27. Macroevolution *(RHM: Chapter 23)*

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I. Introduction: History of Life *(521-522)*

II. The Fossil Record *(522-527)*

A. How Fossils Form

1. sedimentation

-Fossils from in a variety of different ways:

-Liquefied minerals get into the wood and replace cell of the tree bit by bit

2. other mechanisms

B. What Fossils Can Tell Us

1. incompleteness of the fossil record

-Scavenges

-Sedimentation

-Subjected to geo forces, heat/pressure

2. relative and absolute time

-Fossils tell us when an organism lived

-Radiometric dating

-Many elements exist in multiple isotopes (carbon 14)

-Every carbon 14 will become carbon 12 per half life

-Half life is the time for half the radio isotopes to revert to the non-radio form

-Measure ratio of radio isotope to non-radio isotope

-Carbon half-life: 5730 years

3. ancient ecological communities

4. how characteristics changed through time

5. functional analyses of structures

-Pambeosaurine (dinosaur) – PET scan discovered the crest had large nasal passages used to make low frequency sounds

-Know they could hear low frequency sounds from structure of inner ear

III. Earth History *(527-530)* A. Introduction

B. Plate Tectonics

1. history of the idea

-Africa looks like it fits into South America

-Not accepted until late 1960’s

-Continental rocks are less dense and float above ocean rocks

-Magma coming from the mantel creates ridges and oceanic crusts sinks below the continental rock

2. plate tectonics: the underlying mechanism

C. Continental Drift

1. patterns of continental movements

2. consequences of continental drift

-Causes speciation

-Splitting continents creates more coast line ie. more habitats for evolution

-Large temperature changes from moving with respect to the equator

-Sea level changes (figure 23.8)

-Warm period 🡪high sea levels; cold period 🡪 low sea levels

IV. The History of Biodiversity (533-537)

1. Biodiversity

-Number of species alive at any given time

-Speciation vs extinction

B. Adaptive Radiations

1. responses to ecological opportunities

2. examples of adaptive radiations

-As angiosperms became more diverse insects became more diverse

-Produced positive feedback loop

C. Extinction

1. background extinction rates

2. mass extinctions

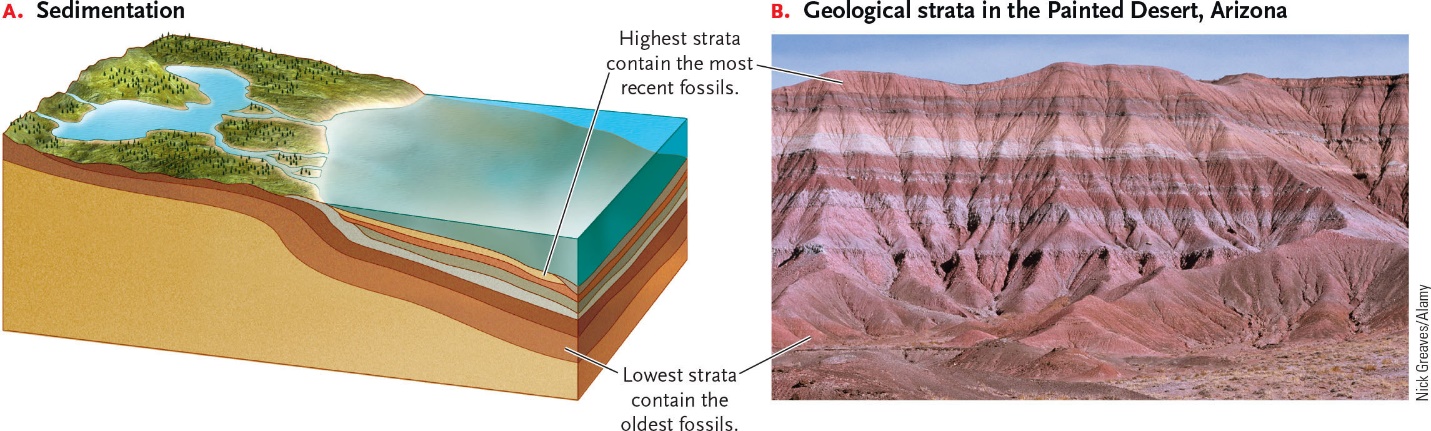
-Current mass extinction due to human intervention

