Macroevolution

Species formation
Adaptive radiations
Extinctions


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OSU
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WSU

Macroevolution

Species formation
Adaptive radiations
Extinctions

Fossil formation

- **Burial in sediment (mud, ash, sand) = low O2 environment**
- **Little decomposition**

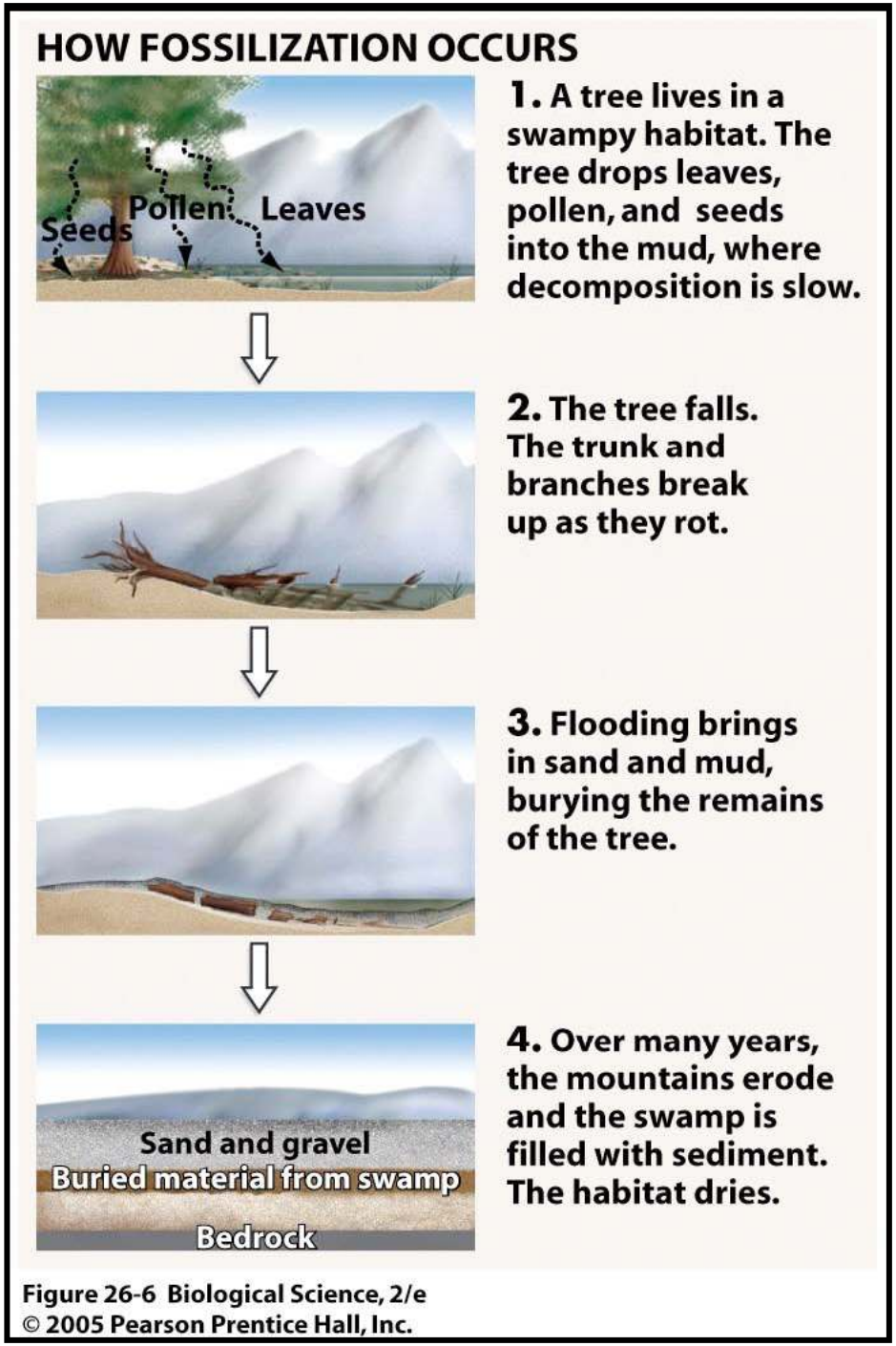
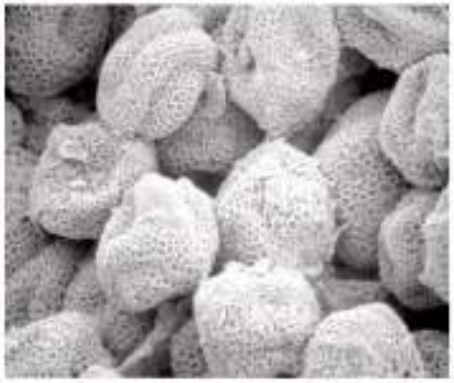


