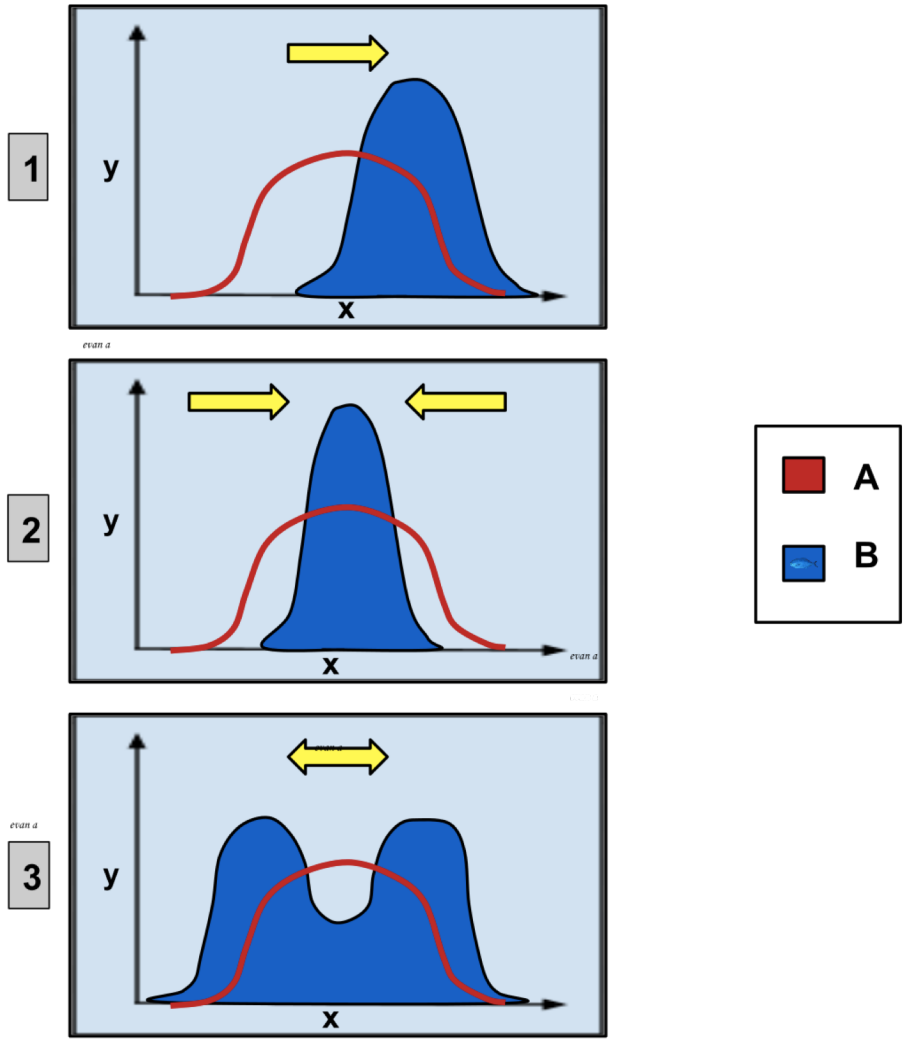
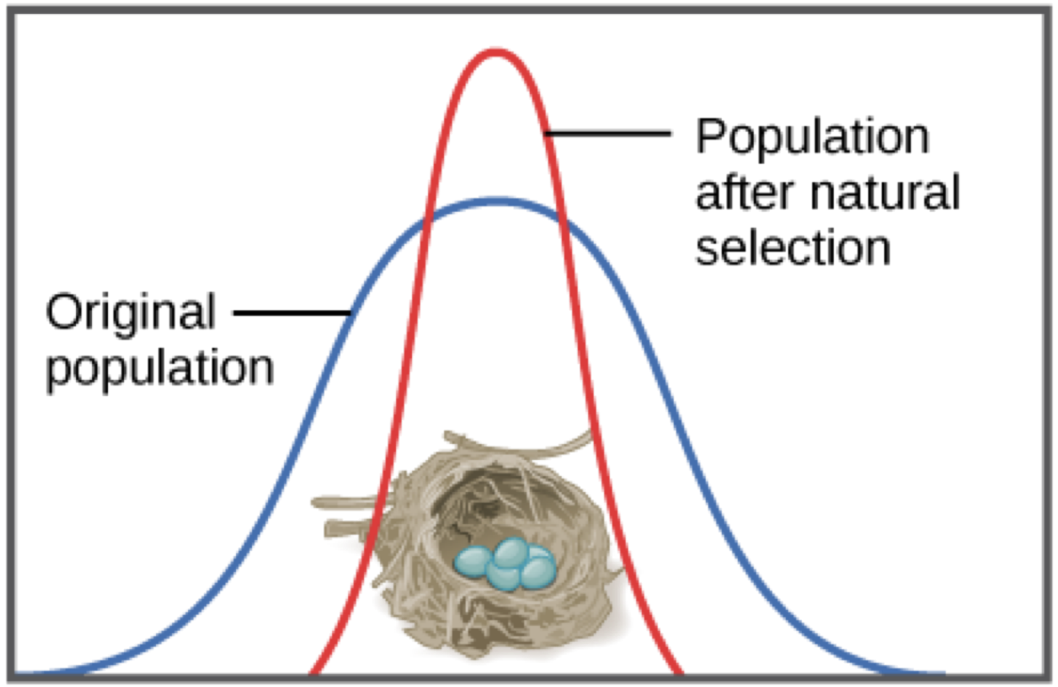
Types of Natural Selection



