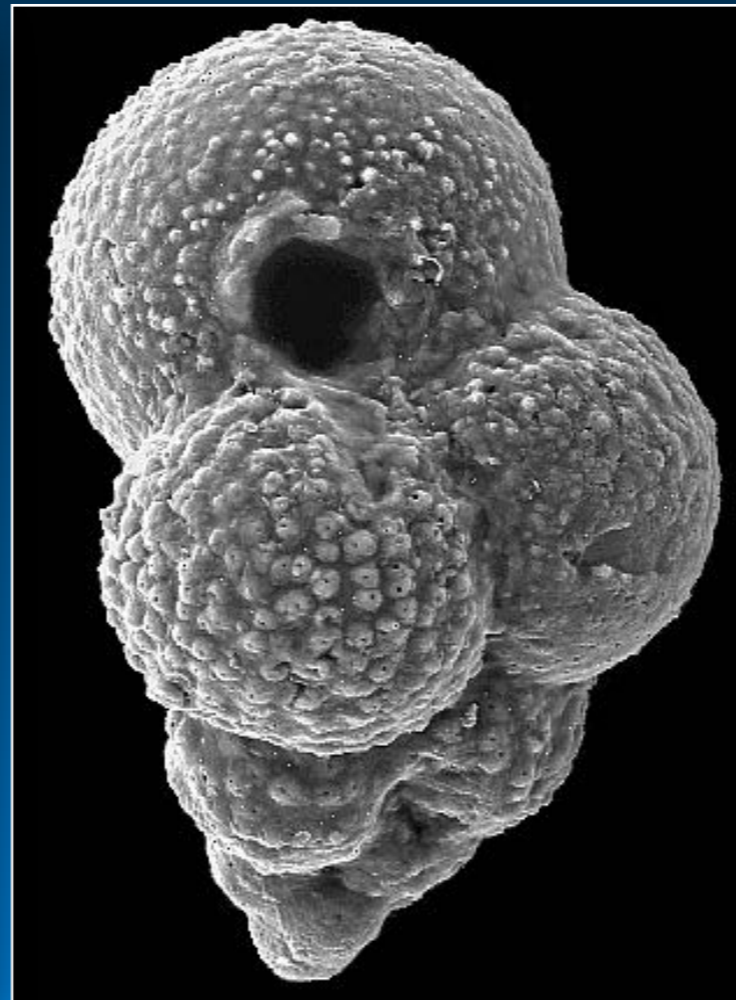
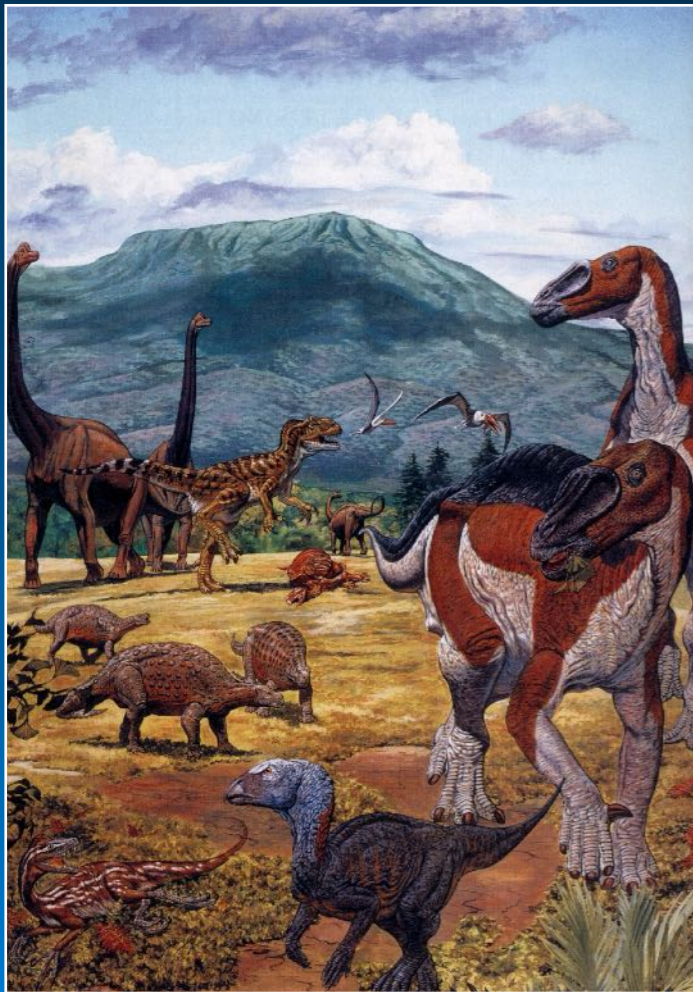