D. Changes in Biodiversity Over Time

-Over the long term there is in a increase in biodiversity happens in waves

-More species live today than ever before

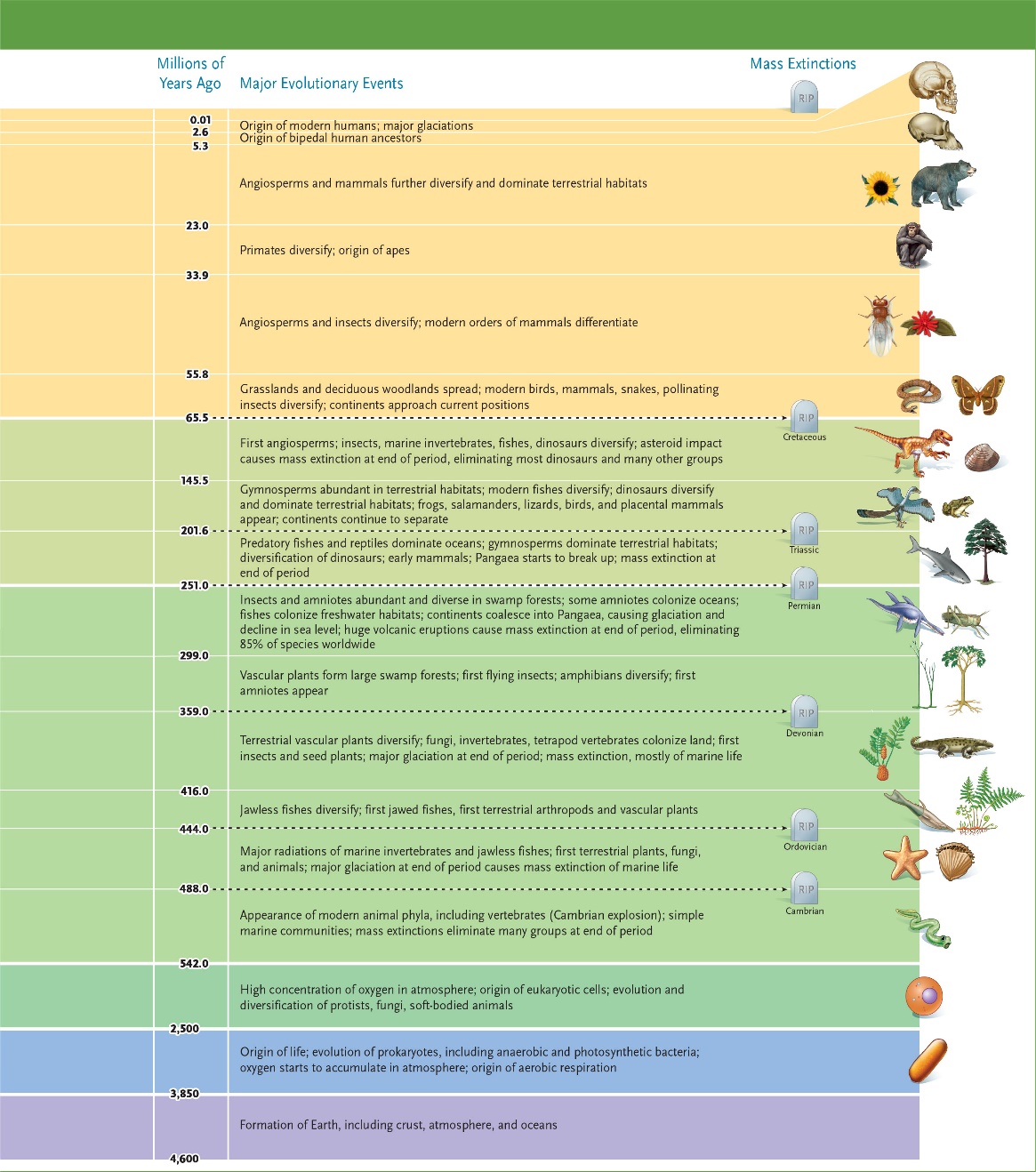
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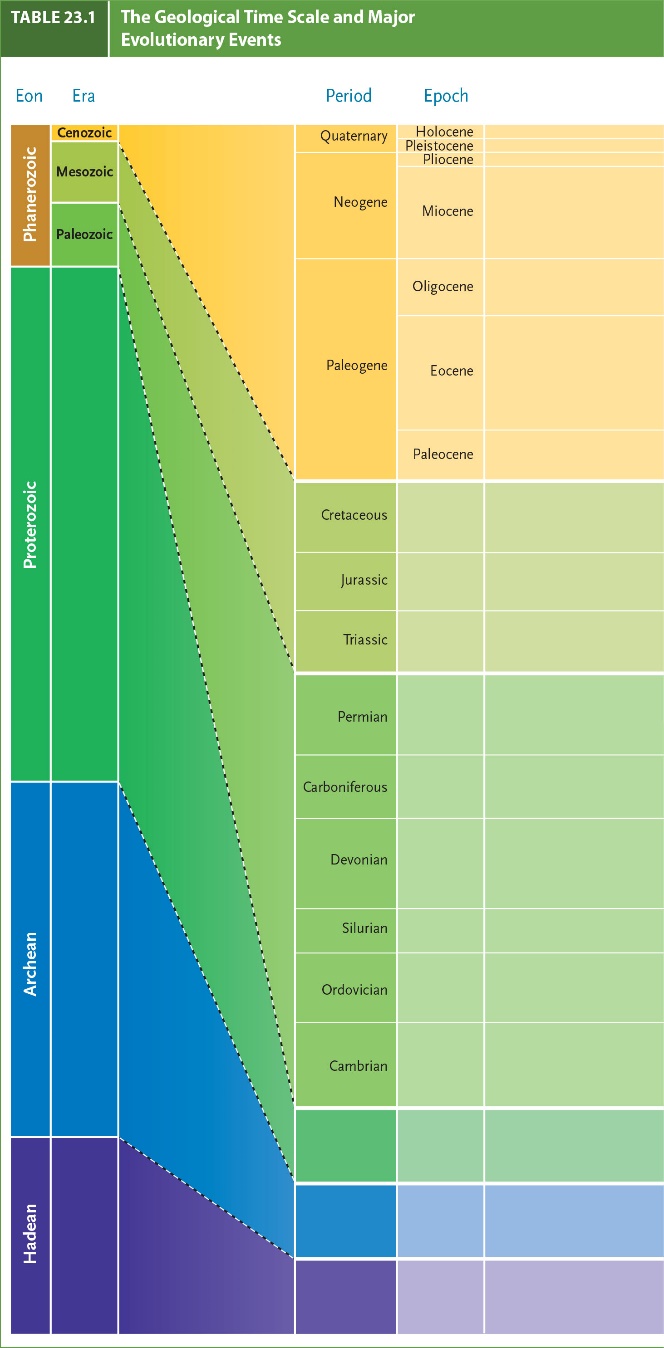


