



## Discovery Day – Amazing Adaptations Color Changing Chameleon

Video Premieres  
March 28, 2021  
on Facebook!

### What you need

- 2 paper plates
- Set of paints
- Paintbrush(es)
- Cup of warm water
- Brass fastener
- Scissors
- Chameleon image (see next page)
- Paper towels for easy clean-up in case of spills

Follow the steps below to create your own color-changing chameleon! This craft models the chameleon's skin adaptation which allows them to change color to express their mood.

### Preparation

1. Gather your supplies listed above.

### What to do

1. Paint one paper plate in a variety of chameleon colors – green, brown, as well as patterns like yellow stripes on green, red stripes on yellow, and even red and blue shades! Don't leave any white spots on the paper plate.
2. If you don't have multiple paintbrushes, clean your paintbrush off in between by rinsing it in the cup of warm water. Keep the paper towels handy for easy clean-up.
3. Use your scissors to cut out the provided chameleon image.
4. Then use your pencil to trace the outline of the chameleon image onto the second paper plate. You might need to tape the chameleon image down in order to hold it still for tracing.
5. With an adult's help, poke a hole using your scissors through the traced chameleon and then cut it out so that you end up with a paper plate that has an empty chameleon shape cut out of the middle.
6. After the painted paper plate is thoroughly dry, place it under the plate with the cut-out chameleon shape.
7. Poke the brass fastener through the middle of both paper plates, and fasten in the back to hold the two plates together. You may need adult assistance with this step.
8. Finally, rotate the top plate and see the chameleon's colors change!



Image from PBS Kids for Parents

### What is happening?

This craft models the chameleons' ability to change their skin color. Chameleon skin contains different types of specialized cells called chromatophores (meaning color-bearing). The chromatophores are organized into layers within the skin. The upper layer of skin contains cells with yellow and red pigments, while lower layers contain cells with dark melanin pigment, which appears black or brown. Just below the layer of yellow

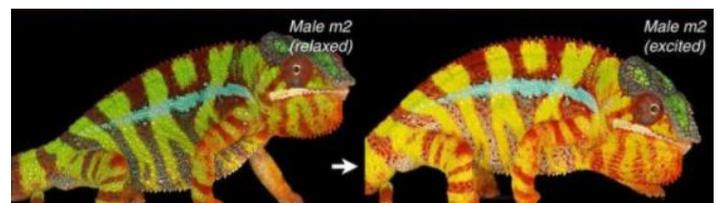


Image from Figure 1 of Teyssier et al., 2015  
(*Nature Communications*)

and red chromatophores is a layer of cells of iridescent chromatophores. Rather than containing pigment, iridescent chromatophores contain an array of transparent, nano-sized crystals that reflect specific wavelengths of light. The reflected light is perceived as color. Chameleons primarily change color by actively adjusting the spacing between these nanocrystals, which causes different wavelengths of light to be reflected. For example, when blue light reflects off the crystal layer and travels through the yellow pigment above, the result humans see is the color



## KU NATURAL HISTORY MUSEUM & BIODIVERSITY INSTITUTE

green. Recent research suggests that, instead of changing skin color to camouflage with their surroundings, chameleons actually change color to communicate with one another during social interactions and to express their moods.

Activity modified from PBS Kids for Parents. Scientific information from <https://asknature.org/strategy/skin-changes-color-2/>

### CHAMELEON IMAGE

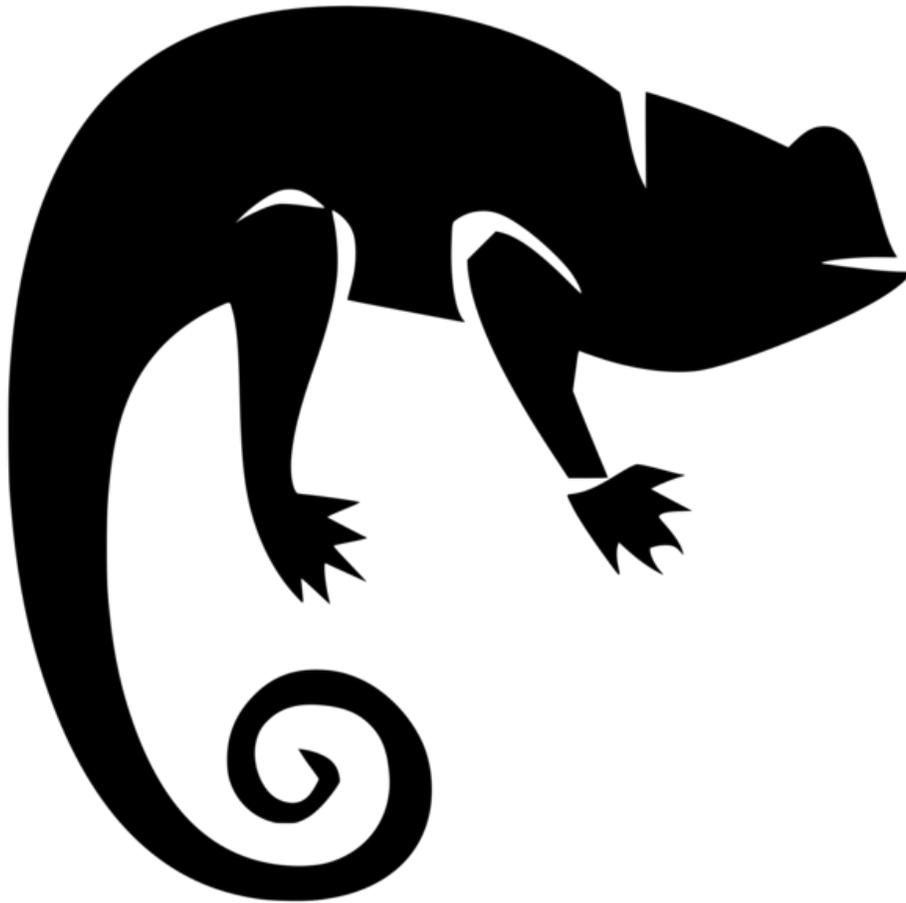


Image from Creative Commons  
CC0 1.0 - Public Domain