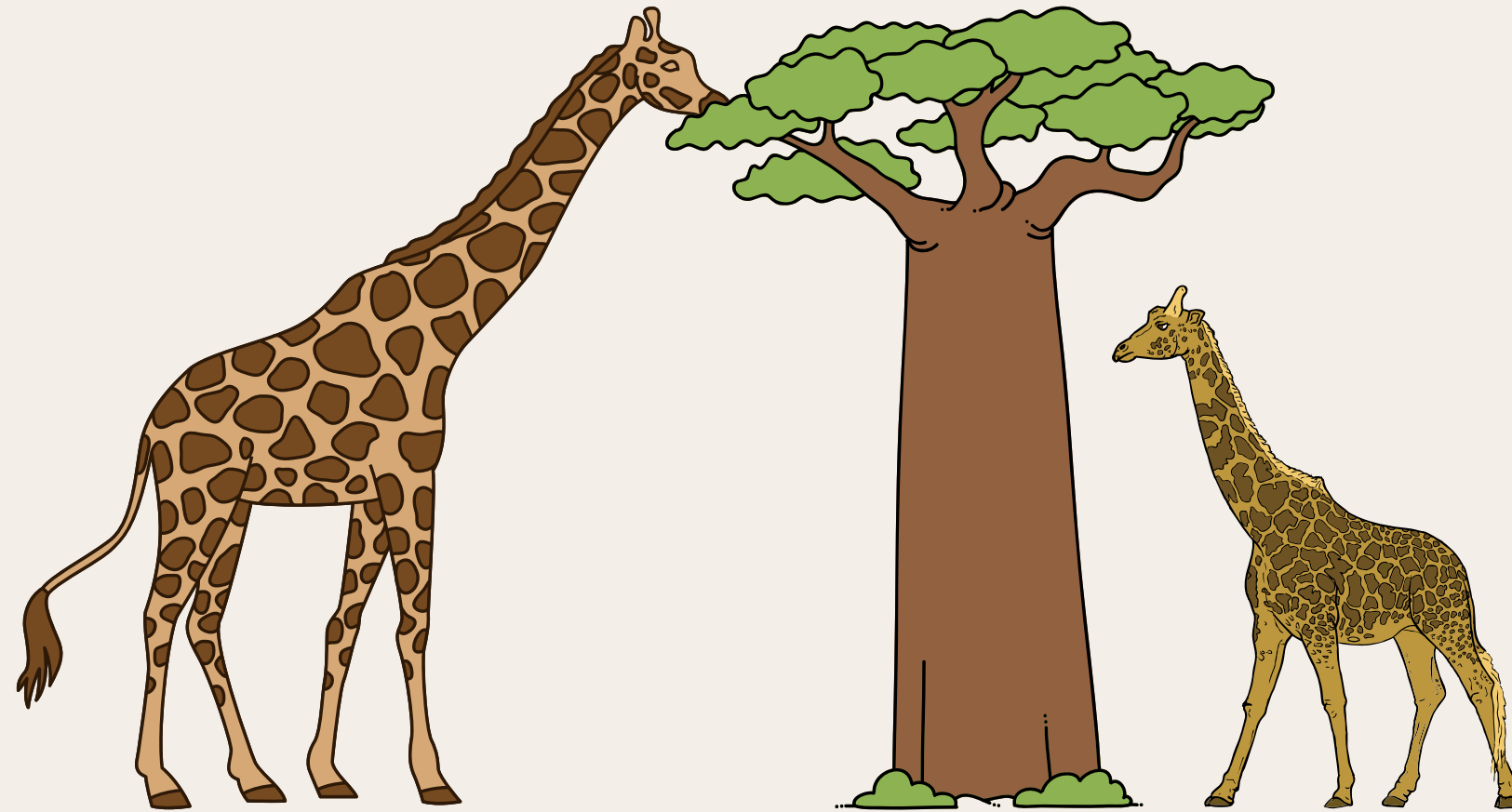
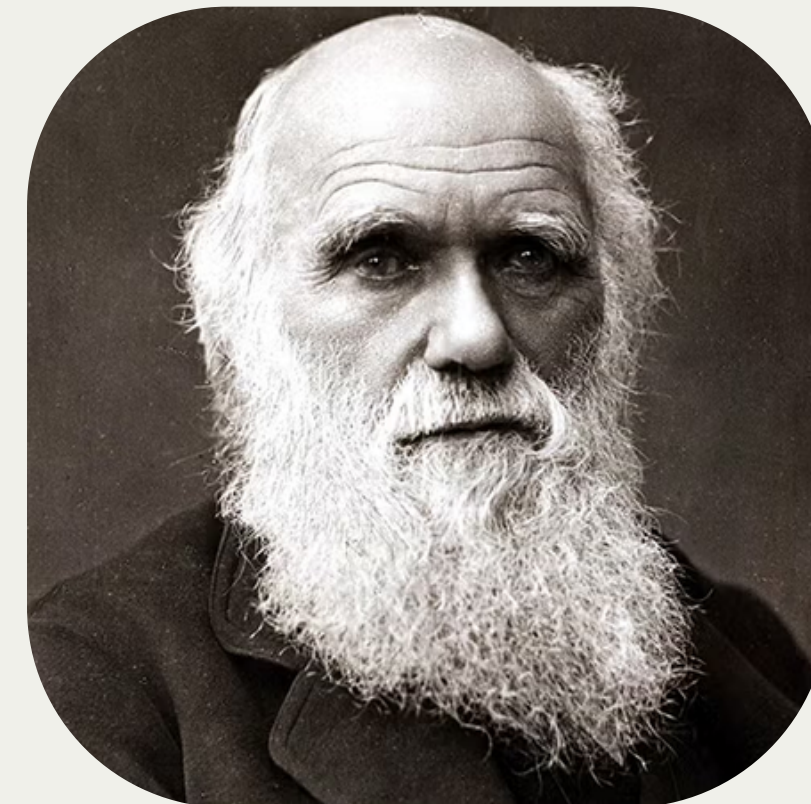


