



# Dragon Genetics Lab

Name: \_\_\_\_\_

Partner: \_\_\_\_\_

Hour: \_\_\_\_\_

Along with a partner, you will work in the lab to produce a dragon from the random mixing of genetic traits. Each student will be a surrogate dragon parent. They will pick up a complete set of dragon chromosomes. One parent must pick up a set of chromosomes from a female dragon, while the other parent must pick up a set of chromosomes from a male dragon. The homologous chromosomes will be separated according to Mendel's laws. The genetic codes that are passed on to the baby will be recorded on the following pages. The surrogate parents must decode the genes inherited by their baby to determine the phenotypic traits of their baby.

## Procedure

1. In this lab, you will be working with a partner. Each of you should pick up a set of chromosomes from the teacher. Make sure that one of you gets a set from the mother dragon and one of you gets a set from the father dragon.
2. Within your set of chromosomes you should have one of each color of autosome and one sex chromosome. Each side of a popsicle stick represents a chromosome – with both sides together representing a homologous pair.
3. The first thing you should do is complete the Genotypes of the parents on the attached charts. Each parent should have two alleles.
4. For each allele, you will need to determine which allele Mom will pass on to the egg and which allele Dad will pass on to the sperm. For each allele, you will pick up the chromosome (Popsicle stick) and randomly drop his or her stick on the table. The side of the stick that is up represents the allele that is passed on to the baby. Write down the allele that came from the egg (Mom) and the allele that came from the sperm (Dad) in the appropriate columns of the chart.
5. Also attached is a copy of the decoding chart, which indicates the phenotype for all of the traits. Remember that a capital letter is dominant over a small letter.
6. Determine the sex of your baby. The father dragon will determine the sex of the baby. The mother will pass on an X chromosome no matter what. The father will either pass on an X or a Y. If you drop the blue chromosome and the letter Y is on top, the baby is a boy, if there is no Y, then the baby is a girl.
7. Complete all of the attached charts for your baby dragon.
8. Once you have finished, use the combined talents of both parents and draw a picture of your baby. Make sure you name your baby and be sure to indicate the parents on your paper.

## Dragon Genome

### Decoding of the Genes

#### **Dominant Genes**

- A. No chin spike
- B. Nose spike
- C. Three head flaps
- D. No visible ear hole
- E. Eye pointed at each end

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- F. Long Neck
- G. No back hump
- H. No back spikes
- I. Long tail
- J. Flat feet

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- K. Red eyes
- L. Spots on neck
- M. Wings
- N. No fang
- O. Spots on back

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- P. No spots on thigh
- Q. Green body
- R. Small comb on head
- S. Red spots
- T. No elbow spike

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- U. Non-fire breath
- V. Four toes
- W. No chest plate
- X. No tail spike
- Y. Male Sex
- Z. Long arms

#### **Recessive Genes**

- a. Chin spike
- b. No nose spike
- c. Four head flaps
- d. Visible ear hole
- e. Round eye

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- f. Short Neck
- g. Back hump
- h. Back spikes
- i. Short tail
- f. Arched feet

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- k. Yellow eyes
- l. No spots on neck
- m. No wings
- n. Fang
- o. No spots on back

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- p. Spots on thigh
- q. Purple body
- r. Large comb on head
- s. Yellow Spots
- t. Elbow spike

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- u. Fire breather
- v. Three toes
- w. Chest plate
- x. Tail spike
  
- z. Short Arms

# Our Baby

Name: \_\_\_\_\_

Hour: \_\_\_\_\_

## Green Autosomes

### Genotypes

Mom	Dad	Genotype of baby	Trait – Phenotype of baby

## Red Autosomes

### Genotypes

Mom	Dad	Genotype of baby	Trait – Phenotype of baby

## Orange Autosomes

### Genotypes

Mom	Dad	Genotype of baby	Trait – Phenotype of baby

## Black Autosomes

### Genotypes

Mom	Dad	Genotype of baby	Trait – Phenotype of baby

## Sex Chromosomes (Pink or Blue)

### Genotypes

Mom	Dad	Genotype of baby	Trait – Phenotype of baby

### Questions:

1. What is the sex of your baby?
2. What are your parental genotypes for fire-breathing?
3. Using a punnett square, what would be the probability that your baby will breathe fire?