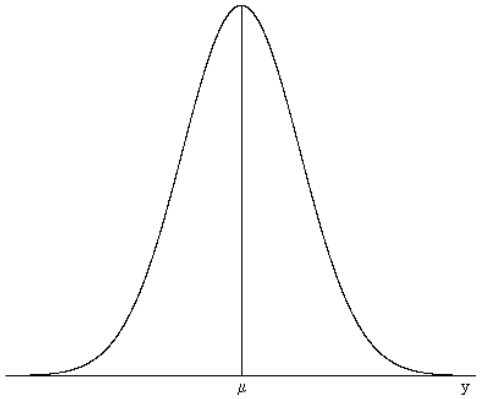
1. Favors the “average” value or amount of a trait
2. Selects against the extremes



Robins typically lay four eggs, an example of stabilizing selection. Larger clutches may result in malnourished chicks, while smaller clutches may result in no viable offspring.

3. Example: human babies: birth weight

survival rates for 3.1 – 3.5 kg better than for under- or over-weight newborns



Ex: 7lbs

TIME Passes…

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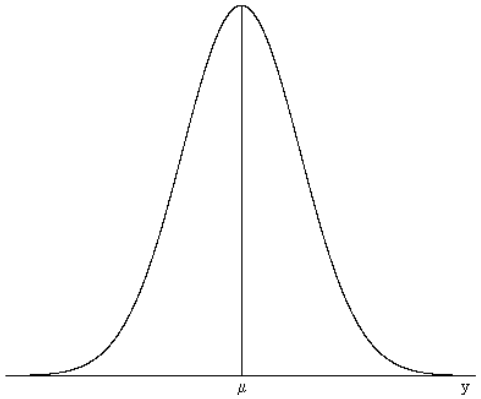
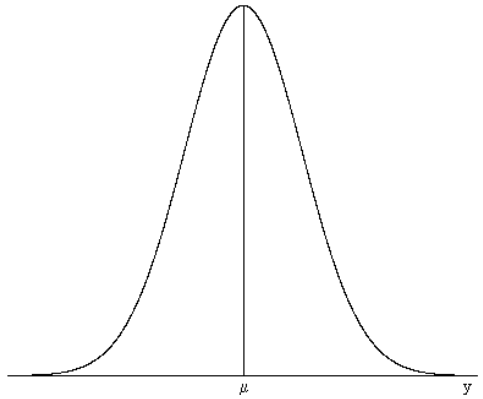


