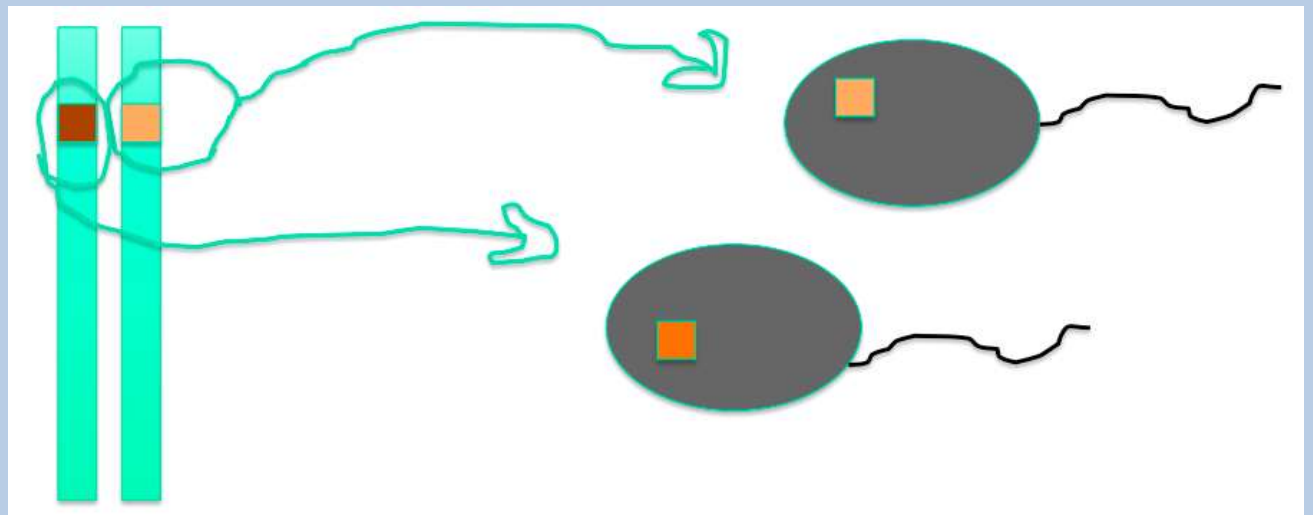


- 1. What is the probability of a couple giving birth to a daughter? (XX)**
- 2. What is the probability of a couple, both heterozygous for eye color, having a blue-eyed daughter?**
- 3. What are 3 causes of genetic variation in gametes during meiosis?**
- 4. Why are siblings from the same parents genetically different? (except identical twins)**



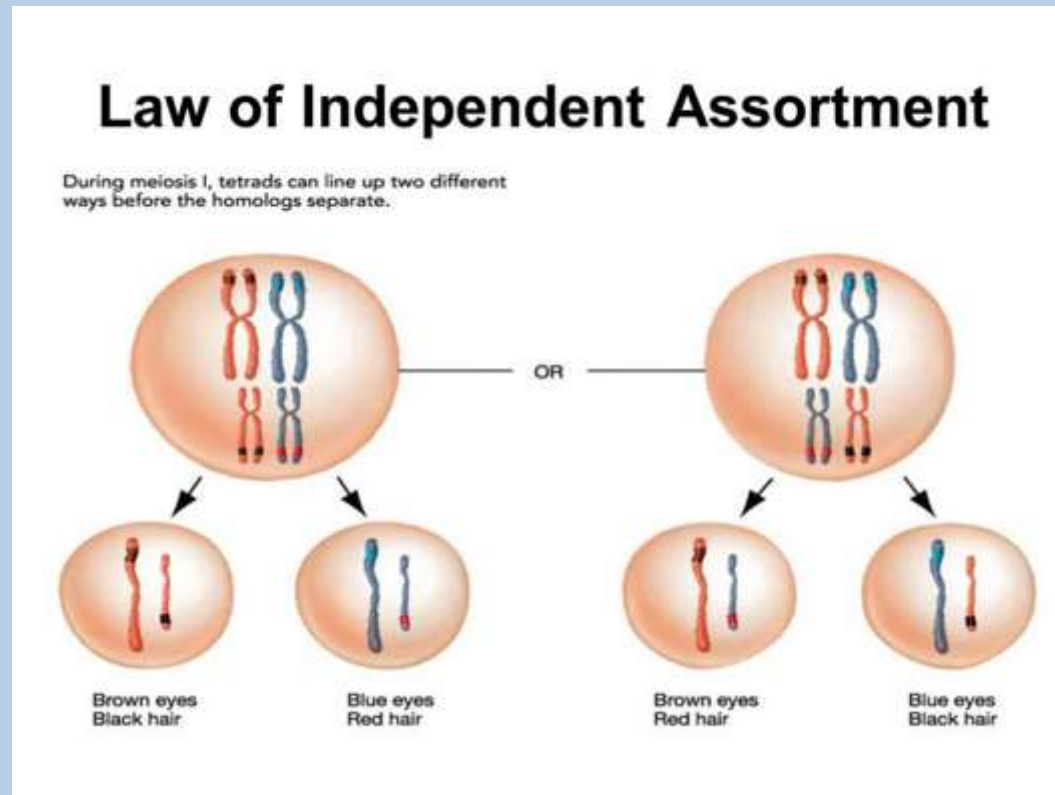
# Law of Segregation

- Organisms receive one copy from each parent
- These copies will be separated in the gametes of the organism through meiosis



