

Medical Academy named after S.I.
Georgievsky of Vernadsky CFU



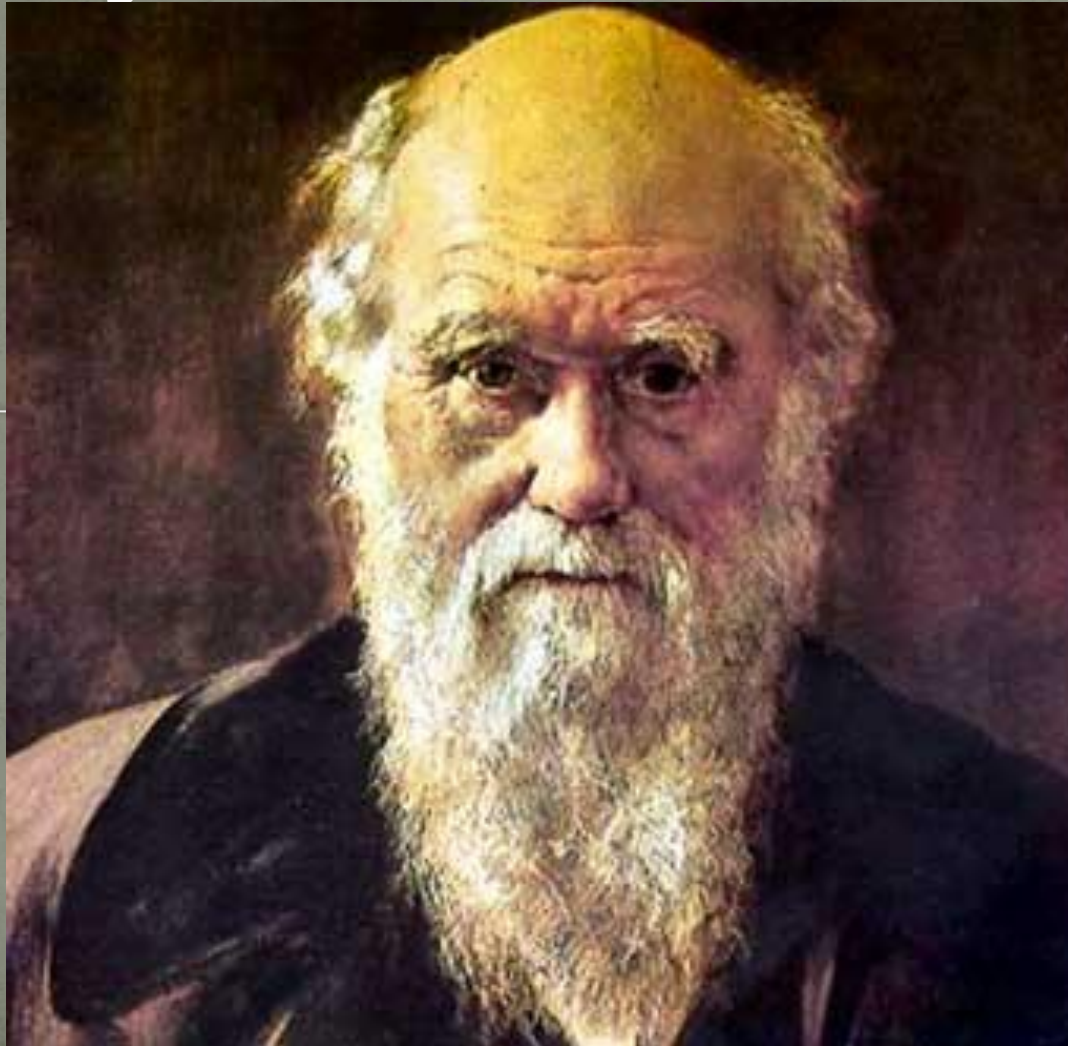
● NATURAL SELECTION OF HUMAN POPULATION



REPRESENTED BY :

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- 191 A
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Darwin's Theory of Evolution by Natural Selection