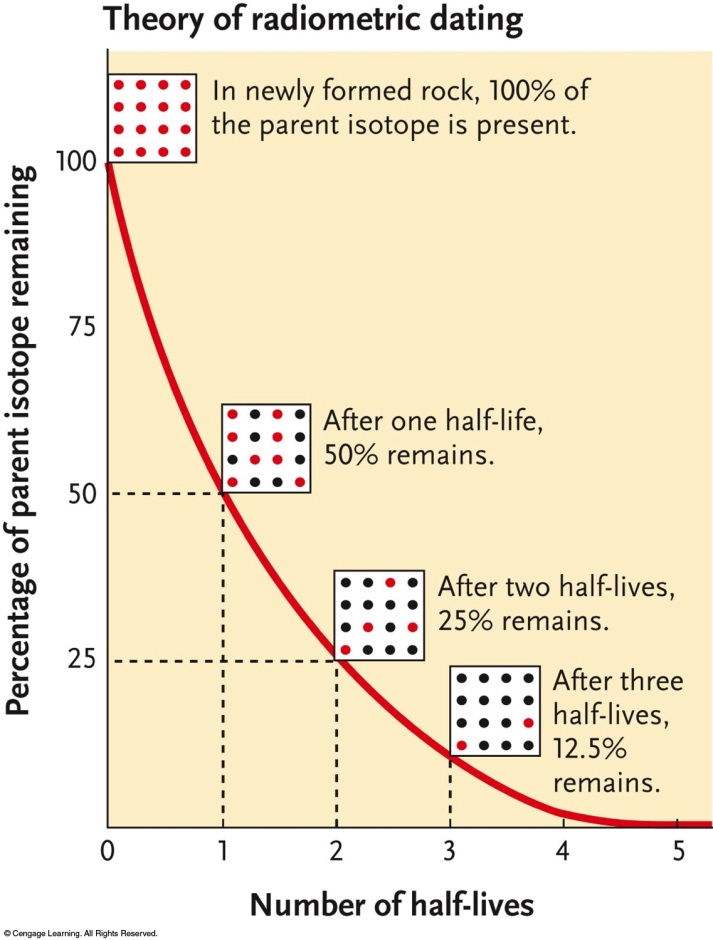
 

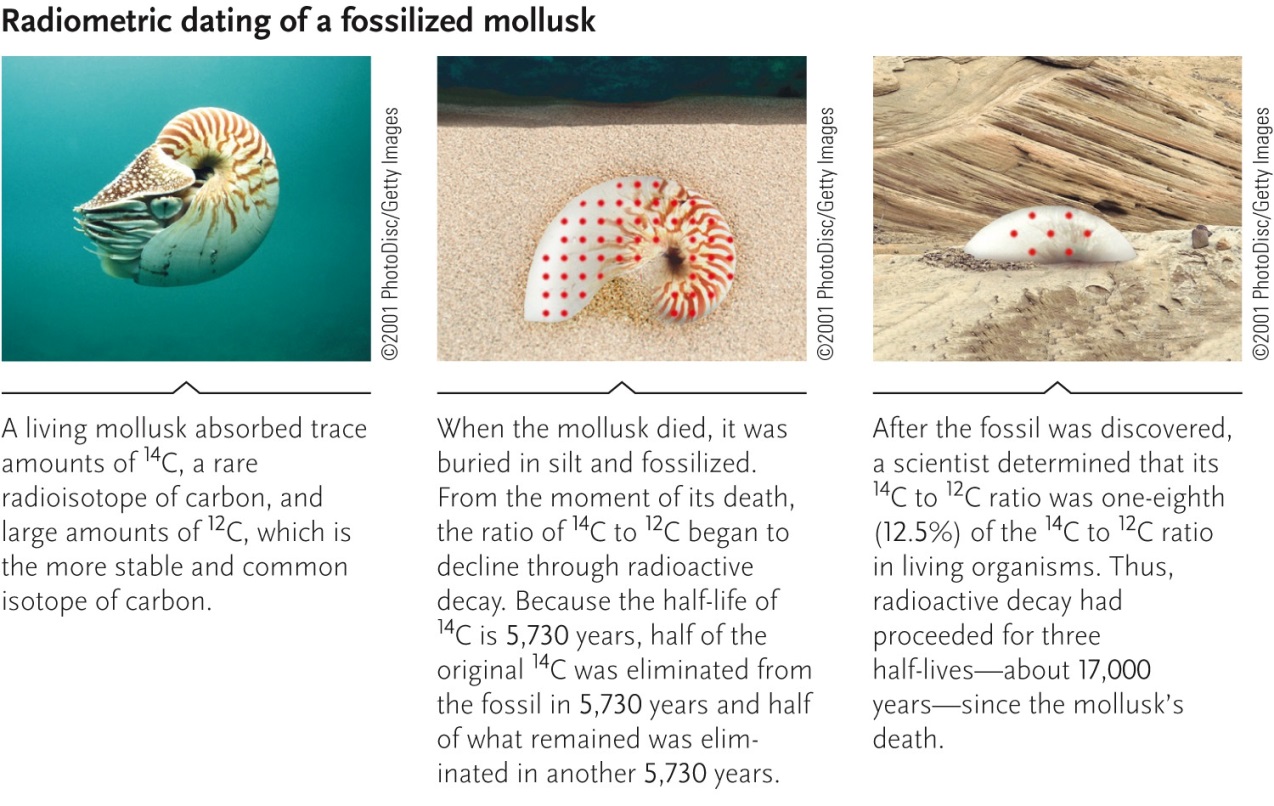
