Evolutionary processes

Analyzing genotype frequencies

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Outline

Analyzing genotype frequencies

Types of natural selection
- Trait level
- Allele level

Other evolutionary mechanisms
- Genetic drift
- Gene flow
- Mutation

Mating patterns
- Inbreeding
- Sexual selection

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Example: ABO Blood groups have simple dominance

TABLE 20.1 **The ABO Blood Group.**

PHENOTYPE	GENOTYPE
A	*AA* or *AO*
B	*BB* or *BO*
AB	*AB*
O	*OO*

Table 20.1
Biology: How Life Works

Example: flower color

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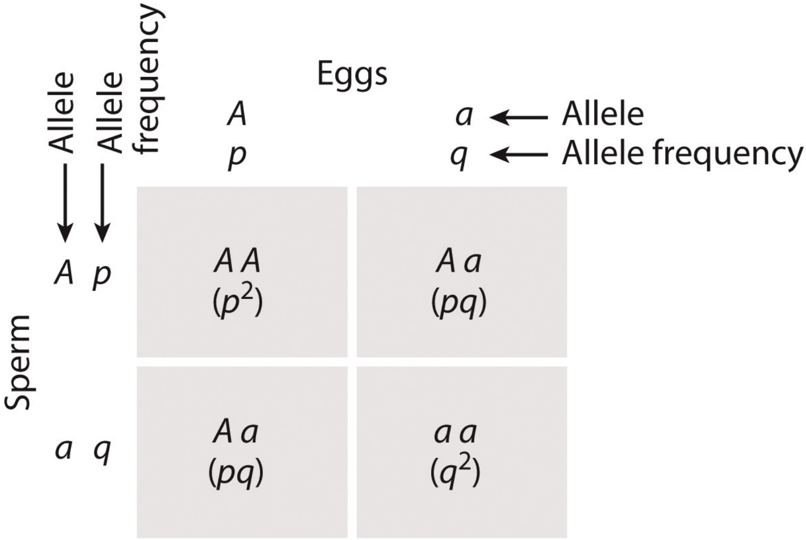

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Example: Human HLA genes

Table 3

Observed and Expected Numbers of Heterozygotes and Homozygotes for Individuals Born Before 1954 and Those Born in 1954 or Later, for Males and Females

	Heterozygotes	Homozygotes
HLA-A:		
Born before 1954:		
Females	22	8
Males	22	7
Born 1954 or later:		
Females	22	12
Males	18	11
Total:		
Observed	84	38[a]
Expected	73.57	48.43[a]
HLA-B:		
Born before 1954:		
Females	25	5
Males	22	7
Born 1954 or later:		
Females	31	3
Males	23	6
Total:		
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Expected	92.44	29.56[b]

[a] $P = .0317$.

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Outline

Analyzing genotype frequencies

Types of natural selection
- Trait level
- Allele level

Other evolutionary mechanisms
- Genetic drift
- Gene flow
- Mutation

Mating patterns
- Inbreeding
- Sexual selection

Outline

Directional selection

- **Directional selection** tends to move a population in a particular direction

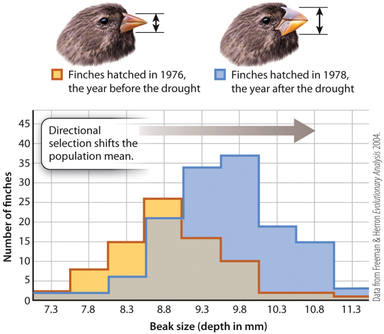

Figure 20.8b
Biology: How Life Works

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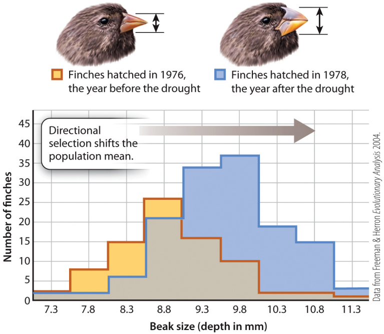

