

Course introduction

Introduction

Thinking conceptually

The cell theory

Doing biology

Outline

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Ground rules

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Example: cards and drinks

Logical inference

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Experiments

Observational studies

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Algebra

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Hockey



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Cards



Deductive thinking (preview)

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All living organisms are composed of cells

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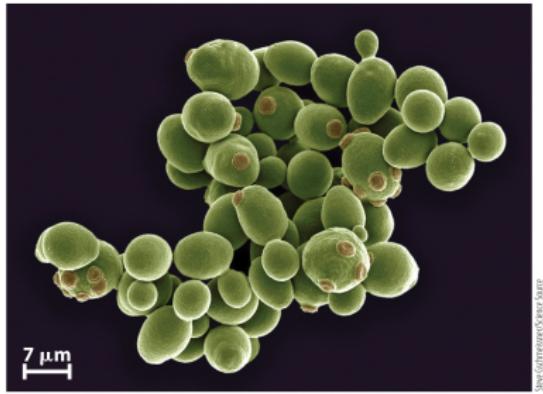


Figure 1.16b
Biology: How Life Works
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All living organisms are composed of cells

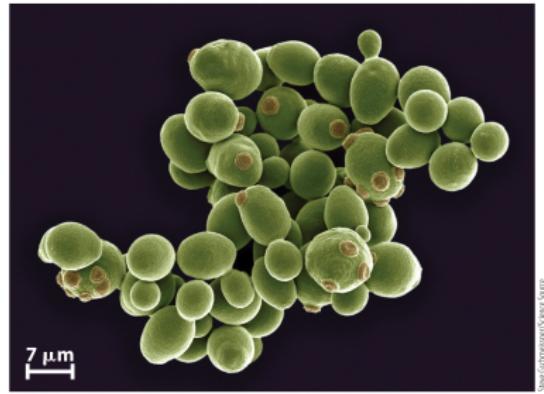


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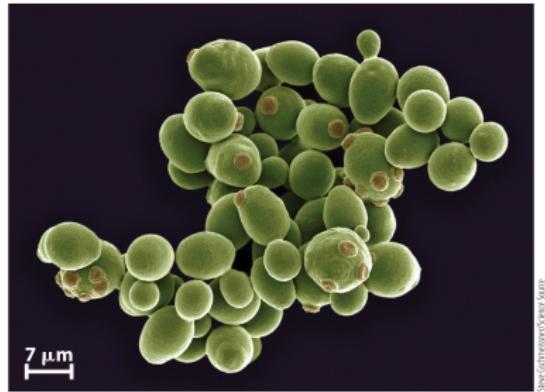


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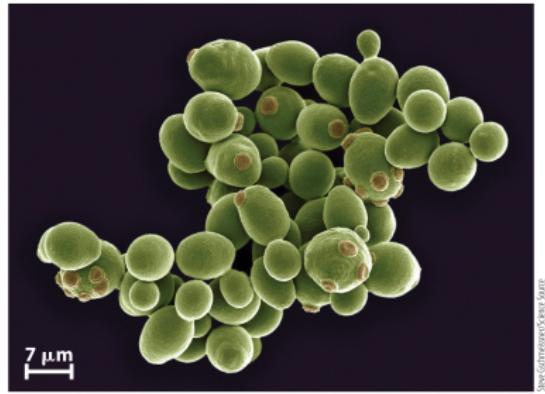


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Cells (see textbook)