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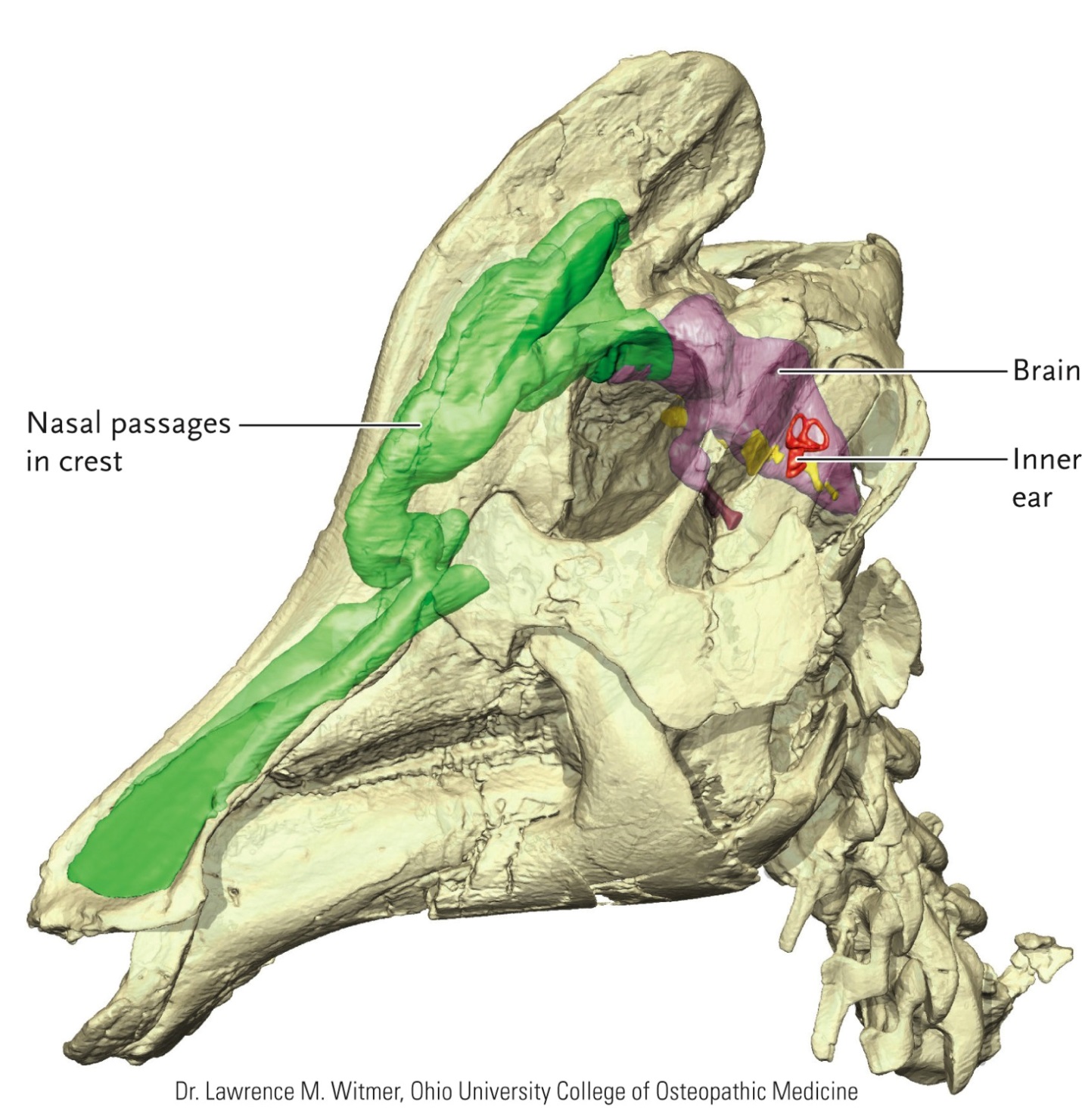