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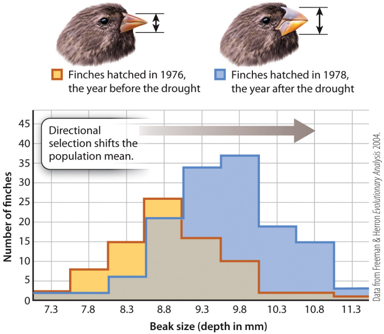

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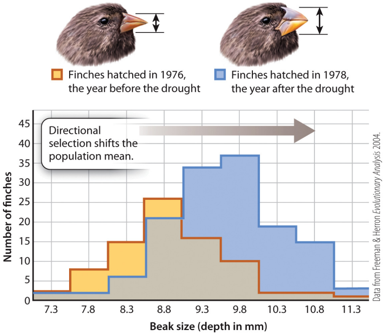

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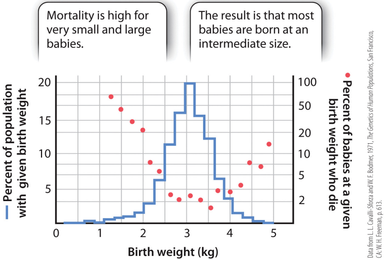

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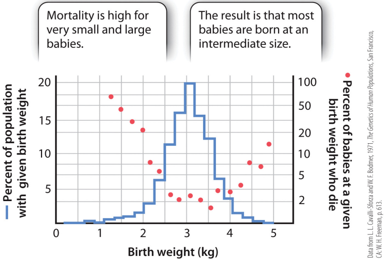

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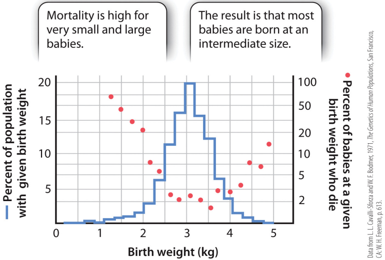

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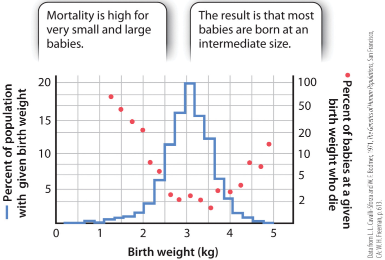

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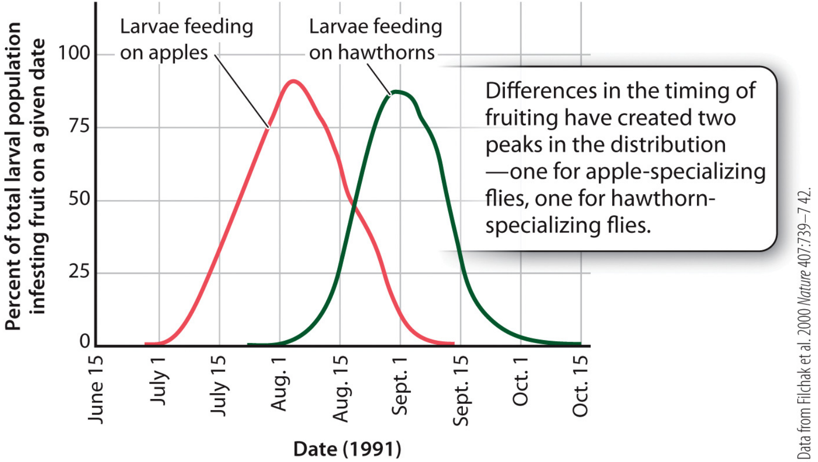

Figure 20.9b
Biology: How Life Works

Outline

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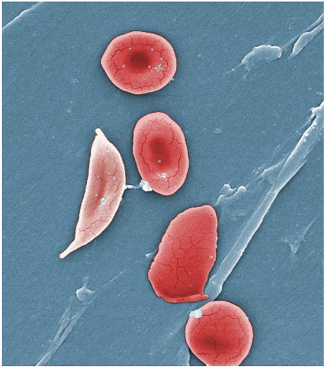

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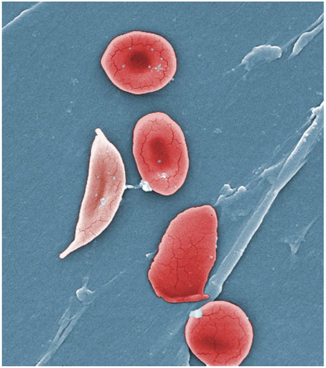