Ex: 7lbs

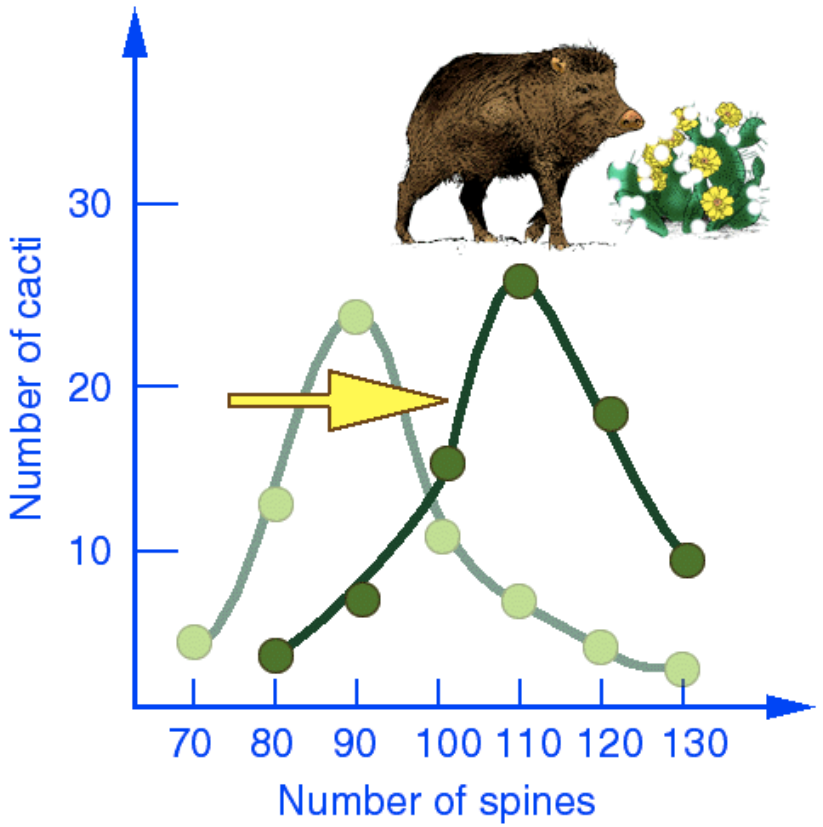
TIME Passes…

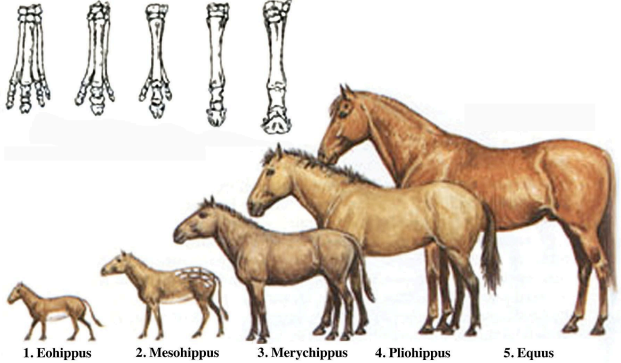


Ex: 7lbs

ii) Directional Selection

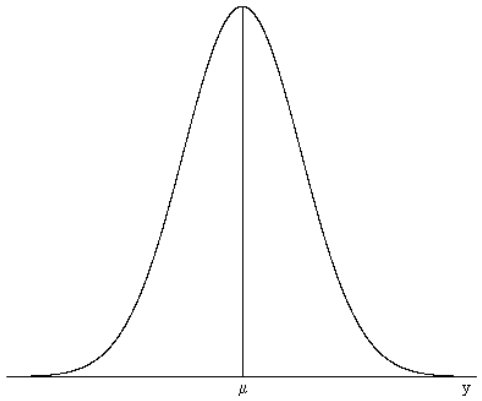
1. Favours an extreme value of a trait
2. Selects against average & opposite values





