

The work of
Gregor Mendel
Ch. 10.2

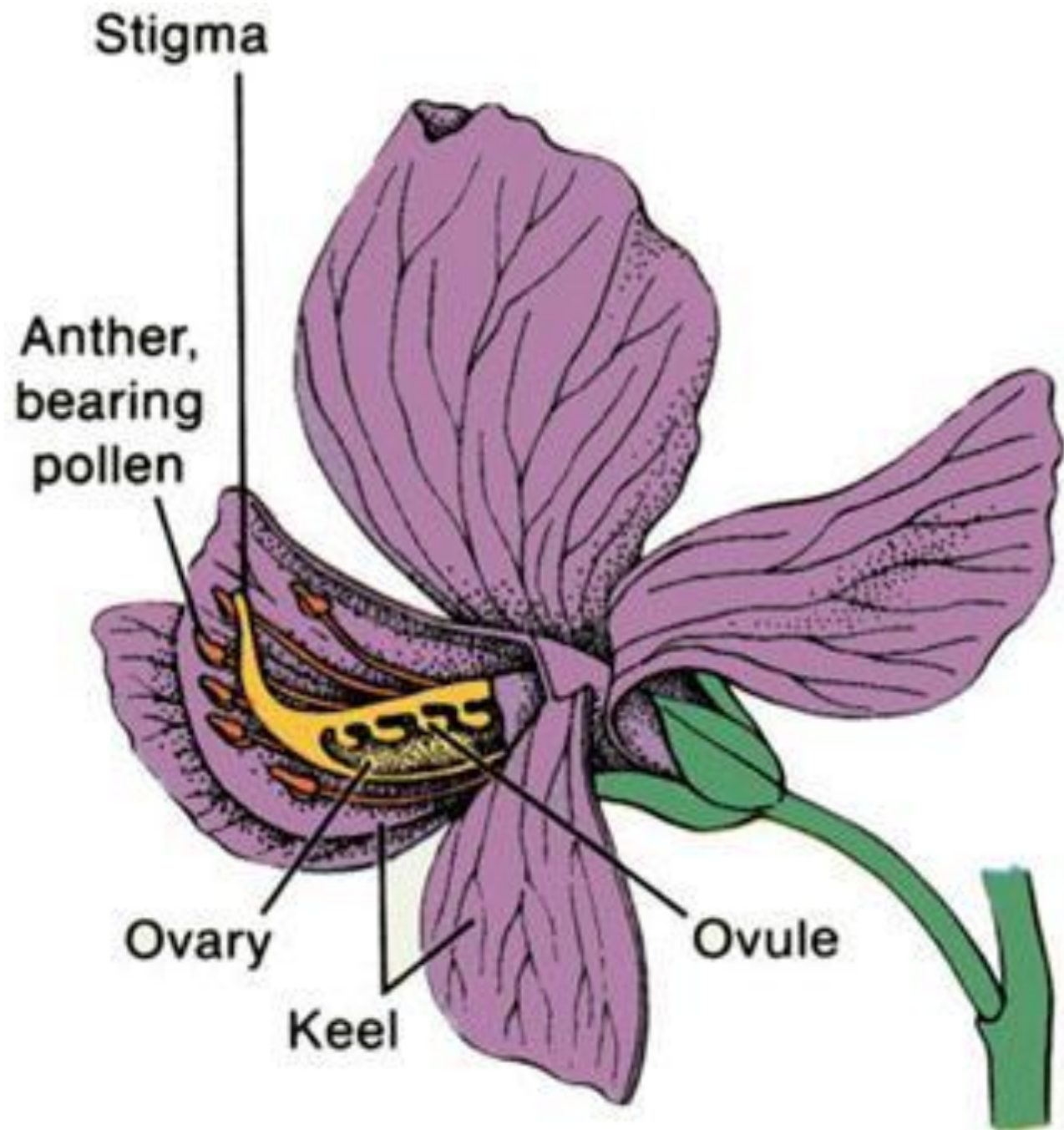
A. The man

1. Later 1800' s

2. Monk

3. Peas-self fertilize







B. Experiment-by hand

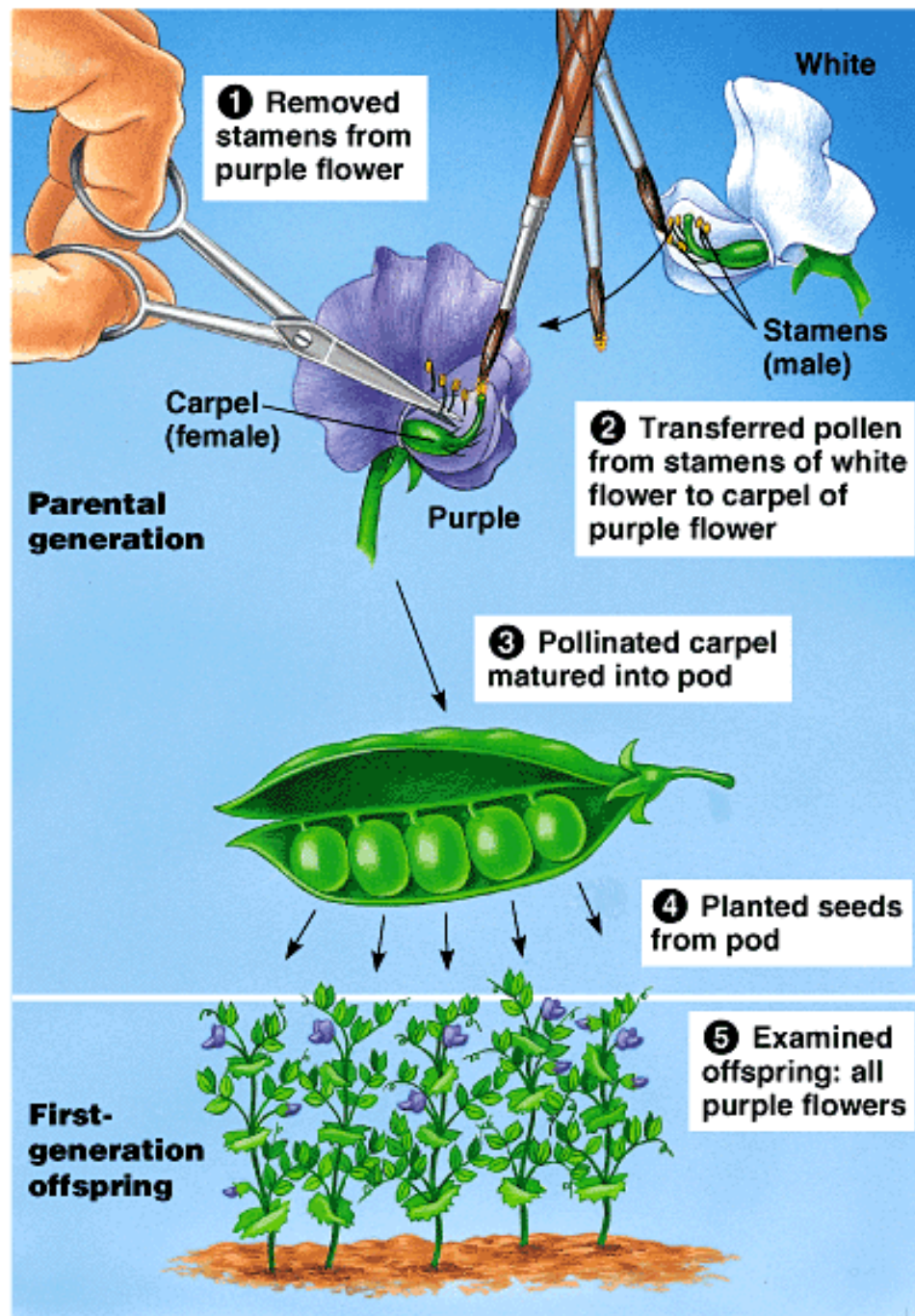
1. True breeding parents

(P generation)

2. True purple x true white

a. Filial generation
(F1)

b. Results: hybrids









3. F1 *x* F1

a. Second filial (F2)

b. White reappears

c. Always 3:1

		gametes	
		A	a
gametes	A	$\frac{1}{2}$ AA 	$\frac{1}{2}$ Aa 
	a	$\frac{1}{2}$ Aa 	$\frac{1}{2}$ aa 