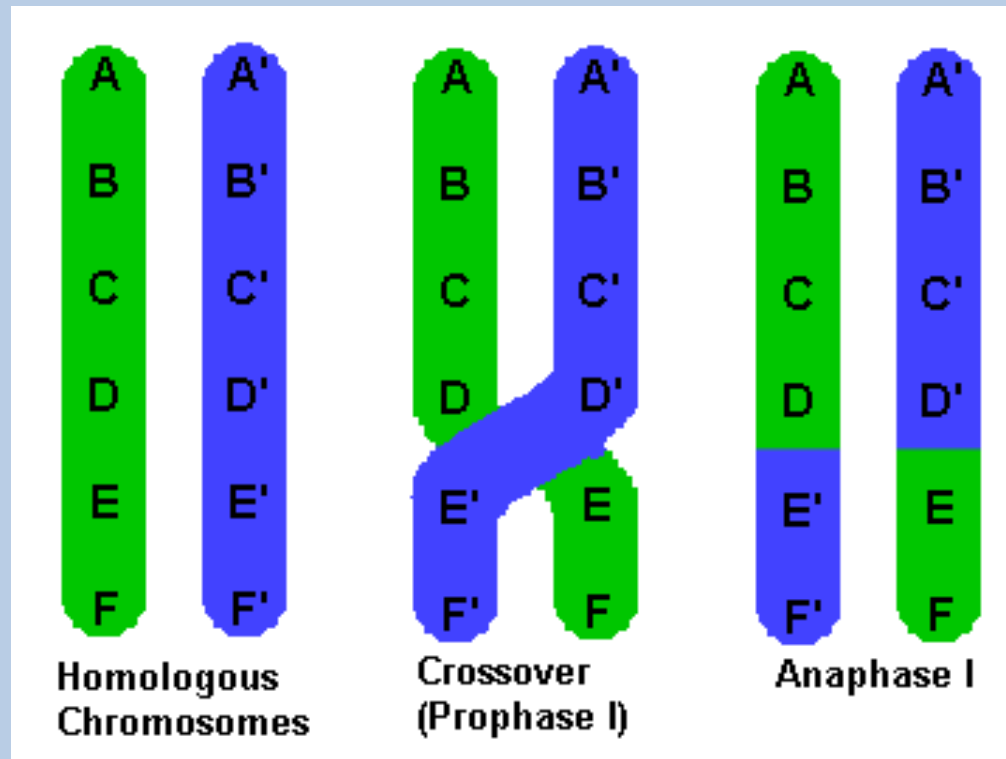
# Law of Independent Assortment

- Genes for different traits are inherited separately from each other



# Crossover

- During prophase I of meiosis chromosomes exchange equal pieces of DNA



# Poker Chip Lab

- Write the class averages for the Poker Chip Lab!

Possible Combinations	Expected Percentages	Your Average	Class Average
<b>C</b> <b>C</b> (Color)			25.6
<b>C</b> <b>c</b> (Color)			24.4
<b>C</b> <b>c</b> (Color)			25.4
<b>cc</b> (White)			24.6

# **Get out the Cross Application Packet**

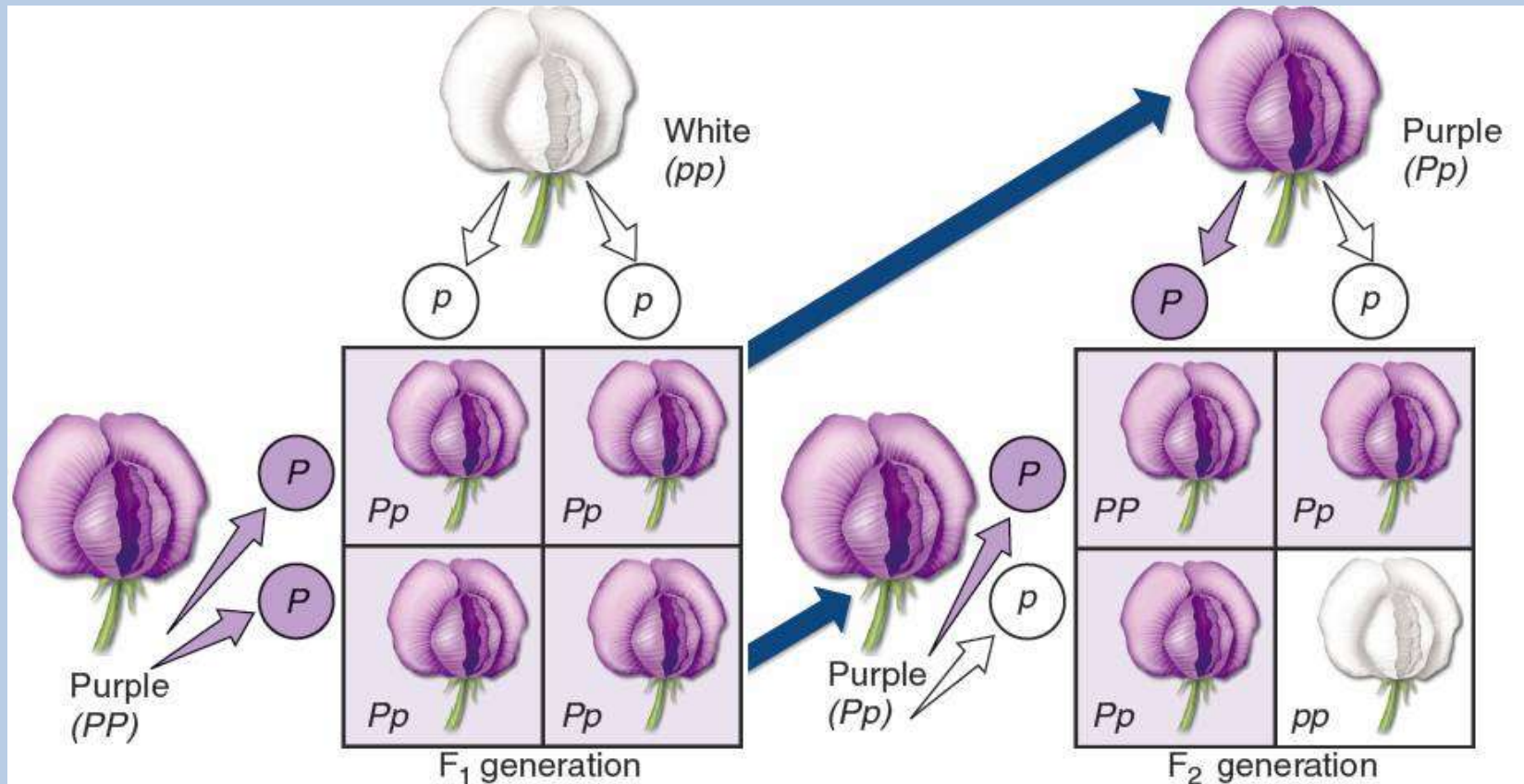
**How many traits do  
monohybrid crosses examine?**

