

Introduction to Biology. Lecture 24

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Outline

- 1 Where we are?
- 2 Everybody is going terrestrial
 - Ordovician, Silurian and Devonian: three ages of fishes
 - Plants are going terrestrial

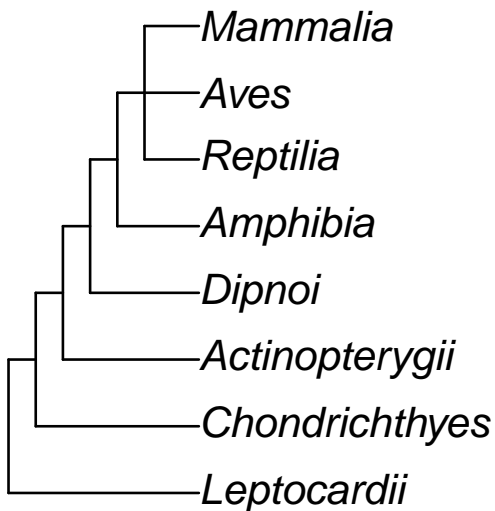


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Phylogeny of eight classes



Timescale of Phanerozoic eon, Paleozoic era

- Phanerozoic eon
 - Paleozoic era
 - Cambrian period: 541 Mya
 - Ordovician period: 485 Mya
 - Silurian period: 443 Mya
 - Devonian period: 419 Mya
 - Carboniferous period: 358 Mya
 - Permian period: 299–252 Mya



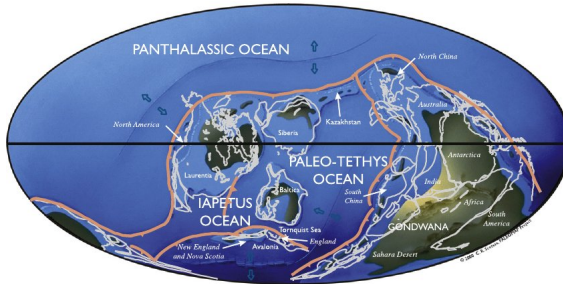
Everybody is going terrestrial

Ordovician, Silurian and
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Ordovician period

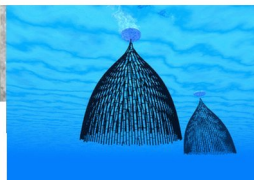
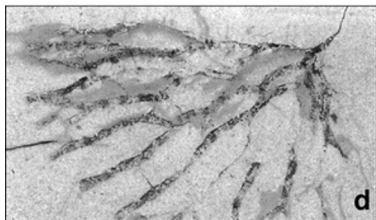
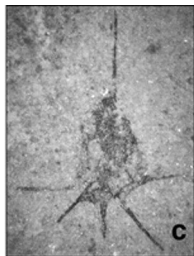
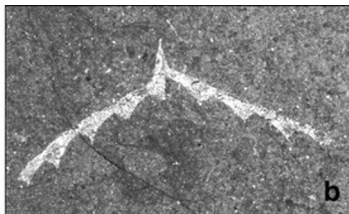
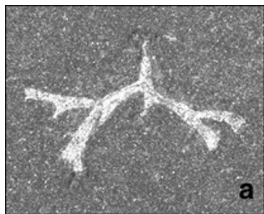
458 Ma Ordovician



- Climate changed from hot to glaciated (Gondwana hits the South Pole)
- Marine fauna spread out, especially cephalopods, conodonts and graptolites
- In the end, the first great extinction: 85% of marine species extinct



Graptolites

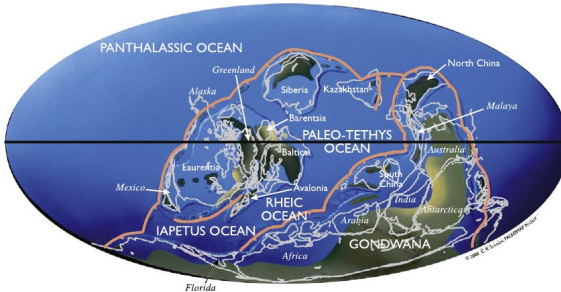


They were plankton colonial animals close to echinoderms and chordates



Silurian period

425 Ma Silurian



- Fluctuating climate
- Prospering of marine fauna again
- Land colonization started from plants and arthropods!
- South Pole still in the Gondwana

Where we are?

Everybody is going terrestrial

Ordovician, Silurian and Devonian: three ages of fishes

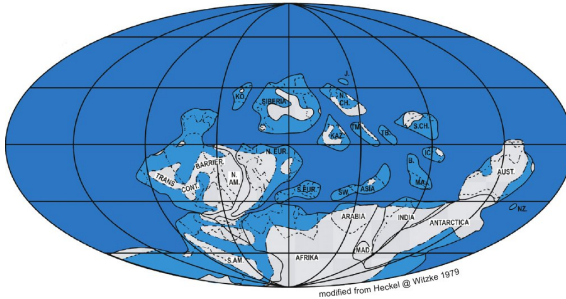
Plants are going terrestrial

Silurian sea



Devonian period

Middle Devonian



- Moderate climate becoming warmer
- Exceptionally high sea level
- Greatest diversity of marine fauna in Paleozoic (especially fishes)
- Terrestrial vertebrates: tetrapods appeared!



Everybody is going terrestrial

Plants are going terrestrial



Protists, algae and plants

- Photosynthetic protists are algae
- Plants are descendants of green algae, they developed tissues in the process of land colonization



Primordial plant cell: cell wall, chloroplasts and turgor



Origin of tissues and organs of plants: first steps



Terms associated with origin of plants

- Thallus
- Epidermis
- Cuticle
- Transpiration
- Stomata
- Compound tissues
- Ground tissue
- Supportive tissues
- Shoot system
- Absorption tissue
- Mycorrhiza
- Root system



Summary

- Plants are photosynthetic multi-tissued eukaryotes
- Plants developed tissues independently from animals, in the process of land colonization



For Further Reading



Plant cell.

http://en.wikipedia.org/wiki/Plant_cell



Plant tissues.

[http://en.wikipedia.org/wiki/Tissue_
%28biology%29#Plant_tissues](http://en.wikipedia.org/wiki/Tissue_%28biology%29#Plant_tissues)