3  yellow : 1  green

4. Other traits

a. Yellow:green

b. Round:wrinkled

c. Green:yellow

Seed shape



Spherical



Dented

Seed color

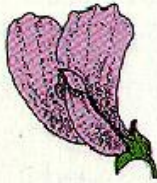


Yellow

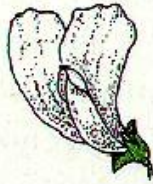


Green

Flower color

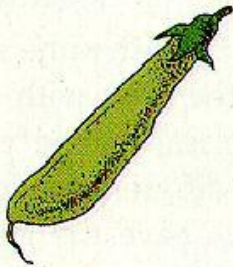


Purple

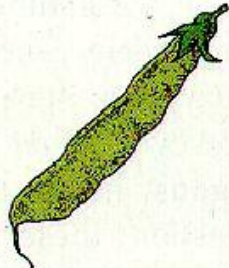


White

Pod shape

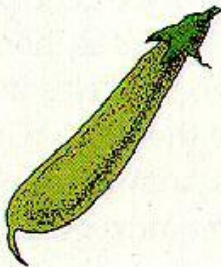


Inflated

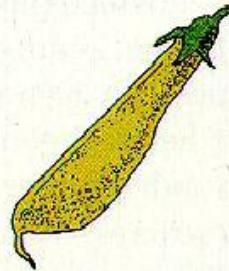


Constricted

Pod color



Green

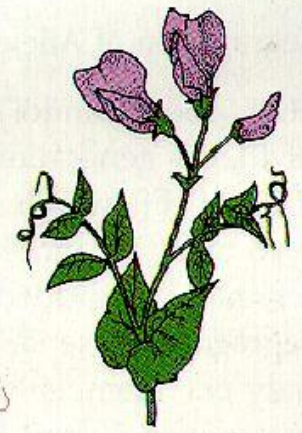


Yellow

Flower position



Axial



Terminal

Stem height



Tall



Dwarf

C. Model and vocab

1. Traits pass

2. 2 “factors”