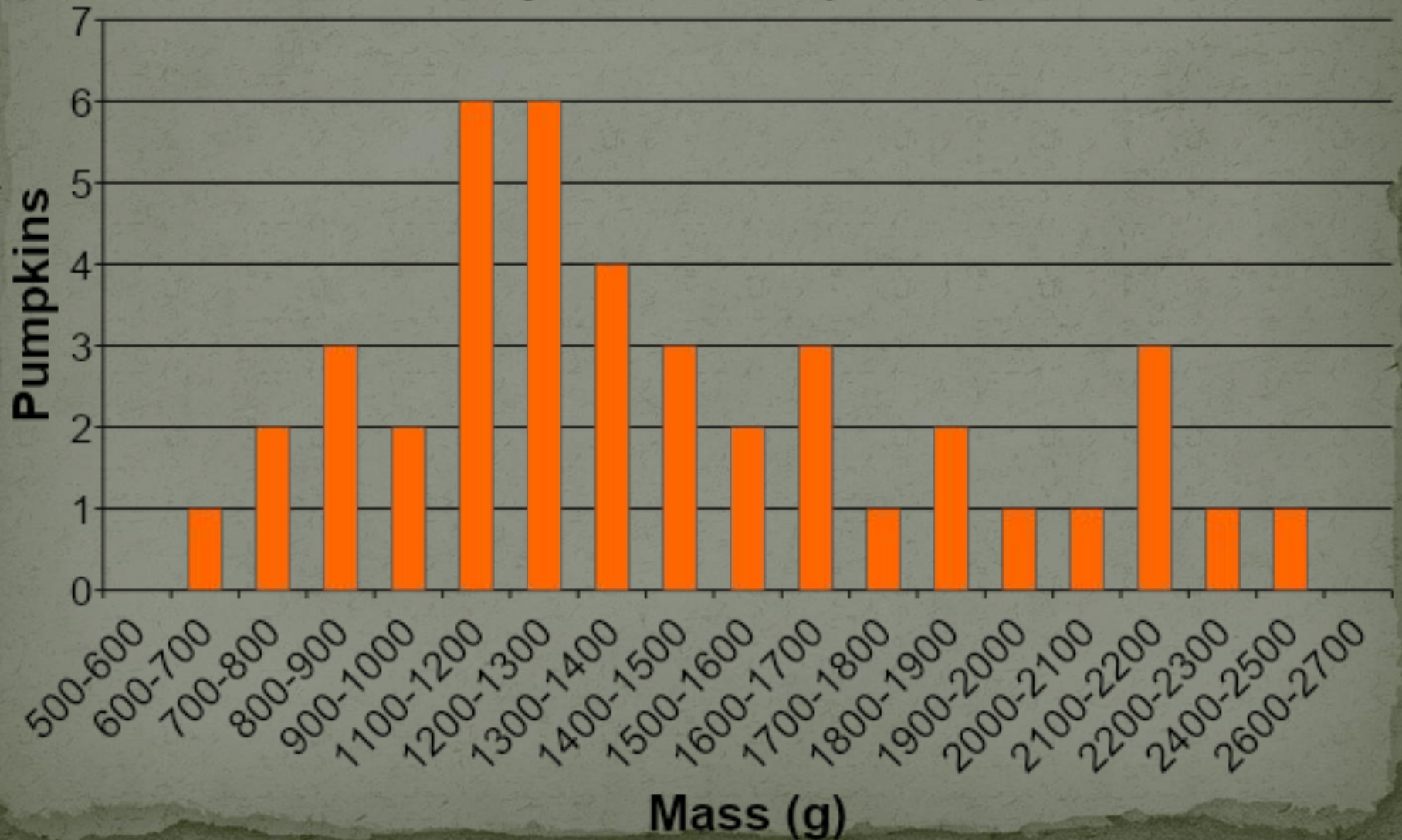


FACT 1: Individuals in a *population* vary or differ in traits. Most of this variation is **heritable** (passed from parent to offspring).