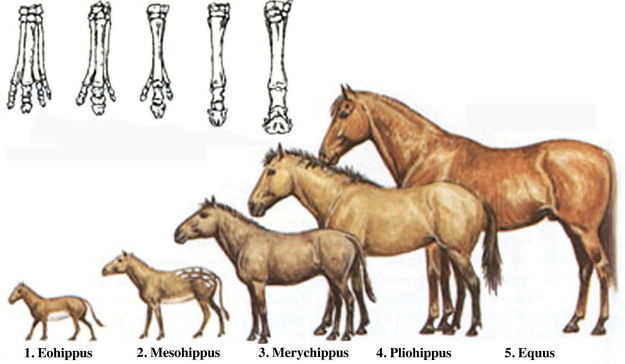
earliest horses: dog-sized, short legs; adapted for forest life…

as population adapted to grassland environment: legs lengthened, size increased (speed, endurance, power)



Average Leg Length: 45cm

TIME Passes…



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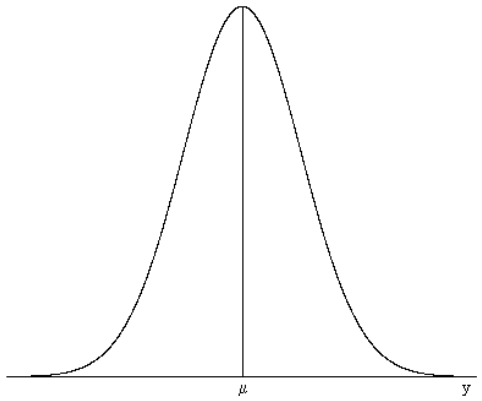

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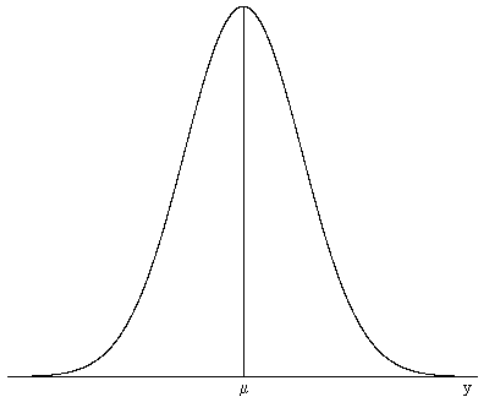
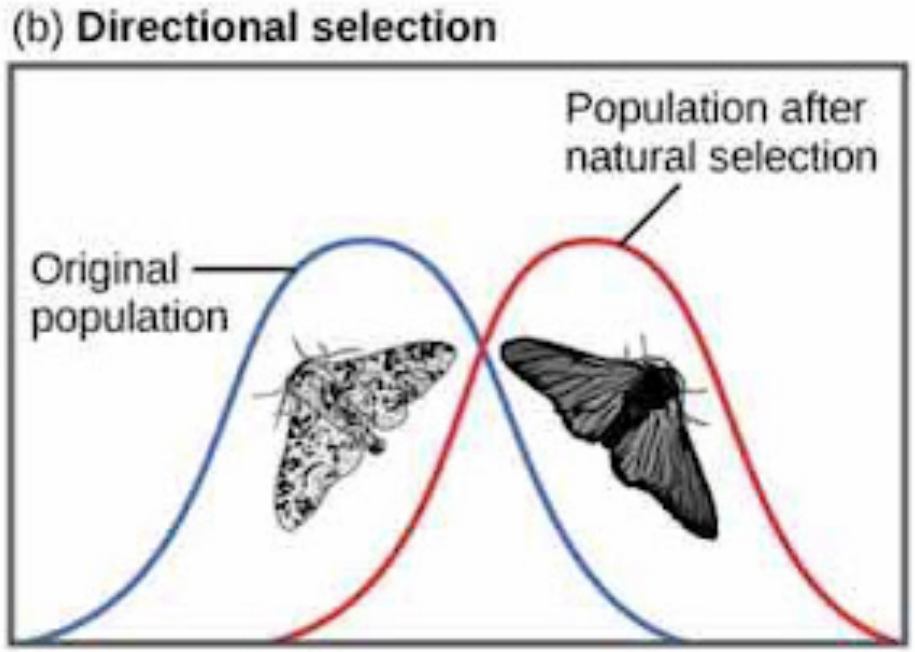


