**UNDERSTANDING HOW GENETIC FACTORS INFLUENCE GROWTH TIME:** 60 minutes

**ESSENTIAL QUESTION:** How do the genes of an organism influence its growth?

**EXPECTATIONS:** Complete the instructions below in order. Since your goal is to be able to describe how genes influence growth, you need to study resources that will help this make sense. More resources are listed below if you still need help answering the questions after completing the suggested activities.

**PART 1:** **WARM-UP/15 minutes** - Watch this short video then answer the questions.

Video Link: <https://www.pbslearningmedia.org/resource/unicorn-dna/unicorn-dna/>

Answer these questions to prepare for what you’re about to learn. (It’s okay not to know the answers yet. Thinking about them first helps prepare your brain for learning).

Q1: **What are genes and how do they determine traits?**

Q2: **What happens to traits when we change the genes of the parents?**

**Summarize: Physical Traits needed to make a Unicorn/5 minutes**   
Make a list of the genetic ingredients (physical traits) needed to make a unicorn.

**PART 2 – Gizmo: Inheritance (30 minutes)**

Use Clever to Log in to Gizmos (Go to <https://clever.com/> > Active Directory > Login with your KSD credentials, scroll down to “Gizmo Pilot”)

**Launch the Inheritance Gizmo.** Consider completing the [accompanying worksheet](https://kentschooldistrict-my.sharepoint.com/:w:/g/personal/corblc24771e_kent_k12_wa_us/EaRaeVW9uHpOhr7Jx82BAisB9EyR9QPJ_5YNzAc73eSz8Q?e=Q5Biur) (answer the prior knowledge questions and complete the warm-up to see how the Gizmo works). In this Gizmo you can try your hand at breeding aliens with different physical traits. Consider the following:

* You can experiment with both kinds of reproduction – asexual and sexual. What is the difference?
* Continue on with the experiment by combining parents with different physical traits. How does a parent’s physical traits affect the traits of their babies? Which traits are definitely passed from parent to offspring?
* Change the amount of food available in their environment. How does this affect the babies?
* Record your findings as you go.
* Make a list of the traits parents need to have in order for their babies to have a **pink body** and **straight** antenna.What factors influence the size of their bodies?
* Try the Online Assessment Q’s below the Gizmo. How many did you get right?

**PART 3:** **REVIEW** **and** **WRITE** (15 minutes)

Try to answer the questions again. (They should make more sense now).

Q1: **What are genes and how do they determine traits?**

Q2:  **What happens to traits when we change the genes of the parents?**

***Teachers should collect student data from students on these topics/questions in any way they choose.***

**FINISHED EARLY? GOT QUESTIONS? NEED DIFFERENT RESOURCES?**

**Explore:**<http://sciencenetlinks.com/esheets/nature-and-nurture/>

**Explore:** <https://www.pbslearningmedia.org/subjects/science/life-science/genetics-and-heredity/>

**Video: Amoeba Sisters: An Intro to Heredity** <https://www.youtube.com/watch?v=8m6hHRlKwxY>