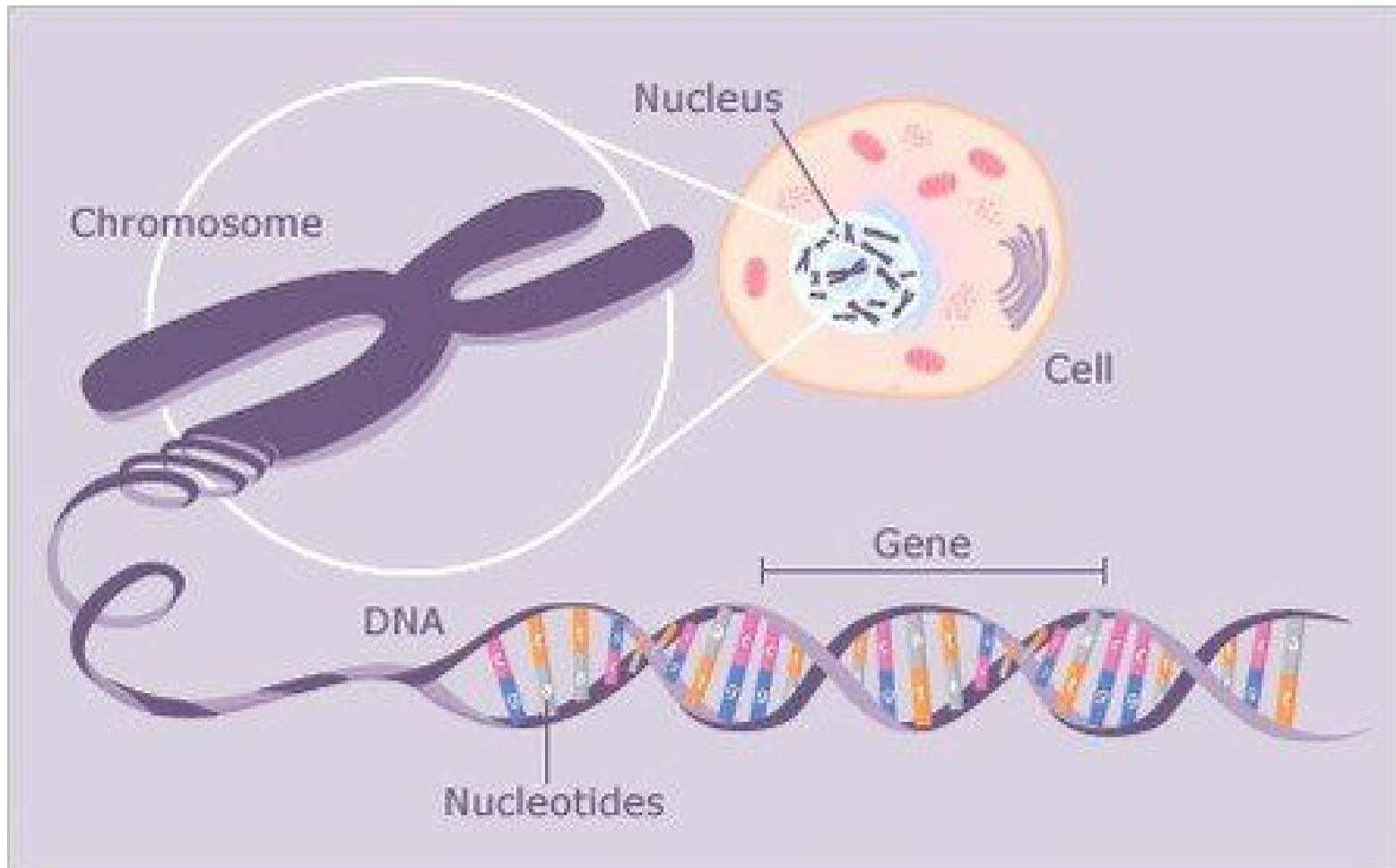


TODAY:

Halloween Genetics

Dominant and Recessive Genes



From DNA to Genes

We have looked at the form of DNA

DNA strands are tiny components that we can see when we unravel our chromosomes

Within our DNA, genes are made up of small sequences within our DNA and they provide the code for our traits. We get one set from our Mother and one from our Father.