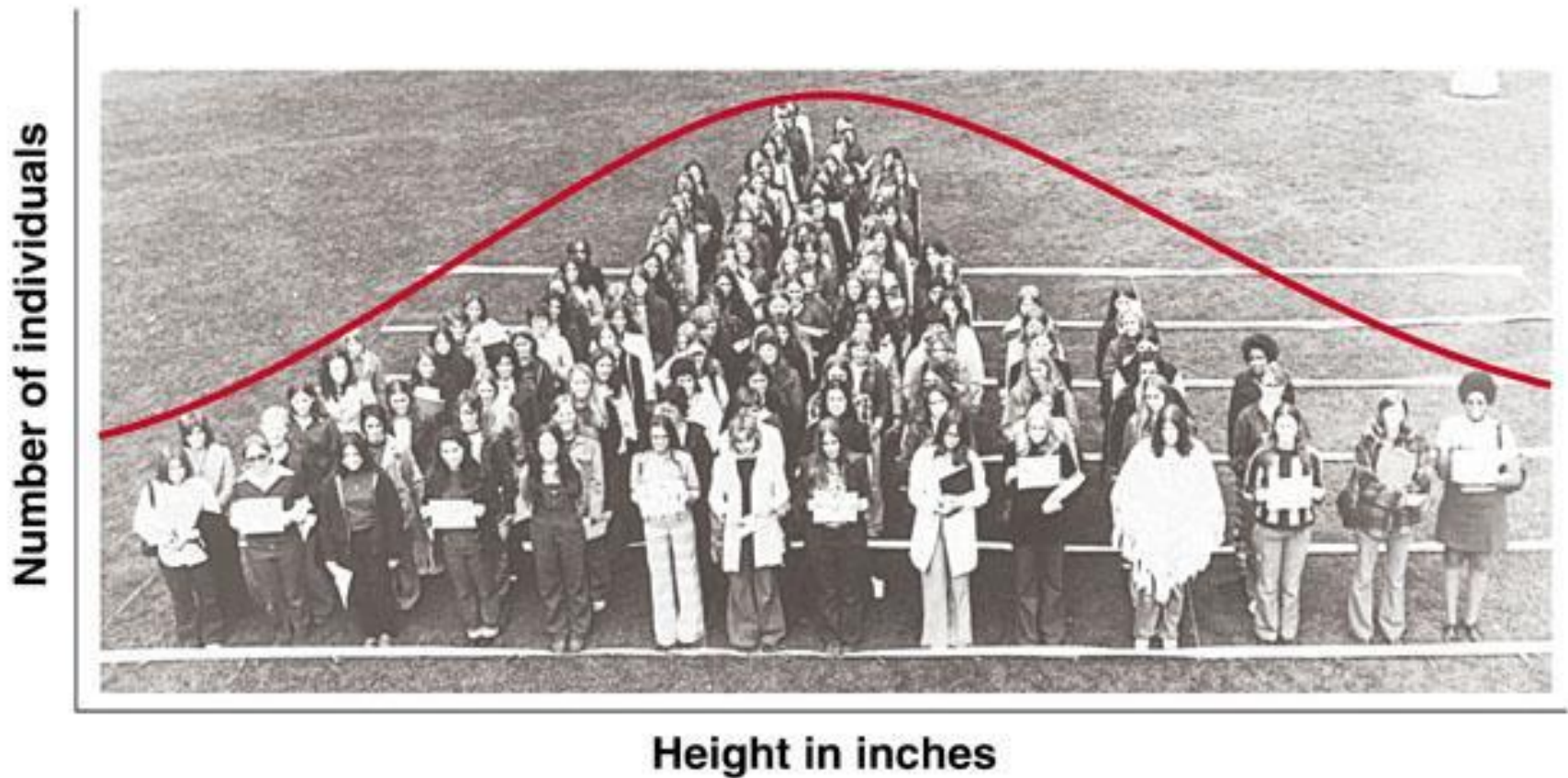
Variation in Pumpkins

Pumpkin Mass (N=40)



Variation in Humans

Tobin/Dusheck, Asking About Life, 2/e
Figure 16.6



Genetic mutation can produce new variations



Genetic mutations are **RANDOM!**

Sexual (two parent) reproduction “shuffles” existing variations into new combinations



