

GENETIC DRIFT

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- Presented by
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Synopsis

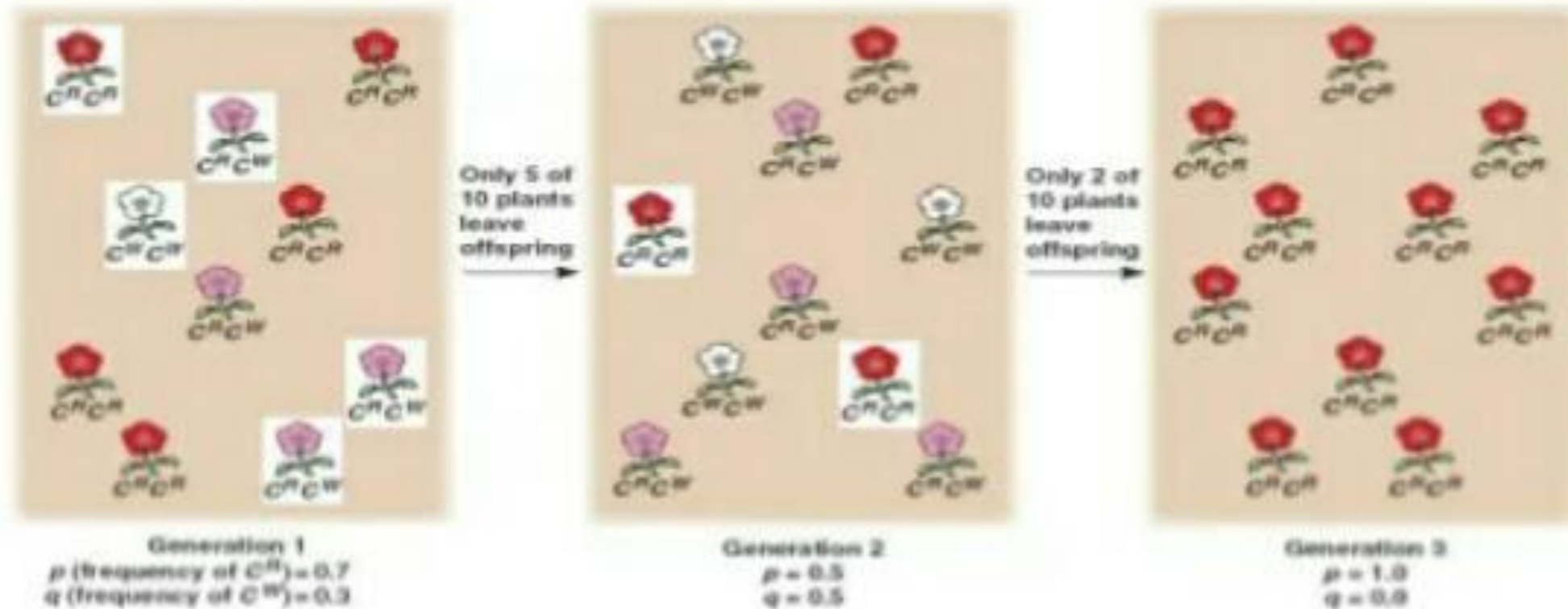
- **Introduction**
- **Kinds of Genetic drift**
- **Bottleneck effect**
- **Founder effect**
- **Conclusion**

Introduction

- Basic mechanisms of evolution (along with natural selection and mutation).
- Random, stochastic process.
- Independent of selection
- “Random Drift” or “Random Genetic Drift” (allele frequencies do not change in any predetermined direction in this process)

“The change in the frequency of an allele in a population due to random sampling of organisms.”

- Common in small population, no significance in large population.
- Some alleles become more common while others become less common over time (or lost)
- When there is only one allele is left for a particular gene pool, that allele is said to be fixed

