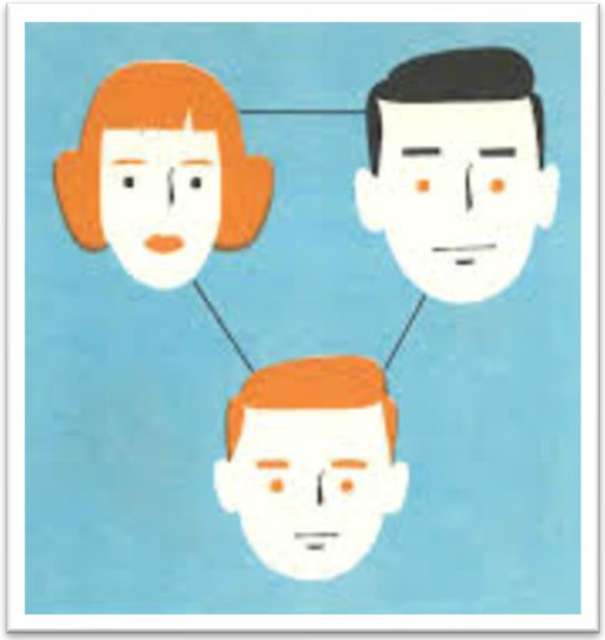
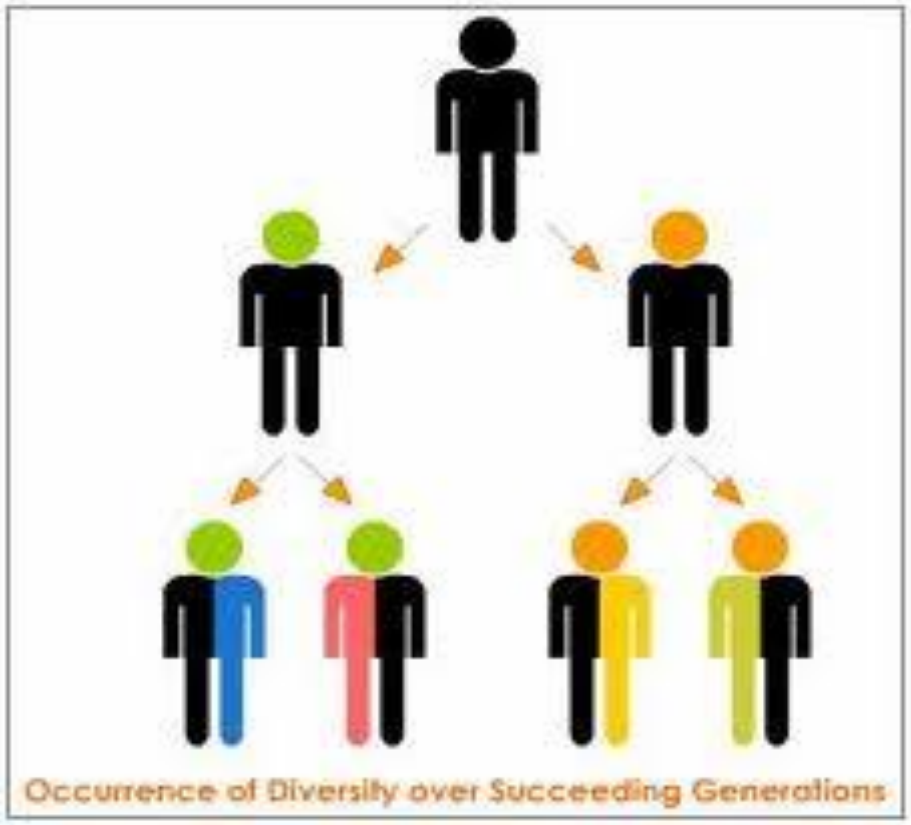
Mendel and His Peas

Aka- Studying Heredity

What is heredity?

