

ST.0203 Paläontologie
ST.0218 Paläontologie Praktikum

9. Plantae + Vertebrata

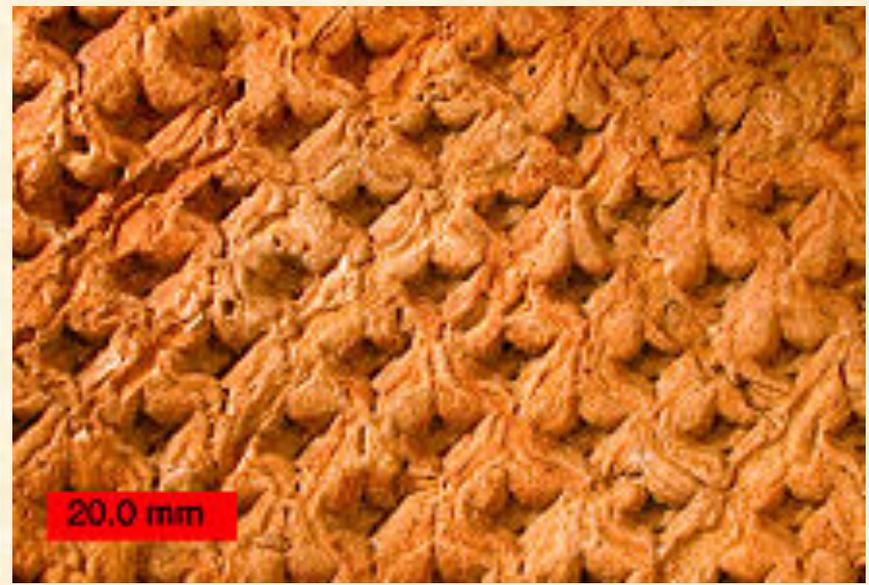
Plantae: Bryophyta (Moose)



Plantae: Lycophyta (Bärlappgewächse)