Today we are going to look at how traits present themselves based on the strength of the genes we get from each of our parents.

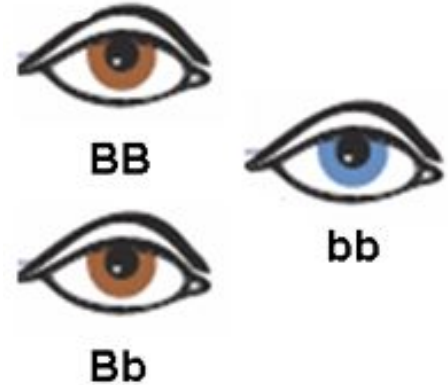
Phenotypes and Genotypes

- The **genotype** is the set of genes in our DNA which is responsible for a particular trait.
- The **phenotype** is the physical expression, or characteristics, of that trait.

EX: Eye Colour

B is the code for brown (dominant) and b is the code for blue. Possible Genotypes are BB, Bb and bb

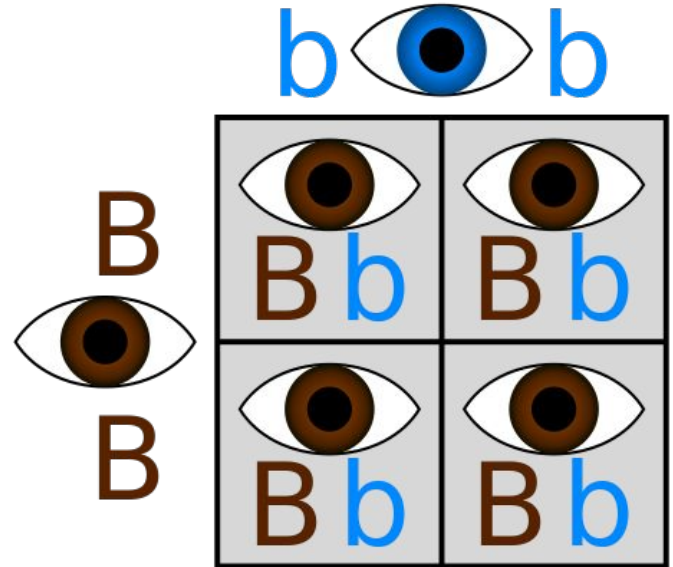
Possible Phenotypes (the actual traits we see) are brown and blue



Punnett Squares

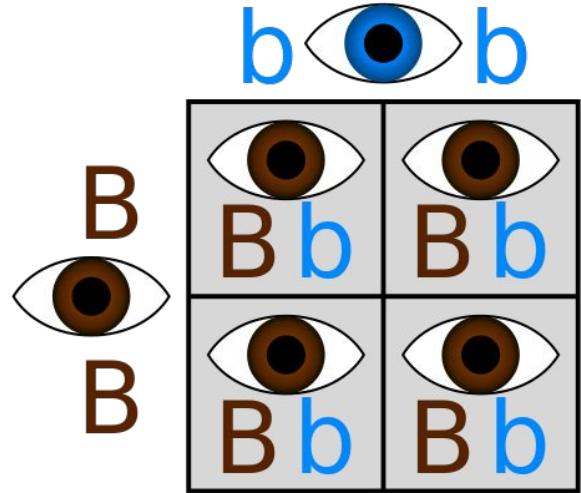
We use these squares to compare the genotypes of the 2 parents in order to calculate the probability of different outcomes of phenotypes for offspring.

In this case one parent had blue eyes with only the gene for blue eyes, while the other parent only had the gene for brown eyes. The capital B shows us that brown is DOMINANT, while blue is RECESSIVE - meaning that in any case where the B is present, the person will have brown eyes.



