

Bell Work Week 4 Tues./Wed. 1/28 & 1/29

Quiz Today – 7:35 May wish to review notes

1. Genetics is the science that studies ____.

2. A cross that involves one set of contrasting traits is called ____?

3. When two alleles for one trait are the same, it is called ____?

4. When the two alleles for one trait are different, it is called ____?

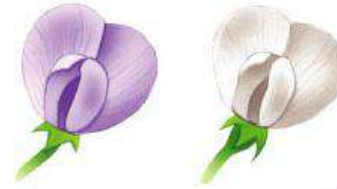
Today in class 1/28 & 1/29

- Bell work
- Quiz
- Notes
- Activity – How Can the Genes of Offspring Be Predicted – **Turn into basket when done**
- Finish vocab. Section 3, Chp. 8

TOC

21 Notes Monohybrid Cross 1/28

22 How Can the Genes of Offspring ... 1/28



Genetics & The Work of Mendel



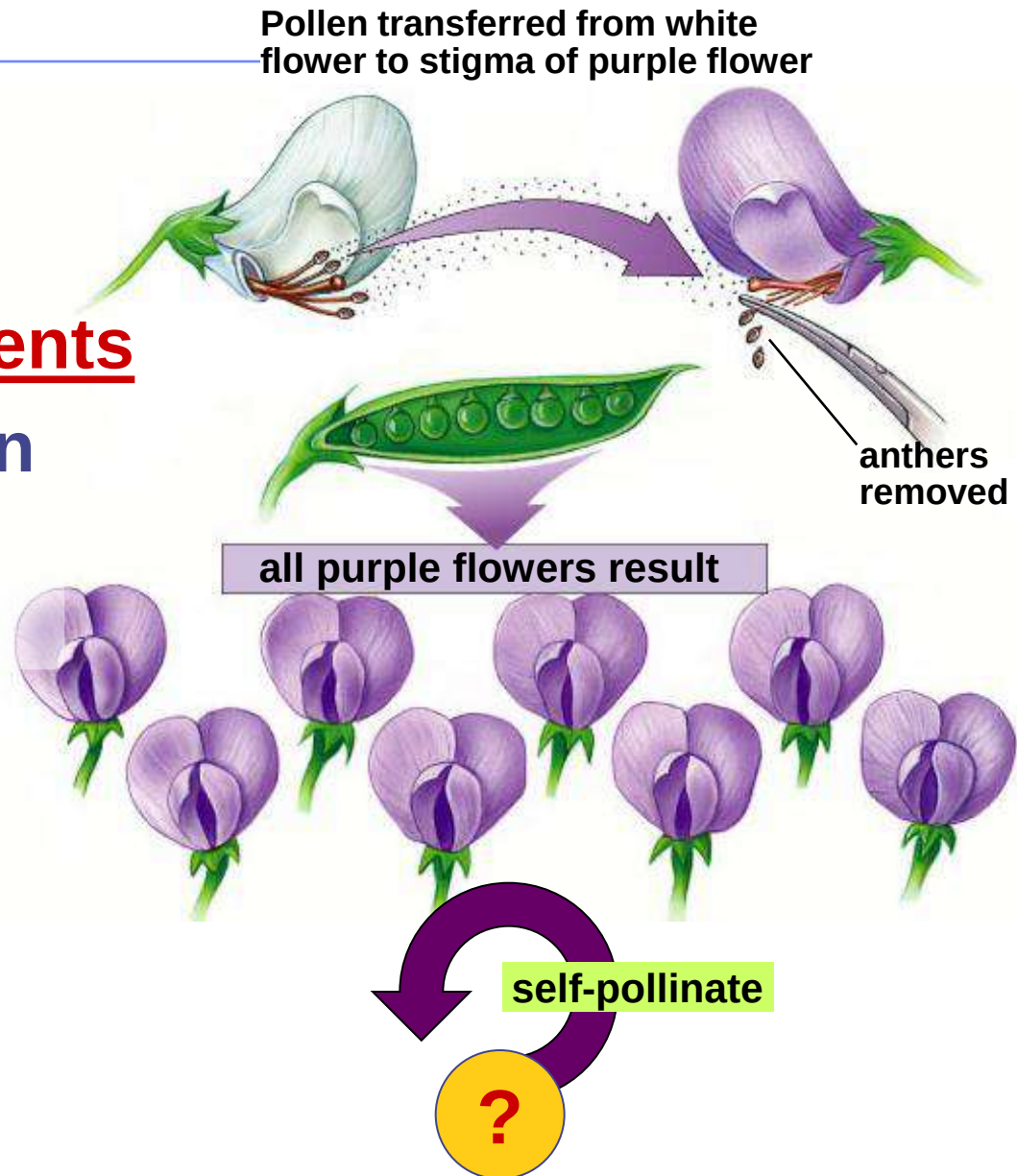
2007-2008

A portrait of Gregor Mendel, a man with glasses and a high-collared shirt, holding a pea plant. The image is a classic portrait of the geneticist, showing him from the chest up, looking slightly to the left. He is holding a pea plant with several green pods in his right hand. The background is a plain, light-colored wall.