Fossile Gruppen



Plantae: Monilophyta



Farne



Schachtelhalme



Plantae: Gymnospermae



Ginkgo



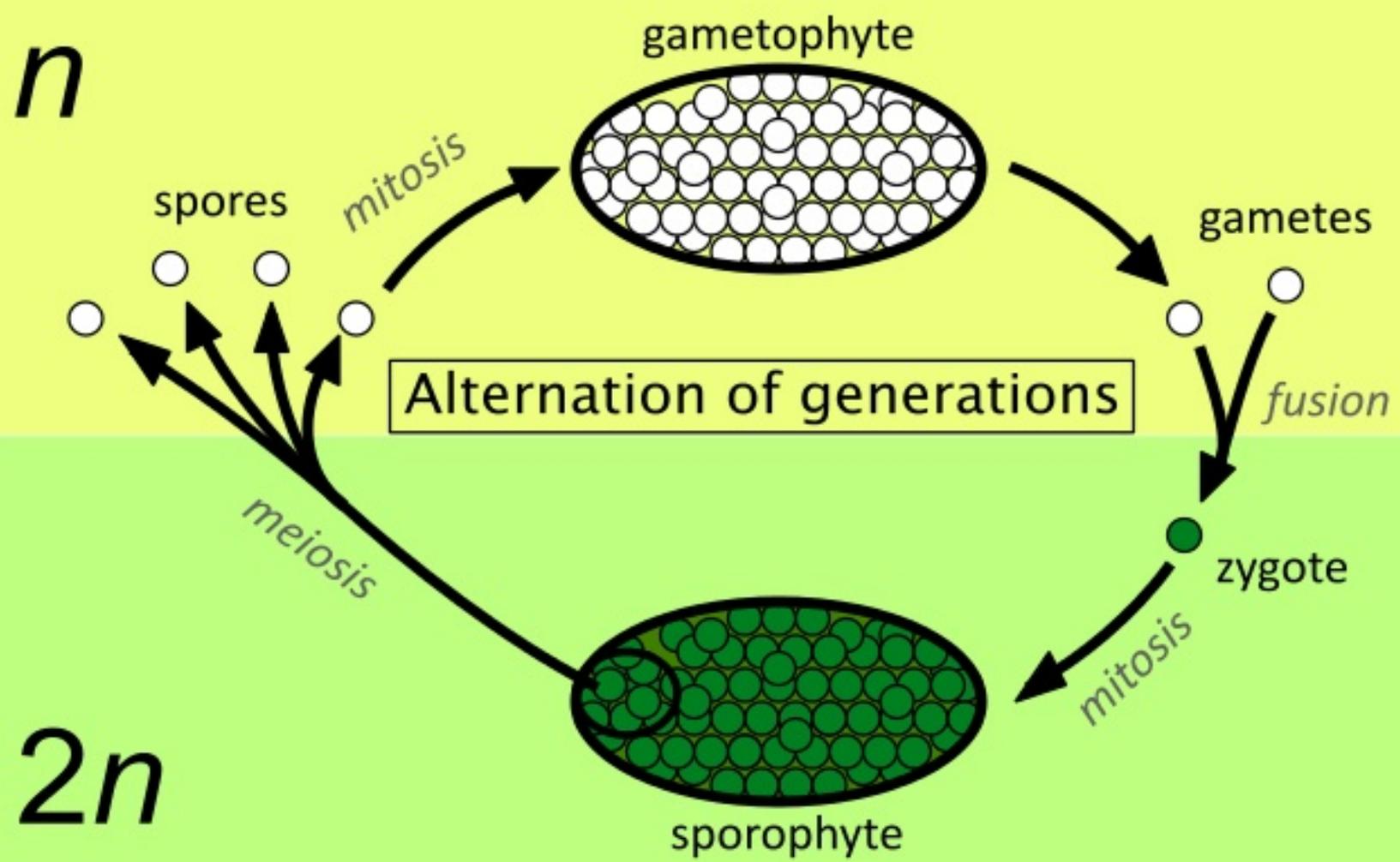
Coniferales