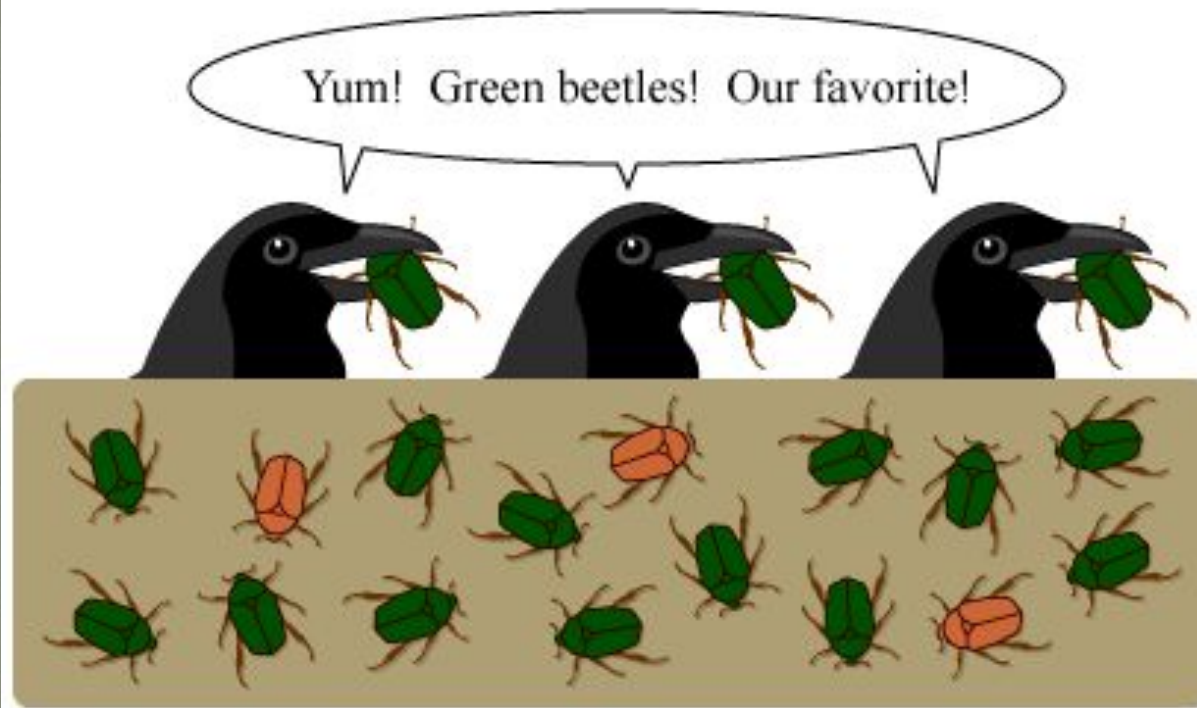
FACT 2: A population of any species has the potential to produce far more offspring than will survive to produce offspring of their own.



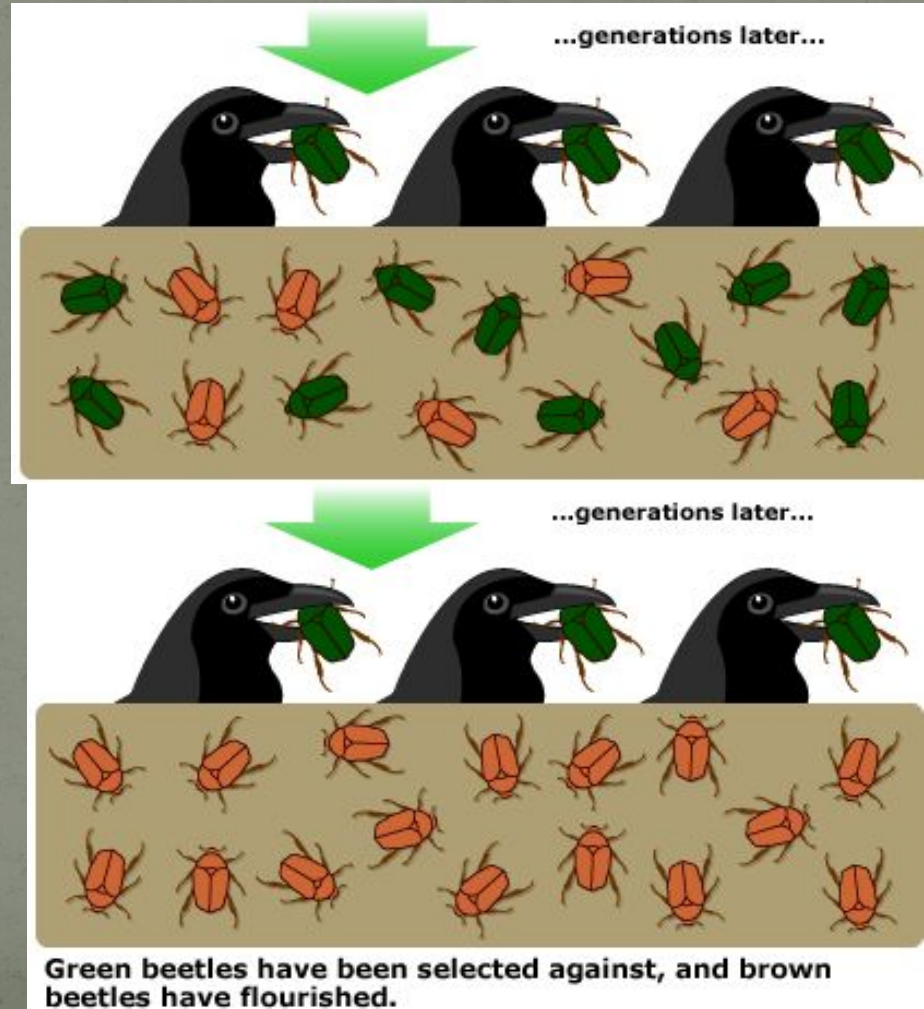
What are some of the challenges living things must overcome to survive?