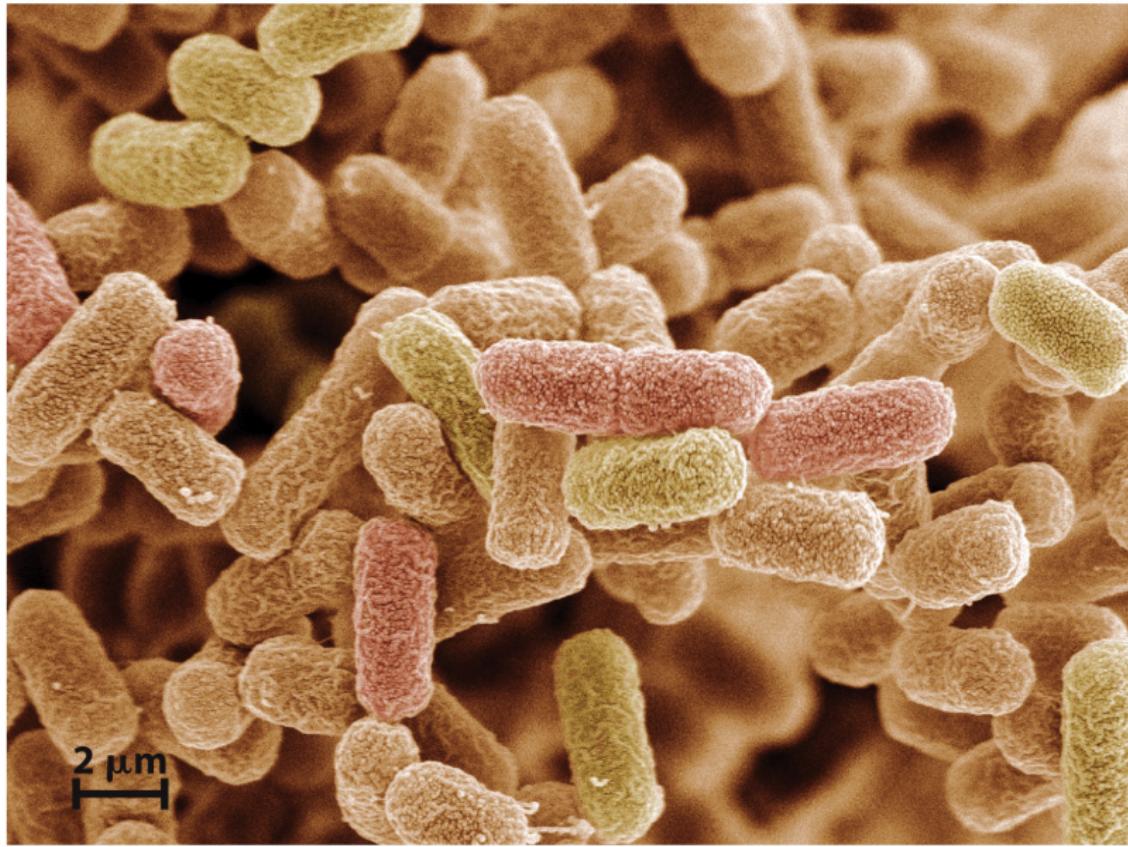


Figure 1.9a
Biology: How Life Works

Steve Gschmeissner/Science Source

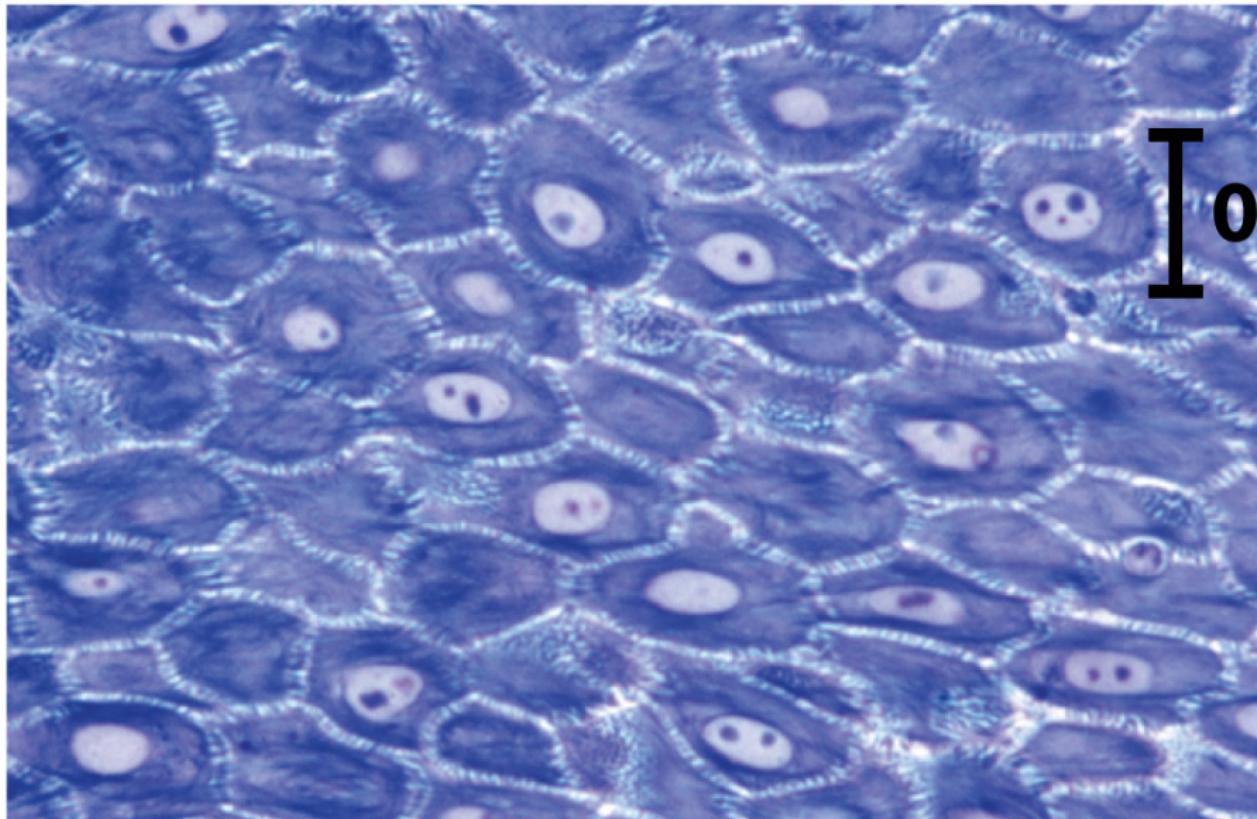


Cells (see textbook)



Figure 1.9d
Biology: How Life Works

Cells (see textbook)



10

Figure 1.10a
Biology: How Life Works

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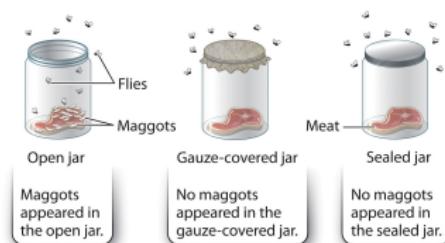