EVOLUTION AND DARWIN'S THEORY OF NATURAL SELECTION



DARWINS LIFE

- born in shrewsbury england, attended edinburgh for medicine, quit, and attended cambridge university to be a clergyman.
- went with Robert Fitzroy for a voyage
- led to the theory of evolution in 1831



CHARLES DARWIN

1809-1882

DARWINS FINDINGS

- visited galapagos islands, where lived the same species of birds with different characteristics.
- influenced the idea that the same species can adapt to different environments.



DARWINS FINCHES

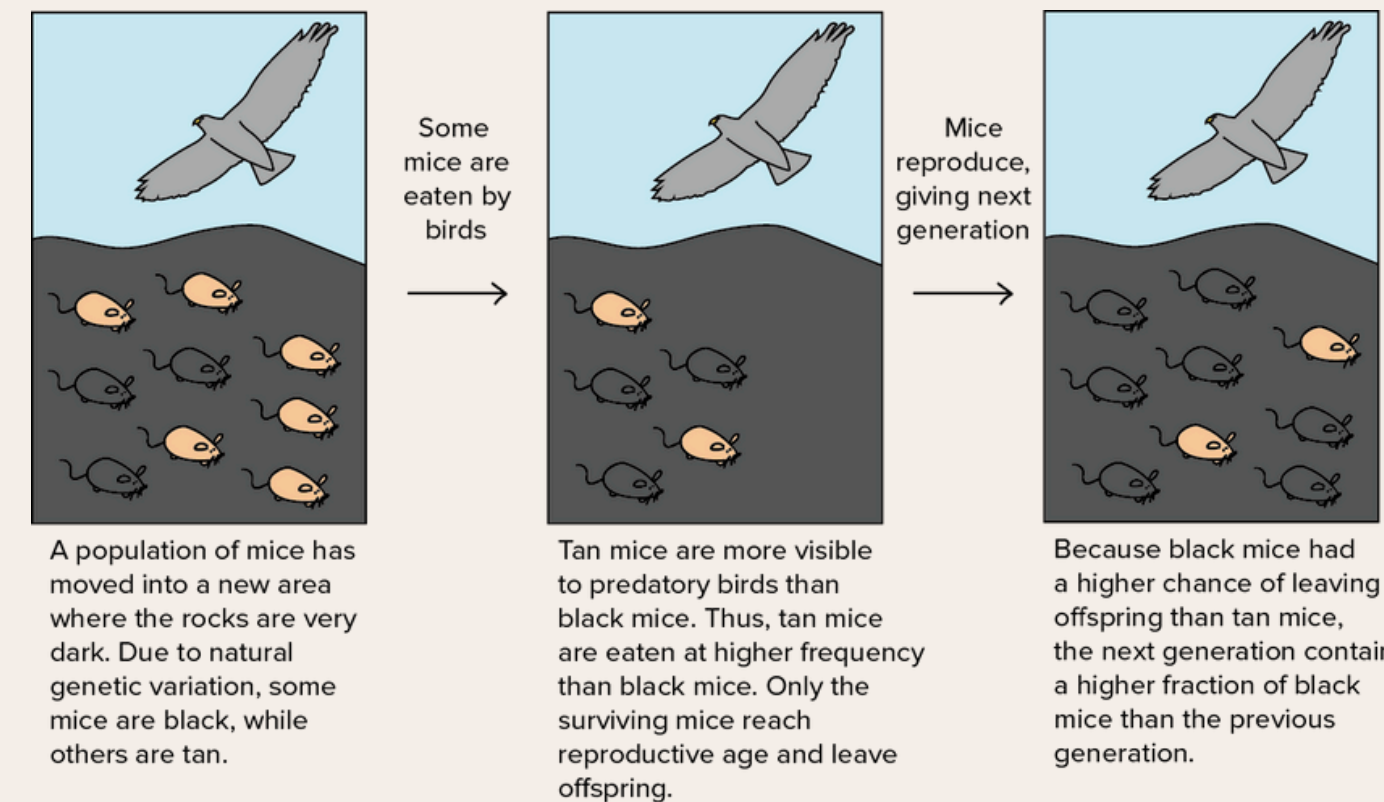
EVOLUTION

- Evolution occurs as ideal characteristics develop over time.