**How many traits do  
monohybrid crosses examine?**

**1**



# Example: Flower color



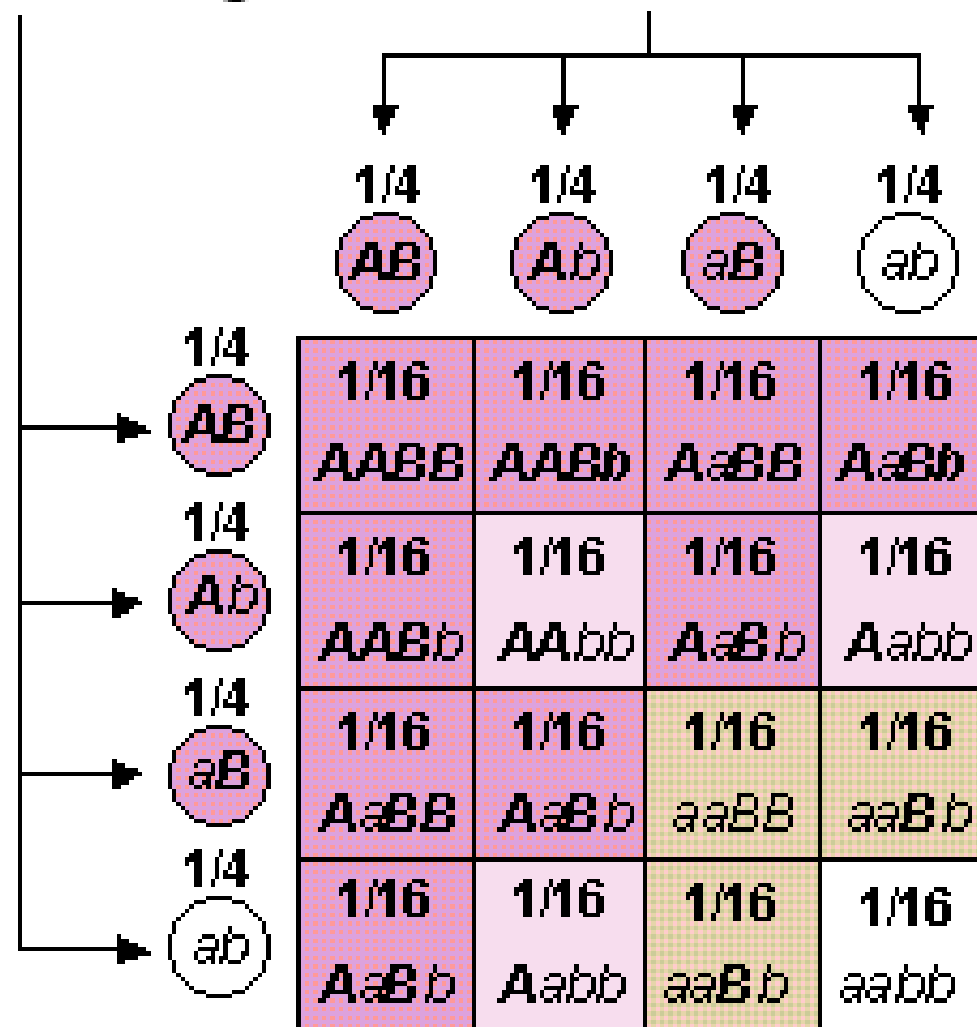
**How many traits do dihybrid crosses examine?**

**How many traits do dihybrid crosses examine?**

**2**

# Example: Flower color AND Height

meiosis, gamete formation



Possible outcomes of cross-fertilization

**AABB**  
purple-flowered  
tall parent  
(homozygous dominant)



**AB**

X

**ab**



**aabb**  
white-flowered  
dwarf parent  
(homozygous recessive)

F1 OUTCOME: All F1 plants purple-flowered, tall  
(**AaBb** heterozygotes)



meiosis, gamete formation

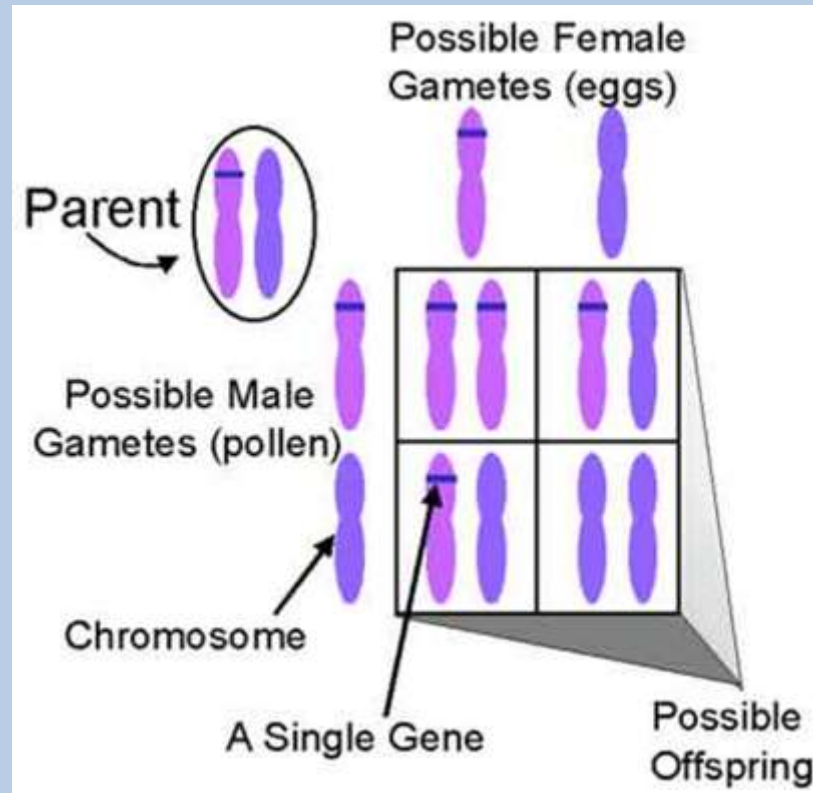
	1/4 <b>AB</b>	1/4 <b>Ab</b>	1/4 <b>aB</b>	1/4 <b>ab</b>
1/4 <b>AB</b>	1/16 <b>AABB</b>	1/16 <b>AABb</b>	1/16 <b>AaBB</b>	1/16 <b>AaBb</b>
1/4 <b>Ab</b>	1/16 <b>AABb</b>	1/16 <b>AAbb</b>	1/16 <b>AaBb</b>	1/16 <b>Aabb</b>
1/4 <b>aB</b>	1/16 <b>AaBB</b>	1/16 <b>AaBb</b>	1/16 <b>aaBB</b>	1/16 <b>aaBb</b>
1/4 <b>ab</b>	1/16 <b>AaBb</b>	1/16 <b>Aabb</b>	1/16 <b>aaBb</b>	1/16 <b>aabb</b>