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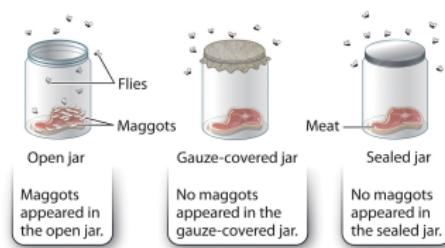


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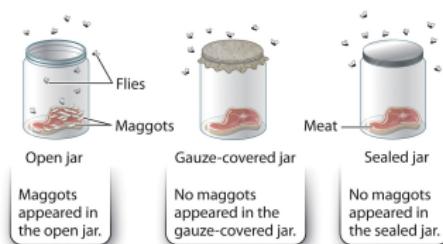


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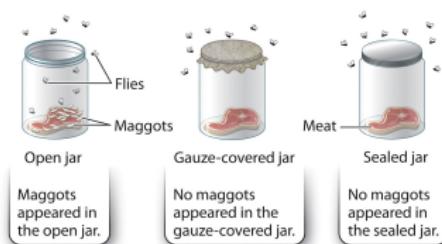


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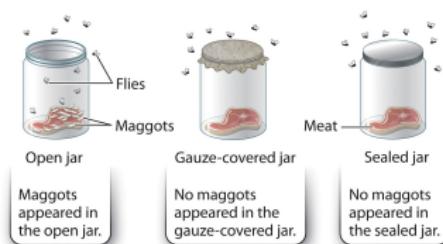