- Not all variation is beneficial; only advantageous traits lead to evolution.
- Natural selection can lead to the emergence of new species.



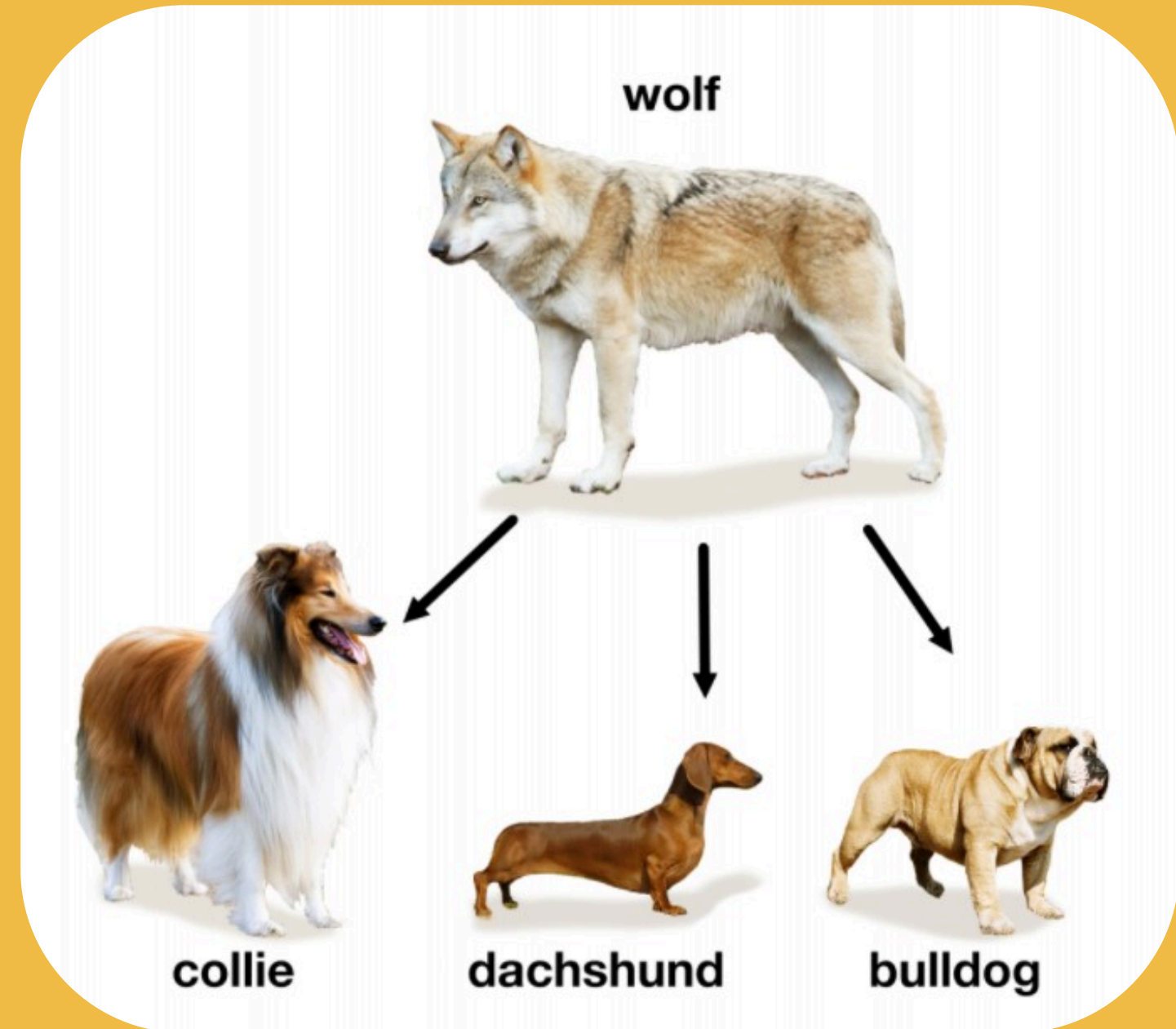
NATURAL SELECTION

- Organisms with helpful traits are more likely to survive and reproduce leading to that trait becoming more common among that species
- Only works if there is variations between the individuals (no variety, nothing to select from)



ARTIFICIAL SELECTION

- Humans choose the preferred traits in plants and animals (Not natural)
- After a while that species will start to primarily have that favored trait.
- This could lead to new breeds or species.
- Much faster than natural selection.