Average Leg Length: 90cm

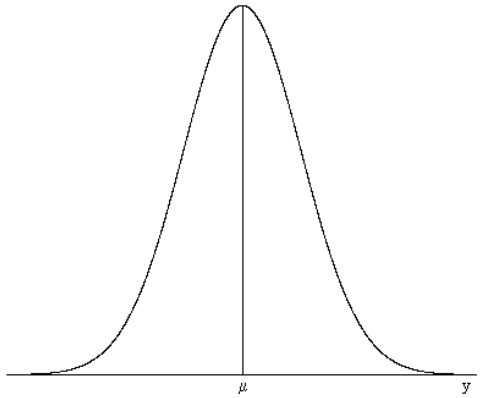
III) Disruptive Selection

1. The extremes are favored over an intermediate



Light-colored peppered moths are better camouflaged against a pristine environment; likewise, dark-colored peppered moths are better camouflaged against a sooty environment. Thus, as the Industrial Revolution progressed in nineteenth-century England, the color of the moth population shifted from light to dark, an example of directional selection.

shells (better camouflaged); in open areas, they have light shells (better camouflaged)… result is a mixed population of the extremes, and few intermediate shells!



Intermediate Colour

TIME Passes…

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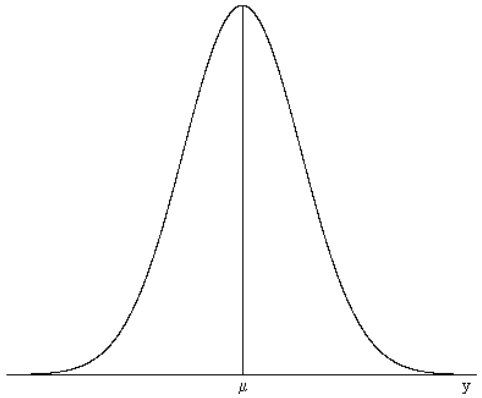
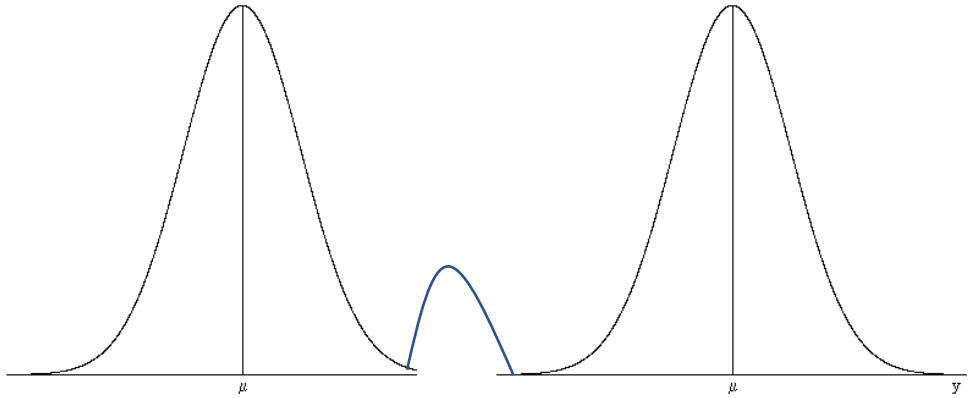