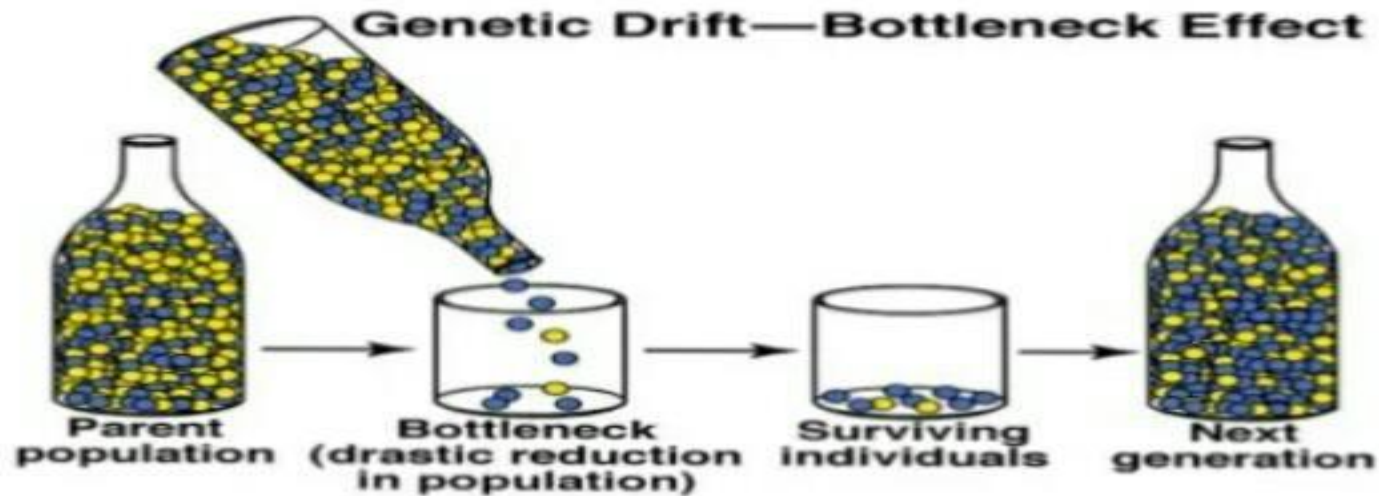


Kinds of Genetic drift

- Factors that cause genetic drift are:
 - Bottleneck Effect
 - Reduction in population size
 - Founder Effect
 - Subset of population founds new population

Bottleneck effect

- The bottleneck effect occurs when a natural disaster or similar event randomly kills a large portion (i.e. random sample) of the population, leaving survivors that have allele frequencies that were very different from the previous population.



Source: <http://evolution.wikispaces.com/Group+197/response?Token=df19f377988e5706840&c1e021e0034>

Example of Bottleneck effect

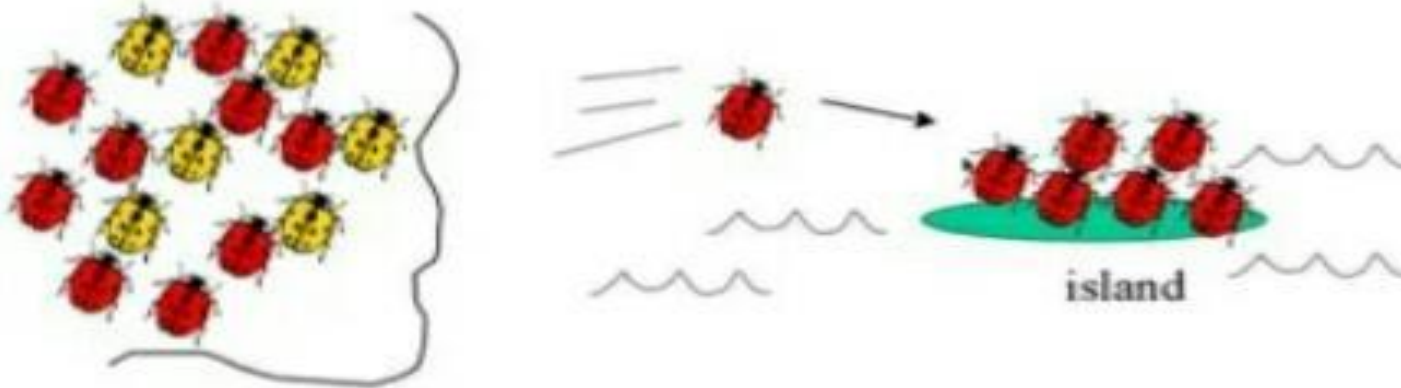
- Northern elephant seals
- Bottleneck event
 - Humans hunting (1890s)
- Population size 20 individuals (at the end of the 19th century)
- Now Population 30,000
 - — but their genes still carry the marks of this bottleneck:
- Much less genetic variation



Founder effect

- The founder effect occurs when a portion of the population (i.e. "founders") separates from the old population to start a new population with different allele frequencies.

- founder effect: a few individuals from a population start a new population with a different allele frequency than the original population



Example of Founder effect

- Silveryeyes colonized south island of New Zealand from Tasmania in 1830.



Source: <http://rectant.bfi.edu/learn-more-overview/mechanisms-of-evolutionary-change/>

Conclusion

Genetic drift is an evolutionary change in allelic frequencies of a population as a matter of chance. It occurs in very small populations but its effects are strong. It occurs due to an error in selecting the alleles for the next generation from the gene pool of the current generation. It does not occur due to any environmental influences.