DOWNSIDERS OF ARTIFICIAL SELECTION

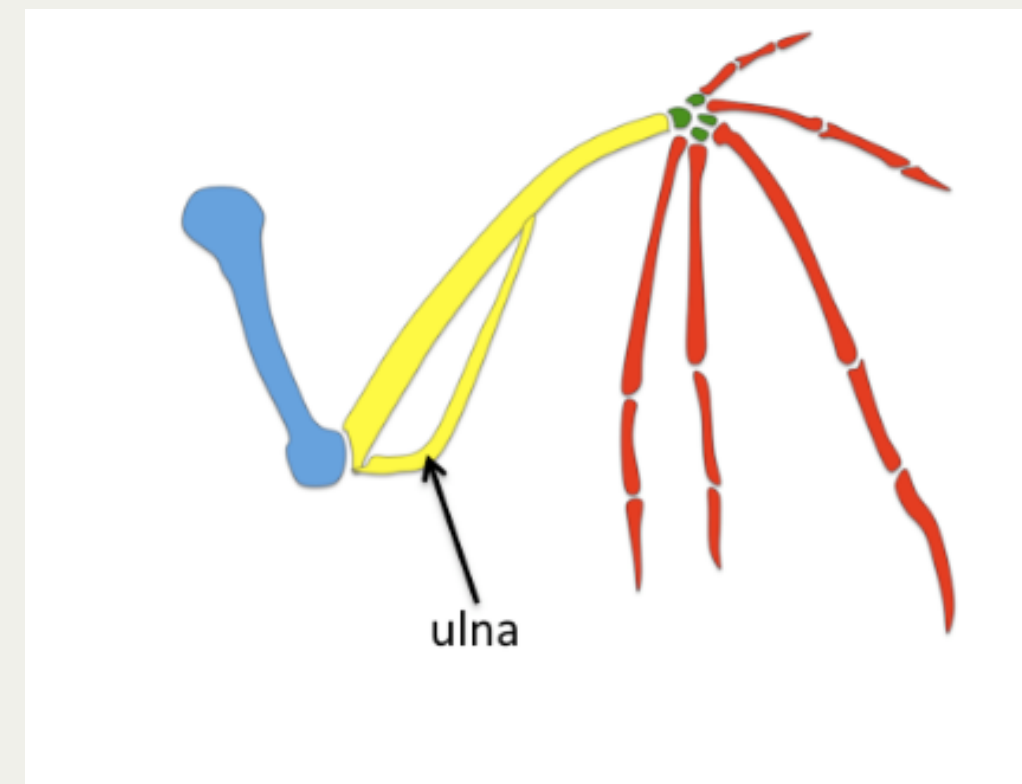
- Less genetic diversity. No variety after a while.
- Commonly bred for looks which leads to health problems (Think of pugs)
- Can lead to inbreeding.
- Often leads to heavy dependence on humans

COMMON HEALTH ISSUES *in pug dogs*



BIOGEOGRAPHY

- the geographic distribution of species.
- endemic, refers to a species only found in one place on earth.
- convergent evolution: visually appear to be closely related only because they evolved under the same species.
- analogous structure: different build, same purpose. bat wing and insect wing.
- homologous indicates ancestry, analogous does not



Bat wing

BIOGEOGRAPHY CONT.

- fossil evidence supports the theory of evolution through similar builds among species.
- fossil record is incomplete due to some fossils being undiscovered either under dirt or some body of water.



STICKLEBACK FISH FOSSIL

BIRD BEAK LAB MATERIALS

- 3 "beaks" (tools provided by the teacher)
- 1 small tube with food coloring
- 1 container filled with water
- 1 small bowl or plate with pasta
- Paper towels
- Notebook (for observations and answers)

Keep in mind how some beaks are ideal for some foods compared to others

	Fish	Nectar	Worms
Spoon Pelican			
Pipette Humingbird			
Tweezers Swallow			

BIRD BEAK LAB INSTRUCTIONS

- Each group will have 3-4 students. Each student will be assigned a different beak.
- If there are 4 students, one can be the recorder or rotate in.
- You will get 30 seconds at each container to collect as much of the food as possible.
- After the 30 seconds you will count how much you were able to collect and then record it in your notebook
- afterwards clean up and put the food back in the container and rotate to the next.

(While doing lab think about how different bird beak shapes are adapted to gather different types of food)