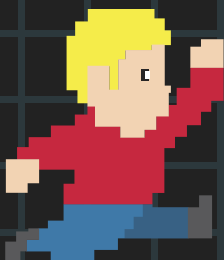


# GENE FLOW AND GENETIC DRIFT

## BATTLE OF THE RANDOM EVOLUTIONARY FORCES

BY  
GABBIE HUGGINS

START GAME OF LIFE

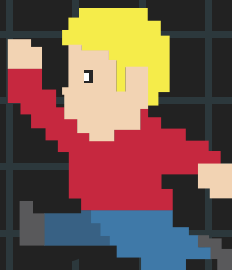


Hi! My name is Gene Flow and I'm the best evolutionary force!

★ INCREASES VARIABILITY WITHIN THE POPULATION

★ DECREASES VARIABILITY BETWEEN POPULATIONS

Hi! I'm Genetic Drift and actually I'M the best evolutionary force!



OCCURS IN SMALL POPULATIONS ★

DECREASES THE GENETIC DIVERSITY OF A POPULATION ★

ALTERS ALLELE FREQUENCY IN A POPULATION ★

## HELP THEM CHOOSE!

### SOURCES:

ANDREWS, C. A. (N.D.). NATURAL SELECTION, GENETIC DRIFT, AND GENE FLOW DO NOT ACT IN ISOLATION IN NATURAL POPULATIONS. NATURE NEWS. RETRIEVED SEPTEMBER 11, 2021, FROM [HTTPS://WWW.NATURE.COM/SCITABLE/KNOWLEDGE/LIBRARY/NATURAL-SELECTION-GENETIC-DRIFT-AND-GENE-FLOW-15186648/](https://www.nature.com/scitable/knowledge/library/natural-selection-genetic-drift-and-gene-flow-15186648/).

EDITORS, BY: BD, ET AL. "GENETIC DRIFT VS. GENE FLOW VS. NATURAL SELECTION." BIOLOGY DICTIONARY, 25 APR. 2019, [BIOLOGYDICTIONARY.NET/GENETIC-DRIFT-VS-GENE-FLOW-VS-NATURAL-SELECTION/](https://biologydictionary.net/genetic-drift-vs-gene-flow-vs-natural-selection/).

BROWN, GENE. "THE DIFFERENCE BETWEEN GENE FLOW AND GENETIC DRIFT." DIFFERENCE BETWEEN SIMILAR TERMS AND OBJECTS, 18 OCT. 2019, [WWW.DIFFERENCEBETWEEN.NET/SCIENCE/THE-DIFFERENCE-BETWEEN-GENE-FLOW-AND-GENETIC-DRIFT/](https://www.differencebetween.net/science/the-difference-between-gene-flow-and-genetic-drift/).

# MEET GENE FLOW

## WHO IS GENE FLOW?



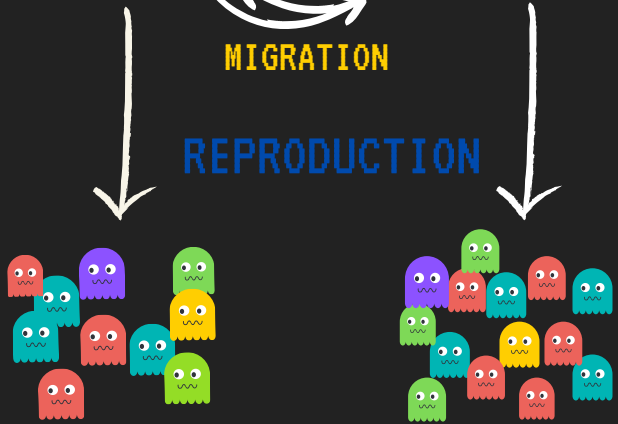
GENE FLOW IS THE EVOLUTIONARY FORCE RESPONSIBLE FOR THE MIGRATION OF ANIMALS AND THEIR ALLELES BETWEEN POPULATIONS

## MIGRATION



## MIGRATION

## REPRODUCTION



BY INCREASING VARIABILITY IN THE POPULATION, NEW COMBINATIONS OF TRAITS ARE POSSIBLE

## BARRIERS TO GENE FLOW



Geographical



Behavioral



Reproductive/  
Mechanical



# MEET GENETIC DRIFT

## WHO IS GENETIC DRIFT?

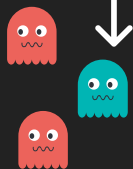
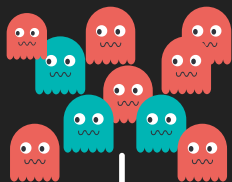
GENETIC DRIFT IS THE FORCE THAT ALLOWS ALLELES TO CHANGE FREQUENCY WITHIN A POPULATION DUE TO RANDOM SAMPLING.



## GENETIC DRIFT HAS TWO MECHANISMS:

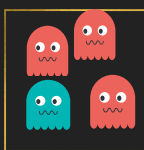
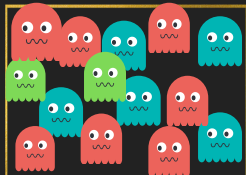
### POPULATION BOTTLENECK

RANDOM CATASTROPHIC EVENT CAUSES SIGNIFICANT REDUCTION OF POPULATION SIZE AND ALTERS ALLELE FREQUENCY

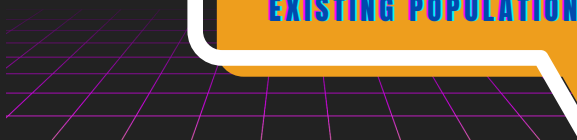


### FOUNDER'S EFFECT

SMALL GROUP FROM POPULATION BECOMES ISOLATED FROM ORIGINAL POPULATION WHICH CAUSES SHIFTS IN ALLELE FREQUENCIES



**IMPORTANT NOTE: THE FOUNDER EFFECT IS DISTINCT FROM GENE FLOW BECAUSE THE GROUP MOVES TO AN AREA WITHOUT AN EXISTING POPULATION**



# HOW DO THEY CONTRIBUTE TO EVOLUTION?

## RANDOMNESS!



These forces do not act in isolation! Because all real populations are finite, they are subject to genetic drift.

Loss of variation in threatened populations can increase the probability of fixation of alleles and raise the risk of extinction



Gene flow promotes population divergence via selection and drift, which can lead to speciation.

SO GENE FLOW AND GENETIC DRIFT ARE EQUALLY IMPORTANT TO EVOLUTION!