NJU Course

Principles of Paleobiology

Prof. Norman MacLeod

School of Earth Sciences & Engineering, Nanjing University



Principles of Paleobiology

Paleontology

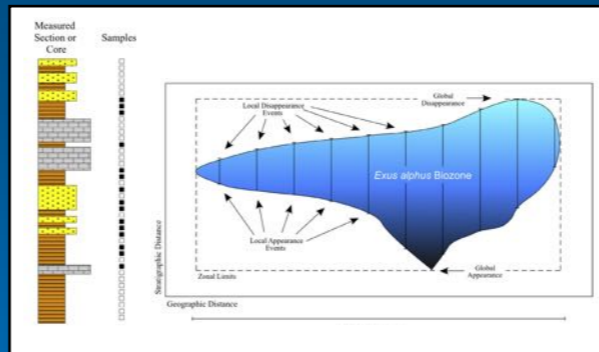
The scientific study of fossils including their classification, interaction with ancient environments and use in solving geological problems.

Systematics & Taxonomy



The classification of fossils that reflects relations between groups based on their attributes.

Biostratigraphy



The study of the distribution of fossil taxa within sequences of stratified sediments.

Paleoecology



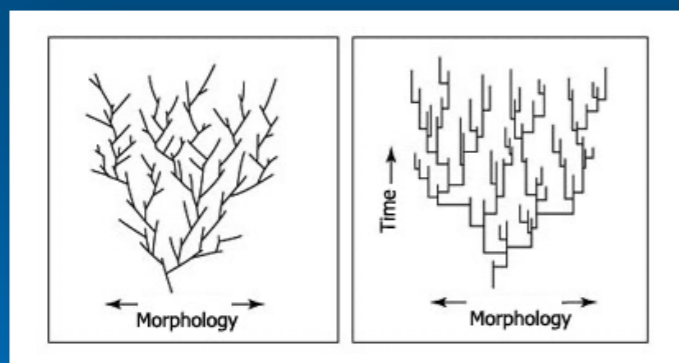
The study of relations between fossil taxa and the environment(s) in which they occur.

Principles of Paleobiology

Paleobiology

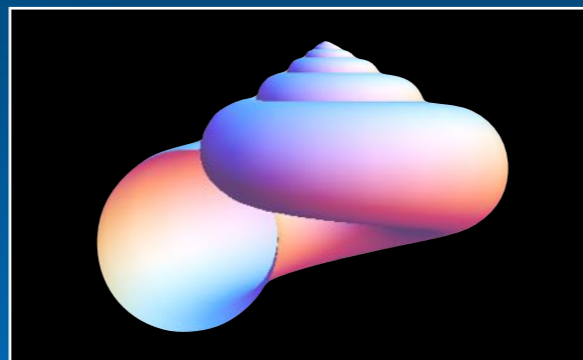
The interdisciplinary study of fossils that combines the methods and findings of the earth and life sciences in the effort to understand and solve outstanding biological problems.

Evolutionary Rates & Trends



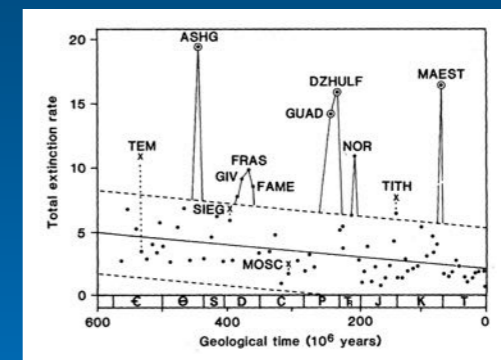
The study of patterns and rates of morphological change in fossil species through deep time.