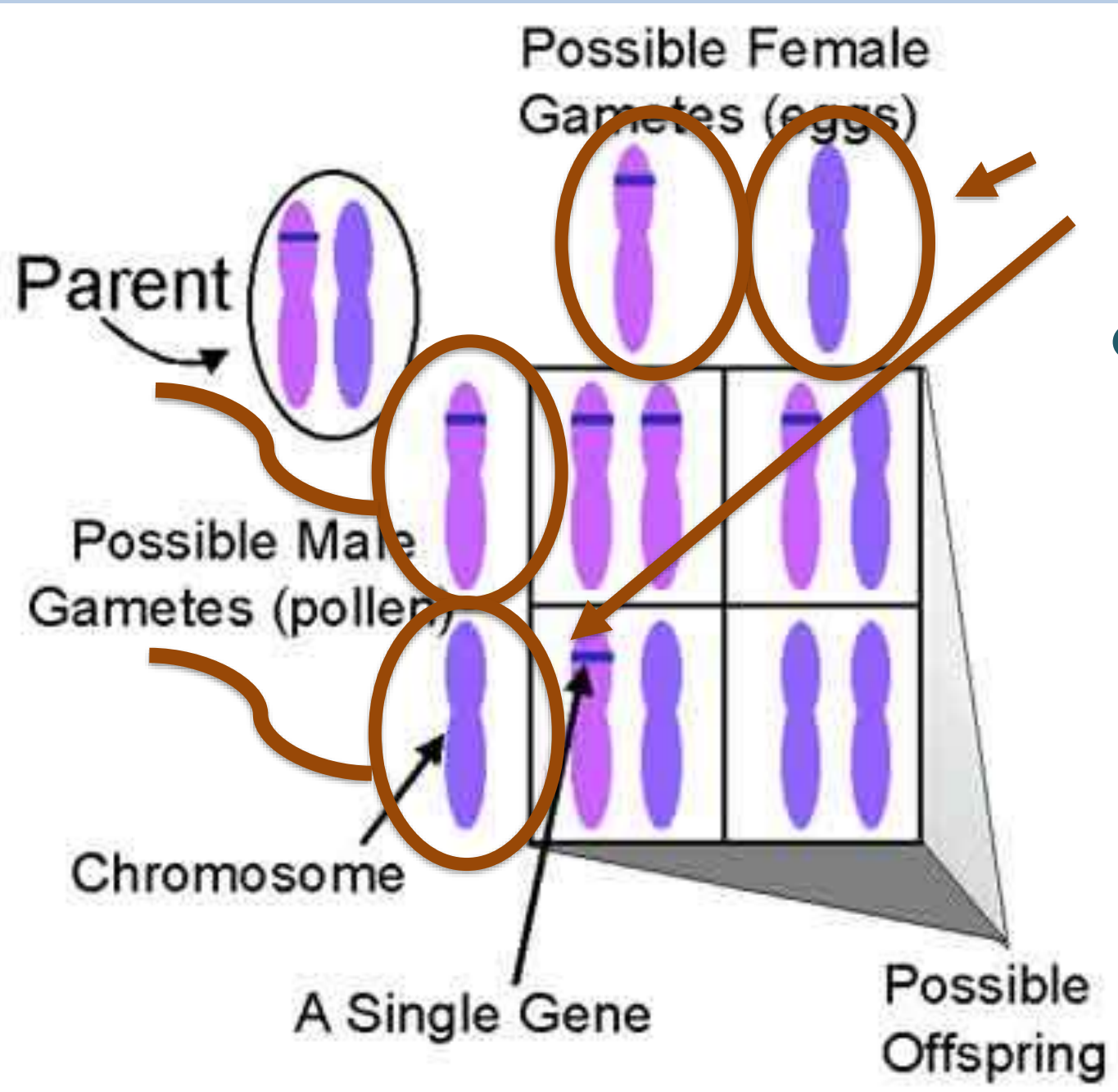
Possible outcomes of cross-fertilization

ADDING UP THE F2 COMBINATIONS POSSIBLE:

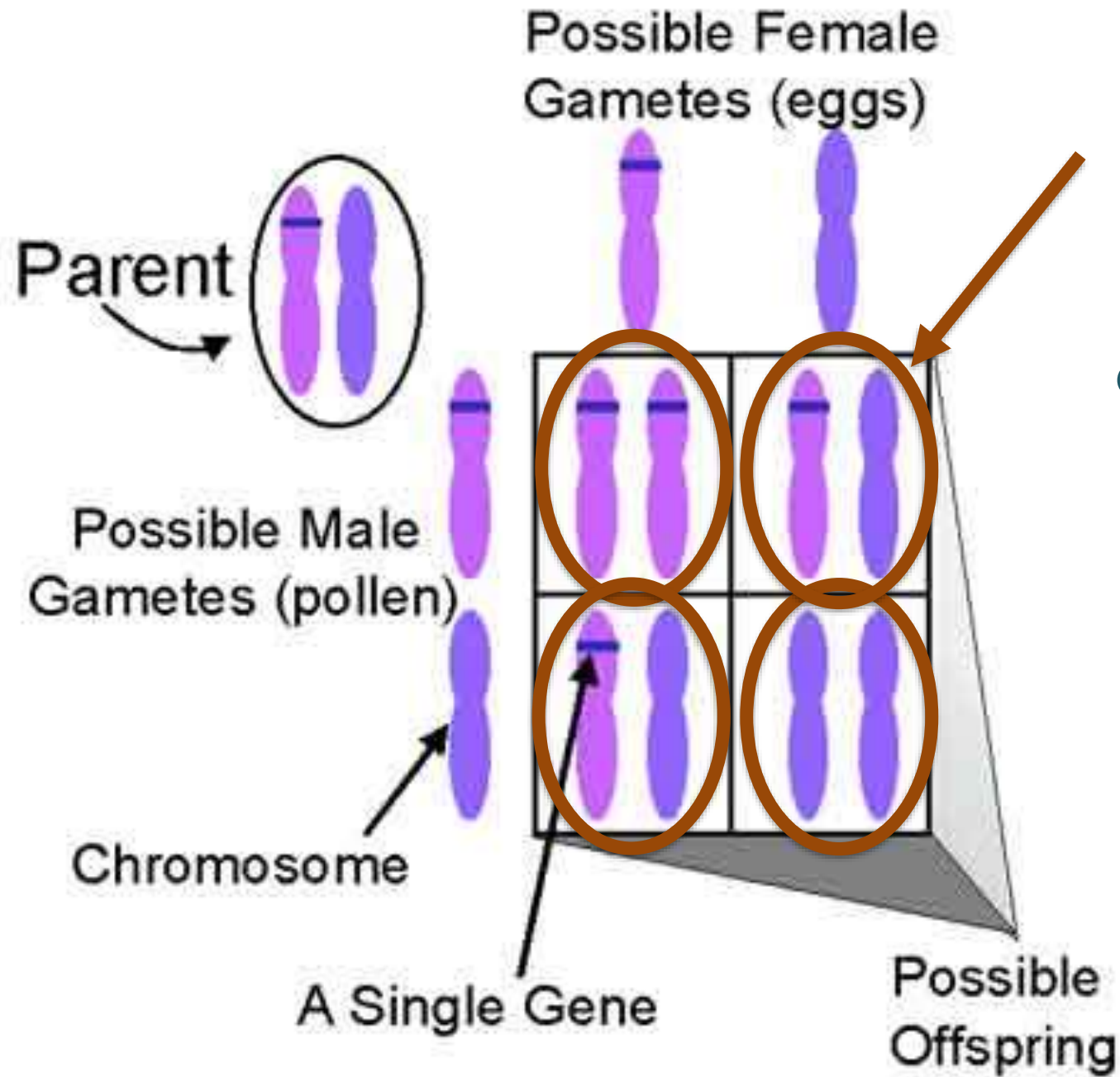
- 9/16 or 9 purple-flowered, tall
- 3/16 or 3 purple-flowered, dwarf
- 3/16 or 3 white-flowered, tall
- 1/16 or 1 white-flowered, dwarf