- $V_1 = 34$
 $g = 34 \frac{3}{4}$
 $gV_1 = 75 \frac{3}{4}$
 $V_1W = 150$
 $gW = 150$
 $W = 150$
- $V_1 + gV_1 = 112$ *Neel*
 $V_1W + gW = 300$ *Neel*
 $W = 150$ *Neel*
 $gV_1 = 75$ *Neel*
 $g = 34$ *Neel*
 $V = 34$ *Neel*
- 343 $6V + V$ 351 $\frac{1}{2}$ *Neel*
 92 B 100 $\frac{1}{6}$ $\frac{7}{12}$ *Loone t*
 166 W 150 $\frac{1}{4}$ $\frac{3}{12}$ *braun chos*
- $x: 305 = 39 \cdot 296$
 $\frac{39}{296}$
 1525
 $19995 = 296 \cdot 67$
 1235
- $W 150$ $\frac{1}{4}$ W
 65 75 $\frac{1}{8}$ gV_1
 dB 34 $\frac{1}{16}$ g
 $6V$ 300 $\frac{1}{2}$ $gW + V_1W$
 V 34 $\frac{1}{16}$ V

Mendel's work

- Bred pea plants
 - ◆ cross-pollinate true breeding parents
 - ◆ raised seed & then observed traits
 - ◆ allowed offspring to self-pollinate & observed next generation



Mendel collected data for 7 pea traits

Table 13.1 Seven Characters Mendel Studied and His Experimental Results

Character				F ₂ Generation	
	DOMINANT FORM	×	RECESSIVE FORM		DOMINANT:RECESSIVE RATIO
	Purple flowers	×	White flowers 	705:224	3.15:1
	Yellow seeds	×	Green seeds 	6022:2001	3.01:1
	Round seeds	×	Wrinkled seeds 	5474:1850	2.96:1
	Green pods	×	Yellow pods 	428:152	2.82:1
	Inflated pods	×	Constricted pods 	882:299	2.95:1
	Axial flowers	×	Terminal flowers 	651:207	3.14:1
	Tall plants	×	Dwarf plants 	787:277	2.84:1



- http://www.siskiyous.edu/class/bio1/genetics/monohybrid_v2.html

- http://www.zerobio.com/drag_gr11/mono.htm

Looking closer at Mendel's work

Parents

true-breeding
purple-flower peas

x

true-breeding
white-flower peas



**1st
generation
(hybrids)**

100%
purple-flower peas

100%



self-pollinate

75%
purple-flower peas

25%
white-flower peas

3:1

**2nd
generation**



What did Mendel's findings mean?

- Some traits mask others

- ◆ purple & white flower colors are separate traits that do not blend

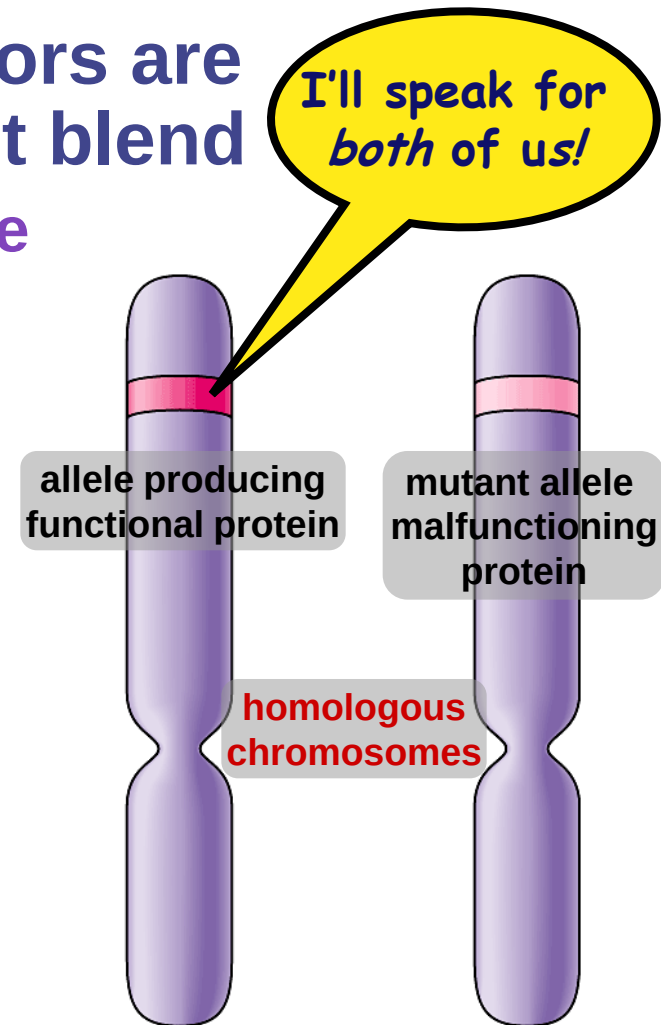
- purple x white $\neq$ light purple
- purple masked white