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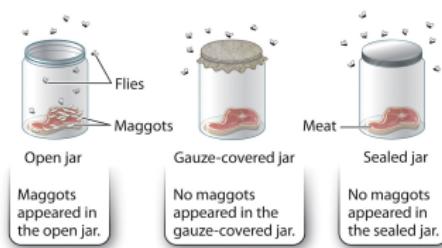


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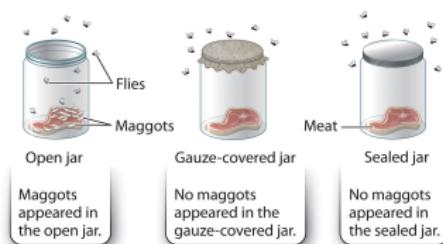


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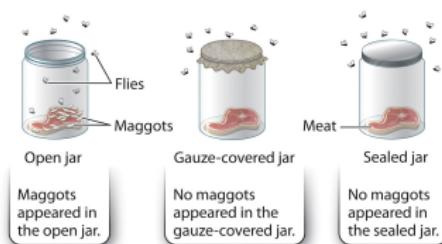


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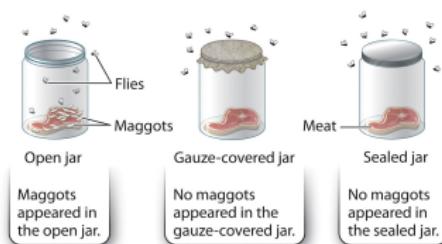


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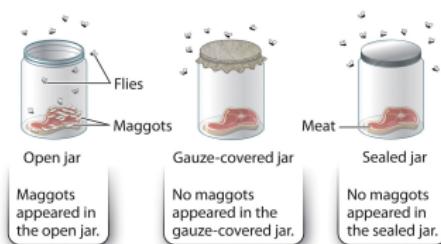


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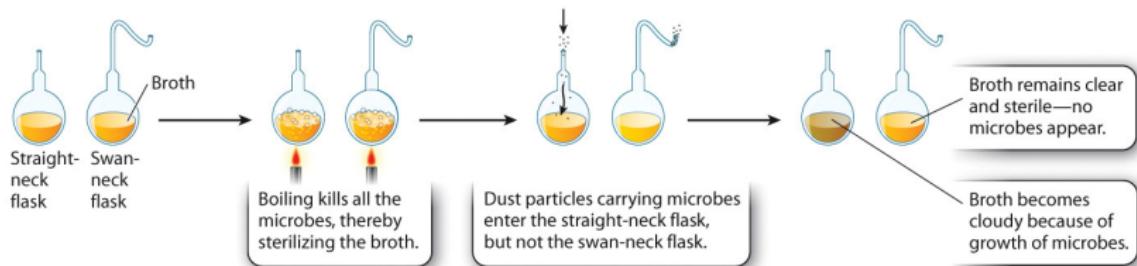


Figure 1.8
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Scientific inquiry (see textbook)

