

GEOL 104 Dinosaurs: A Natural History  
Final Exam Review

Review previous exams

Other Organisms of the Mesozoic

Pterosauria: basic adaptations, especially for flight and for physiology

“Rhamphorhynchoidea” vs. Pterodactyloidea. Terrestrial locomotion; feeding

Mesozoic marine reptiles: why would an amniote return to the sea? What problems would they face; what sort of adaptations would they need?

Know the basic adaptations (especially feeding, locomotion, and reproduction) and be able to identify:

mesosaurs; ichthyosaurs; placodonts; plesiosaurs; mosasaurs; marine crocodiles; sea turtles; hesperornithines

Mesozoic mammals: Origins; diversity; major adaptations; major groups: monotremes, multituberculates, therians (eutherians (placentals and our ancestors) plus metatherians (marsupials plus their ancestors))

Mesozoic plants: Photosynthesis ( $6 \text{ CO}_2 + 6 \text{ H}_2\text{O} + \text{sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{ O}_2$ ). Basic adaptations. Difference between gymnosperm, and angiosperm reproduction. Angiosperm origins in Cretaceous: what are the co-evolutionary partners and function of flowers and fruit?

The K/Pg Extinction

Be familiar with the following groups and their fate relative to the K/Pg Extinction:

Marine life: Coccolithophorids; foraminiferans; ammonoids; belemnoids; rudists; inoceramids, the various marine reptiles

Terrestrial life: Plants, insects, amphibians, turtles, tuataras, lizards (incl. snakes), crocodylians (incl. various non-aquatic types), champsosaurs, pterosaurs, the various mammals

Definitions: Extinction                      Mass extinction    Maastrichtian                      Campanian  
“Tertiary”                      Paleogene                      K/Pg extinction

Hypotheses of extinction: What evidence exists for different causal agents of extinction?

How might each have caused the event?

What are some of the old models, and why they don't work

Good evidence for: Volcanism: esp. Deccan Traps (India)

Asteroid impact: Iridium layer at Gubbio, Italy; Shocked quartz, melt glass, tsunami deposits, ejecta deposits, etc.; Crater at Chicxulub (Yucatán)

Maastrichtian Regression

What is the environmental impact of each of those agents? The effects and timing of each? What does the magnetostratigraphic record say about the timing of Deccan Traps and the Chicxulub Impact?

Phases of destruction from the Chicxulub impact: Phase I Shockwave & Tsunami; Phase II “Easy-Bake Oven”; Phase III Impact Winter; Phase IV Greenhouse Summer

Changes in dinosaur populations (especially in western North America) before and at K/Pg boundary

Pattern of fates at K/Pg in marine and continental environments

Vulnerability of dinosaurs due to ontogenetic niche shifts

Recovery from the K/Pg extinctions