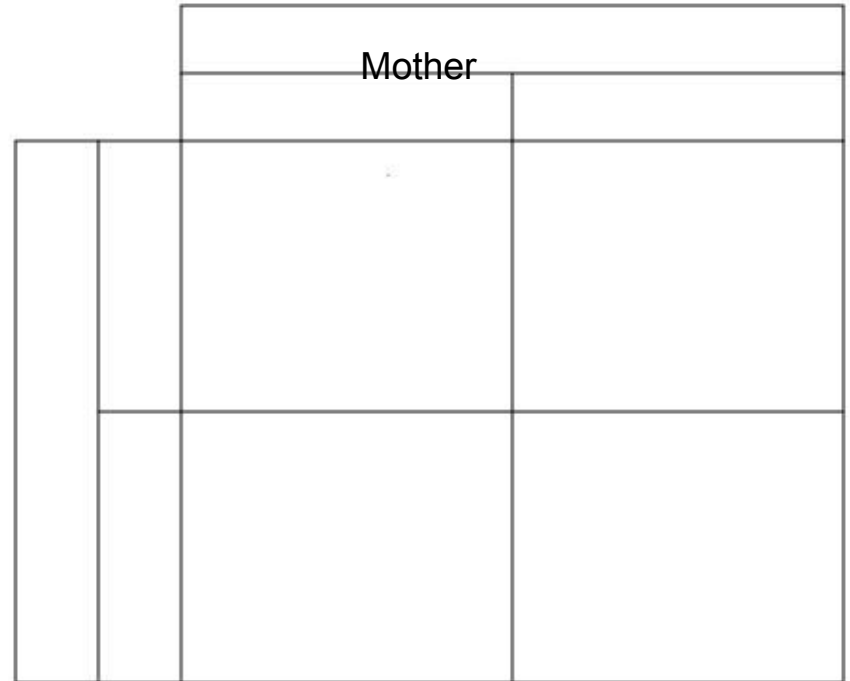
Examples with eye colour

- Mother has brown eyes and no gene for blue (BB)
- Father has blue eyes (bb)



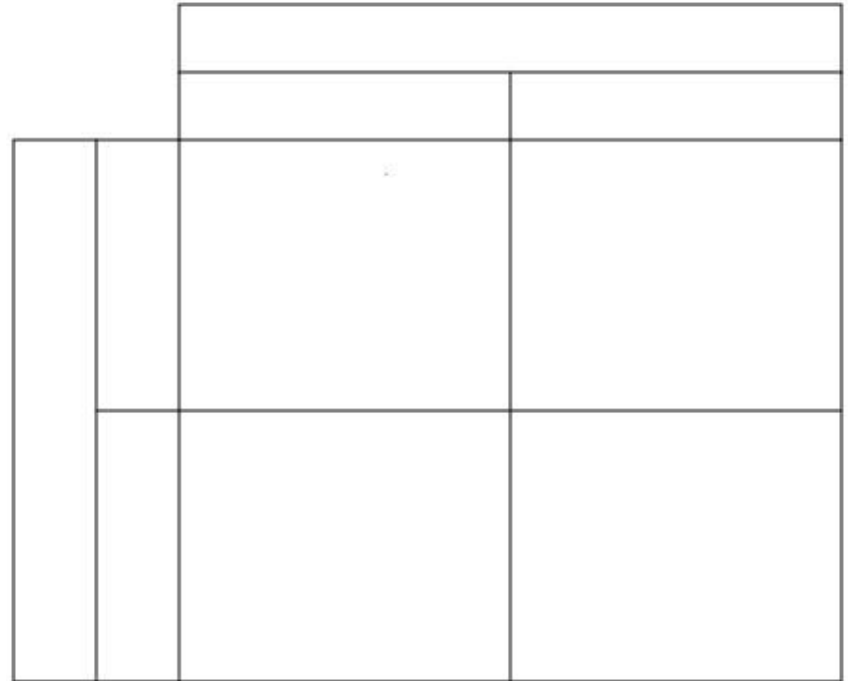
Examples with eye colour

- Mother has brown eyes but has the gene for blue (Bb)
- Father has blue eyes (bb)



Examples with eye colour

- Both parents have brown eyes but have the gene for blue (Bb)



NOW YOU TRY!