Plantae: Angiospermae

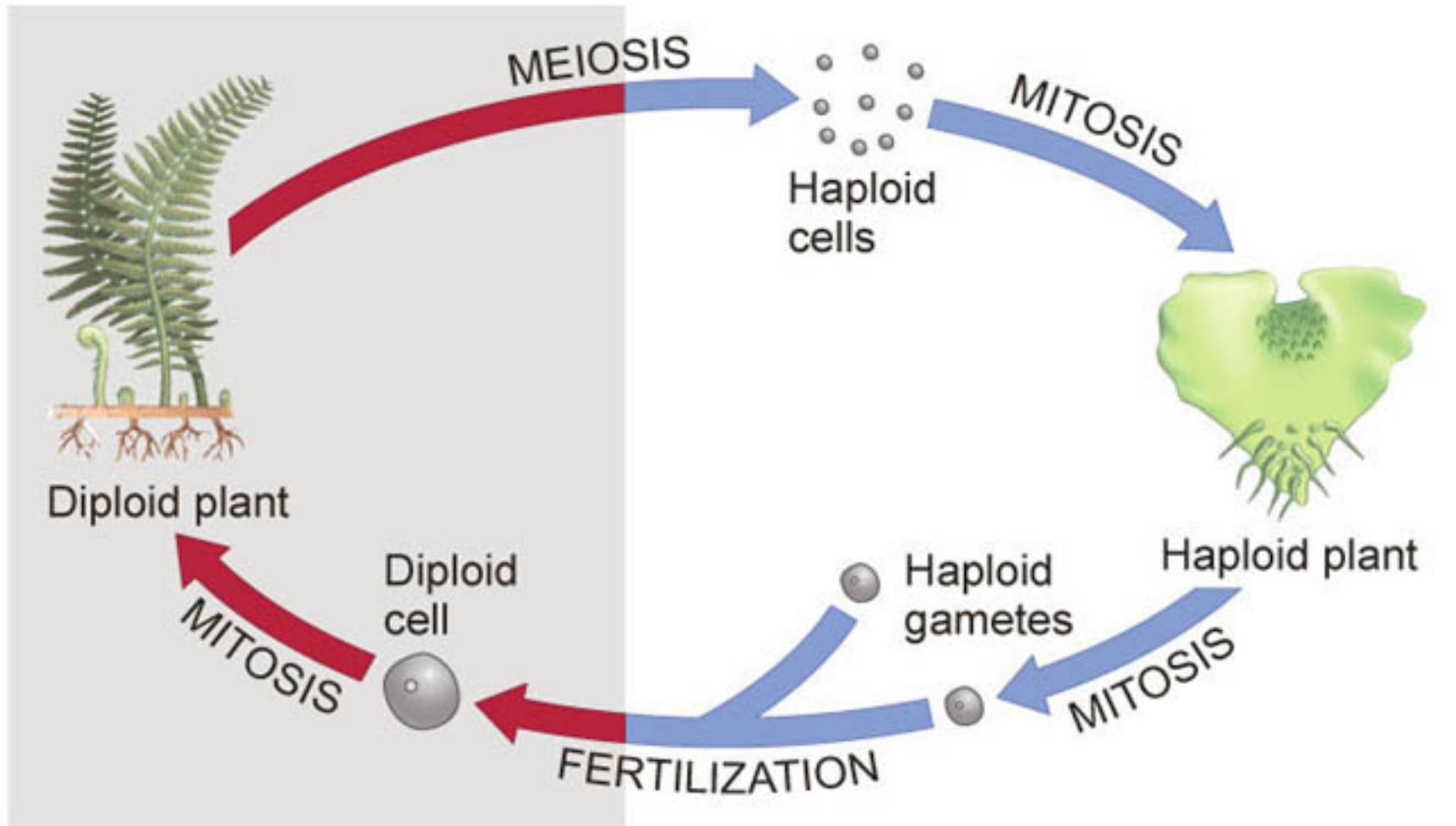


Plantae: Generationswechsel



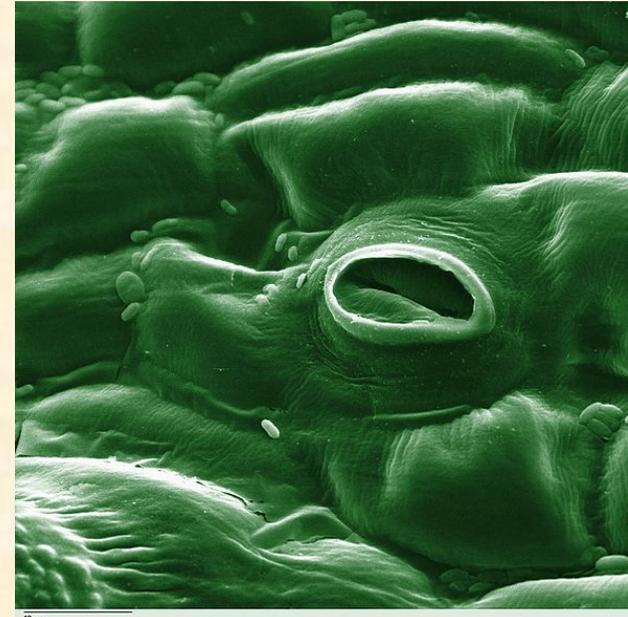
Plantae: Generationswechsel