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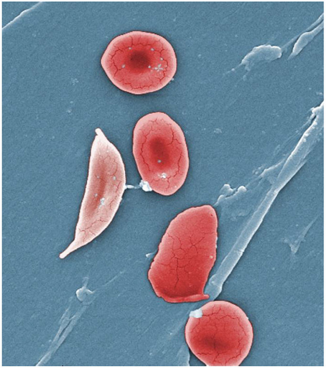

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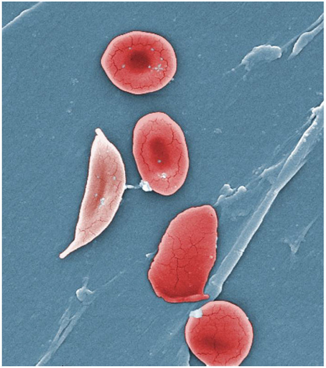

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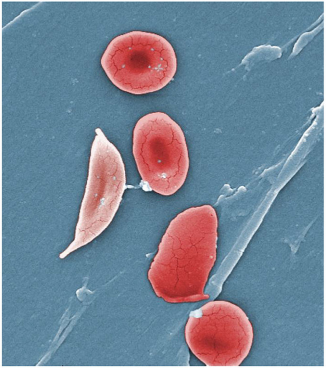

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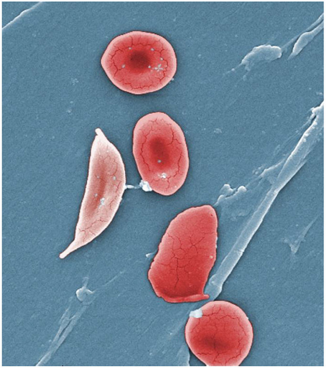

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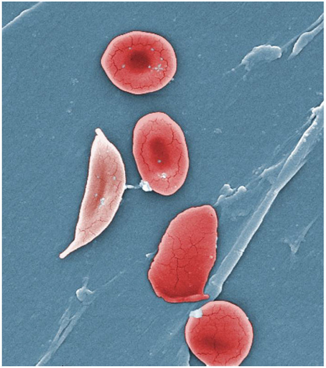

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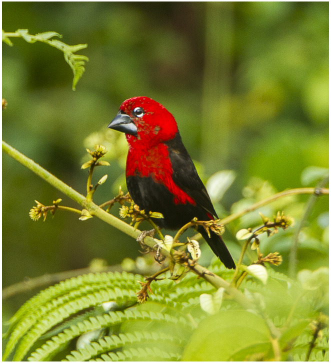

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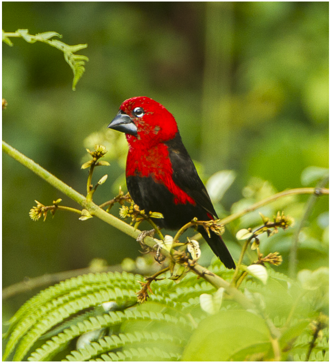

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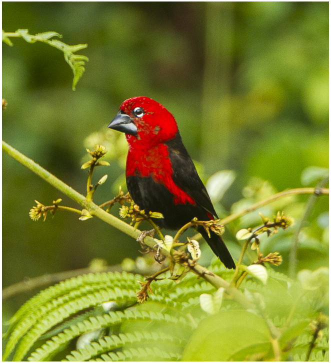

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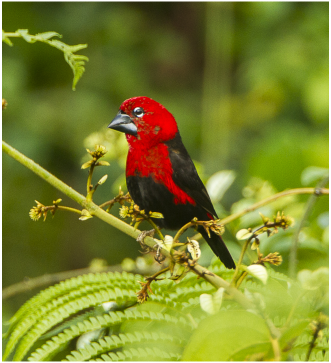

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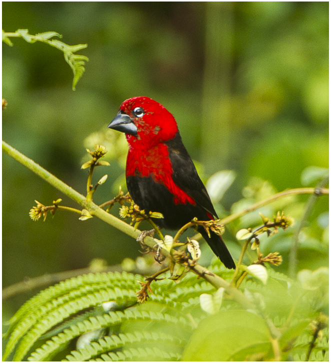

