



NATURAL SELECTION

Remember, what is variation?



Small Rabbit



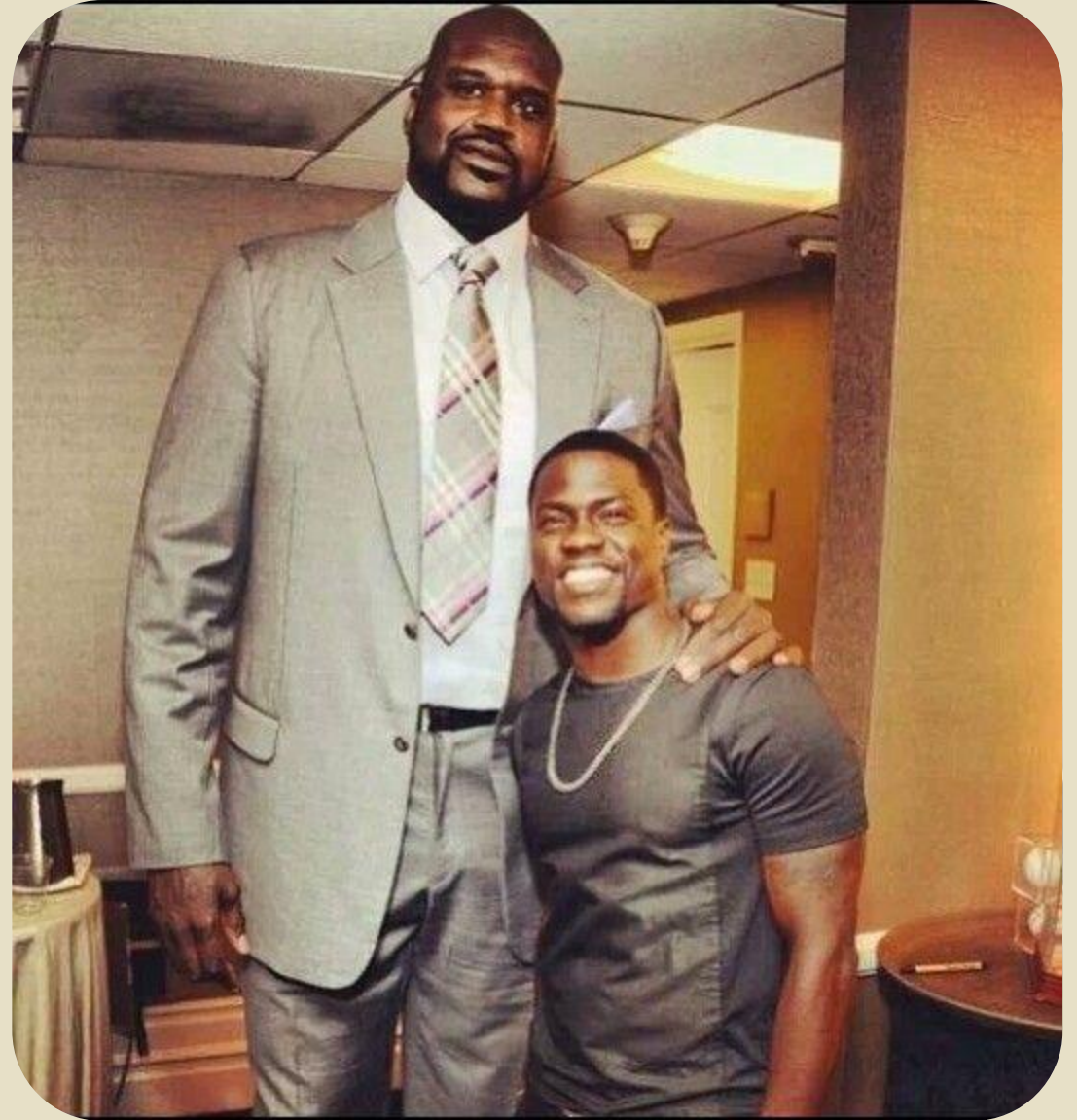
Medium Rabbit



Large Rabbit

Differences in traits!

- Reach for the vegetation on the “tree top”
- Who reached the vegetation? What does that mean?
- What about the shorter organisms? What happens to them?
- We are the same species so what is our “variation”?



CLASS LAB ACTIVITY



KEEP STATION CLEAN FOR ROTATIONS-
MAKE SURE TO PUT EVERYTHING
NEATLY!