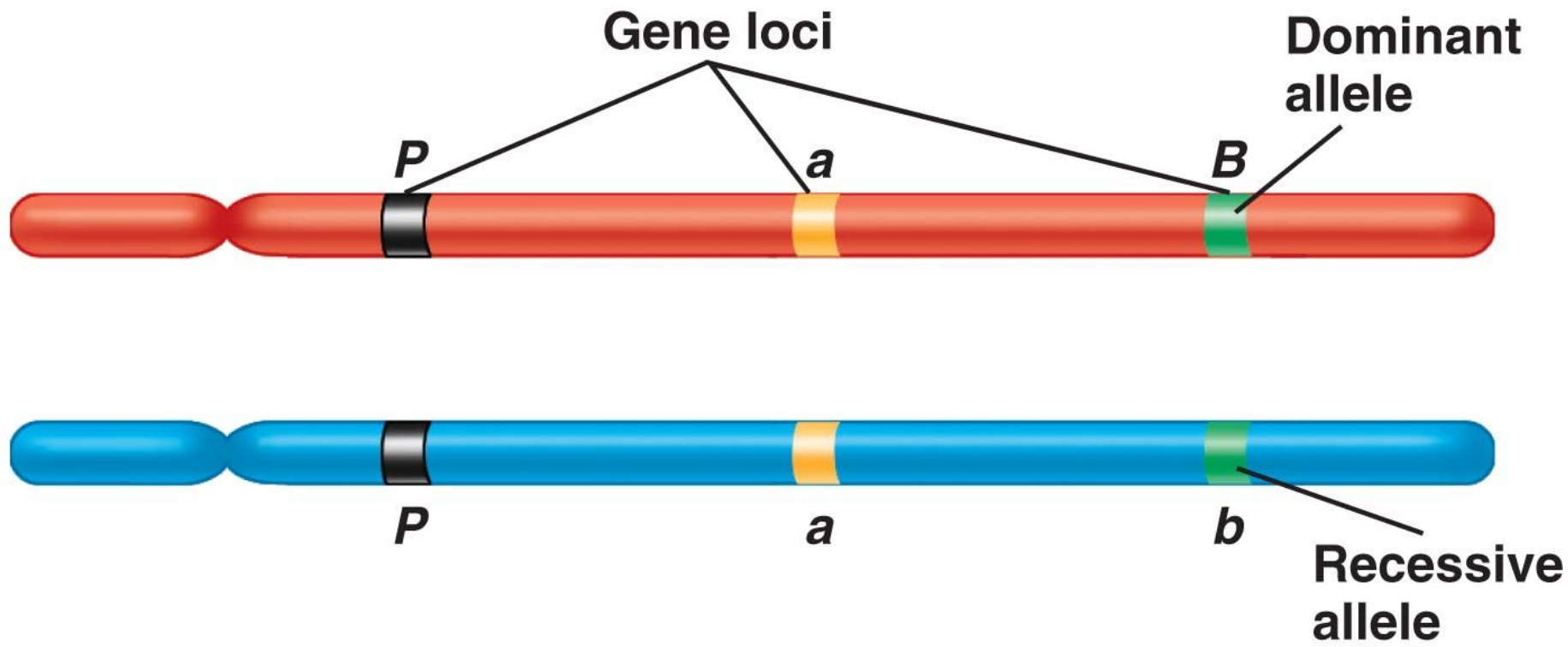


What happens when we get scared?



Homozygous vs. Heterozygous

- **Homozygous**: inherits two similar alleles from the parents for a particular gene
 - Ex: tall allele and tall allele, written as TT
 - Ex: short allele and short allele written as tt
- **Heterozygous**: inherits two different alleles from the parents for a particular gene
 - Ex: tall allele and short allele, written as Tt



Genotype:

PP

aa

Bb

Homozygous
for the
dominant allele

Homozygous
for the
recessive allele

Heterozygous

Chromosomes and Genes

- **one long strand of DNA**
- **associated proteins**
 - “chromatin”
- **thousands of genes**
- **gene**
 - discrete unit of heredity
- **locus**
 - physical location of a gene

