

# Table 1

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Condi  
tion

Descriptio  
n

Evidence

Variatio  
n

Individuals  
in a  
population  
or group  
differ in  
some trait  
of interest.

- Melanism is a common mutation across many animals
- Larger populations probably have some dark colored mice due to the common-ness of melanism

- Black mice likely exist in the population

Inheritance

The variation in the trait of interest is at least partially inherited (passed from parents to offspring).

The variation stems from random mutations and the recombination that accompanies sexual reproduction. The genetic variation may have arisen many generations in the past.

- Melanism is a genetic mutation, meaning it is

genetically  
inheritable

- Fur color is governed by genetics
- Mutations in genetics are inheritable

Difference  
in survival  
and reproduction

More offspring are born than can survive, resulting in competition among individuals within a population. Some individuals with a particular trait are more likely to survive and/or have relatively more offspring compared to individuals that do not have that

trait.

Selection  
depends  
on the  
specific  
context of  
a species.

Traits that  
are  
beneficial  
in one  
environme  
nt may  
cause  
problems  
in another  
environme  
nt.

- Mice likely do not have a sexual preference when it comes to fur color
- Dark mice are more likely to survive in a dark environment as they blend in to their environment, making it hard to predate on them
- Dark mice have a natural environmental pressure favoring them

Adapti  
on

The frequency of the trait that helps individuals survive or leave more offspring will increase in the population over time, as will the alleles that affect the trait. This process can take many generations and extend over very long periods of time.

- Dark mice are more likely to survive in dark areas
- Since dark fur is inheritable, its increased fitness will be more likely to pass on to the next generation
- Over time, more mice will be dark furred as they are more fit for

the  
environment