Figure 26-6 Biological Science, 2/e

(a) Intact fossil



The pollen was preserved intact because no decomposition occurred.

(b) Compression fossil

Sediments accumulated on top of the leaf and compressed it into a thin carbon-rich film.

(c) Cast fossil

The branch decomposed after it was buried. This left a hole that filled with dissolved minerals, faithfully creating a cast of the original.

(d) Permineralized fossil

The wood decayed very slowly, allowing dissolved minerals to infiltrate the cells gradually and then harden into stone.

Figure 26-7 Biological Science, 2/e

Phylogenetic Trees 101
(OK, maybe only 01)

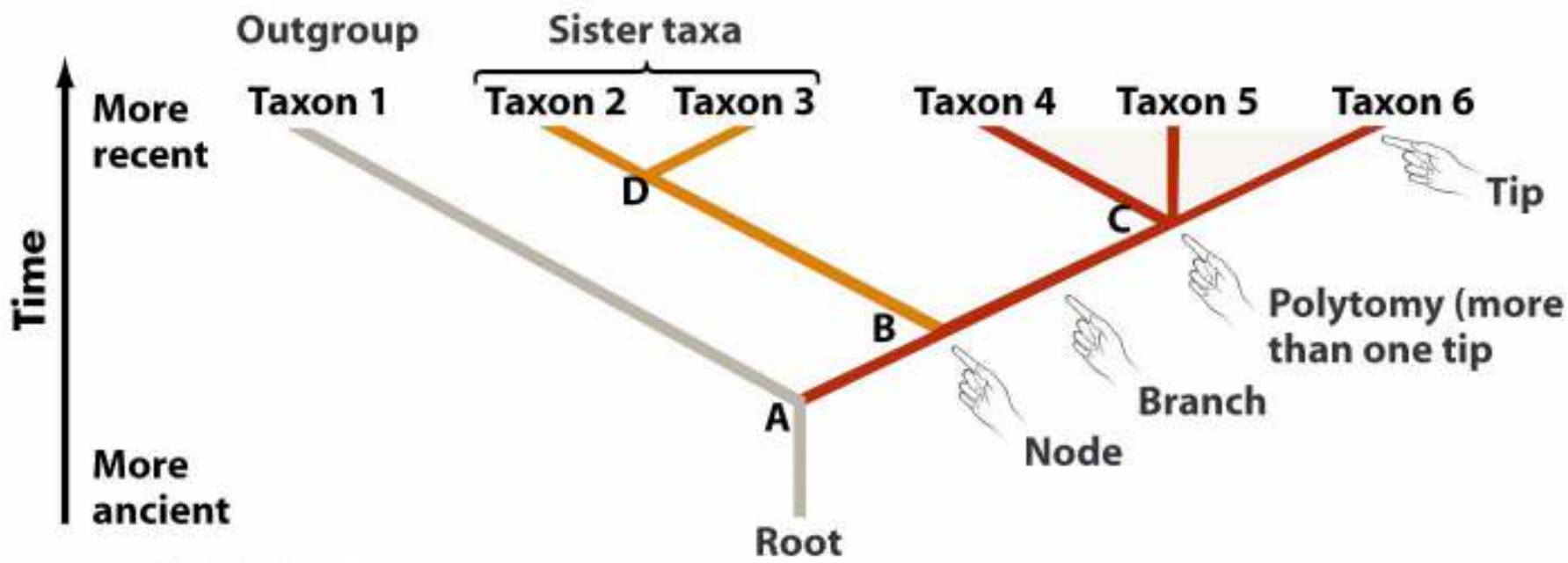


Figure 26-1 Biological Science, 2/e

Adaptive radiations produce star phylogenies.

