Reebop Reproduction

Background

Humans have 46 chromosomes, that come in 23 pairs, in each body cell. Since chromosomes come in pairs, genes do too! One gene is located on one member of the chromosome pair. The pair of genes is usually referred to as one gene because the pair code for the same trait. The different gene forms are called *alleles* and can be either dominant or recessive. There are three possible combinations of alleles. The possibilities are homozygous dominant (TT), homozygous recessive (tt), or heterozygous (Tt).

Reebops do not have the same chromosome number as humans. They have 18 chromosomes, or 9 pairs.

Both parents are heterozygous for all traits.

Mom: Ll, Gg, Ee, Tt, Cc, Nn, Hh, Aa, XX

Dad: Ll, Gg, Ee, Tt, Cc, Nn, Hh, Aa, XY

Procedure

1. You and your partner will be creating your own Reebop baby. One of you will pick the alleles that come from the mother and one will pick the alleles that come from the father.
2. The alleles for each of the traits are located in bins. You will need to randomly pick one allele from each of the bins. After picking the alleles, go back and meet with your partner and allow your Reebop parents to “mate.”
3. The new pile of chromosomes you have just made are the genes of your Baby Reebop!
4. Arrange the chromosomes pairs by size from largest to smallest. Remember that your sex chromosomes will not necessarily be the same size. The Y chromosome is not the same size as the X chromosome.
5. Write the genotypes for your baby Reebop on your birth certificate.
6. Use the key of Reebop traits, figure out your phenotypes for each trait and write them on your sheet.
7. Sketch a picture of your baby Reebop on the birth certificate using the key as a guide. Make sure that your picture accurately represents the correct phenotypes (i.e.- numbers and colors for traits)
8. After sketching your baby, construct your baby Reebop out of the provided materials.
9. Name your baby Reebop and list yourself and the other parent on the “birth certificate”
10. Answer the questions that follow after your baby has been “born.”

GENE KEY

|  |  |  |
| --- | --- | --- |
| **Traits** | **Genotype** | **Phenotype** |
| Leg color | LL | Blue legs |
| Leg color | Ll | Clear legs |
| Leg color | ll | Red legs |
|  |  |  |
| Number of legs | BB or Bb | 4 legs |
| Number of legs | bb | 6 legs |
|  |  |  |
| Eye color | EE | Yellow eyes |
| Eye color | Ee | Blue eyes |
| Eye color | ee | Red eyes |
|  |  |  |
| Shape of tail | TT or Tt | Curly tail |
| Shape of tail | tt | Straight tail |
|  |  |  |
| Tail color | CC | Black tail |
| Tail color | Cc | Blue tail |
| Tail color | cc | Green tail |
|  |  |  |
| Nose color | NN or Nn | Orange nose |
| Nose color | nn | Pink nose |
|  |  |  |
| Number of humps | HH | 1 hump |
| Number of humps | Hh | 2 humps |
| Number of humps | hh | 3 humps |
|  |  |  |
| Number of antennae | AA | 2 red antennae |
| Number of antennae | Aa | 2 black antennae |
| Number of antennae | aa | No antennae |

ANATOMY

Answer the following questions after the birth of your baby!

1. Which traits is your baby Reebop homozygous dominant for?
2. Which traits is your baby Reebop homozygous recessive for?
3. Which traits is your baby Reebop heterozygous for?
4. Are any of the traits incompletely dominant? Which ones? How do you know?
5. Look at the other babies born today. Do all of the baby Reebops look the same? Why or why not?
6. What is the haploid number of chromosomes for the Reebop?
7. What are the genotypes of the parents of our Reebops?
8. What is the diploid number of chromosomes for the Reebop?