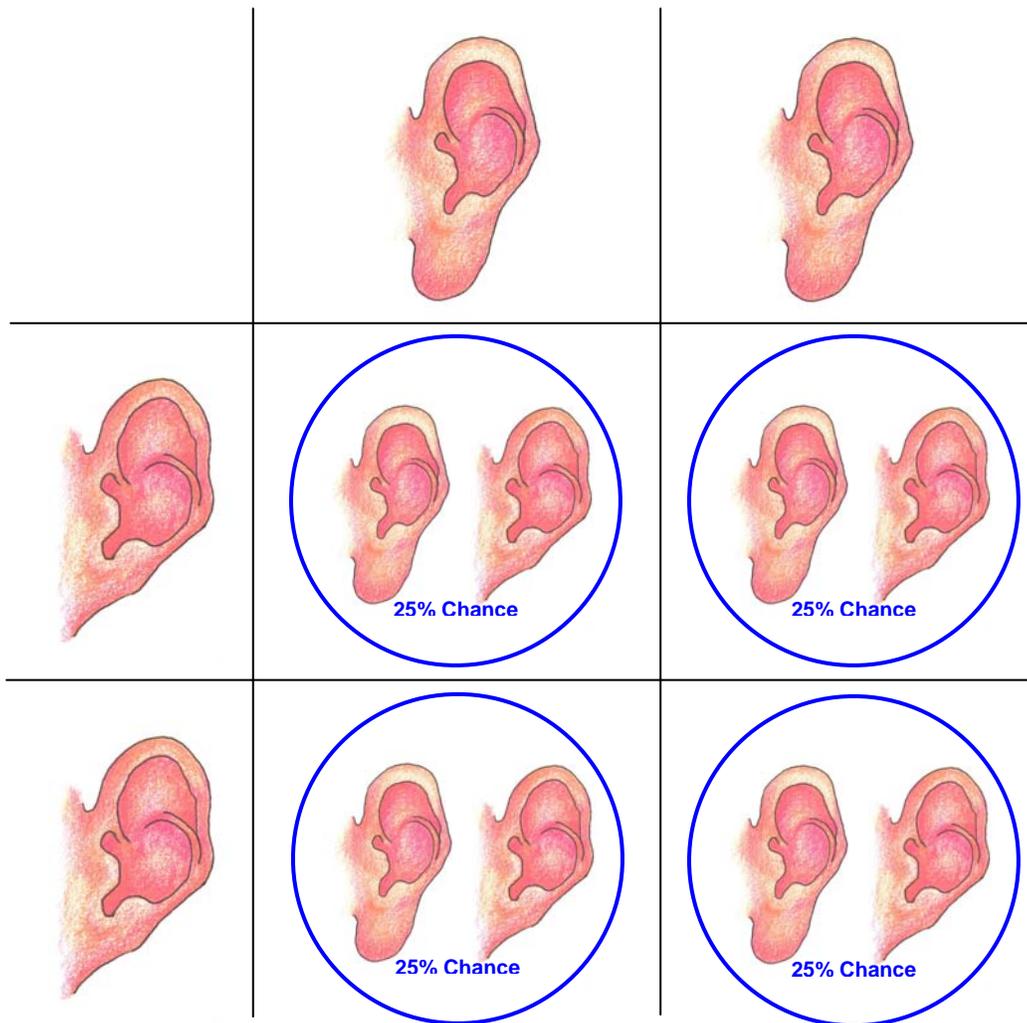


## Ear Lobes and Punnet Squares

Do your ears hang low? Do They Wobble to and fro? Can you tie 'em in a knot? Can you tie 'em in a bow? Can you throw 'em over your shoulder like a continental soldier, oh, do your ears hang low?



**Figure 1: Homozygous Earlobe Punnett Square Combinations**

Assuming that one parent is of ear-lobe type homozygous dominant (both genes governing earlobes are the same and are dominant, or are for large earlobes) and the other parent is of ear-lobe type homozygous recessive (both genes governing earlobes are the same

and are recessive, or are for small earlobes), the Punnett squares in figure 1 show that any offspring of these parents should end up with large earlobes rather than small ones, due to their dominant-recessive pairing in each possible genetic combination (assuming that the large-earlobe gene is totally dominant and that nothing else can influence that).