Inference 1: Certain inherited variations give some individuals a better chance to survive in their environment. Those that survive will produce more offspring. This is called natural selection.

Natural selection, in a nutshell:



Inference 2: Each generation will contain a greater percentage of individuals with these favorable traits leading to a change in the average characteristics of a population over time. This is called evolution.



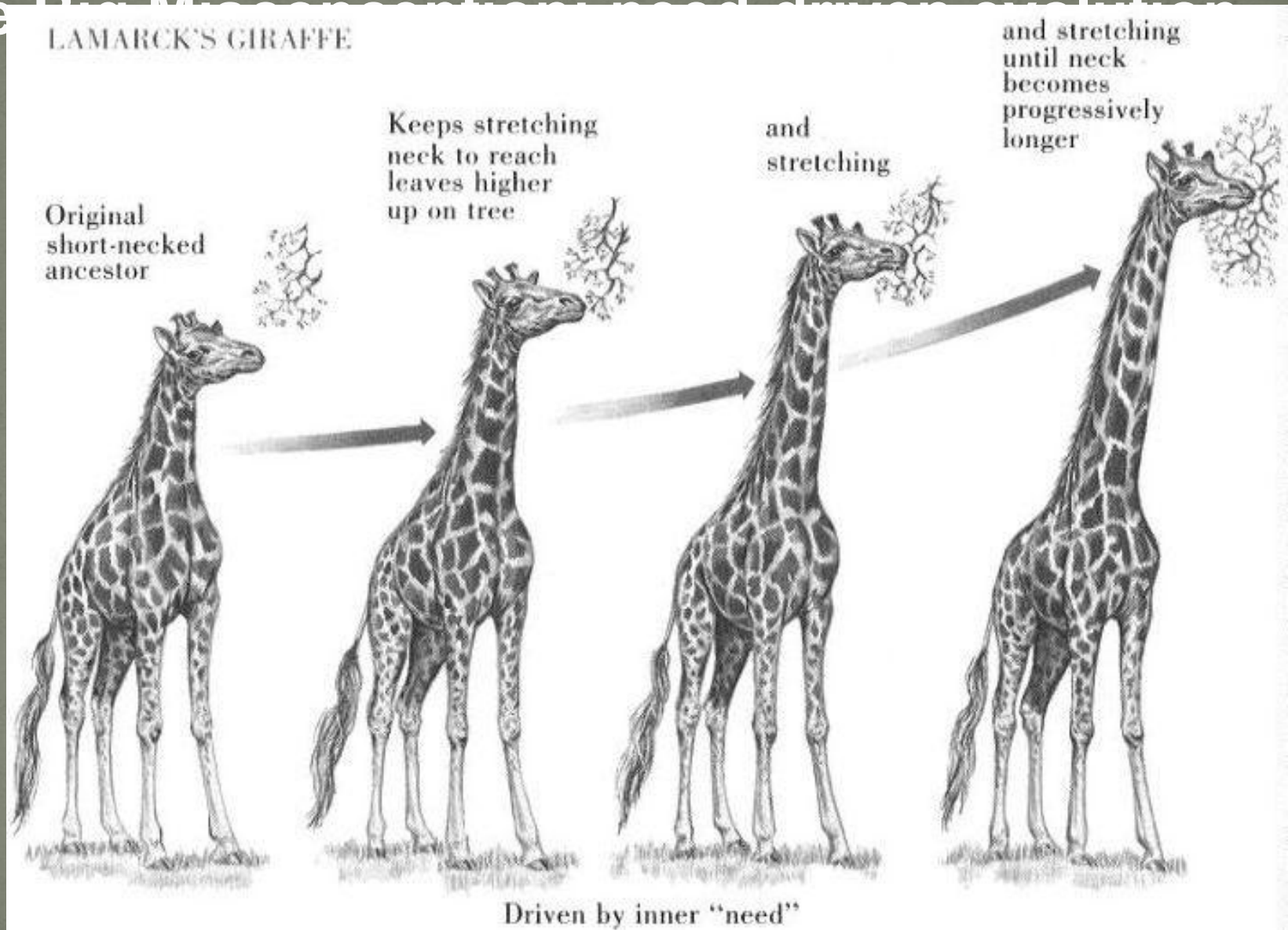
Grant Finch Study: state and explain the specific data that supports each postulate in natural selection