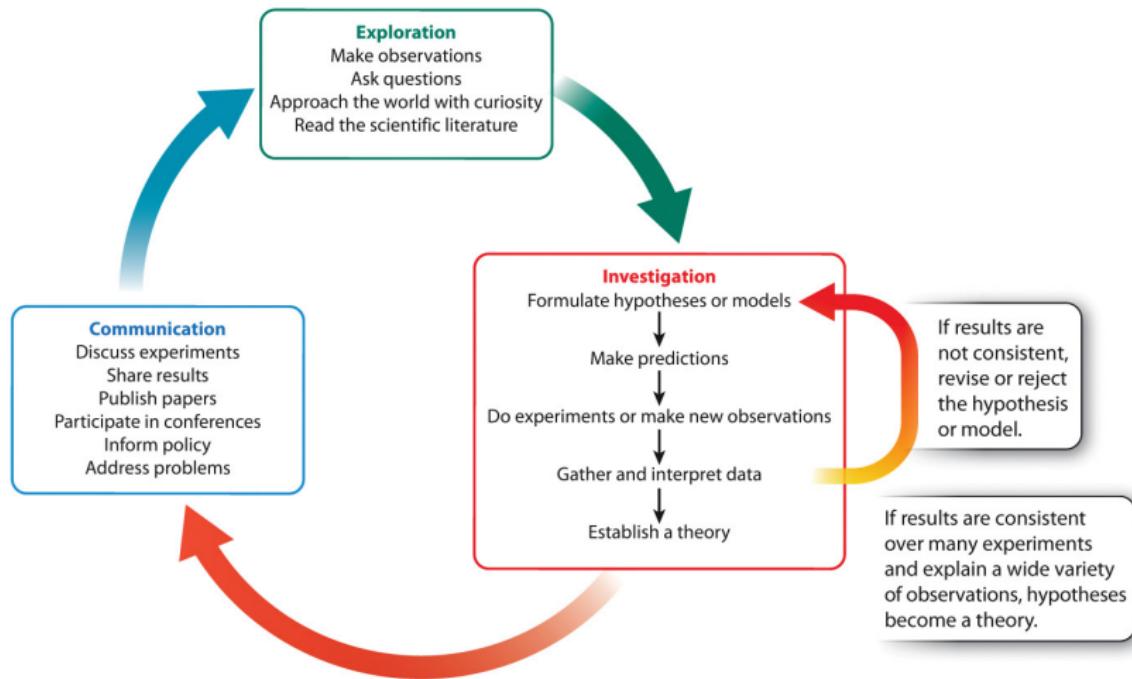


Figure 1.2

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 - ▶ * I only used one mouse. I don't know if there was something unusual about it.
- ▶ * What if I compare two mice?
 - ▶ * one will always do better than the other!

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Where do flies come from? (see textbook)



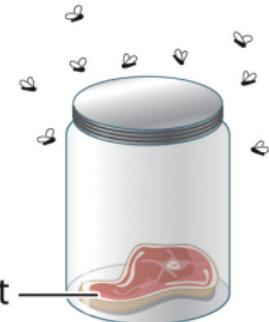
Open jar

Maggots
appeared in
the open jar.



Gauze-covered jar

No maggots
appeared in the
gauze-covered jar.



Sealed jar

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Figure 1.7
Biology: How Life Works
© Macmillan Learning

Where do microbes come from? (see textbook)

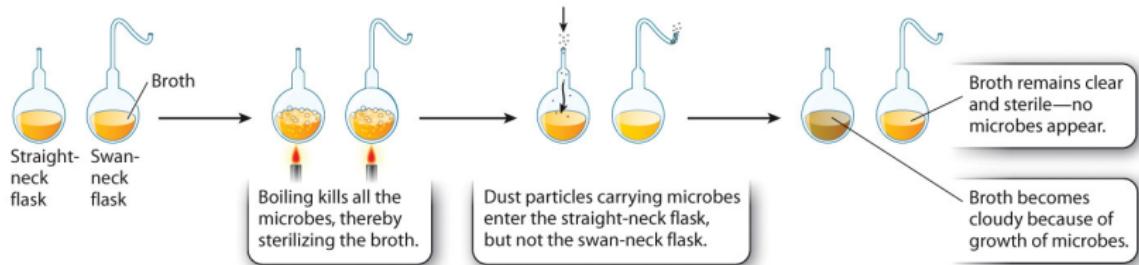


Figure 1.8
Biology: How Life Works
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Outline

Introduction

Ground rules

Thinking conceptually

Example: cards and drinks

Logical inference

The cell theory

Doing biology

Experiments

Observational studies

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- Look for ways to collect data that will support or challenge hypotheses

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Dinosaurs (see textbook)

At Gubbio, Italy, the recessed clay layer in the center of the photo (arrow) marks the end of the Cretaceous Period, when many species became extinct. As shown in the diagram on the right, this layer shows strong enrichment in iridium, rare in most rocks on Earth but relatively common in meteorites.