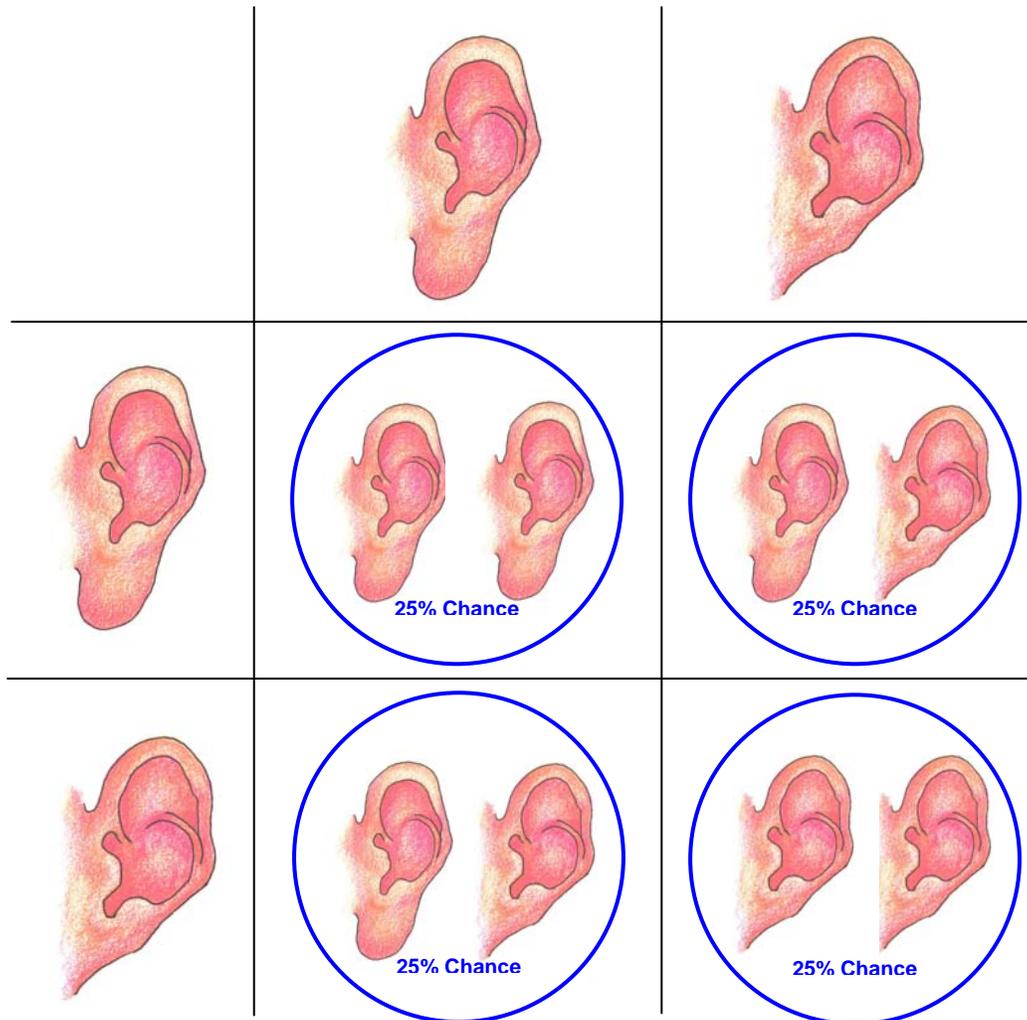
Of course, mother nature is not so easily confined to Punnett squares, so it is important to emphasize the terms *possibility* and *probability*, being careful to recognize that neither term is absolute. As the genetic information from the parents are split into single sets through the process of meiotic cell division in preparation for fertilization of an egg within the mother, crossing over can occur, which can modify genetic information in ways we are not yet able to understand or explain. When the two parental sets of DNA come together after fertilization, that unique combination may also cause certain other circumstances that result in genetic changes. What if, for example, the large-earlobe dominance in Figure 1 offspring will only be completely dominant if the child also has the father's brown hair and the mother's blue eyes, but that if the child ends up with blonde hair from the father and blue eyes from the mother, then the recessive small-earlobe gene can somehow assume dominance?<sup>1</sup>

If offspring from figure 1 mate with partners of identical genotype, differing possibilities in the next generation of family earlobes arise, as illustrated in Figure 2. Although the outcome indicates a 3 to 1 probability that next-generation offspring will also have large earlobes, it is still up to mother nature and her wily ways to determine what will really happen – and although it may be a less likely outcome, it is possible that all their children have small earlobes. Let's assume that only one child is born at a time and that they have four altogether. It is entirely within the scope of DNA replication and fertilization that each of the children will end up with

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<sup>1</sup> Although genetic combinations may not work precisely in this fashion, this suggests one possibility why Punnett square results may not be absolutes and how it is entirely conceivable the offspring may not reflect the dominant genes of either parent in some cases.

quadrant four earlobes (small ones), since that combination can present itself in each individual zygote. The four possible combinations will not necessarily neatly take turns with each child.



**Figure 2: Heterozygous or Dominant-Recessive Genotype Pairing**

And Just for Fun...

Do your ears hang low?  
Do they wobble to and fro?  
Can you tie them in a knot?  
Can you tie them in a bow?  
Can you throw them o'er your shoulder  
like a continental soldier?  
Do your ears hang low?

Do your ears hang high?  
Do they reach up to the sky?  
Do they droop when they are wet?  
Do they stiffen when they're dry?  
Can you semaphore your neighbour  
with a minimum of labour?  
Do your ears hang high?

Do your ears flip-flop?  
Can you use them for a mop?  
Are they stringy at the bottom?  
Are they curly at the top?  
Can you use them for a swatter?  
Can you use them for a blotter?  
Do your ears flip-flop?

Do your ears hang out?  
Can you waggle them about?  
Can you flip them up and down  
as you fly around the town?  
Can you shut them up for sure  
when you hear an awful bore?  
Do your ears hang out?

[The following verses are copyright 1998 by Lawrence,  
Ann, Benjamin, and Katherine Sulky]

Do your ears stretch wide? Do they reach from side to  
side?  
Can you use them as a parachute  
or wings that let you glide?  
Can you cast a cooling shadow  
over most of Colorado?  
Do your ears stretch wide?

Are your ears too big? Are they heavy as a pig?  
Do they bruise your cerebellum  
when you dance an Irish jig?  
Can they function as the anchors  
for a fleet of oil tankers?  
Are your ears too big?

Are your ears real small? Barely visible at all?  
Do they look just like two peanuts stuck onto a bowling  
ball?  
Can you store them in a thimble when you're feeling  
rather nimble?  
Are your ears real small?

Are your ears quite clean? Do they have a lovely  
sheen?  
Did you harvest all the vegetables that grow down in  
between?  
Did you wash out all the soil after all your farming toil?  
Are your ears quite clean?

Are your ears so thin? Do the breezes make 'em spin?  
Can you shine a light right through them like the finest  
onionskin?  
Can you wrap up a salami? Do they fold like origami?  
Are your ears so thin?

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