(c) Alternation of generations

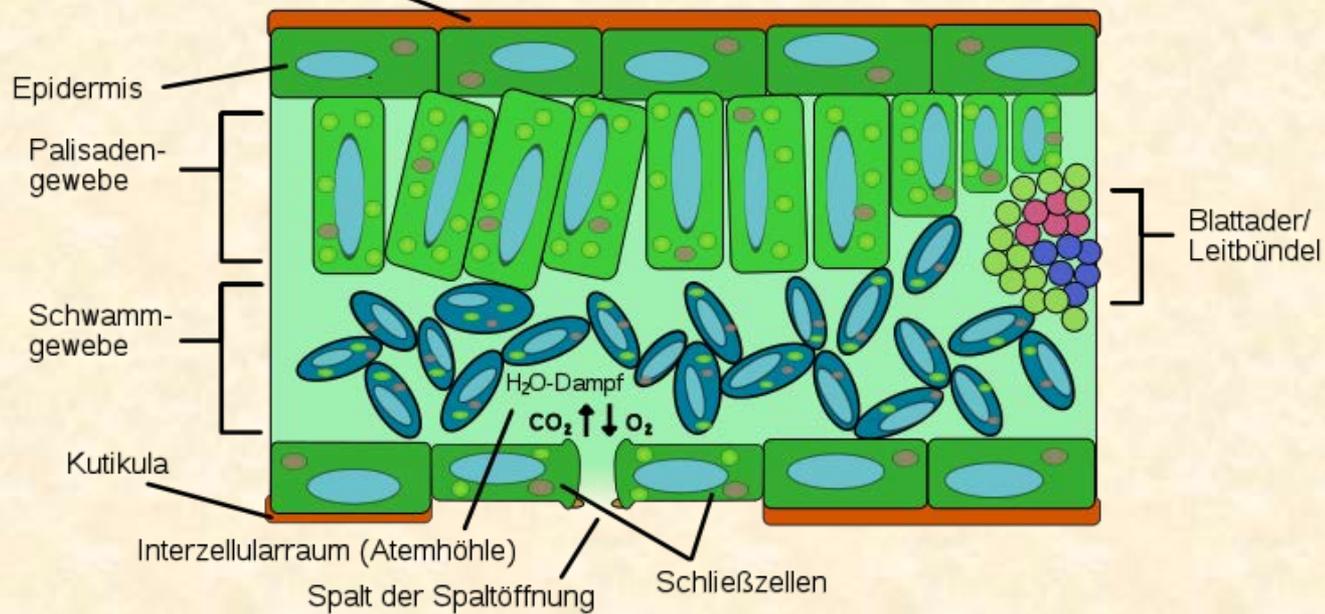


Plantae: Anatomie von Blättern

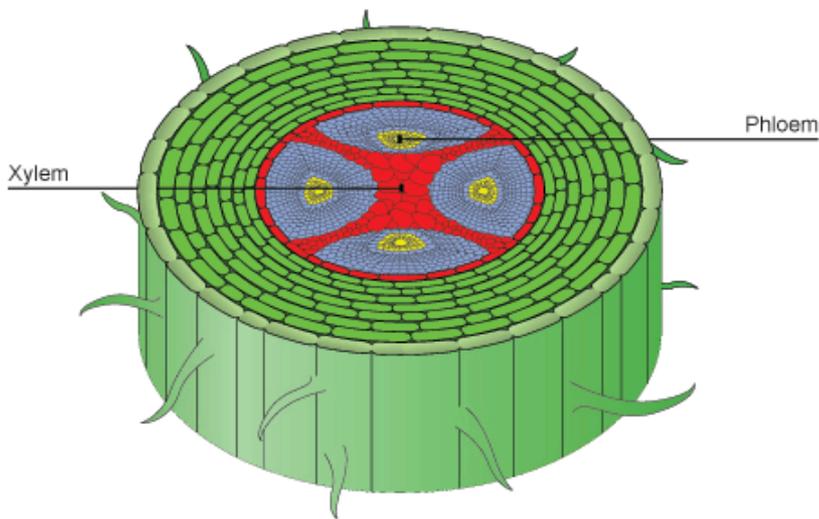
