

## Hybrid Punnett Square

Punnett Squares are tools used by biologists to predict the genotypes of children based on the genotypes of parents. A common Punnett Square is that between two hybrid parents (Heterozygous). It is based on the research of Gregor Mendel, who investigated the probability that an inherited trait would be passed down from parent to child. In the case where two hybrid parents mate (two heterozygous individuals) and have 4 children, probability odds state that 3 of those children will have the same dominant phenotype as their parents. This is because they would all receive a copy of the dominant "A" allele. However, one child would have the different, recessive, phenotype. This is because there is a 25% chance that a child could get the recessive allele from each parent.



PLAY PICMONIC

### Gregor Mendel

#### Grey Man-Doll

The Punnett Square concept is founded on the research done by Gregor Mendel, who observed that there was a probability of inheritance for each characteristic. That means that there is a certain chance for each characteristic to be passed down from parent to child.

### Two Hybrid Parents Mate

#### Half-Bread Woman and Half-Bread Man Supply Alleles

Two hybrid parents mating is a common Punnett Square situation. The hybrid parents are heterozygous, meaning they have one of each allele (A and a, Dominant and Recessive).

### 3 children have the same phenotype

#### Phoenix-Type expressing 3 Children with same Dark Hair Color as Parents

When two hybrid parents mate, there are 4 possible outcomes for genotype. In three of these outcomes, the children have the same phenotype as the parents (dominant) because they all received at least one dominant allele from one of the parents. In fact, the possible genotypes are AA and Aa, as seen in the top row and bottom left square in the Punnett Square. This means that there's a 75% chance that any child will have the dominant phenotype.

### 1 child has a different phenotype

#### Phoenix-Type expressing 1 Child with different Blonde Hair Color

One of the children has a recessive phenotype, aa, because they received a recessive allele from each parent. This is a 25% chance.