Quantitative Analysis & Modelling



Application of quantitative data analytic and statistical forms of hypothesis testing.

Patterns of Diversification & Extinction



The study of the structure and causes of the biological diversity through deep time.

Principles of Paleobiology

Course Syllabus

Section	Week	Title
Introduction	1	Course & Topic Introduction
		Nature of the Fossil Record
Morphology	2	Description and Analysis of Morphology
Taxonomy	3	Species - Definitions & Concepts
Taxonomy	4	Classification, Taxonomy & Systematics
Phylogeny	5	Phylogenetic Inference - Cladistics & Phylogeny
Stratigraphy	6	Stratigraphy - Zonation & Correlation
Stratigraphy	7	Stratigraphy - Inference of Strat. Sequences
Diversification	8	Taxon Richness & Abundance
Assessment	9	Mid-Term Examination
Diversification	10	Morphological Disparity
Origination	11	Patterns & Modes of Origination
Extinctions	12	Patterns & Modes of Extinction
Rates	13	Tempo & Mode of Macroevolution
Distribution	14	Paleoecology
Distribution	15	Paleobiogeography
New Initiatives	16	Astrobiology & Conservation Paleobiology
Assessment	17	Final Examination

Principles of Paleobiology

Course Objectives

- Understand the scope of contemporary paleobiological research.
- Gain a working familiarity with the basic methods, skills and techniques used in paleobiological research.
- Understand the advantages — and the power — of integrating traditional paleontological and paleobiological research approaches.
- Appreciate the historical development of paleontology and its relation to other earth-science and life-science disciplines.
- Understand how science in general, and paleontology in particular, can contribute to understanding and addressing contemporary economic, societal and social concerns.
- Instill an understanding of, and an appreciation for, the scientific hypothetico-deductive method as an efficient and reliable way of gaining knowledge about the world and fostering human progress.



Principles of Paleobiology

Course Parts

- Lectures (given by the course instructor).
- Videos providing explanatory animations of organismal life styles, planetary states and extinction processes.
- Examinations (mid-term & final).
- Term paper on a paleobiological topic of your choice (written in English after the topic has been approved by course instructor).



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Course Evaluations

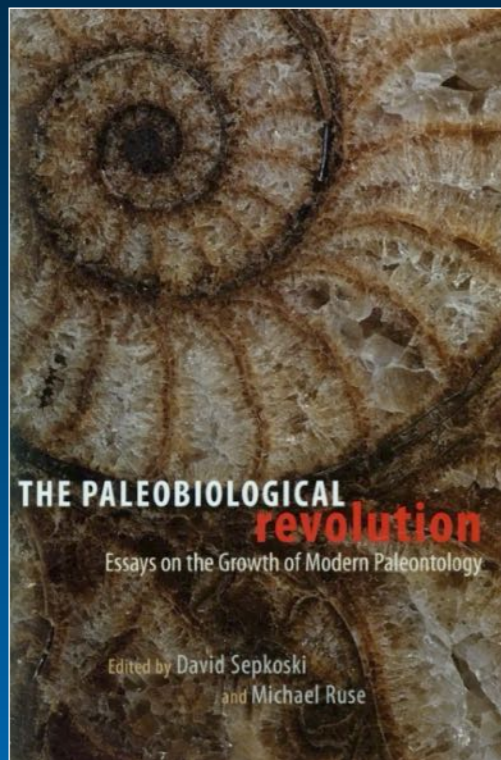
- Mid-Term Examination - c. 100 T/F & multiple-choice questions (30%)
- Final-Term Examination - c. 100 T/F & multiple-choice questions (30%)
- Term Paper - c. 10 double-spaced pages, graded for content & originality (not grammar, spelling, format) (30%)
- Class Participation - answering & asking questions, discussion (10%)



