Survey due NOW!!
 - Mendel's Model
 - Chromosomes and Genes
 - Answer to iClicker 3B at end of class
-
- Due in Lab next week
 - Pre-Lab 2
 - VGL 1 lab report

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Genes & Alleles

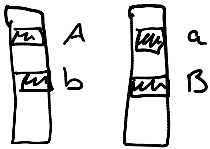


Cell overview / cell



Chromosomes

chromosome has many genes (10 - 1,000's)
genes on chromosome



Rules

- ① only one copy of each gene per chromosome
∴ one allele for each gene per chromosome

③ genotype: A b c D

- ② each gene is always in the same place of the chromosome

gene "a" genotype A a
b B b



Clicker answer

Chromosome Aa

- ① genotype Aa
X rule ①
- ② genotype AAaa
X
- ③ genotype Aa
✓
- ④ genotype Aa
X rule 2

Cell Division

2 types mitosis → cell division
1 cell → 2 cells
each cell has 2 copies

meiosis $\xrightarrow{2 \text{ copies}}$ make gametes \rightarrow fertilization

1 cell $\xrightarrow{2 \text{ copies}}$ 2 cells $\xrightarrow{2 \text{ copies}}$ 4 cells

after fertilization
mom \oplus dad
4 copies

meiosis

1 cell $\xrightarrow{\quad}$ 2 cells

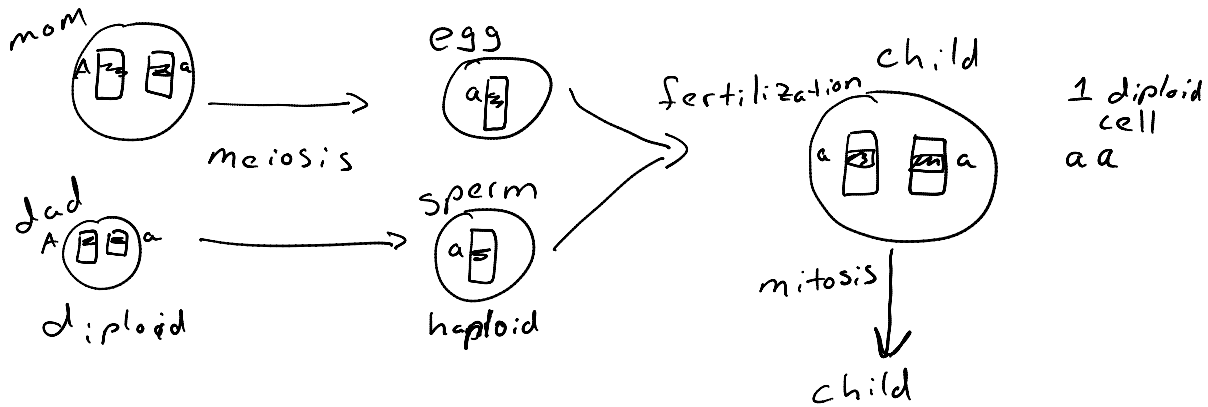
2 copies of each gene 4 copies of each gene (duplication of chromosomes) 2 copies of each gene

\downarrow — no duplication of genes

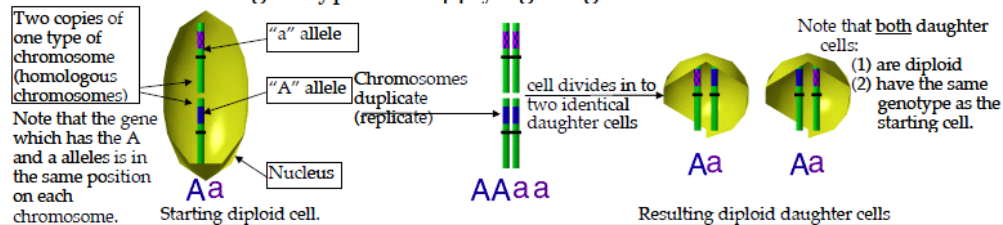
4 cells

mom \times dad \rightarrow child

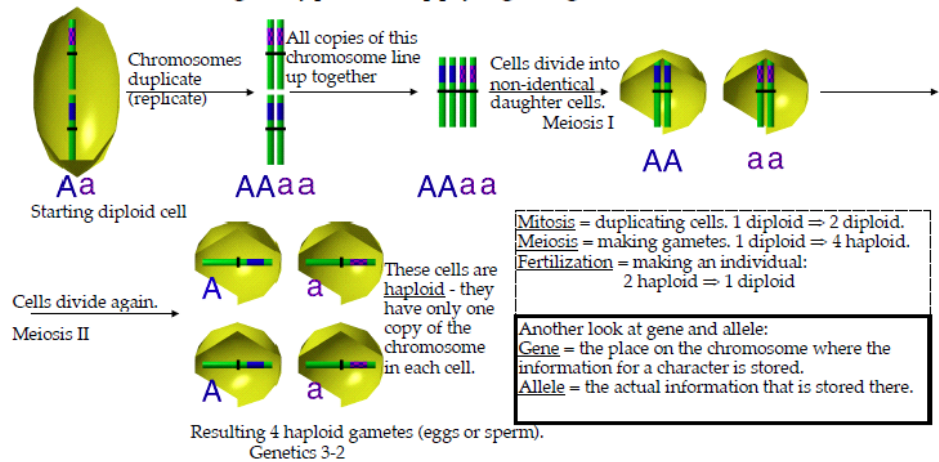
Aa Aa aa



Mitosis of a cell with genotype Aa – applying the genetic model:



Meiosis of a cell with genotype Aa – applying the genetic model:



Bio 111 Chromosomes & Punnett Squares

After talking to several students about the "two alleles make a gene" misconception, here is a clarification.

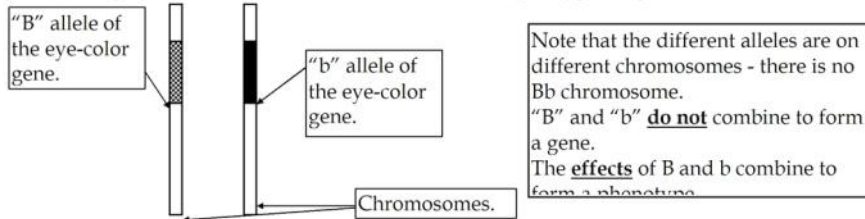
- Suppose eye color were controlled by one gene - this gene has two forms: the following 2 alleles:

allele contribution to phenotype

B blue eyes (dominant)

b white eyes (recessive)

Looking at the chromosomes of an individual with genotype Bb, you'd see:



If two Bb individuals crossed, the resulting Punnett Square would look like:

	B	b
B	BB	Bb
b	Bb	bb

In terms of the chromosomes involved:

Note that each allele travels separately on it's chromosome.