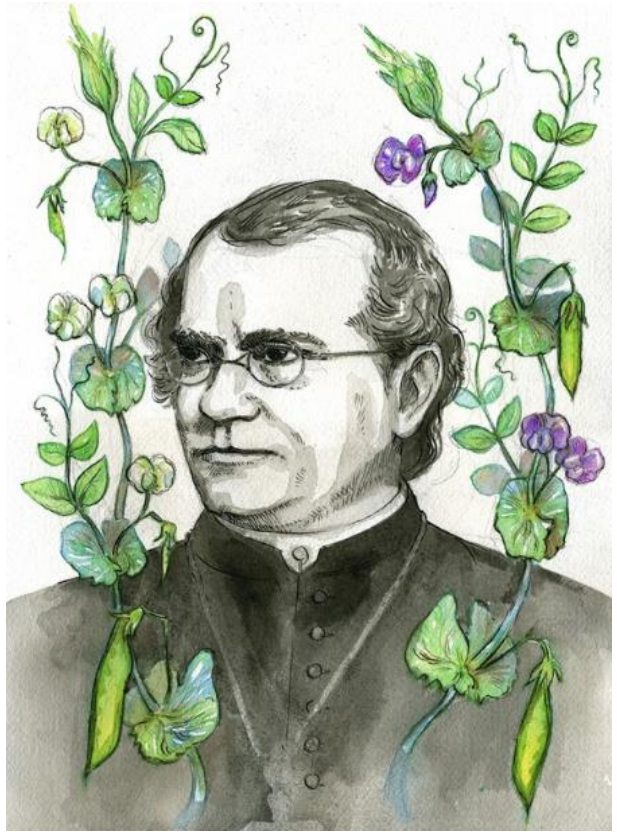
- **Passing of traits from parents to offspring**





How did we figure this out?

- **Gregor Mendel**
  - Monk from Austria
  - Worked in a monastery garden
  - Experimented with peas
- Noticed some traits skipped a generation…