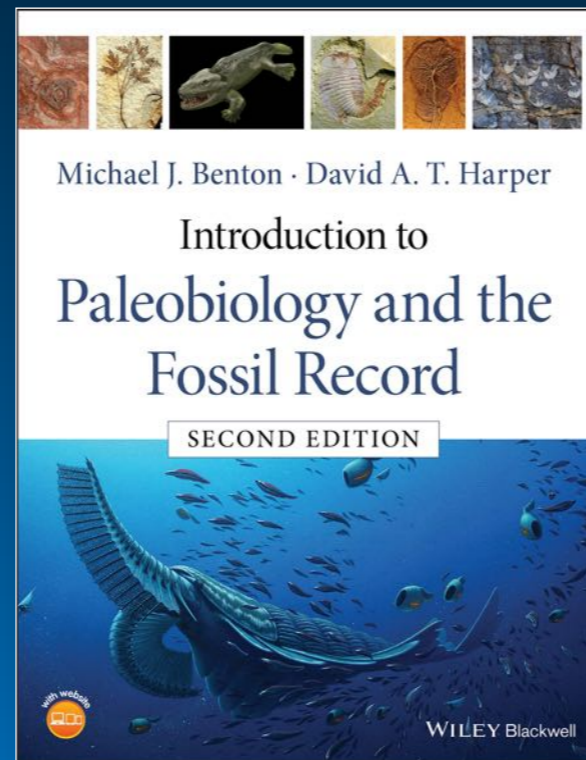
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Course Reference Books

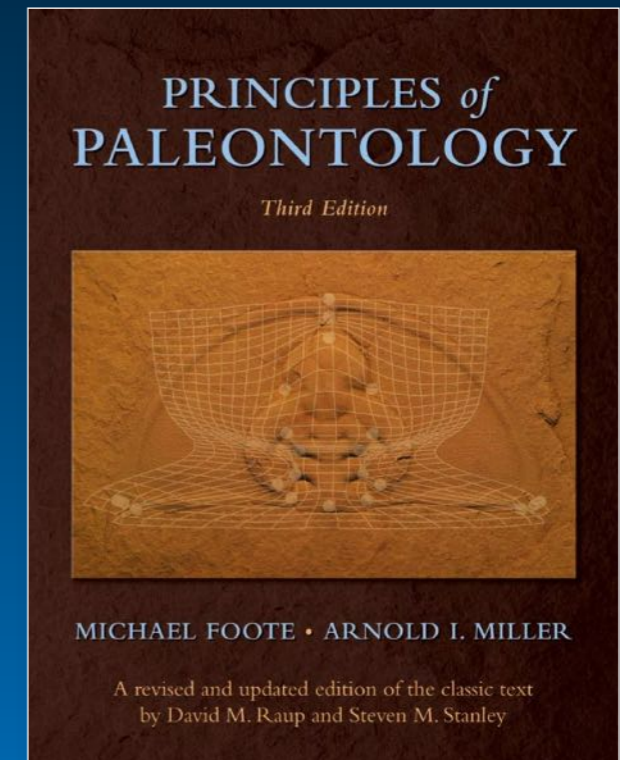
Primary



Sepkoski, D and Ruse, M.
2020, The paleobiological
revolution: Chicago,
Illinois, Chicago University
Press, 568 p.



Benton, M.J. and Harper, D.A.T.
2020, Introduction to paleobiology
and the fossil record: Chichester,
West Sussex, UK ; Hoboken, New
Jersey, Wiley Blackwell, 642 p.

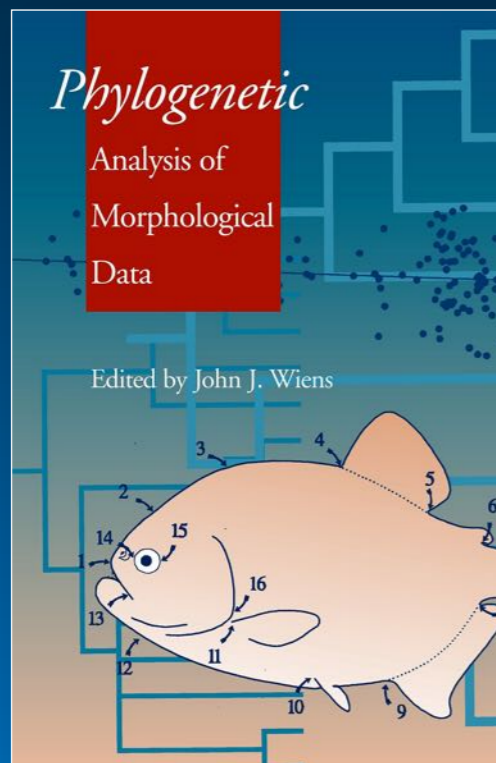


Foote, M. and Miller, A.I.
2007, Principles of
paleontology: New York, W.
H. Freeman and Company,
354 p.