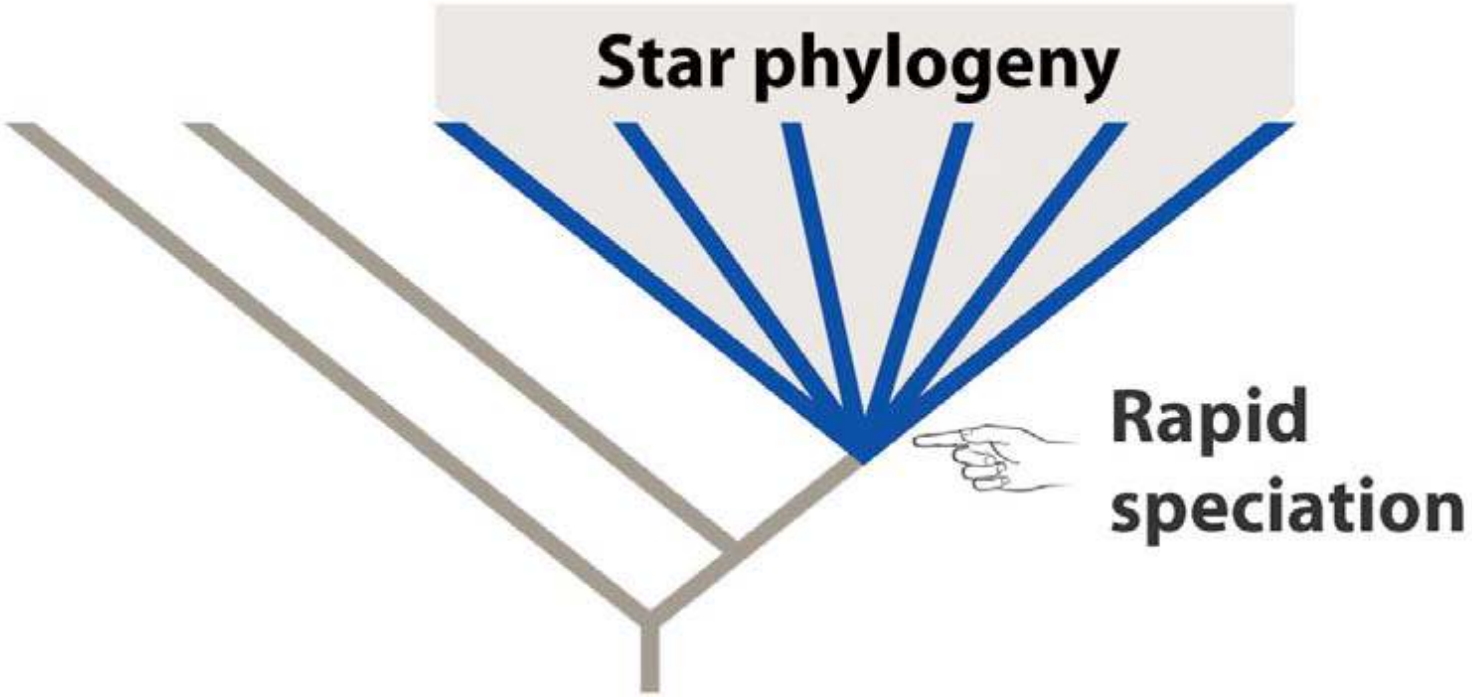


Figure 26-15a Biological Science, 2/e

Hawaiian examples

- Honeycreepers– Single, finch-like,seed-eating ancestor
– Produced huge diversity in foraging types
- Insects
- Fruits
- Nectar
- Seed-crackers