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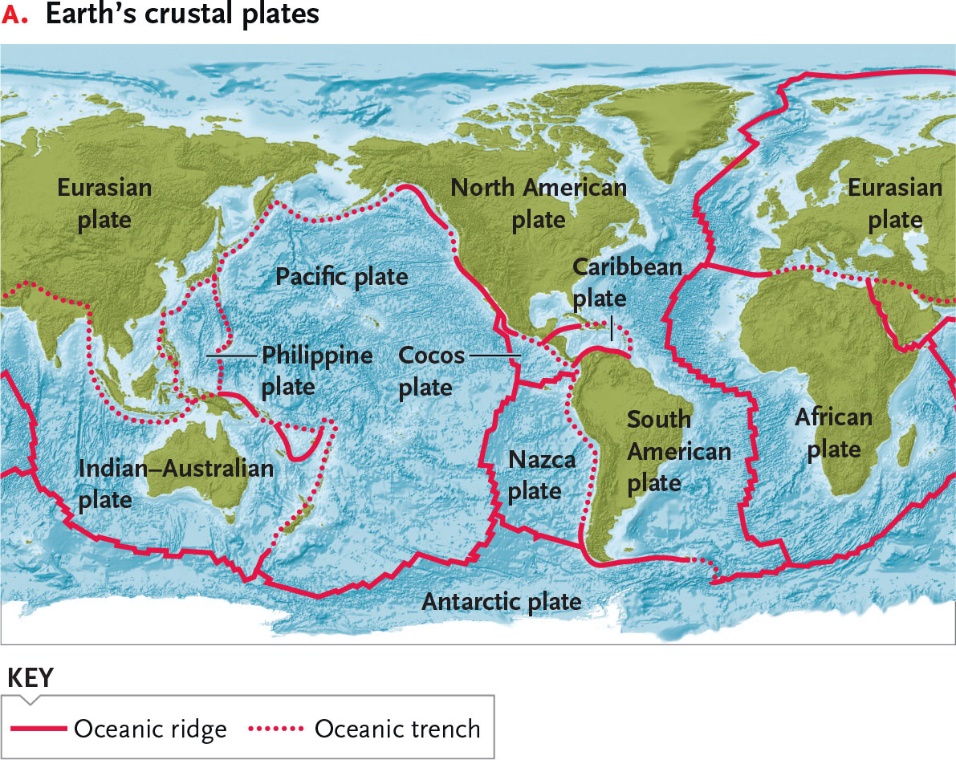