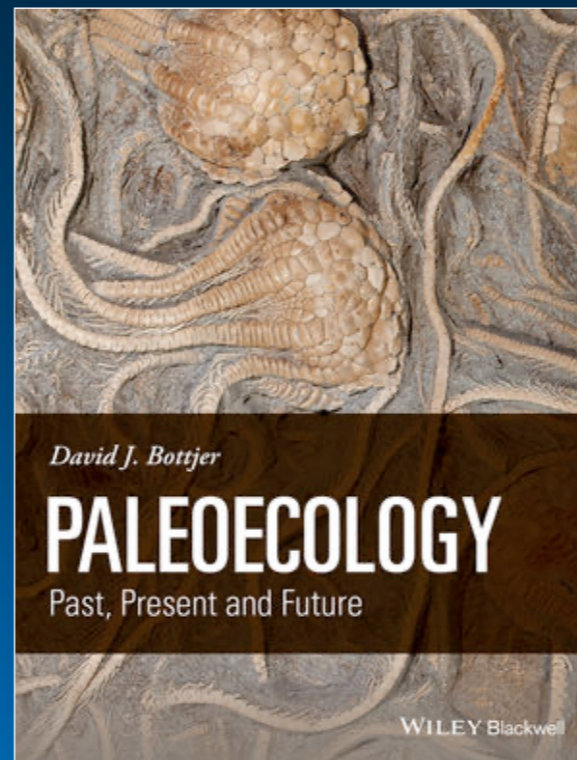
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Course Reference Books

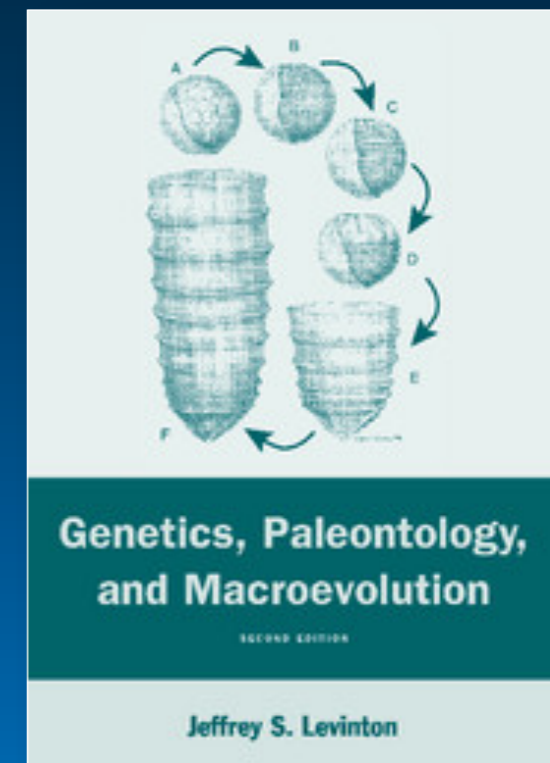
Secondary



Wiens, J. J. 2000,
Phylogenetic analysis of
morphological data:
Washington, D.C.,
Smithsonian Books, 272 p.



Bottjer, D. J.. 2016,
Paleoecology: past, present
and future: Chichester, West
Sussex, UK ; Hoboken, New
Jersey, Wiley Blackwell, 232 p.



Levinton, J. S. 2001,
Genetics, paleontology and
macroevolution: Cambridge,
Cambridge University Press,
634 p.

