



Forces of Evolution



Report by Scott Lucitt and Matthew Yuro

? What are the forces of evolution?

There are four forces of evolution that cause life to change over time. Let's follow a mouse named Maurice and his friends to see how this works!



Squeak

1. **Mutation**¹ 2. **Natural Selection**² 3. **Genetic Drift**³ 4. **Gene Flow**⁴

"Hi I'm Maurice! Meet my friends!"

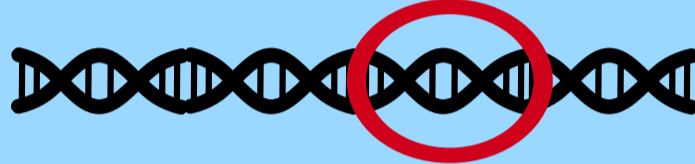


💡 This is Maurice's Population

A population is a group of organisms from the same species that can have families and live in the same place at the same time.

🔍 Maurice has a mutation

- ✓ All organisms have DNA, the instructions for how they look and function.
- ✓ Parts of this DNA, called **alleles**, control specific traits like color.
- ✓ Maurice was born with a special new allele different from his friends and family. This is called a **mutation**.
- ✓ Maurice's mutation turns his fur grey instead of black or brown.



Watch out! A scary owl is flying by and taking mice away.

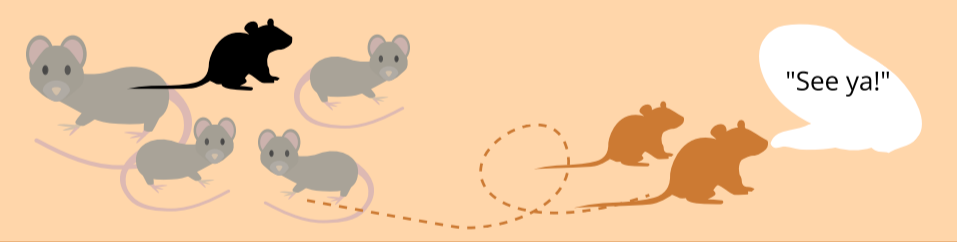


The owl can't see Maurice hiding because of his grey fur. Maurice and his children are safe. Now there are more grey mice alleles in Maurice's population than black or brown mice alleles.

Natural Selection

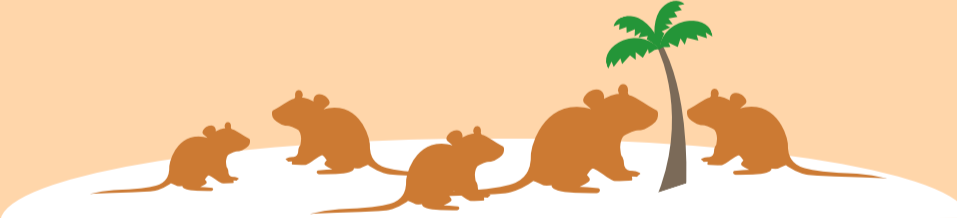
Mice that are best suited to their environment have big families and give their alleles to their kids.

Look! Some of Maurice's friends, Barnabus and Patricia, wandered off!



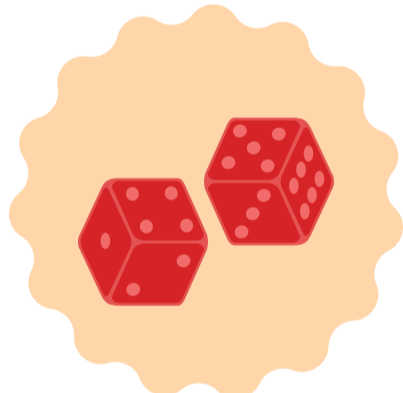
"See ya!"

Maurice's friends found a new island and started a family! Now there are only brown mice alleles in their population.



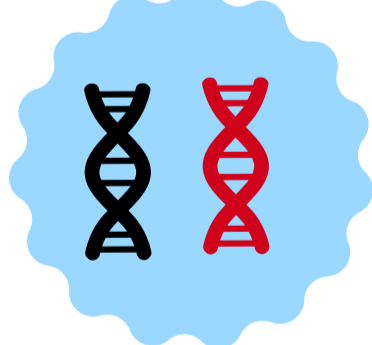
Genetic Drift

Due to random events certain alleles, like color, can become more common in a population.



Gene Flow

Two separate populations meet and their alleles get mixed together.

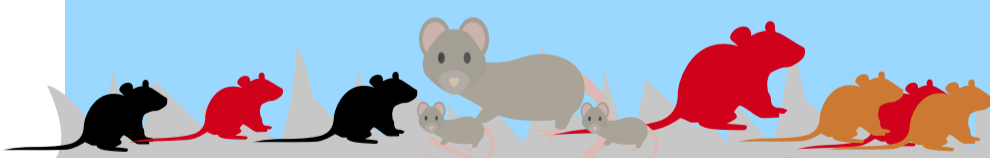


A new mouse, Kathy, and her family just moved to Maurice's population.



"Hi, I'm Kathy!"

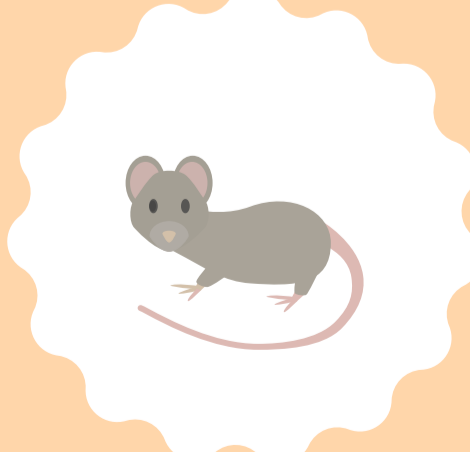
Now there is a red allele in Maurice's population.



” Conclusion

Together we saw how the forces of evolution affected Maurice and his friends!

Mutations, Natural Selection, Genetic Drift and Gene Flow all alter the allele frequencies in populations. **Evolution occurs as a population's alleles change over time.** This is why there are so many different kinds of plants and animals in today's world!



References

1. "Mutation." *Genome.gov*, <https://www.genome.gov/genetics-glossary/Mutation>.
 2. "Natural Selection." *Encyclopedia Britannica*, Encyclopædia Britannica, Inc., <https://www.britannica.com/science/natural-selection>.
 3. "Genetic Drift." *Genome.gov*, <https://www.genome.gov/genetics-glossary/Genetic-Drift>.
 4. "Gene Flow." *Encyclopedia Britannica*, Encyclopædia Britannica, Inc., <https://www.britannica.com/science/gene-flow>.
 5. "Population Ecology." *Encyclopedia Britannica*, Encyclopædia Britannica, Inc., <https://www.britannica.com/science/population-ecology>.
 6. "Allele." *Genome.gov*, <https://www.genome.gov/genetics-glossary/Allele>.
- Referenced: Parrish, Adam. "Infographics for Kids [.]". Infographics for Kids [.] 19 Oct. 2016. www.creativefreedom.co.uk/icon-designers-blog/infographics-for-kids.