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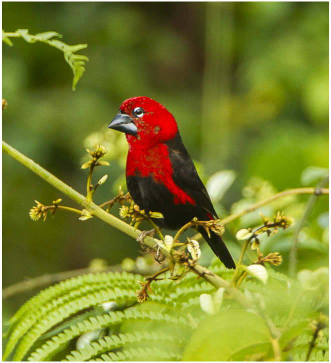

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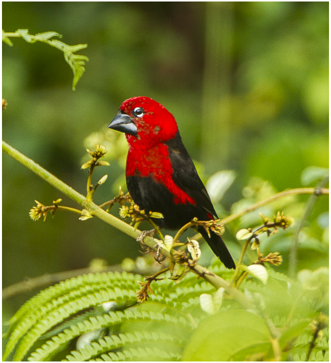

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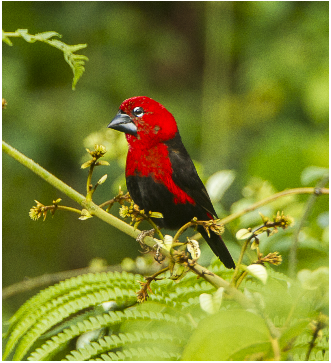

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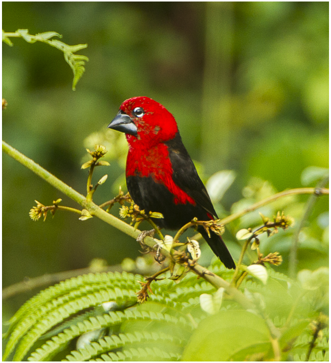

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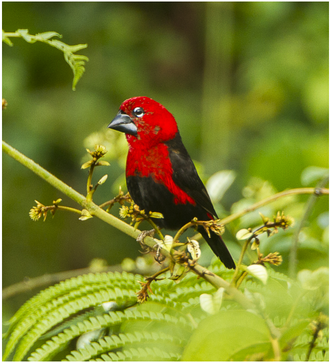

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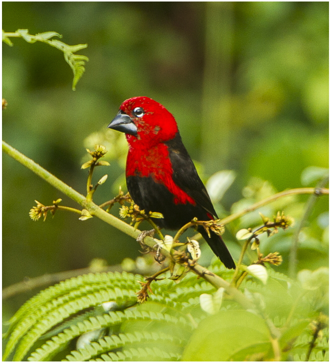

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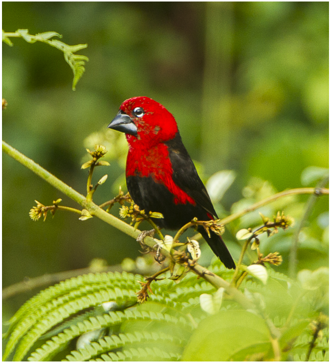

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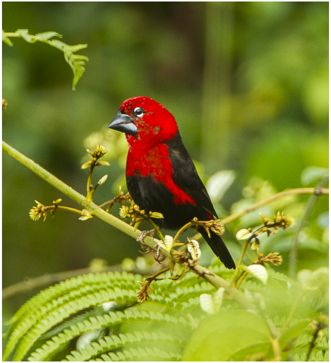

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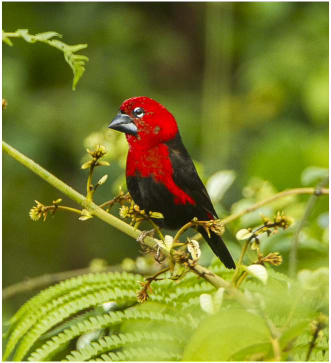

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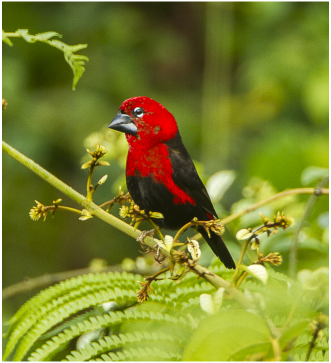