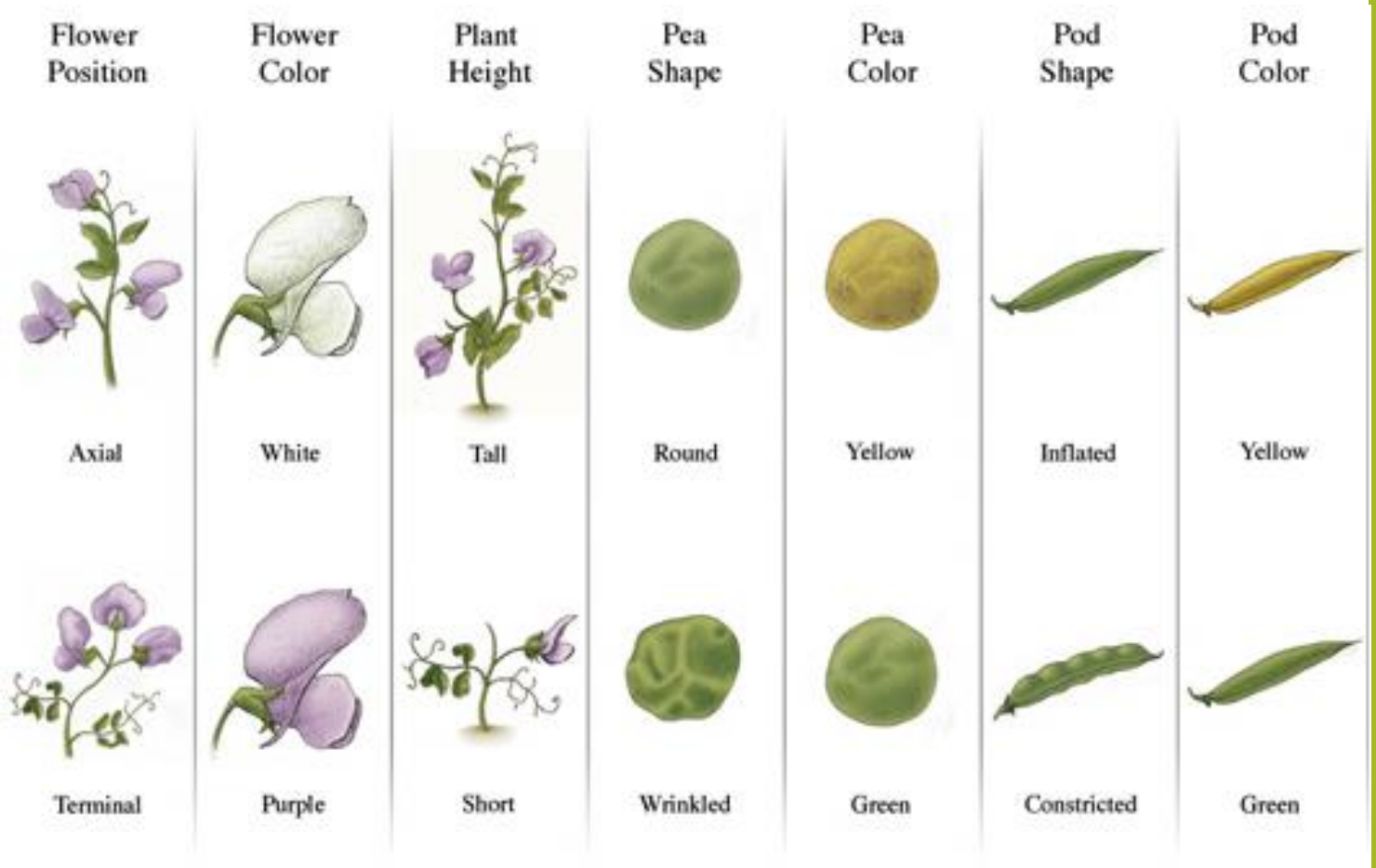


Why peas? (three reasons)