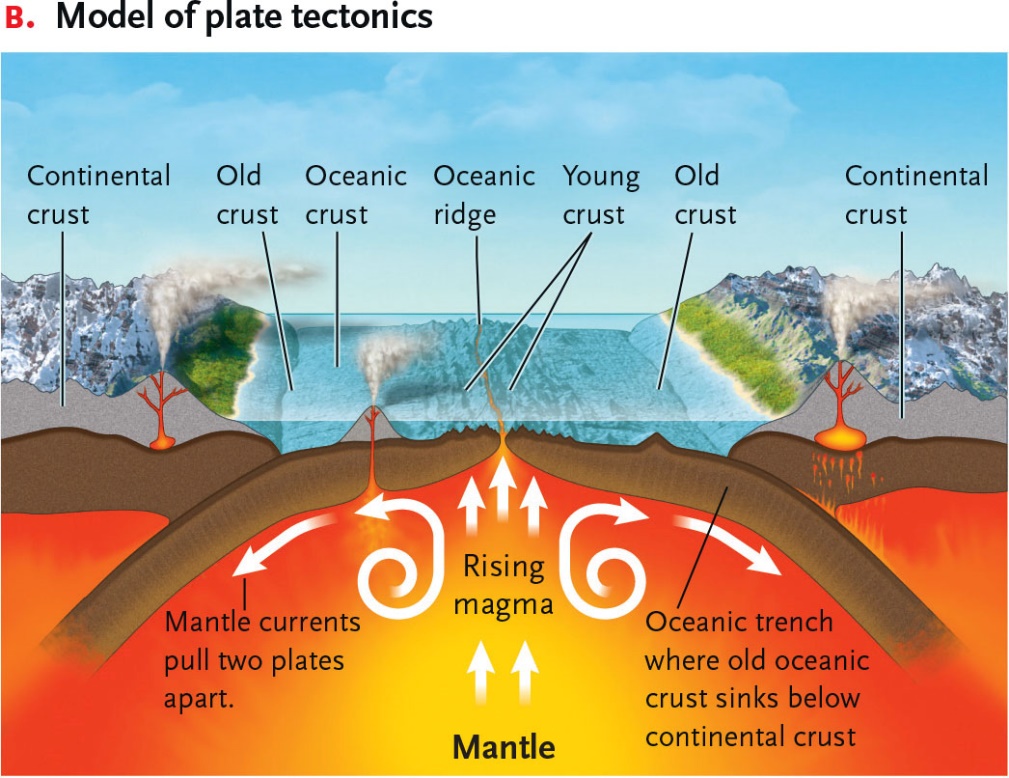


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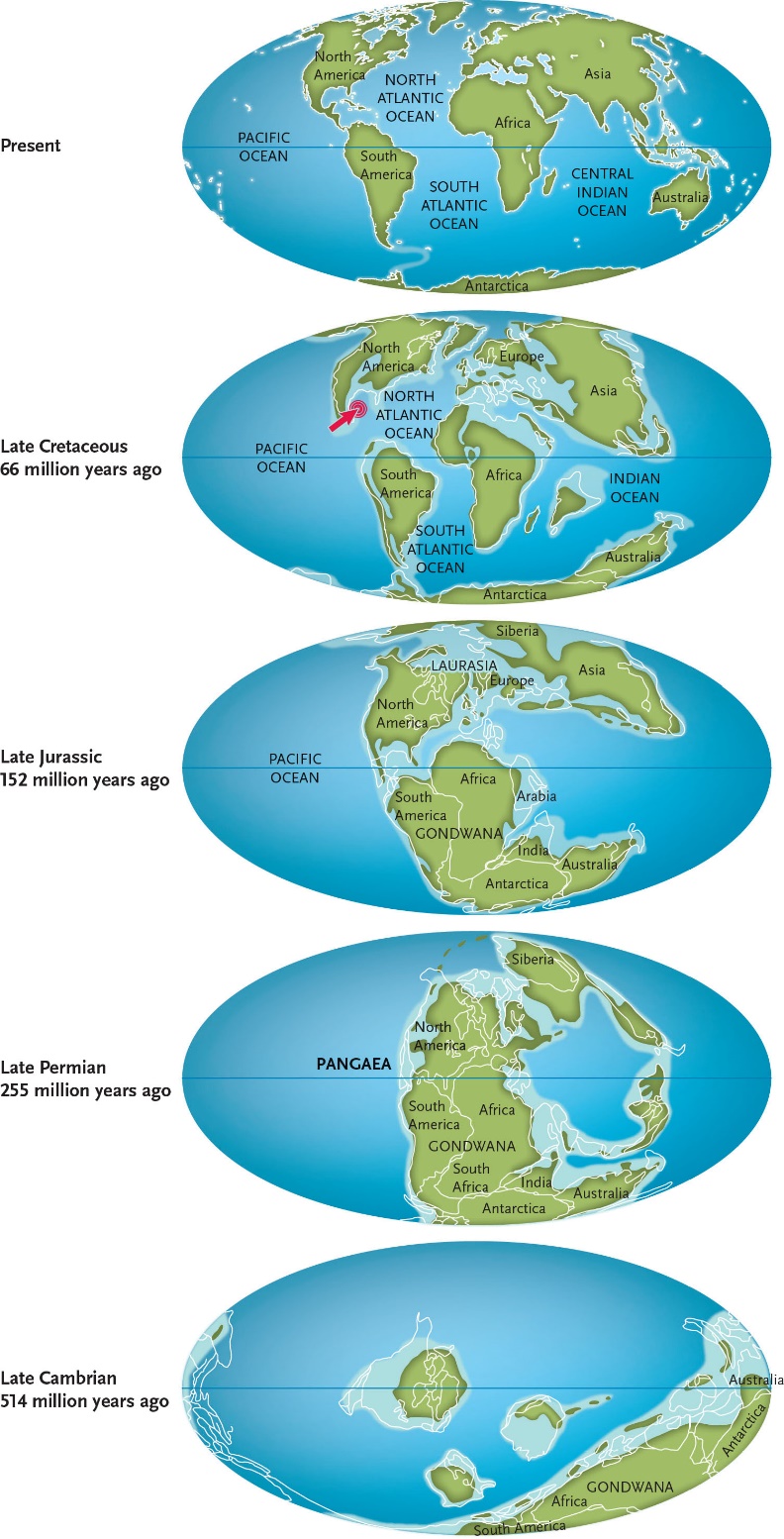