Andrew Knoll, Harvard University

Figure 1.3 (Part 1a)
Biology: How Life Works
© Macmillan Learning

Dinosaurs (see textbook)

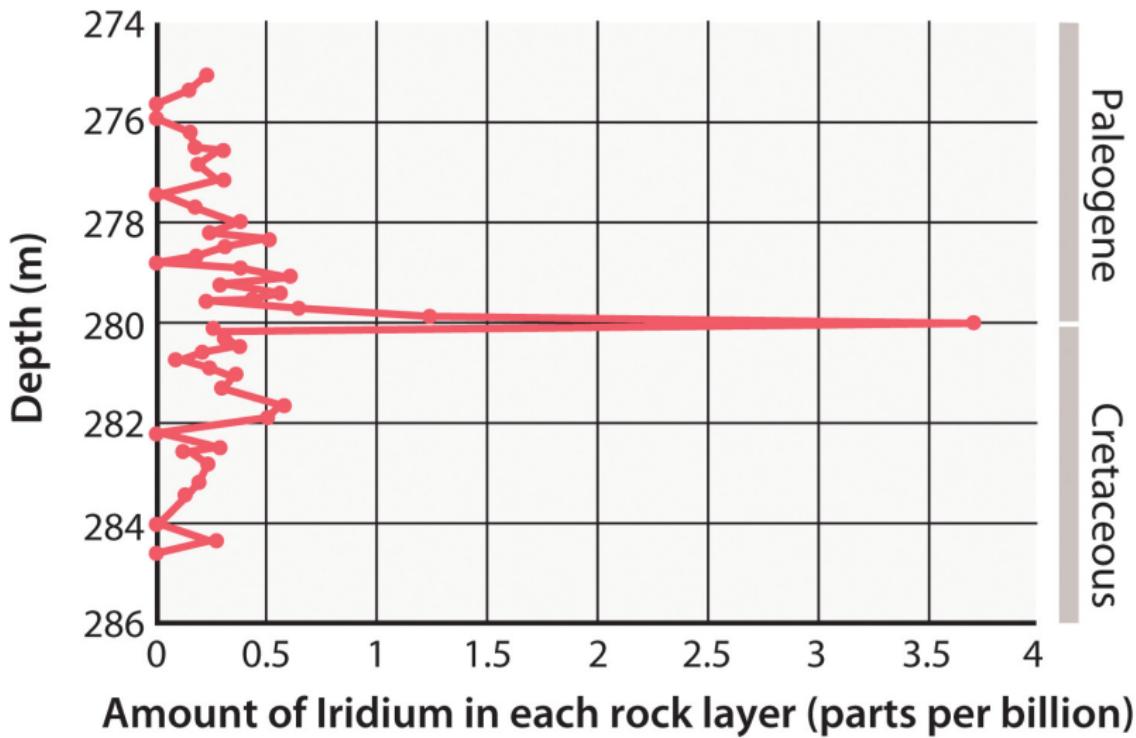
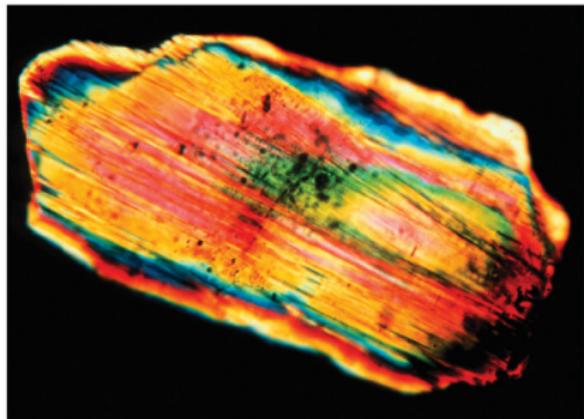


Figure 1.3 (Part 1b)
Biology: How Life Works
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Dinosaurs (see textbook)

Quartz crystals that form only at high temperature and pressure—conditions met by giant meteors as they crash into Earth—occur abundantly in rock layers dated to the time of the extinction.



Dr. David King/Science Source

Figure 1.3 (Part 2a)
Biology: How Life Works
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Dinosaurs (see textbook)

By 1990, geologists had located a crater of just the right size and age in the Yucatan Peninsula, Mexico (image to the right created by mapping subtle variations in Earth's gravitational field).



Figure 1.3 (Part 2b)
Biology: How Life Works
© Macmillan Learning

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