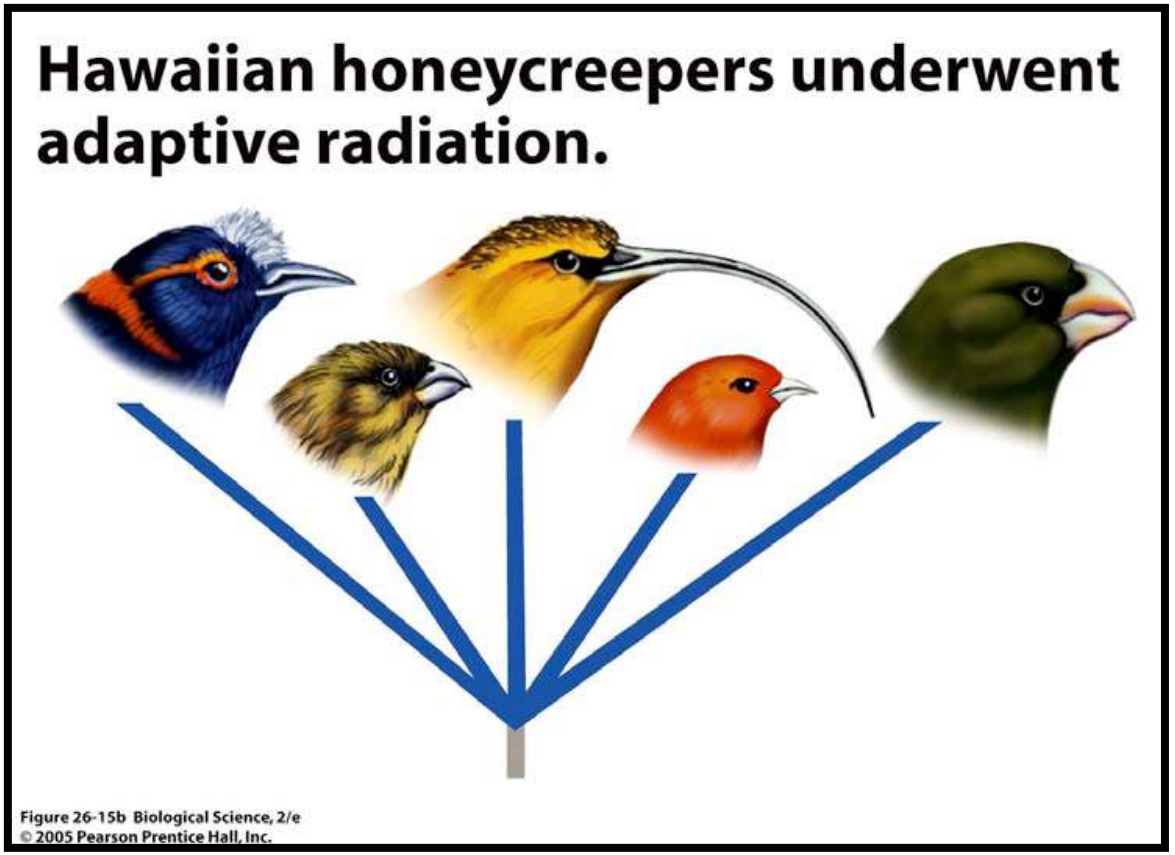
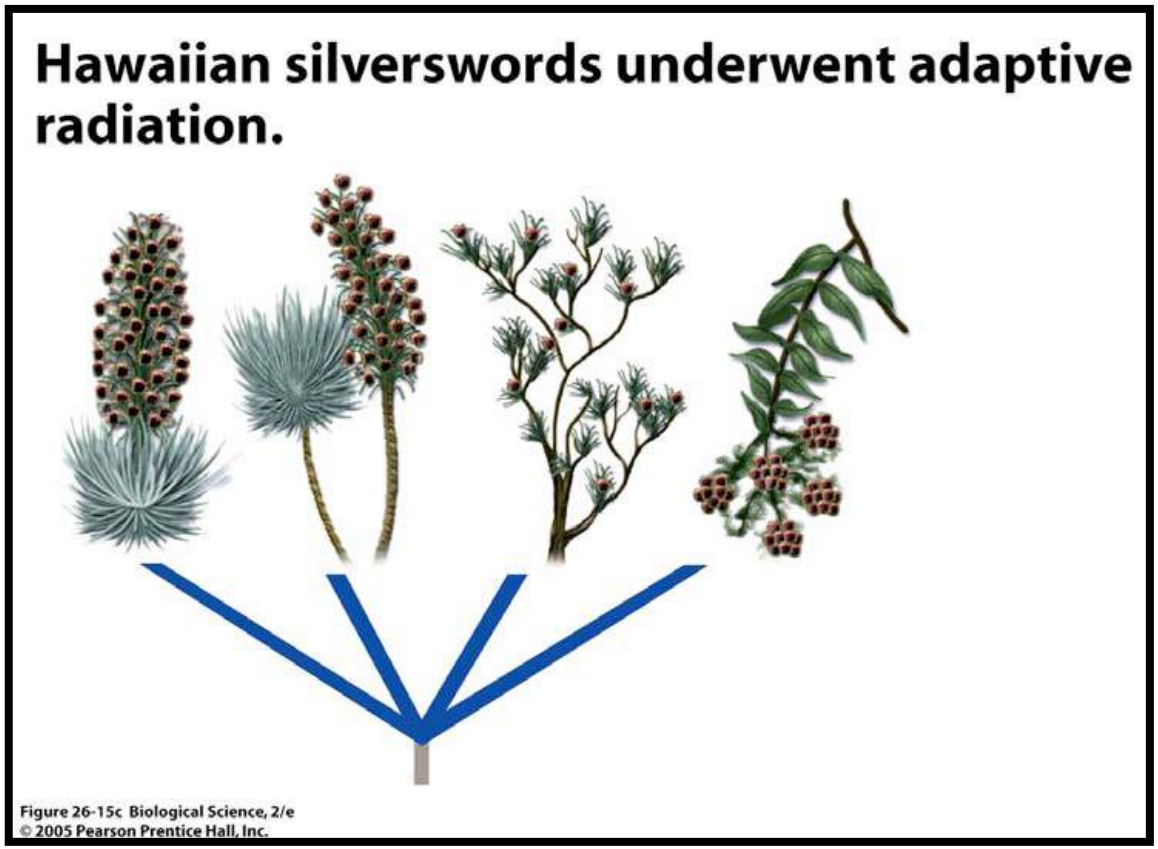