1. Individuals in a population vary in their traits
2. Most of this variation is heritable – passed on to offspring
3. More offspring are produced than can survive (due to limited resources such as food)
4. Individuals with advantageous traits are more likely to survive and reproduce



Medium Ground Finch
Geospiza fortis

The Big Misconception about Darwin's Evolution



How would Darwin explain how the giraffe's neck became long?

The Big Misconception: need-driven evolution

(a) Lamarck's view

Original, short-necked ancestor



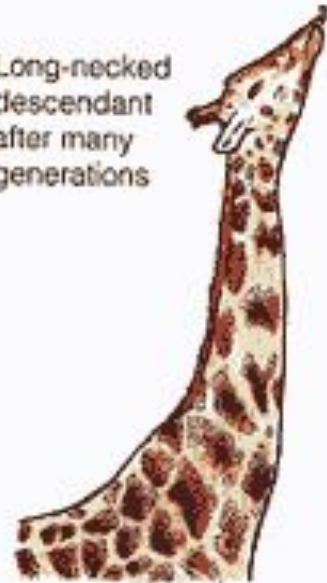
Keeps stretching neck to reach leaves higher up on tree



And continues stretching until neck becomes progressively longer

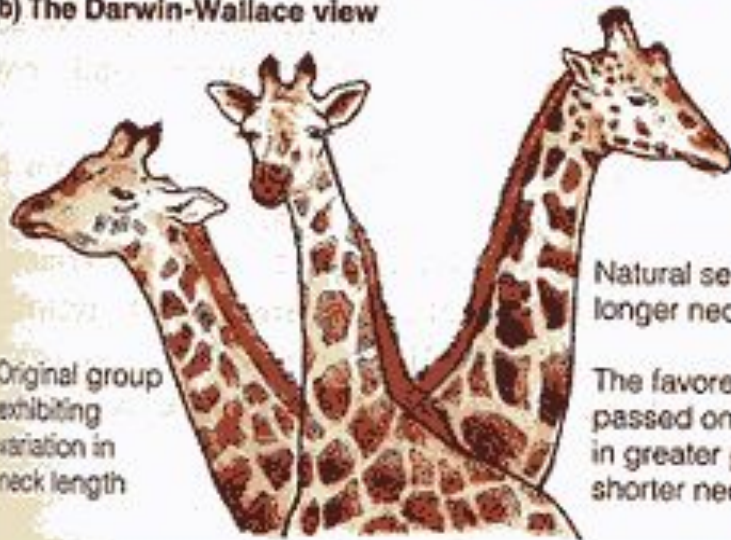


Long-necked descendant after many generations



(b) The Darwin-Wallace view

Original group exhibiting variation in neck length



Natural selection favors longer necks

The favored characteristic is passed on to next generation in greater proportion than the shorter neck



After many, many generations, group is still variable, but showing a general increase in neck length

The Big Misconception: need-driven evolution



Adaptation doesn't involve trying.



Natural selection does not grant organisms what they "need".