- Grow quickly
- Self-pollinating
- Come in many varieties

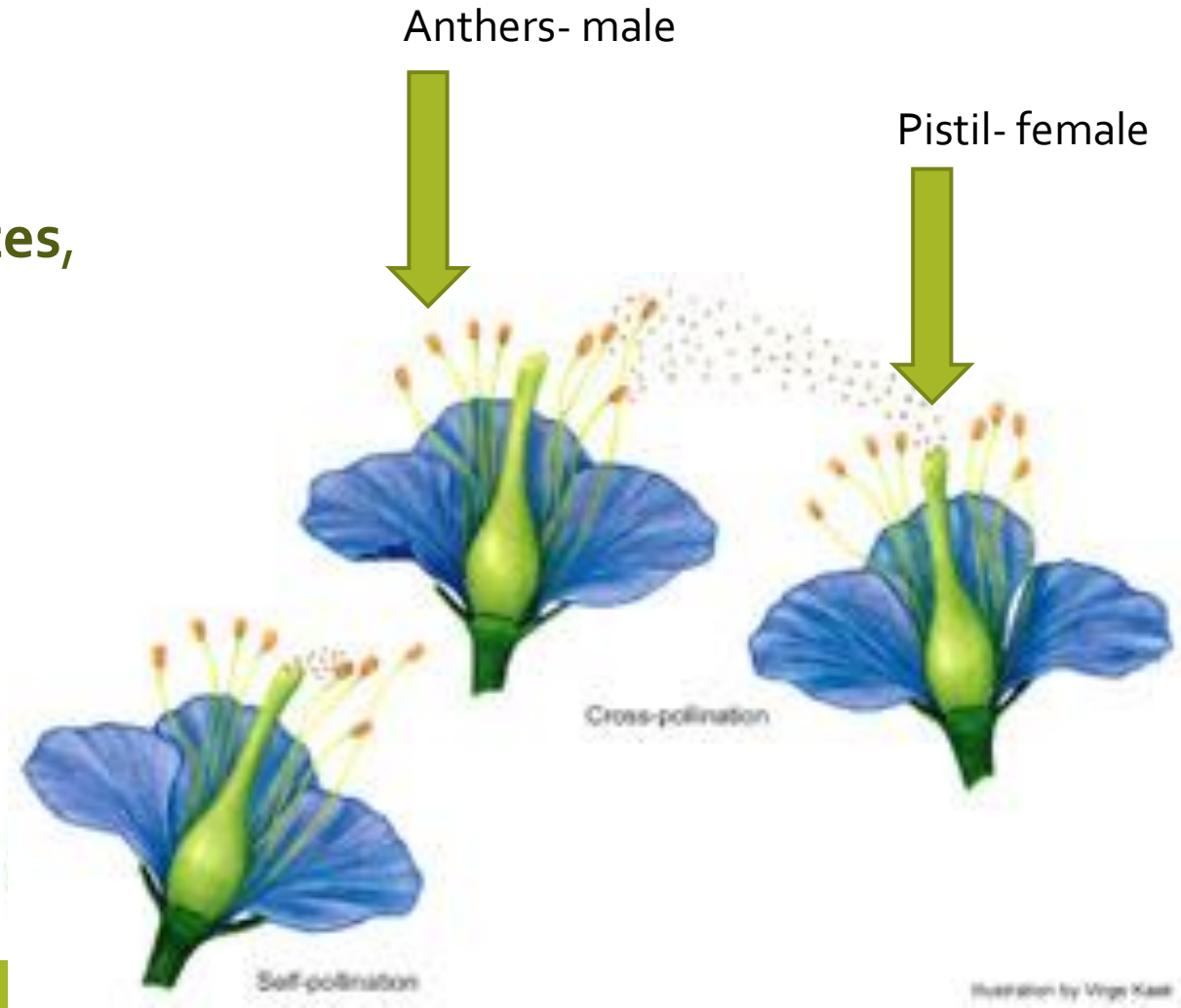
More on Mendel

- Picked one characteristic to study at a time…
  - Round vs. wrinkled
  - Tall vs. short
  - Purple vs. white
- **Self-pollination**
- **Cross-pollination**



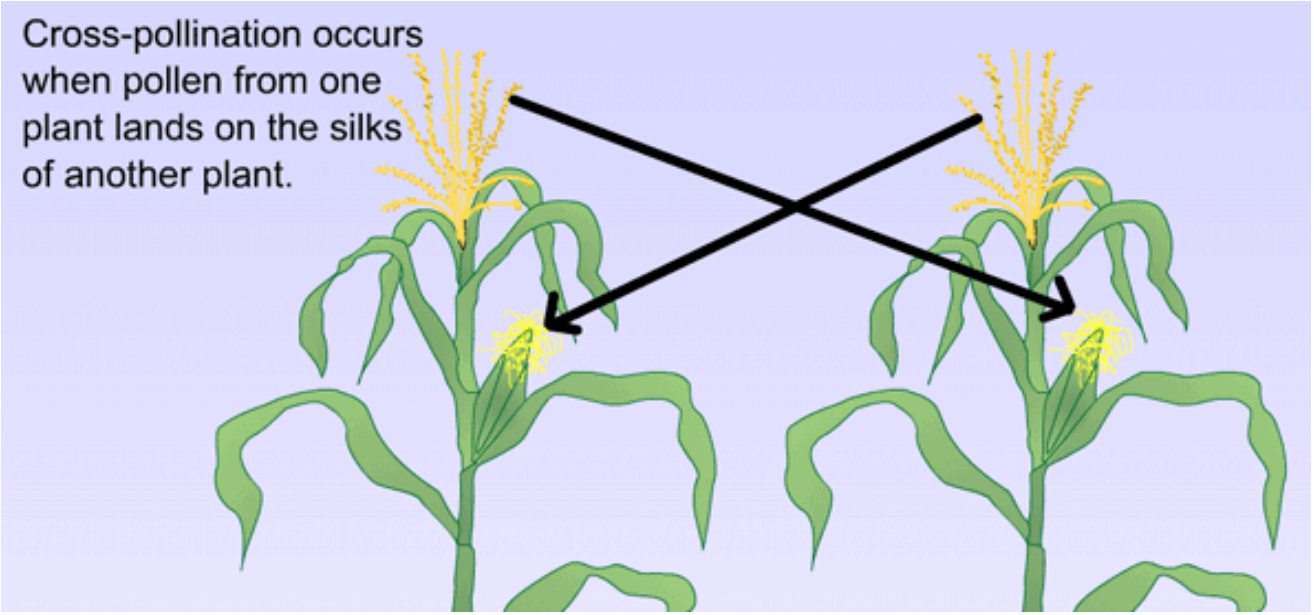
Self-Pollinating Plant

- Contains <u>both male and female</u> reproductive parts
- If a true-breeding plant **self-pollinates**, it will <u>always</u> produce offspring with the same trait



Cross-Pollinating Plant

- Remove the anthers of one plant so the plant can't self-pollinate
- Pollen from another plant is used to fertilize the de-anthered plant. (know which pollen fertilizes)
- Same with animals…