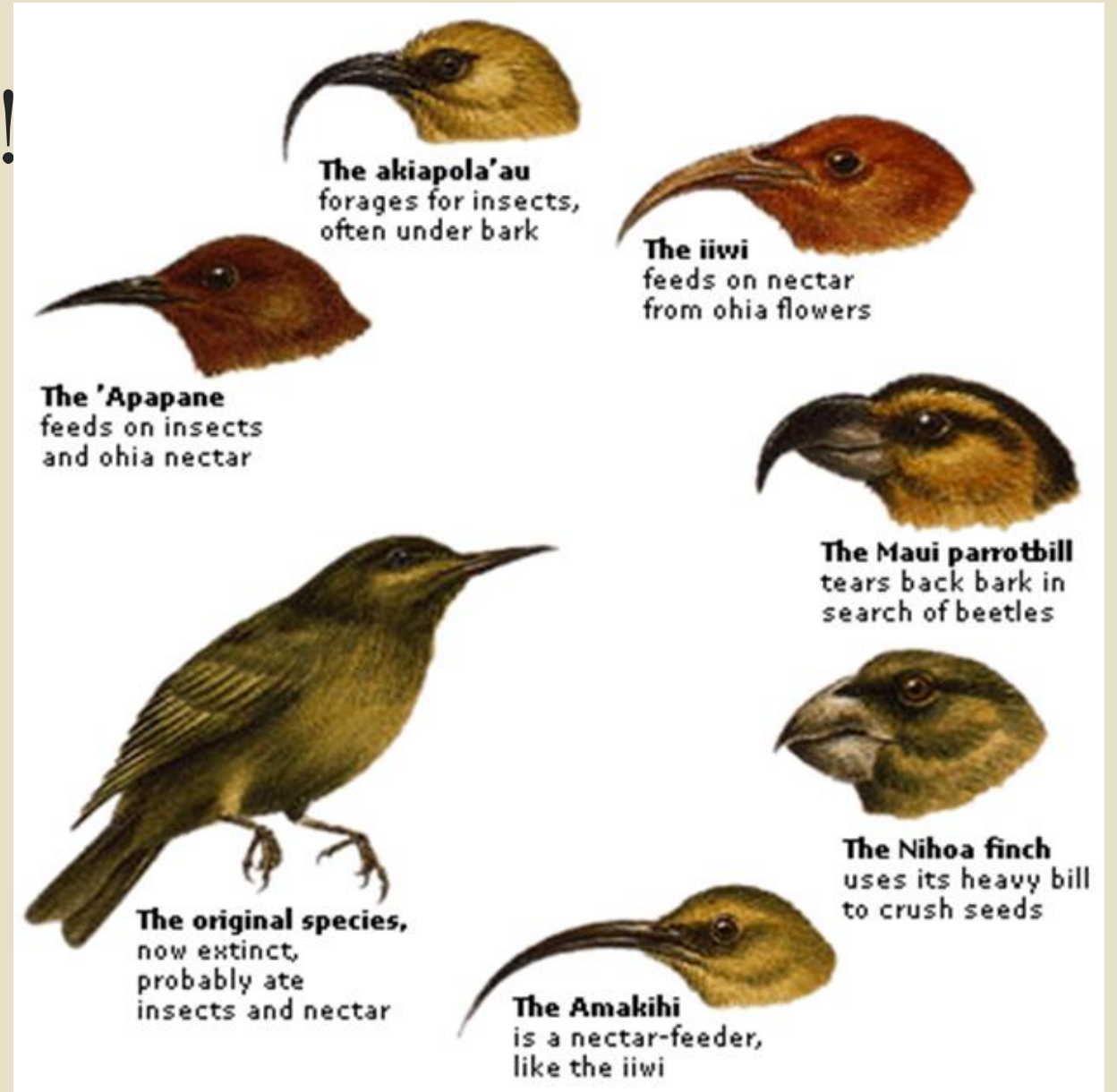
KEEP LIDS ON CONTAINERS AT ALL
TIMES!

DO NOT EAT ANYTHING!

- Each lab table is an “island”.....
- 2 MINUTES AT EACH ISLAND!

Activity Discussion!

- What did we observe?
- What were our variations?
- These variations of beaks were **adaptations** to certain environments. Each beak was perfectly suited for certain islands.
- Their beaks had adapted to the food available to each island!



Adaptations

A specific **structure or behavior** that **helps an organism survive and reproduce** in a particular environment.



Polar bear



Kiwa hirsuta



Star-nosed mole



Aye Aye

What are their adaptations?

- Darwin noticed adaptations of organisms on his journeys and witnessing those traits led him to another idea known as....
- SURVIVAL OF THE “FITTEST”



Tortoise with saddle-shaped shell



Tortoise with dome-shaped shell

Adaptations increase “fitness”

FITNESS IS THE ABILITY TO
SURVIVE **AND REPRODUCE**

LET'S REVIEW NATURAL SELECTION...

- A mechanism by which individuals that have inherited **beneficial adaptations** show different reproductive success.

In other words they tend to produce more offspring on average than do other individuals.

- *****The environment is the selective agent**



Are all these infant birds **EXACTLY** the same? Will they have the **EXACT** same survival rate?



NO! The most “fit” birds will survive and reproduce.

EVOLUTION OCCURS OVER GENERATIONS

- Populations have variations some of which are heritable and when a variation makes an organism more competitive, that variation will tend to be more selected.

DESCENT WITH MODIFICATION!

Descent with Modification

- Proposed that over long periods of time, natural selection produces organisms that have different structures, establish different niches, or occupy different habitats.

WAS DARWIN THE ONLY ONE THINKING EVOLUTION? -NOPE!



Jean-Baptiste Lamarck

- Among the first scientists to understand that that things change over time.
- Proposed that by selective use or disuse of organs, organisms acquired or lost certain traits during their lifetime.
- These traits could then be passed on to their offspring.
- Over time, this process led to change in a species.

Which Lion is more Fit?



I lived for 12 years and fathered 2 cubs.



I lived for 5 years and fathered 8 cubs.



I lived for 12 years and fathered no cubs.



I was better **adapted** to
my environment than
my brothers were!!

◦ 4 principles that drives evolutionary change

1. Diff members of a population have all kinds of individual variations (characteristics- body size, hair type etc)

2. Many variations are heritable. If a certain trait is favorable, it does future generations no good if it can't be passed on

3. Populations can sometimes have way more offspring than resources available...leads to the “struggle for existence”. Plague, famine, wars, only some of us survive to reproduce

4. Given all this competition for resources, heritable traits that effect individual's fitness can lead to variations in their survival and repro rates.. Those with fav. Traits will “come out on top,” and be more successful makin babies.