# THE MOST COMMON MISTAKE FOR DIHYBRID CROSSES IS NOT WRITING THE POSSIBLE GAMETES CORRECTLY



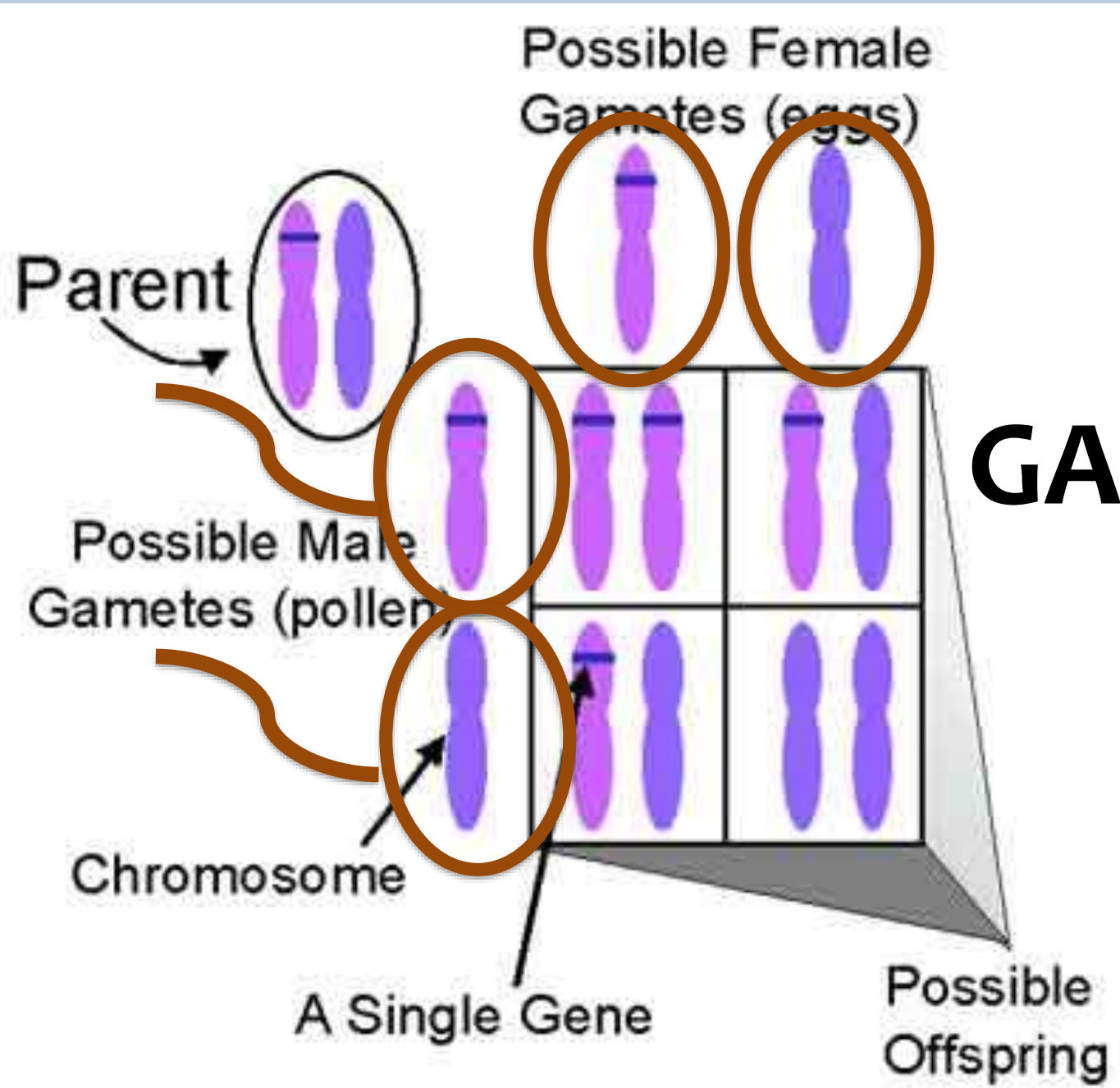


Each *gamete* has only 1 of each chromosome /gene

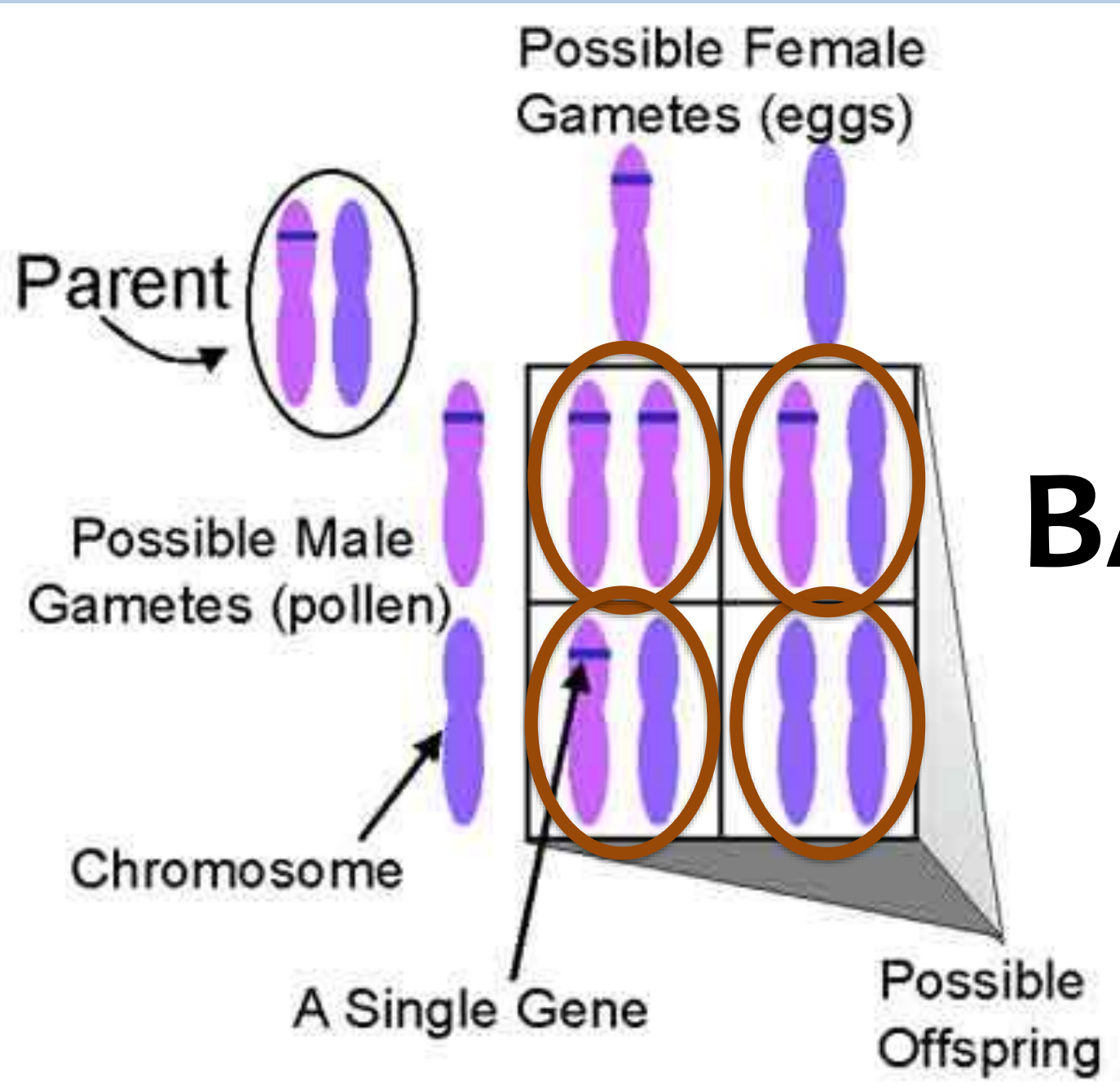


Each *possible baby* has 2 copies of each chromosome

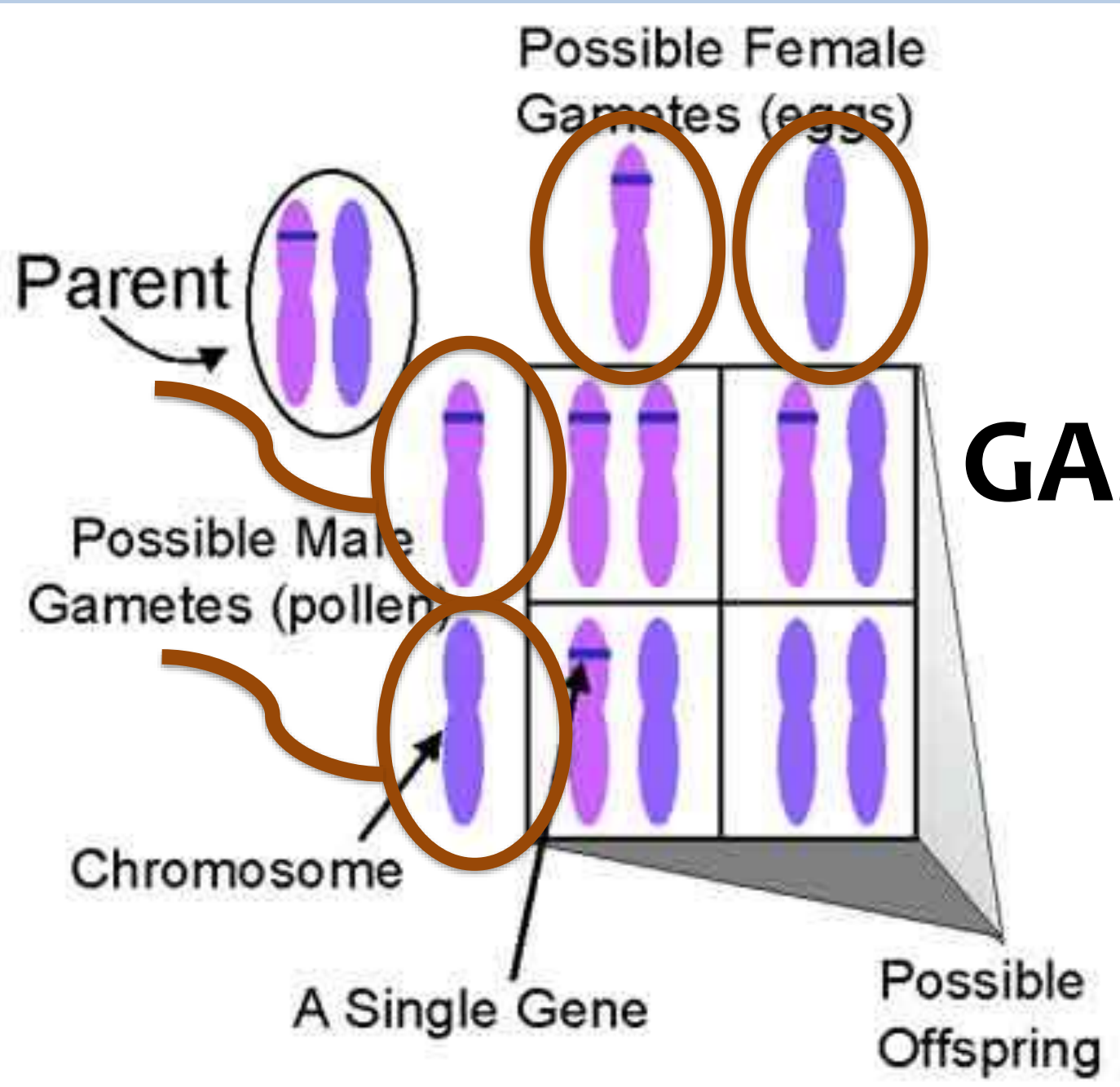




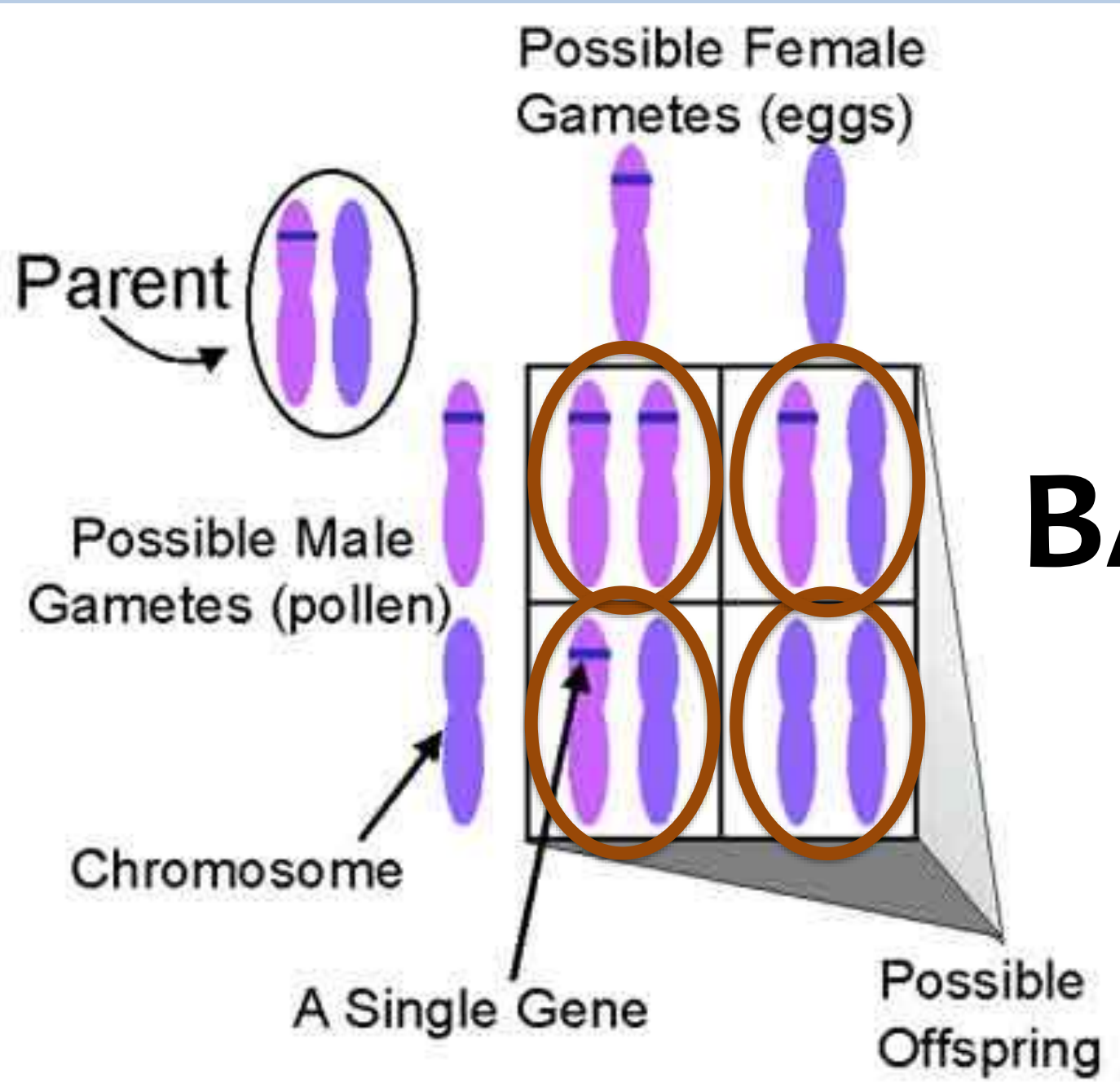
# GAMETES



**BABIES**



# GAMETES



**BABIES**

The parent plants here have a genotype **AaBb**. What gametes can they make?

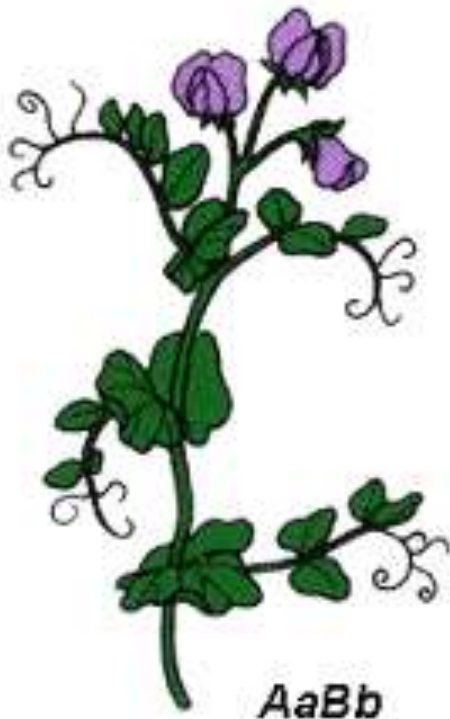


The parent plants here have a genotype **AaBb**. What gametes can they make?



	<b>AB</b>	<b>Ab</b>	<b>aB</b>	<b>ab</b>
<b>AB</b>	1/16 <b>AABB</b>	1/16 <b>AABb</b>	1/16 <b>AaBB</b>	1/16 <b>AaBb</b>