- ◆ dominant allele

- functional protein
 - ◆ affects characteristic
- masks other alleles

- ◆ recessive allele

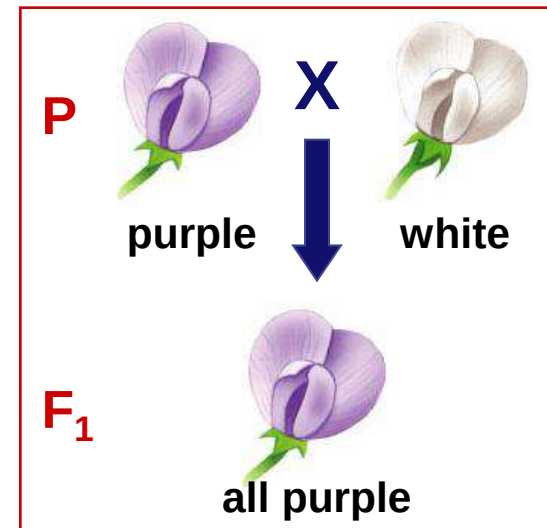
- no noticeable effect
- allele makes a non-functioning protein



Genotype vs. phenotype

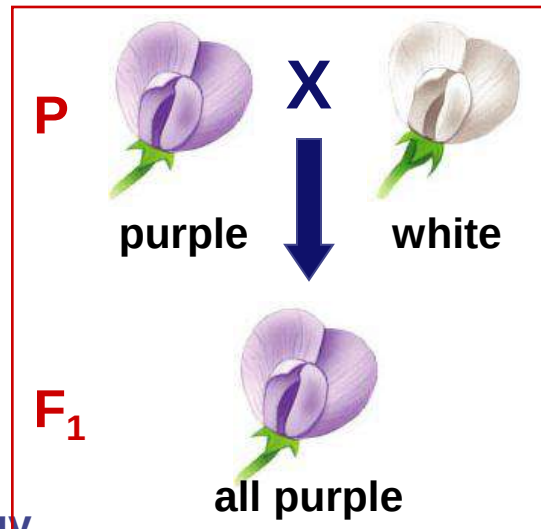
- Difference between how an organism “looks” & its genetics
 - ◆ phenotype
 - description of an organism’s trait
 - ◆ genotype
 - description of an organism’s genetic makeup

Explain Mendel’s results using
...dominant & recessive
...phenotype & genotype



Making crosses

- Can represent alleles as letters
 - ◆ flower color alleles → **P** or *p*
 - ◆ true-breeding purple-flower peas → **PP**
 - ◆ true-breeding white-flower peas → *pp*



PP x *pp*

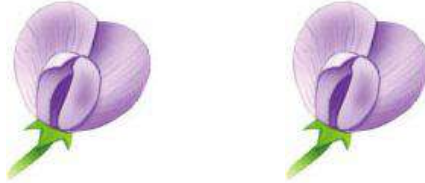
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Pp

Punnett squares

1st
generation
(hybrids)

Pp x **Pp**



male / sperm

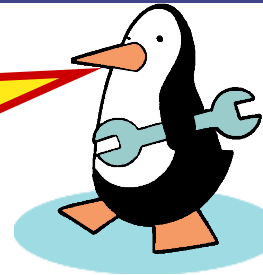
P

p

female / eggs
P
p

P	 PP	 Pp
p	 Pp	 pp

Aaaaah,
phenotype & genotype
can have different
ratios



		% genotype	% phenotype
PP		25%	75%
Pp		50%	
Pp		25%	
pp		25%	25%

1:2:1

3:1

Any Questions??

