

4.4 Gene Flow

Gene flow is one of the important mechanisms of evolution. It occurs when genes move from one population to another through migration and reproduction. Gene flow increases genetic variation and helps populations become more similar.

1. Definition of Gene Flow

Gene flow is the transfer of alleles or genes from one population to another due to migration and interbreeding. When individuals move from one population to another and reproduce, they introduce new genes into the population.

2. How Gene Flow Occurs

Gene flow usually happens through migration. Organisms may move from one area to another because of: Search for food and water Climate changes Natural disasters Human activities Seasonal movement When migrating organisms reproduce with members of a new population, genes are exchanged between the populations.

3. Examples of Gene Flow

Birds moving from one forest to another and mating with local birds. Pollen from one plant population carried by wind to another population. Fish moving between rivers and reproducing. Humans migrating from one country to another and having children.

4. Effects of Gene Flow

Gene flow has several important effects on populations: Increases genetic variation. Introduces new alleles into populations. Reduces genetic differences between populations. Helps populations adapt to environmental changes. Prevents inbreeding in small populations.

5. Importance of Gene Flow in Evolution

Gene flow plays an important role in evolution because it changes allele frequencies within populations. It allows beneficial genes to spread between populations and supports survival in changing environments.

6. Difference Between Gene Flow and Genetic Drift

Gene flow: Occurs through migration and interbreeding. **Genetic drift:** Occurs by chance. **Gene flow:** Increases genetic variation. **Genetic drift:** Often reduces genetic variation. **Gene flow:** Makes populations more similar. **Genetic drift:** May make populations more different.

Summary

Gene flow is the movement of genes between populations through migration and reproduction. It increases genetic variation and reduces differences between populations. Gene flow is an important mechanism of evolution.

Summary Questions and Answers

1. **What is gene flow?**

Gene flow is the transfer of genes from one population to another.

2. **How does gene flow occur?**

Gene flow occurs through migration and reproduction.

3. **Give one example of gene flow.**

Birds migrating to another forest and mating with local birds.

4. **How does gene flow affect genetic variation?**

Gene flow increases genetic variation by introducing new alleles.

5. **Why is gene flow important in evolution?**

It changes allele frequencies and helps populations adapt.

6. **What is one difference between gene flow and genetic drift?**

Gene flow occurs through migration, while genetic drift occurs by chance.

7. **How does gene flow reduce inbreeding?**

It introduces new genes into small populations.