<b>Ab</b>	1/16 <b>AABb</b>	1/16 <b>AAbb</b>	1/16 <b>AaBb</b>	1/16 <b>Aabb</b>
<b>aB</b>	1/16 <b>AaBB</b>	1/16 <b>AaBb</b>	1/16 <b>aaBB</b>	1/16 <b>aaBb</b>
<b>ab</b>	1/16 <b>AaBb</b>	1/16 <b>Aabb</b>	1/16 <b>aaBb</b>	1/16 <b>aabb</b>

The parent plants here have a genotype **AaBb**. What gametes can they make? **AB Ab aB ab**



	AB	Ab	aB	ab
AB	1/16 <b>AABB</b>	1/16 <b>AABb</b>	1/16 <b>AaBB</b>	1/16 <b>AaBb</b>
Ab	1/16 <b>AABb</b>	1/16 <b>AAbb</b>	1/16 <b>AaBb</b>	1/16 <b>Aabb</b>
aB	1/16 <b>AaBB</b>	1/16 <b>AaBb</b>	1/16 <b>aaBB</b>	1/16 <b>aaBb</b>
ab	1/16 <b>AaBb</b>	1/16 <b>Aabb</b>	1/16 <b>aaBb</b>	1/16 <b>aabb</b>

# Dihybrid Crosses Video

[https://www.youtube.com](https://www.youtube.com/watch?v=qIGXTJLrLf8)  
[/watch?v=qIGXTJLrLf8](https://www.youtube.com/watch?v=qIGXTJLrLf8)



16 tributes will be selected to fill in one box each:

AaBb

AB

Ab

aB

ab

AB

Ab

aB

ab

AaBb

	AB	Ab	aB	ab
AB				
Ab				
aB				
ab				

**To remember genotype and phenotype we will do a short activity about YOUR traits.**

# Copy the table on to **page 60**

<u>Trait</u>	<u>Phenotype</u>	<u>Possible Genotype (s)</u>
Tongue Rolling		
Earlobes		
Ear Bump		
Widow's Peak		
Hitchhiker's Thumb		
Cleft Chin		
Hair Whorl		
SBT Paper Taste		

# Tongue Rolling (R/r)

The ability to roll your tongue is dominant



# Earlobes (L/I)

Attached earlobes are recessive



"Free"



"Attached"

