


Bio 115 Cells & Evolution of Life

Species and their Formation

## Charles Darwin and the Theory of Evolution



University of Idaho

Start Audio Lecture!

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Bio 115 Cells & Evolution of Life

Darwin's observations

- Organisms do not reproduce exponentially
- Individuals within a species are similar but not identical
- Individuals best adapted to their environment have the best chance of surviving and reproducing

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Bio 115 Cells & Evolution of Life

Biological evolution

- Biological evolution is the change in a population's genetic composition over time

Galapagos marine iguana (left), penguin (top), and giant tortoise (right)

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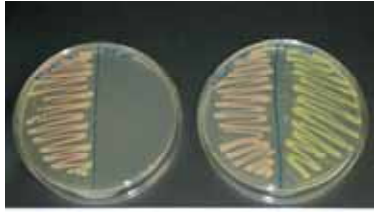
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### Natural Selection in Action



The *E. coli* stained pink has a gene for antibiotic resistance. The green-stained *E. coli* lacks this gene. The plate on the left was treated with tetracycline, a common antibiotic. As you can see, the antibiotic resistant *E. coli* are unaffected by the antibiotic.

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### Three Types of Selection

- Stabilizing Selection
- Directional Selection
- Disruptive Selection



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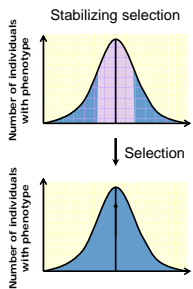
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### Stabilizing Selection



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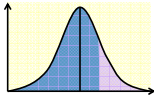
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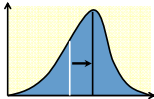
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### Directional Selection

Directional selection



↓ Selection



Tongue selection



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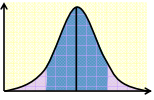
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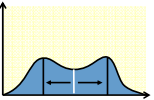
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### Disruptive Selection

Disruptive selection



↓ Selection



Smaller beaks are useful for feeding on soft seeds.

Large beaks are useful for cracking hard seeds.

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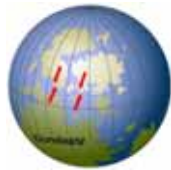
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### Natural Selection is Dynamic



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