

Evolution of Life Through Time

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THE TREE OF LIFE

Most of these life forms are extinct → fossils

FOSSIL [2nd year]

What is a fossil?

Type of preservation

Scale – organic, unicellular

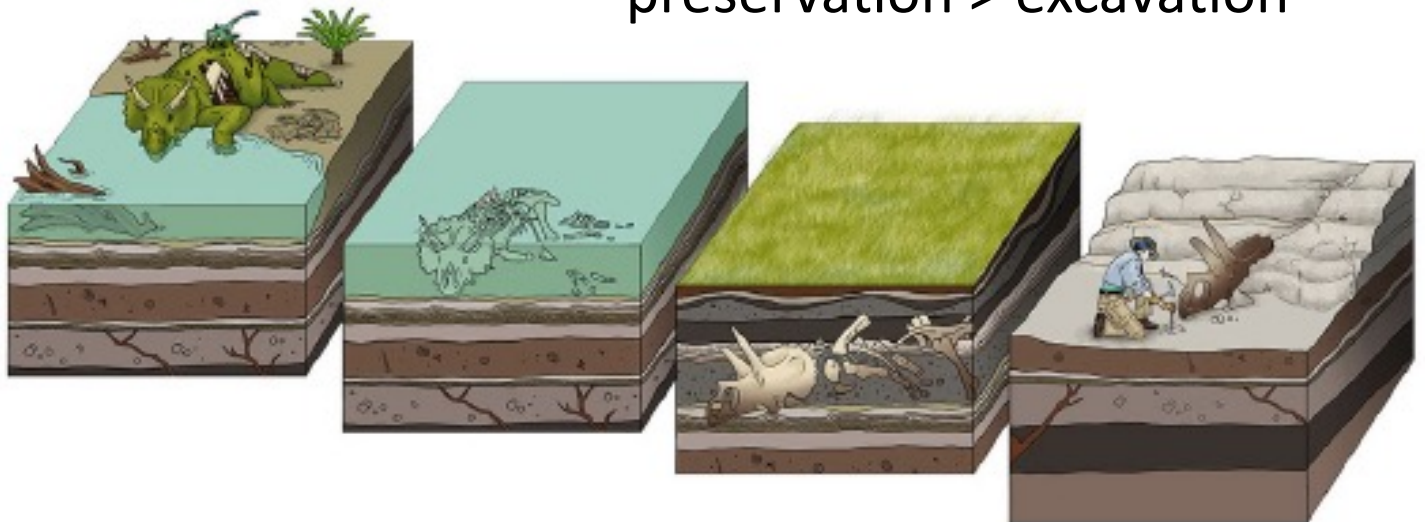
Naturally preserved? Mummies?

Types:

Trace

Body

Death -> burial ->
preservation > excavation



BODY FOSSILS



Cast



TRACE FOSSILS



■ *Thalassinoides* (U. Triassic, Italy)

FOSSIL RECORD

Isua Metasedimentary rocks, Greenland

Eon	Era	Period	
Phanerozoic	Cenozoic	Quaternary	← Today ← 11.8 Ka
		Neogene	
		Paleogene	
	Mesozoic	Cretaceous	← 66 Ma
		Jurassic	
		Triassic	
	Paleozoic	Permian	← 252 Ma
		Carboniferous	
		Pennsylvanian	
		Mississippian	
		Devonian	
		Silurian	
		Ordovician	
		Cambrian	← 541 Ma
Proterozoic	~	~	← 2.5 Ga
Archean	~	~	← 4.0 Ga ← Isua
Hadean	~	~	← 4.54 Ga

- 3.7 Ga
- The original clastic marine sediments had ^{13}C -depleted C at the time of deposition
- “Transmission electron microscope observations show that graphite in the schist occurs as nanoscale polygonal and tube-like grains, in contrast to abiotic graphite in carbonate veins that exhibits a flaky morphology.”

Apex Chert Fossils, Australia

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- 3.5 Ga
- bacteria fossils 10–20 micrometers long
- filaments
- Questionable, as may be abiotic in origin

Apex Chert fossils
Isua

R. William Schopf

STROMATOLITES

Eon	Era	Period	
Phanerozoic	Cenozoic	Quaternary	← Today ← 11.8 Ka
		Neogene	
		Paleogene	
	Mesozoic	Cretaceous	← 66 Ma
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- Trace fossil
- 3.5 Ga to 550 Ma
- indicates photosynthesis

Apex Chert fossils
Isua