# Ear Bump (B/b)

Ear bumps are dominant



# Widow's Peak (V/v)

Widow's Peak hairline is dominant



# Hitchhiker's Thumb (H/h)

Hitchhiker's thumb is dominant



Regular thumb

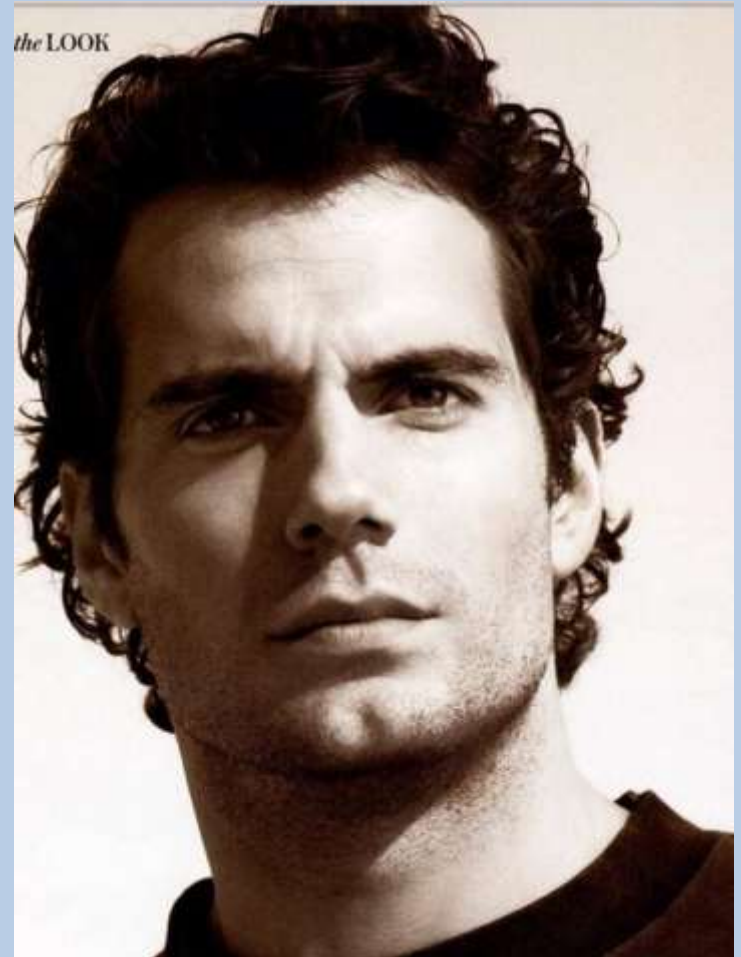


Hitchhiker's thumb



# Cleft Chin (C/c)

Cleft chins are dominant



# Hair Whorl (W/w)

A clockwise swirl is dominant

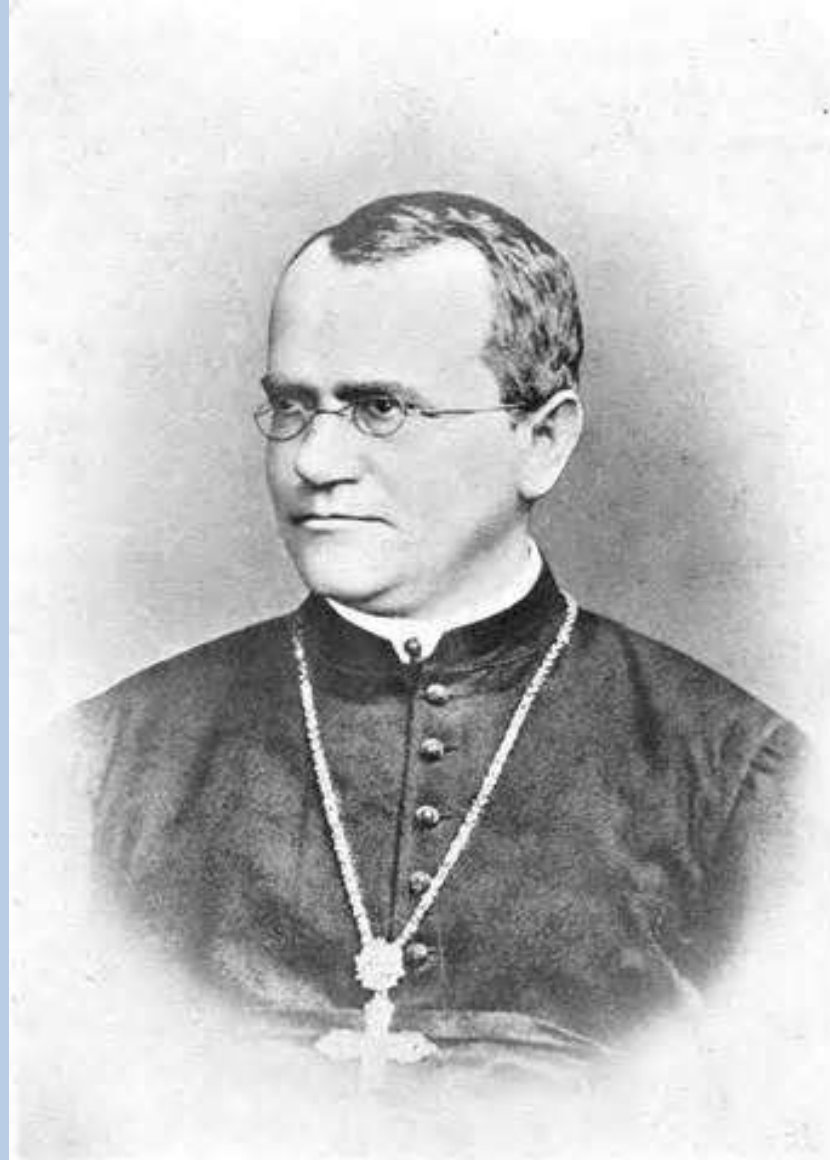


# SBT Paper Taste (T/t)

The ability to taste the chemical is dominant



**Mendel is the Father of \_\_\_\_\_**



# Dragon Genetics

For the next two days you will be completing a lab project to wrap-up simple Mendelian inheritance.



# Dragon Genetics

- **Be NICE AND RESPECTFUL of the materials** (*this activity took A TON of time to prepare*)

Mrs. Moberly if you  
destroy her lab materials



# Dragon Genetics

- Take your time, make sure you do a **GOOD job** (*don't be lazy or rush*)
- Follow the directions **CAREFULLY**

# Dragon Genetics

- Find ONE partner
- See Mrs. Moberly to be assigned a dragon couple to cross
- Follow the directions on your lab sheet
- DESTROYED/LOST MATERIALS  
WILL RESULT IN  
DESTROYED/LOST POINTS