Dominant vs. Recessive

- Dominant always shows
- Recessive seems to disappear (hides)

- Genes= one set of instructions (donated to offspring)
- Alleles= two genes that govern the same characteristic

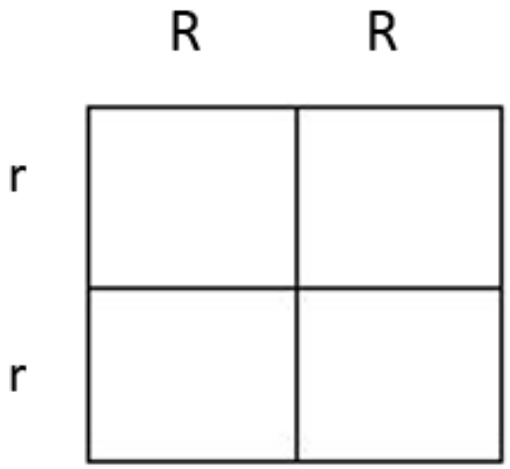
Punnett Squares

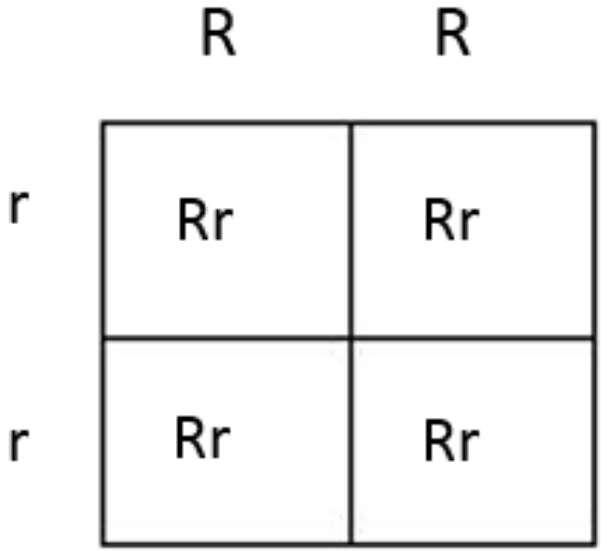
- **Dominant**= capital letters **(always appears)**
- **Recessive**= lowercase letters (fades in the background… not always shown)
- Shows what the odds are for a particular trait
- What are the chances? (probability)

