

# Punnett Squares Key

## Monohybrid Crosses



**Penguin Bay Biology**

- Biology Class, Simplified -

A Punnett square is a diagram that predicts the traits two individuals can produce when crossed.

Remember, a monohybrid cross is a cross of one trait!



Randall and Rochelle have 4 children. Complete the Punnett Square predicting the traits of each child.

**Randall:** Eye color: brown (heterozygous)

Hair color: blonde

Earlobes: attached

**Rochelle:** Eye color: blue

Hair color: brown (heterozygous)

Earlobes: free (heterozygous)

### #1: Eyes

Alleles for Randall's Eyes: **Bb**

Alleles for Rochelle's Eyes: **bb**

Place the alleles on the outside of the chart and complete the cross:

	<b>B</b>	<b>b</b>
<b>b</b>	Child #1 <b>Bb</b>	Child #2 <b>bb</b>
<b>b</b>	Child #3 <b>Bb</b>	Child #4 <b>bb</b>

Genotype: **2 : 2**

Phenotype: **2 heterozygous brown eyes; 2 homozygous blue eyes**

# Punnett Squares Key

## Monohybrid Crosses



**Penguin Bay Biology**

- Biology Class, Simplified -

**Randall:** Eye color: brown (heterozygous)

Hair color: blonde

Earlobes: attached

**Rochelle:** Eye color: blue

Hair color: brown (heterozygous)

Earlobes: free (heterozygous)

**#2:**

Alleles for Randall's Hair: **hh**

Alleles for Rochelle's Hair: **Hh**

Place the alleles on the outside the chart and complete the cross:

	<b>H</b>	<b>h</b>
<b>h</b>	Child #1 <b>Hh</b>	Child #2 <b>hh</b>
<b>h</b>	Child #3 <b>Hh</b>	Child #4 <b>hh</b>

Genotype: **2 : 2**

Phenotype: **2 heterozygous brown hair; 2 homozygous blonde hair**

# Punnett Squares Key

## Monohybrid Crosses



**Penguin Bay Biology**

- Biology Class, Simplified -

**Randall:** Eye color: brown (heterozygous)

Hair color: blonde

Earlobes: attached

**Rochelle:** Eye color: blue

Hair color: brown (heterozygous)

Earlobes: free (heterozygous)

**#3:**

Alleles for Randall's Earlobes: **ee**

Alleles for Rochelle's Earlobes: **EE**

Place the alleles on the outside the chart and complete the cross:

	<b>E</b>	<b>E</b>
<b>e</b>	Child #1 <b>Ee</b>	Child #2 <b>Ee</b>
<b>e</b>	Child #3 <b>Ee</b>	Child #4 <b>Ee</b>

Genotype: **4 : 0**

Phenotype: **4 heterozygous free earlobes**

# Punnett Squares Key

## Monohybrid Crosses



**Penguin Bay Biology**

- Biology Class, Simplified -

Using the data from your Punnett squares, describe what each child looks like:

Trait	Child #1	Child #2	Child #3	Child #4
Eye color	Brown	Blue	Brown	Blue
Hair color	Brown	Blonde	Brown	Blonde
Earlobes	Free	Free	Free	Free

### Application:

1. If a brown female dog has three brown puppies and one white puppy, is the mother dog's genotype homozygous or heterozygous?

Heterozygous

2. Explain your answer. Why would the mother dog's genotype be homozygous or heterozygous?

A white puppy would have two recessive alleles. This means the mother dog would need to have one recessive allele in her genotype, making her heterozygous.