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Outline

- Analyzing genotype frequencies
- Types of natural selection
  - Trait level
  - Allele level
- Other evolutionary mechanisms
  - Genetic drift
  - Gene flow
  - Mutation
- Mating patterns
  - Inbreeding
  - Sexual selection

Outline

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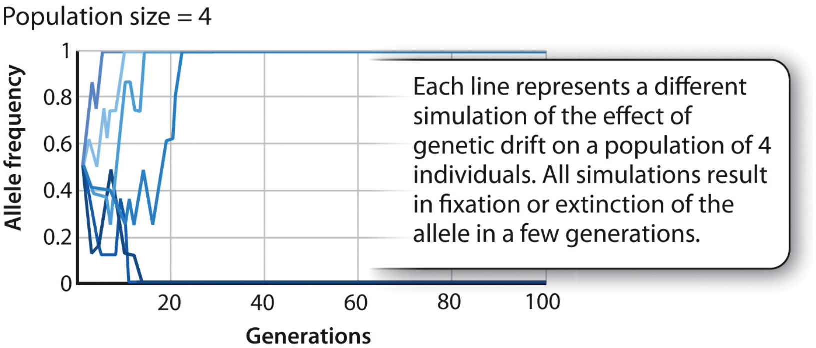

Figure 20.13b
Biology: How Life Works

Genetic drift

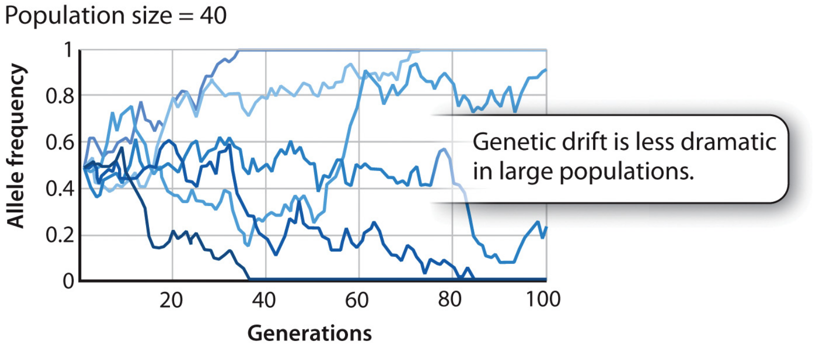

Figure 20.13c
Biology: How Life Works

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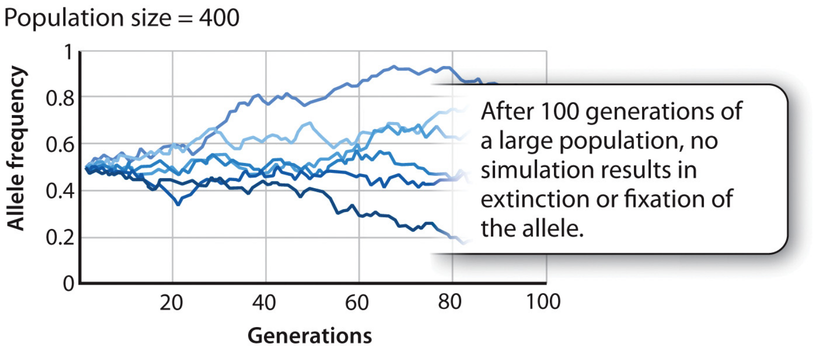

Figure 20.13d
Biology: How Life Works

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Florida panthers

DenGuy/Getty Images

Figure 20.14
Biology: How Life Works

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Why the males?

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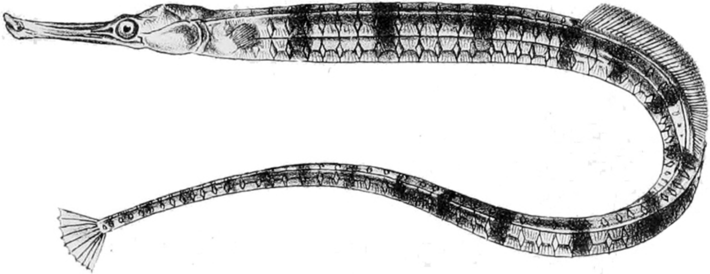

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