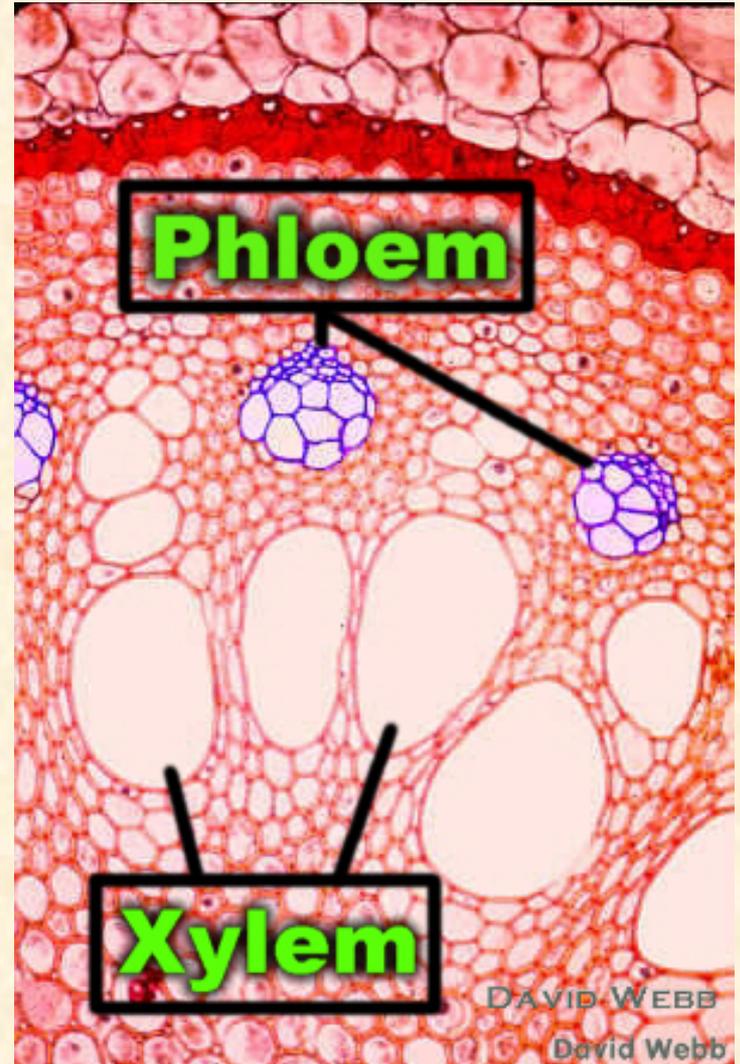
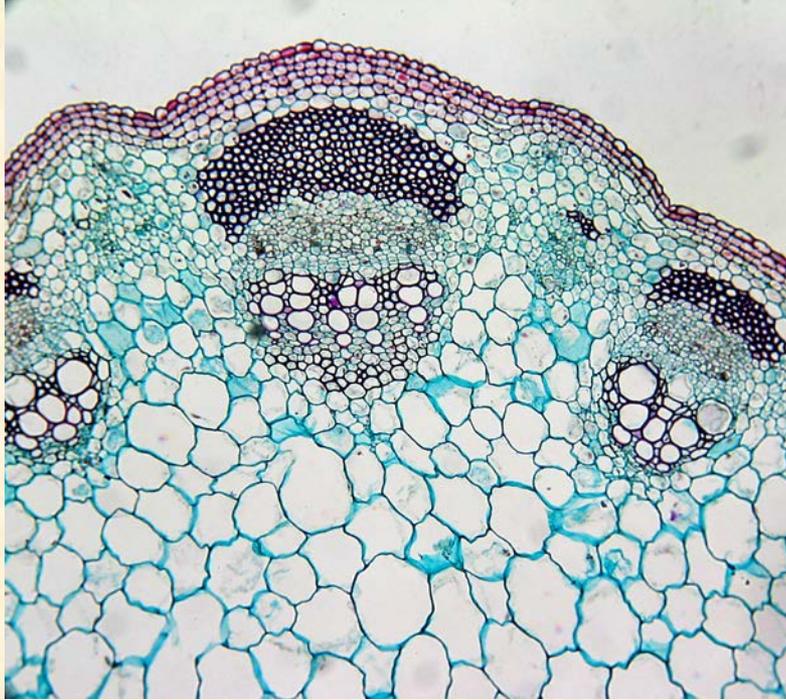
Stoma



Kutikula (dicke oder dünne Wachsschicht, Verdunstungsschutz)