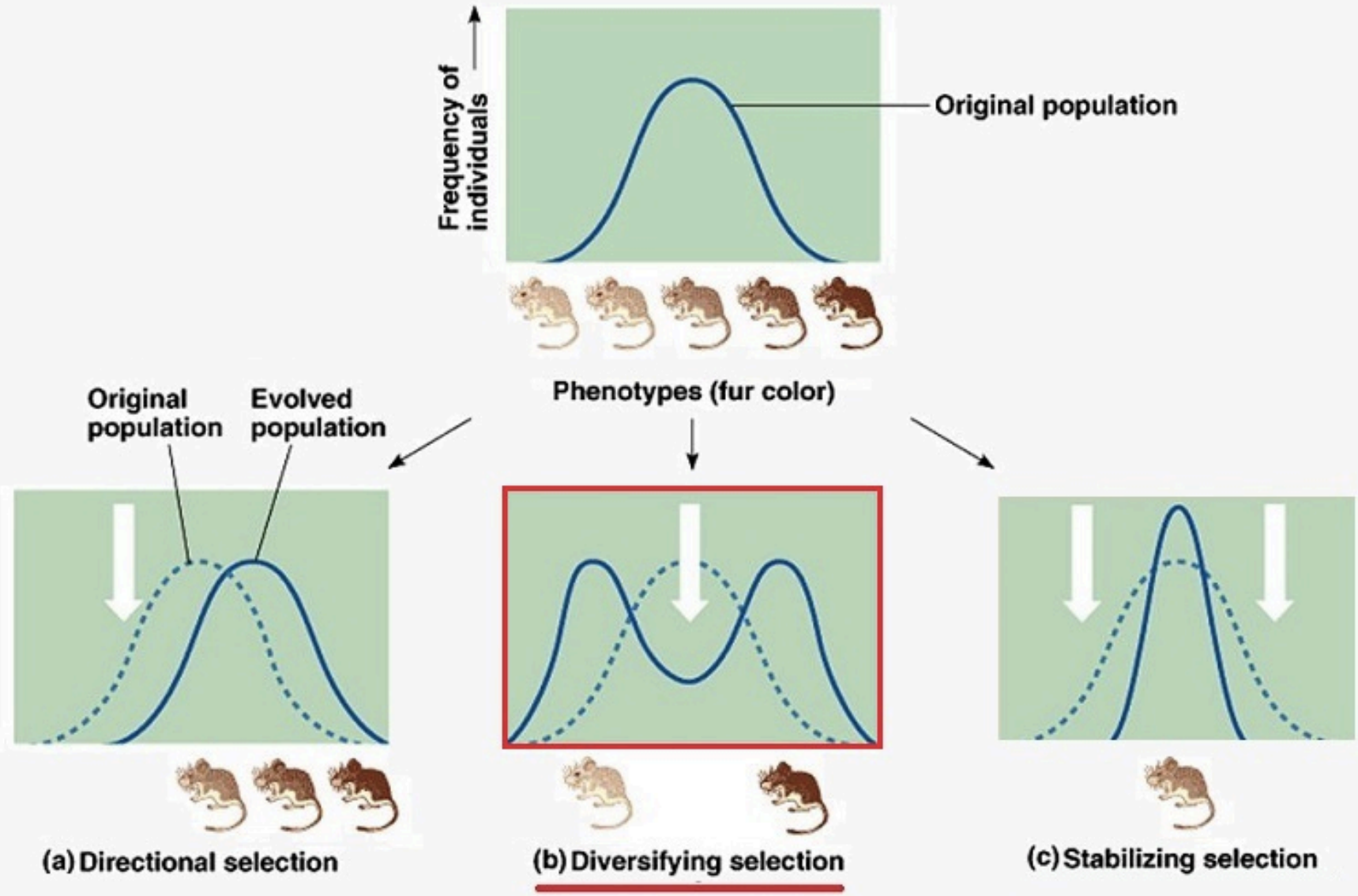
Intermediate Colour

TIME Passes…



Light Colour

Dark Colour


Frequency of individuals
Original population
Phenotypes (fur color)
Original population
Evolved population
(a) Directional selection
(b) Diversifying selection
(c) Stabilizing selection