

High School Biology Activity: Investigating Natural Selection

*Natural selection results in change over time in populations. The central dogma of molecular biology states that DNA makes RNA and RNA makes protein. While genetic mutation is random, natural selection is not random.
(NGSS HS-LS3-2 and HS-LS4-2 Inheritance and Variation of Traits and Natural Selection and Evolution)*

Pre-Activity Questions

- Is it possible to observe natural selection taking place in nature?
- What is the role of genetic variation in evolution?
- What is a genetic mutation?

Activity

- Write down a list of at least 10 possible genetic traits that differ within a regional population of humans. Examples: eye color, height....
- Is there genetic variation within a group of siblings? For example, do you notice any coat color or other physical differences amongst the [Oakland Zoo's 4 wolf pups](#)?
- Review the Central Dogma of Molecular Biology by **creating your own diagram** that illustrates **DNA**, transcription, **RNA**, translation and **proteins**. Check out [Khan Academy](#) or [Crash Course Biology](#) for a recap of this topic.
- Explain your diagram to someone in your household or a classmate using video conference.
- Now let's look for natural selection happening in real time!

Take careful notes on this 10 minute [HHMI video on Natural Selection and The Rock Pocket Mouse](#).

- Where do Rock Pocket mice live? What is their role in this ecosystem?
- What genetic mutation causes a difference in fur color? Explain this using your diagram on the Central Dogma of Molecular Biology.
- What process is taking place in Rock Pocket Mouse populations that live on black lava deposits? How long does it take for this process to be noticeable?

Create your Own Comic Strip about Natural Selection

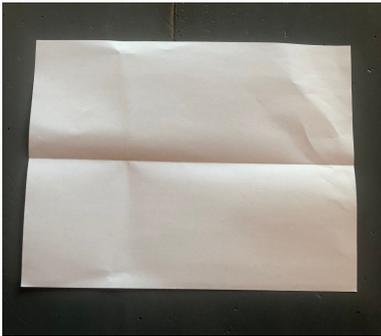
Materials

- Plain paper
- Colored pencils, markers, or writing implements of your choice.

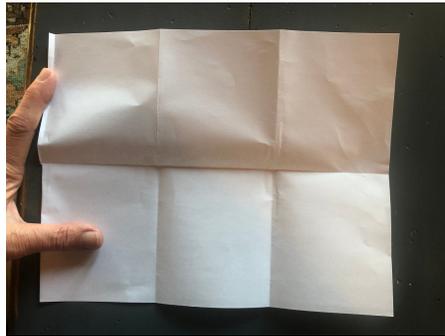
note: if you prefer, you can create a digital comic strip

Steps

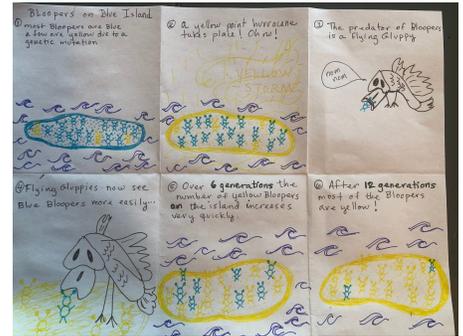
1. Divide a blank piece of letter sized paper into 6 equal squares by folding it in half along the longer edge and then in thirds (see 1 and 2 below).
2. Number each square 1-6
3. Create an imaginary species and illustrate, in 6 steps, how a population of this species undergoes natural selection.
 - a. Hint: Remember that natural selection acts on populations over generations (not individuals in the course of their lifetime).
4. Take a picture of your Natural Selection Comic Strip and share it with [the Oakland Zoo](https://www.oaklandzoo.org/), we will post top submissions on our Zoo@Home page!



1. fold paper in half lengthwise



2. fold again into thirds to create 6 squares



Example cartoon strip about Bloopers on Blue Island