a. Homozygous

b. Heterozygous



Homozygous



Heterozygous

3. Alleles

a. Genotype

b. Phenotype

Rr



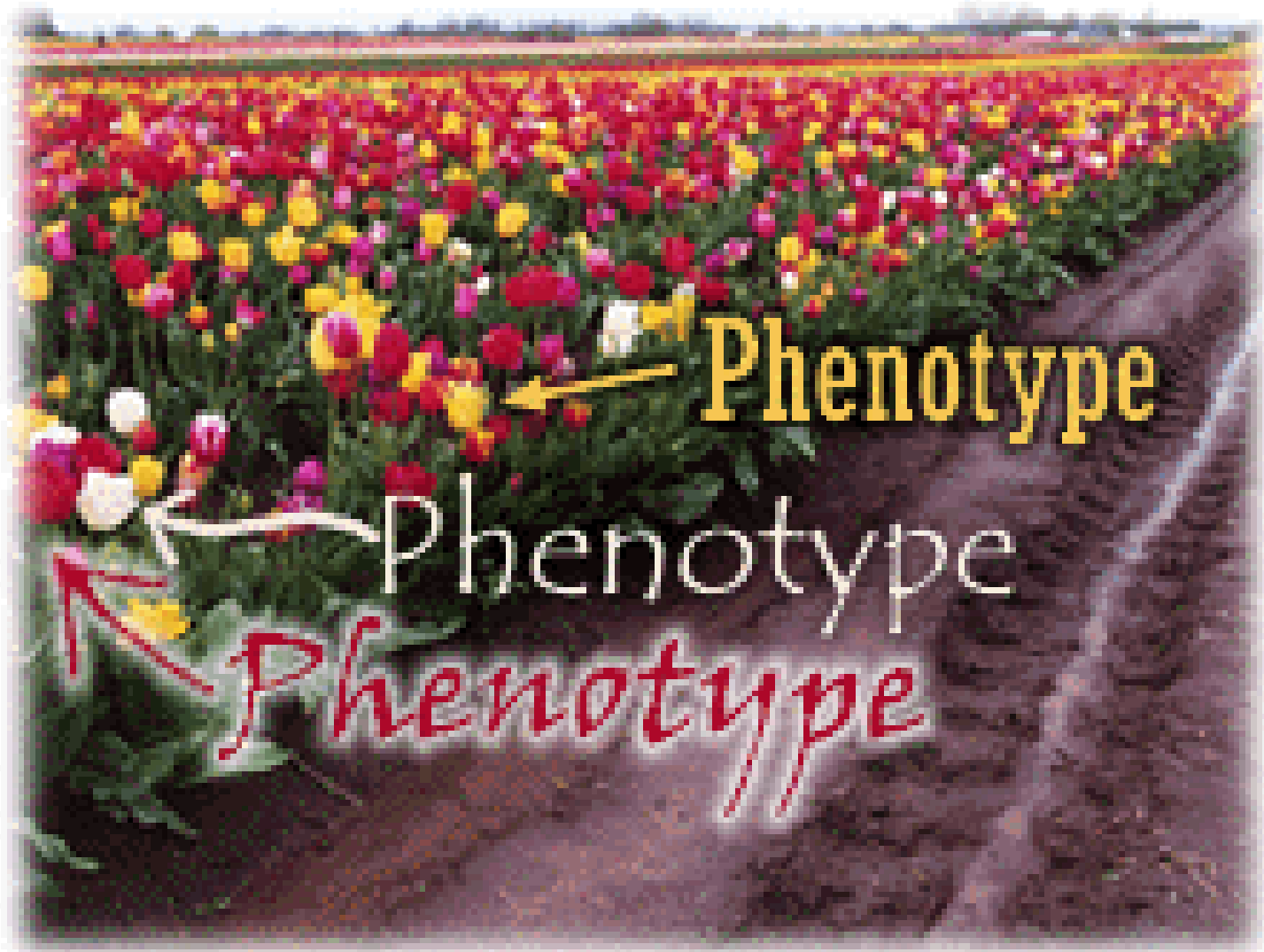
RR



rr



Genotype



4. Variation: meiosis

a. Random line up

(M)

b. Crossing over (P)

c. Gametes: 1 copy

MEIOSIS

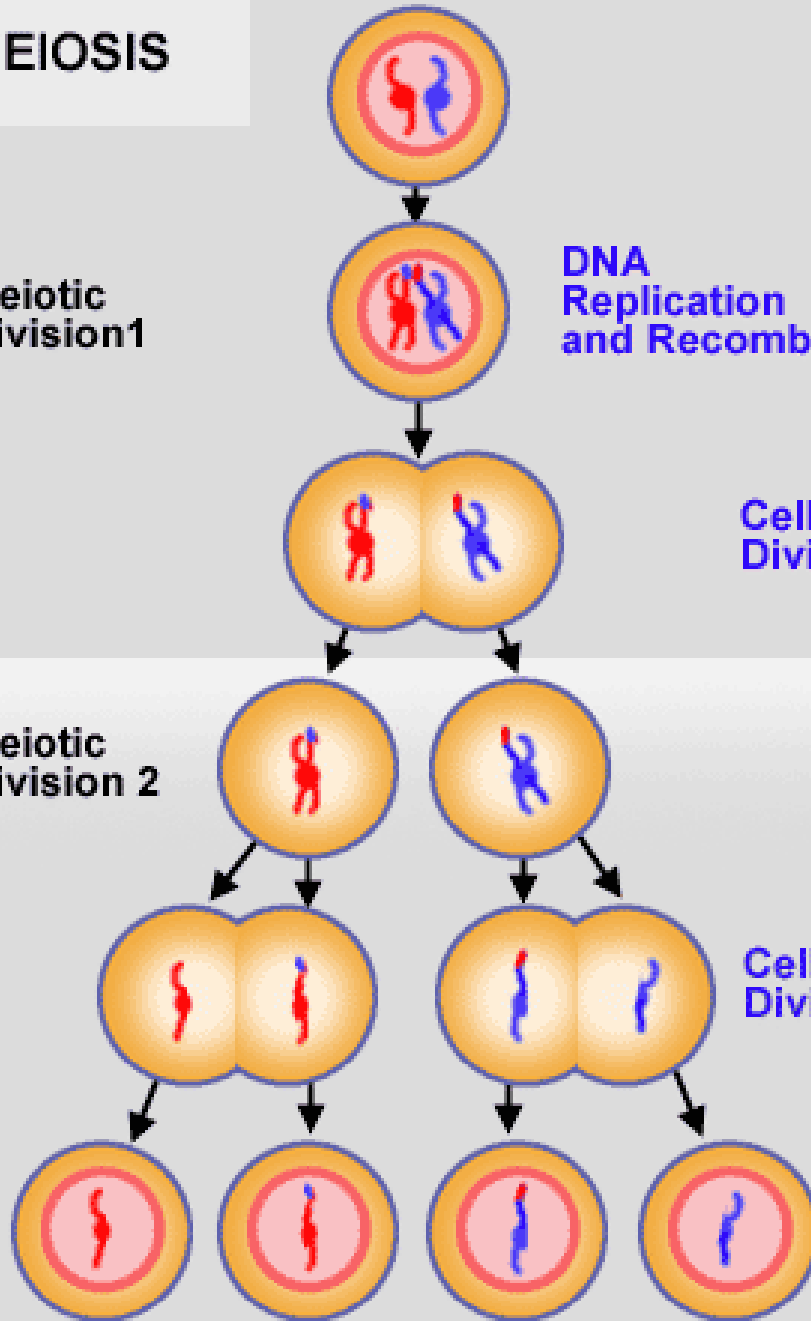
Meiotic
Division 1

DNA
Replication
and
Recombination

Cell
Division 1

Meiotic
Division 2

Cell
Division 2



5. Expression

a. Dominant

b. Recessive

A, B, R, T

Dominant

a, b, r, t

Recessive

D. Punnett Squares

1. P cross

a. $WW \times ww$

b. P' s are homo.dom.
and homo. rec.