alleles

RR x rr

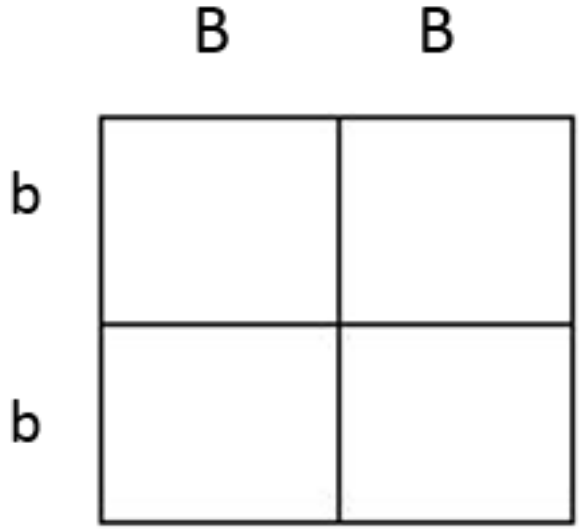
R= round
r= wrinkled



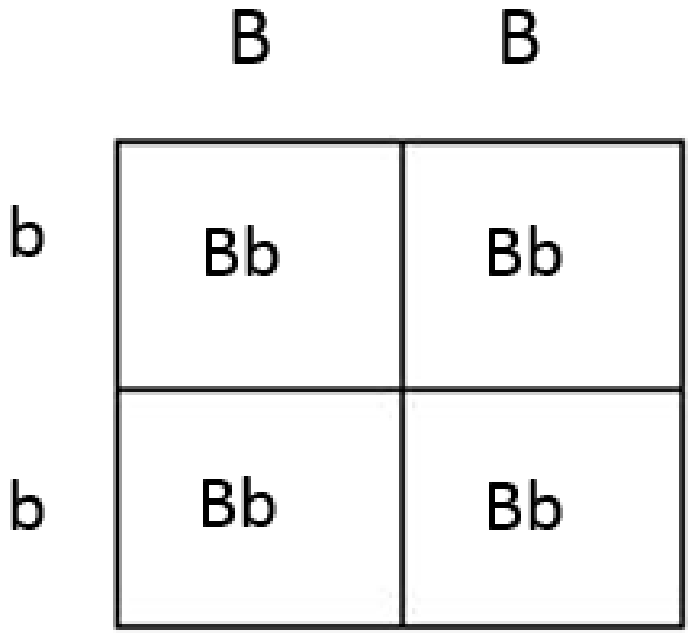


Punnett Squares

What's the probability for each combination?



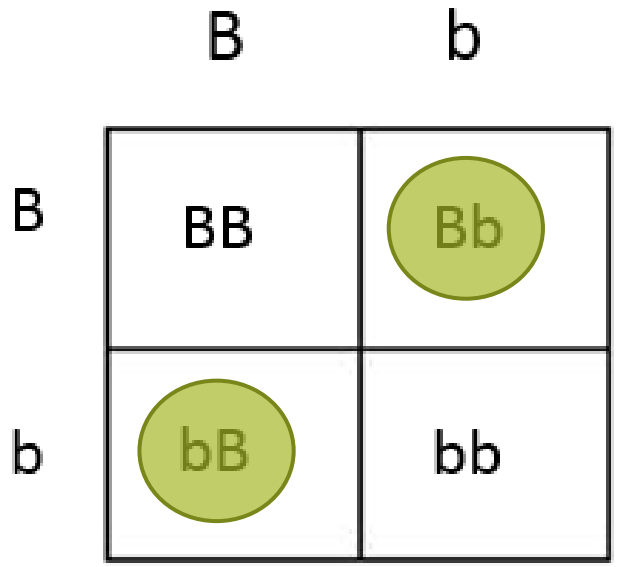
BB x **bb**



Bb x **Bb**

Punnett Squares

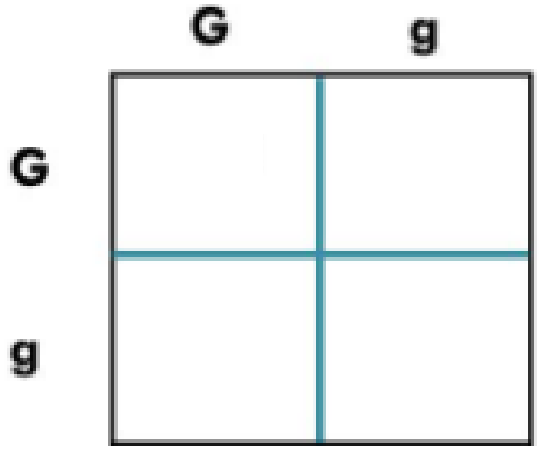
	B	**b**
B	BB	Bb
b	Bb	bb



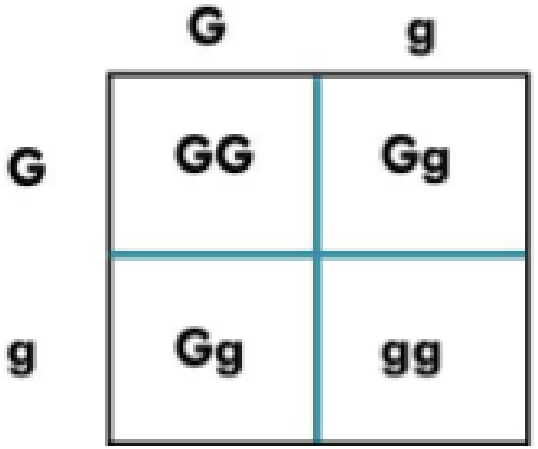
Same thing!

Punnett Squares

What's the probability for each combination?



Gg x Gg



Gg x Gg

Genotype vs. Phenotype

- **Genotype**= combination of alleles (the actual DNA… might not show up in looks)
- **Phenotype**= what the organism **looks like** (appearance)

Genotype =

Phenotype =

Purple		*PP* (homozygous)
Purple		*Pp* (heterozygous)

Genotype and Phenotype