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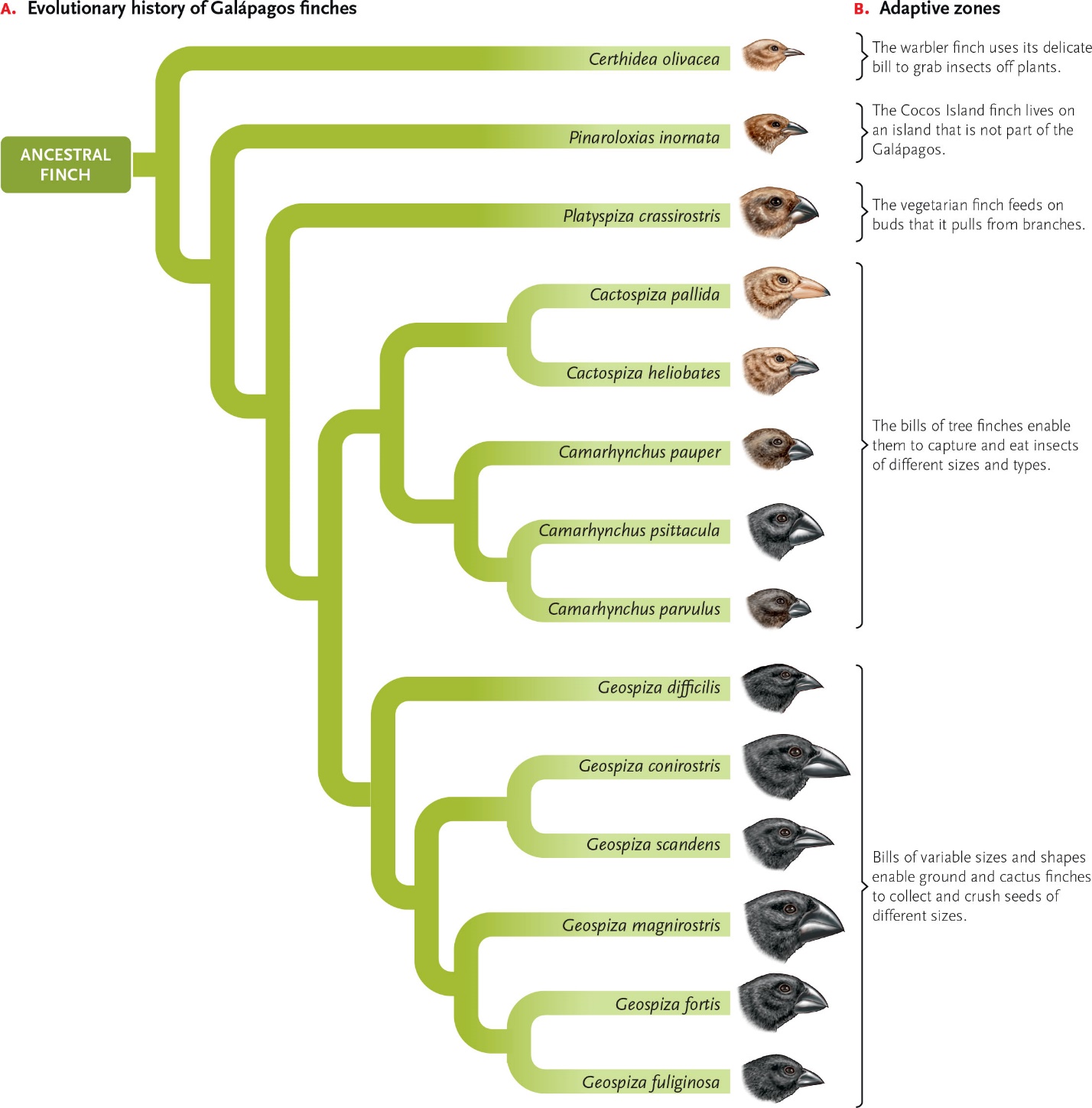




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