T

T

t

t

- c. F1' s all hetero.
- d. Genotypic ratio
- e. Phenotypic ratio

Genotypic Ratio

Hom Dom : Hetero : Hom Rec

RR : Rr : rr

0 : 4 : 0

Phenotypic Ratio

Dominant : Recessive

purple : white

4 : 0

2. F1 cross (hybrids)

a. $Ww \times Ww$

b. Genotypic ratio

c. Phenotypic ratio

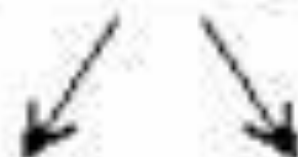
Genotypic Ratio:
1:2:1

Phenotypic Ratio:
3:1

Tt



Tt



T

t

T

TT

Tt

t

Tt

tt

T	TT	Tt
t	Tt	tt

E. Conclusions

1. Law of segregation

a. Meiosis (ana)

b. 1 copy

Mendel's Law of Segregation

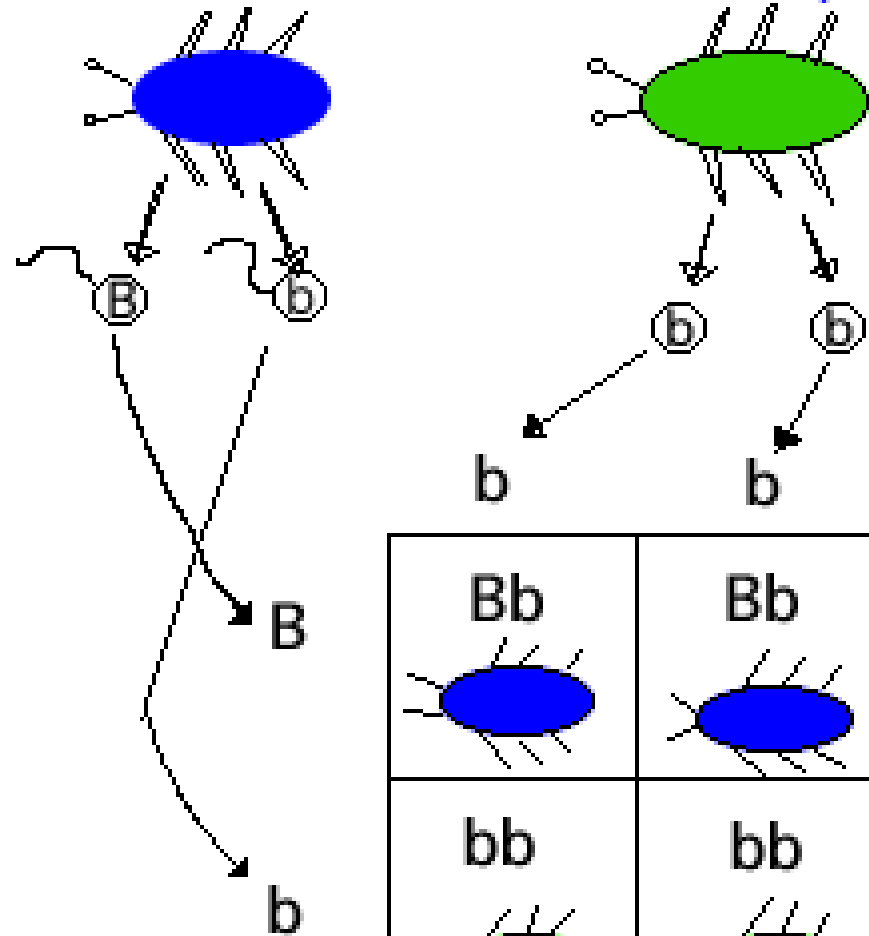
Blue coloration in beetles is dominant (B) to green coloration (b).

Blue beetle (Bb)

Green Beetle (bb)

P (parental) Generation

As the Law of Segregation states, each allele of the pair sorts to a separate gamete.



F₁ (first filial) Generation

Genotypes: 2/4 Bb

2/4 bb

Phenotypes: 2/4 Blue Beetles

2/4 Green Beetles

Punnett Square

2. Law of independent assortment

a. Random (meta)

b. Example



OR