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Course Personnel



Prof. Norman MacLeod
Instructor

Faculty Member, School of Earth
Sciences and Engineering

nmacleod@nju.edu.cn



Ms Shuyi (Ariana) Xu
Facilitator

Secretary & Personal Assistant to Prof.
MacLeod


ariana.xu@nju.edu.cn

Principles of Paleobiology

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江苏南京 210023 中国

● Course Websites

- NJU Website: <https://teaching.applysquare.com/>
- N. MacLeod Courses Site: <https://macleod01.online>

Principles of Paleobiology

MacLeod NJU Courses Site

Data Analysis & Statistics

Extinctions

Paleobiology

About me



Prof. Norman MacLeod's NJU Courses

<https://paleo-bio.com/>

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MacLeod NJU Courses Site

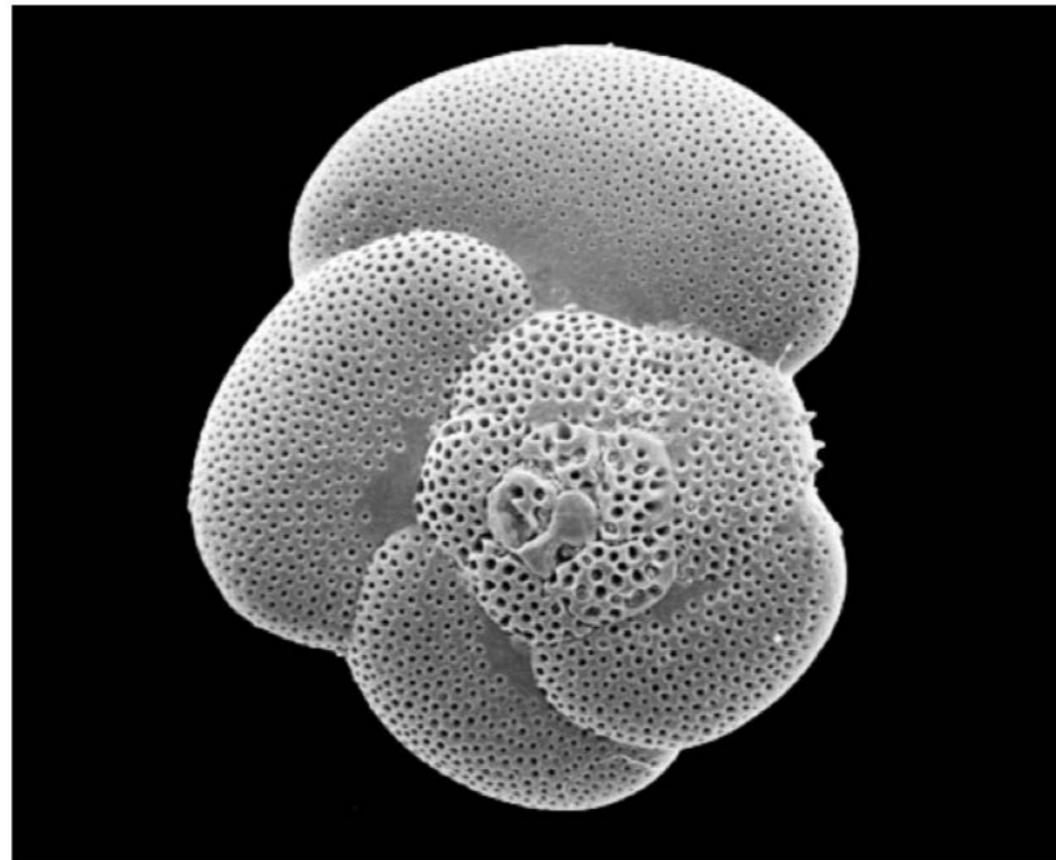
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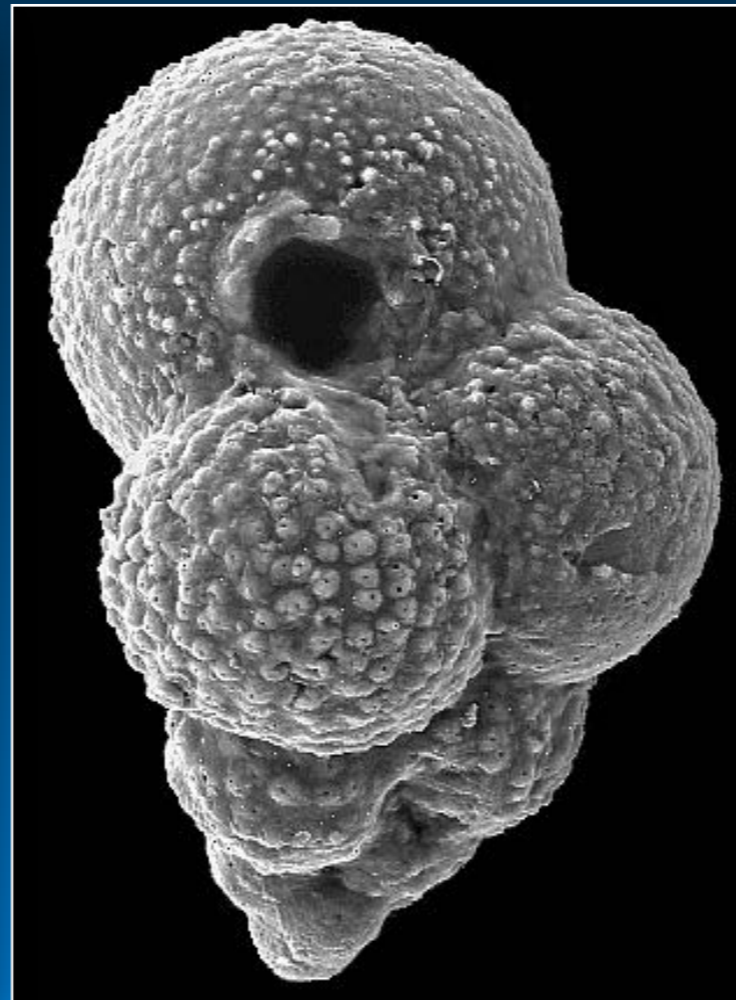
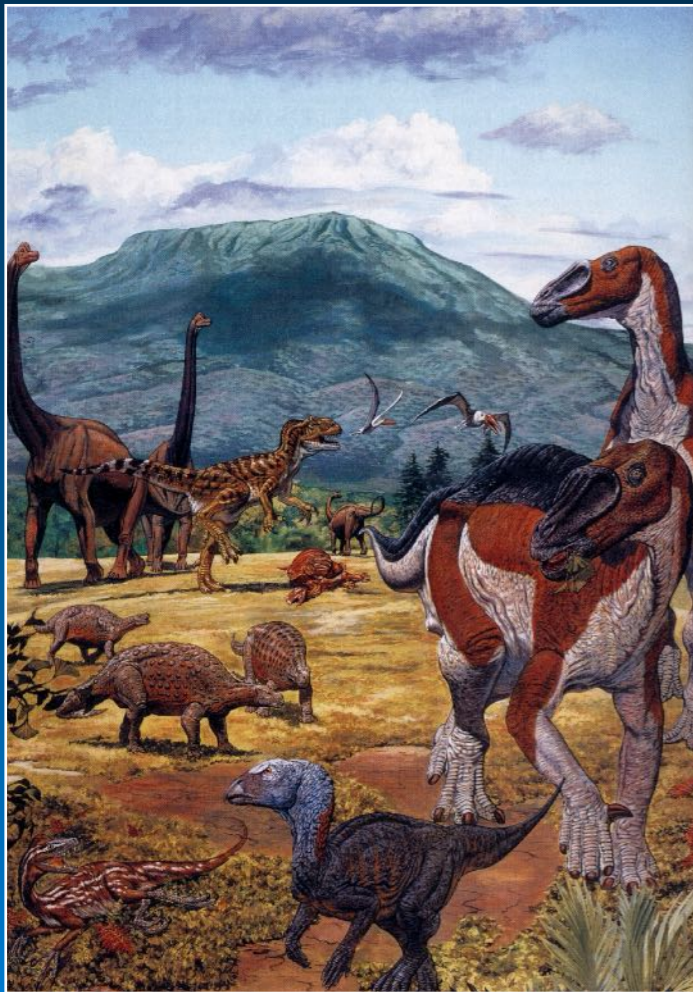
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