Figure 26-15b Biological Science, 2/e

Silverswords

– Ancestor = California tarweed
– Produced huge diversity in growth forms and habitat type

• Rainforest to lava flows
• Vines, trees, bushes, mats



Mammals

E. fulvus
Photo by
http://www.monkeyland.co.za/Images/speciesblacklemur.jpg

V. variegata
Photo by the S.F. Zoo

L. catta
Photo by C. Dirks.

E. fulvus
Photo by C. Dirks.

The relative distribution of lemurs selected for our study. *D. madagascariensis* (X) and *M. murinus* (open circle) are found in several locations.

P. verreauxi
Photo by C. Dirks.

M. Murinus
Photo by J. Visser.

D. madagascariensis
Photo by M. Beal

Anolis lizards

Species of *Anolis* vary in leg length and tail length. Some species are ground dwelling; others live in distinct regions of shrubs or trees.

Figure 26-16a Biological Science, 2/e

Multiple Ecotypes Diverged After A Colonization Event

Oh, and it occurred TWICE!

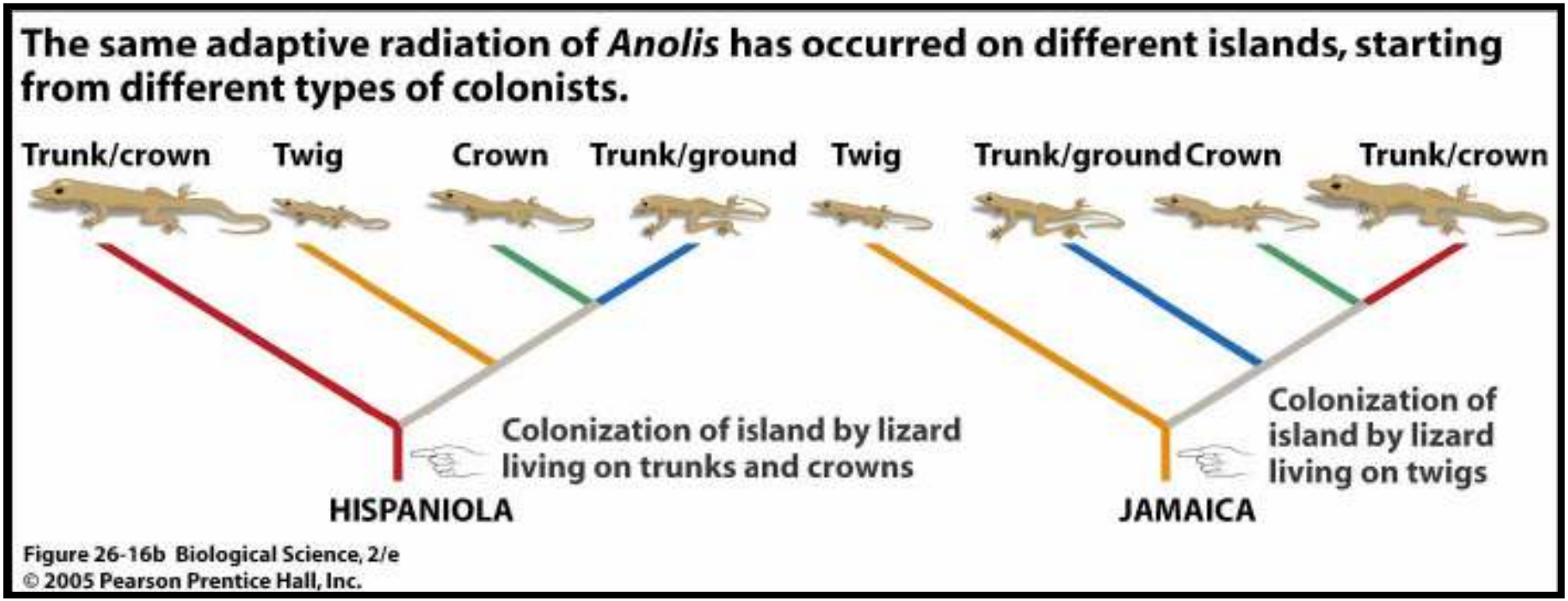


Figure 26-16b Biological Science, 2/e

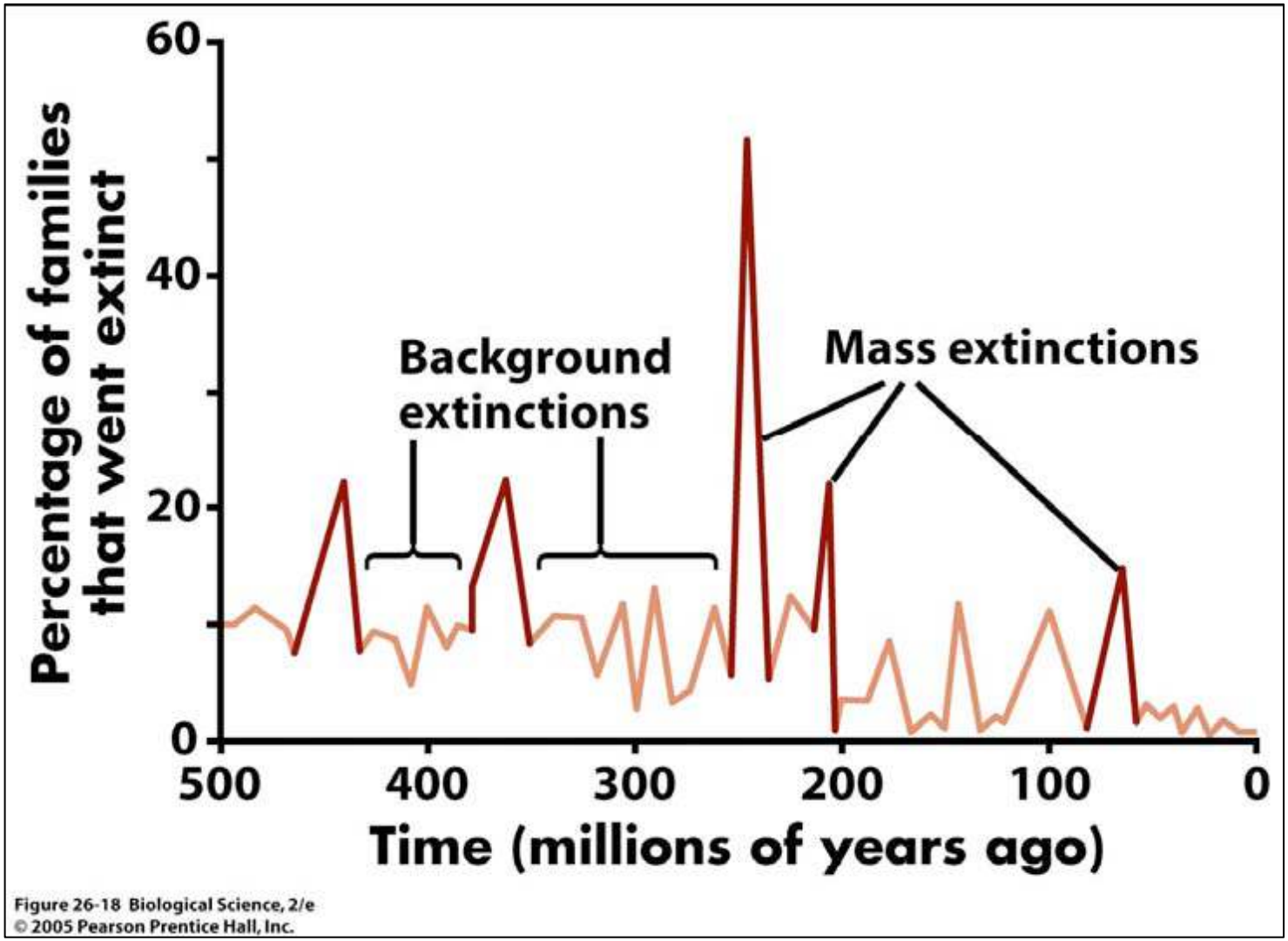


Figure 26-18 Biological Science, 2/e

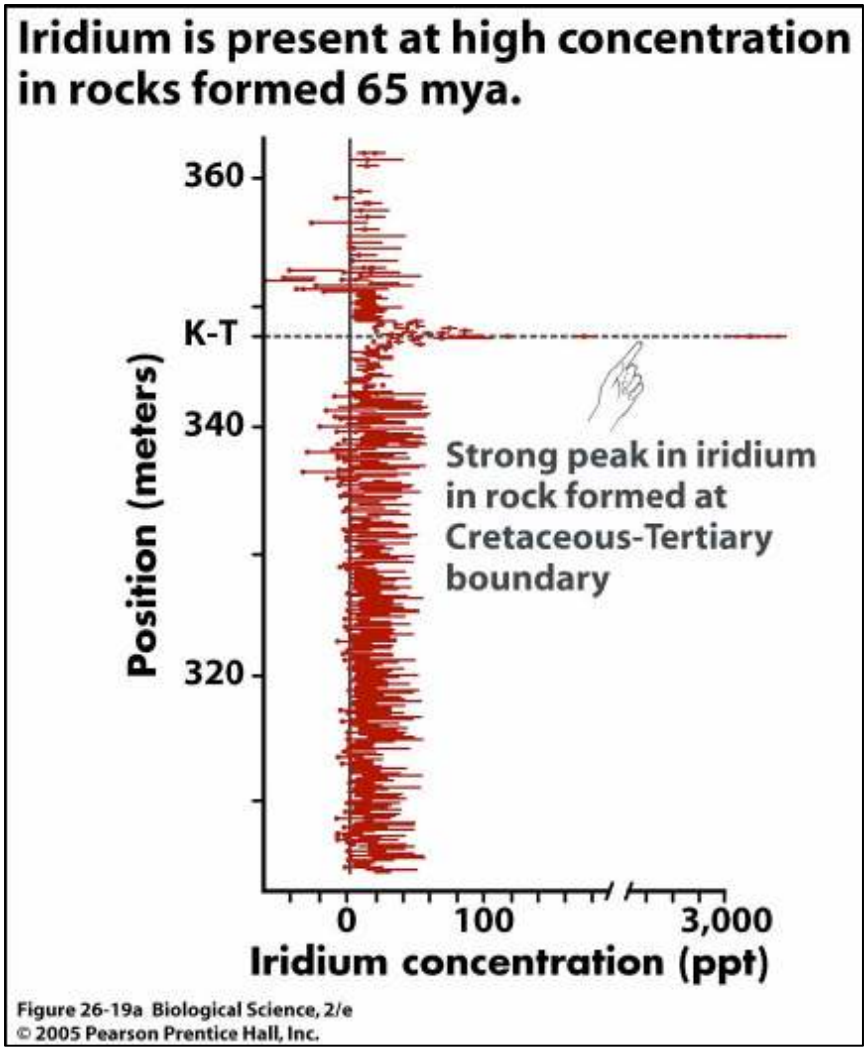
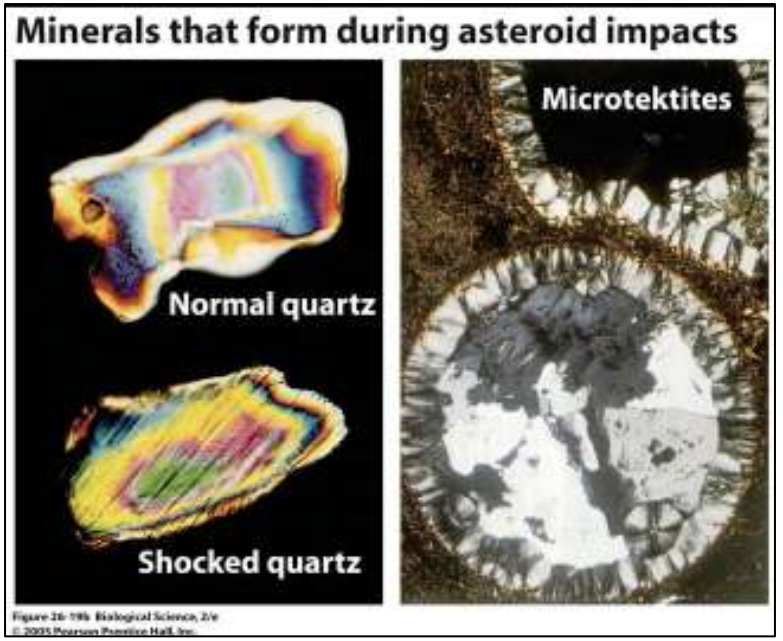
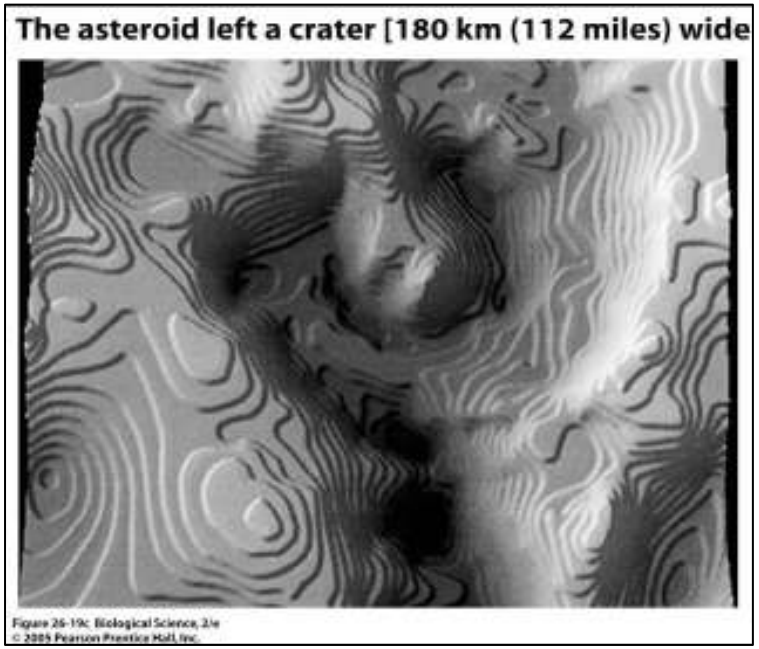


Figure 26-19a Biological Science, 2/e





WORKSHOP TIME!
Uh, what are we working on?

ANSWER:
You are going to work on being a scientist!

Discuss with your neighbors what interests you about science.

Then, together define “scientist”.

ACTIVITY:

One ONE piece of paper, write your name and the name of your neighbor with whom you will work on this exercise.

Now, working with your neighbor, write down what you think are attributes of a good scientist. Write your list of attributes on the left hand side of a piece of paper.

FOLD THE PAPER IN HALF DOWN THE MIDDLE AND TURN IT OVER.

NEXT TASK:

Working with your neighbor, write down what you think are attributes of a good student of science.

Write your list of attributes on the right hand side of a piece of paper (the one that is facing up).

NEXT TASK:

Open the sheet of paper and compare the lists. Identify common attributes by circling them.