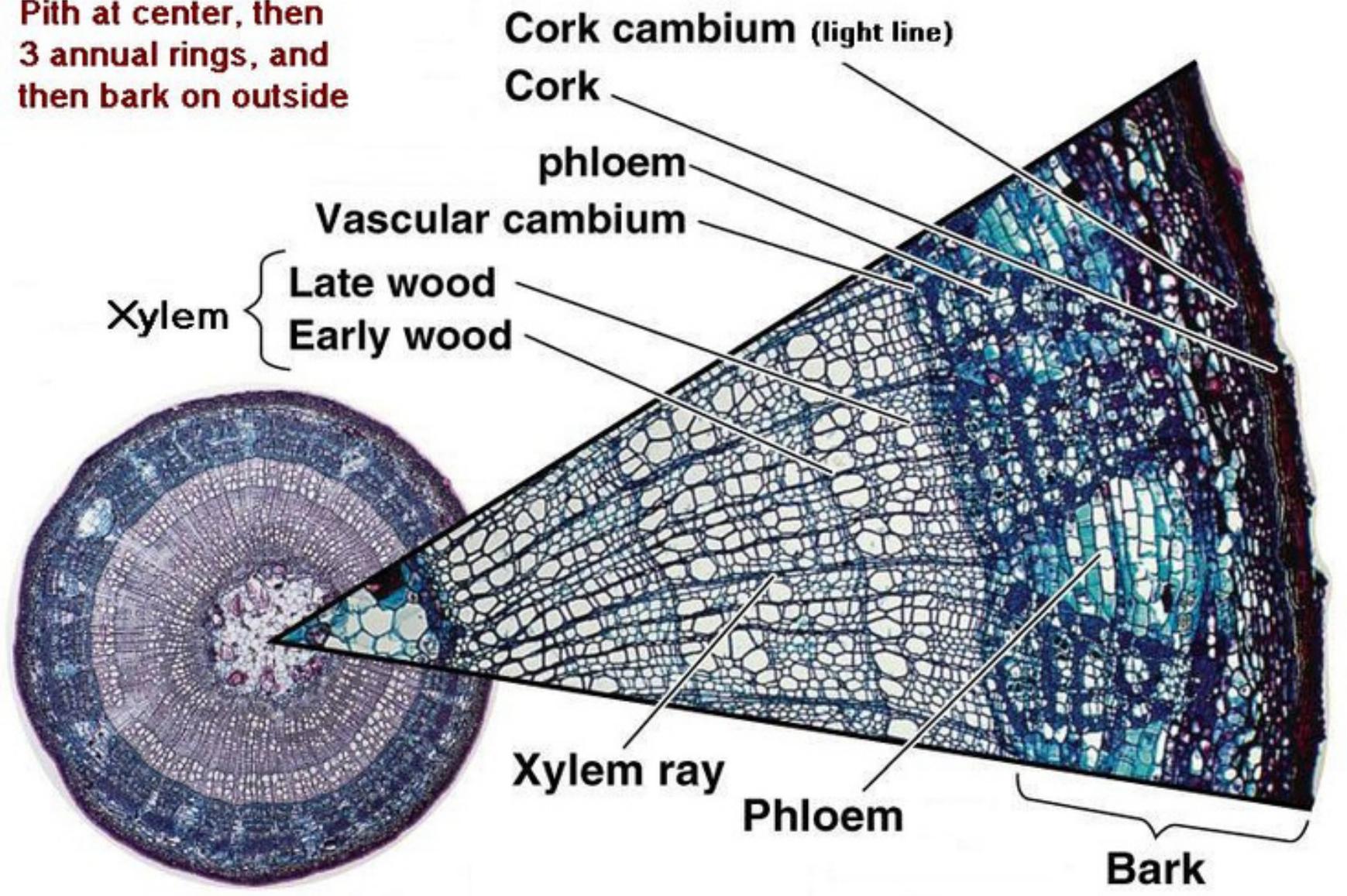


Plantae: Leitbündel

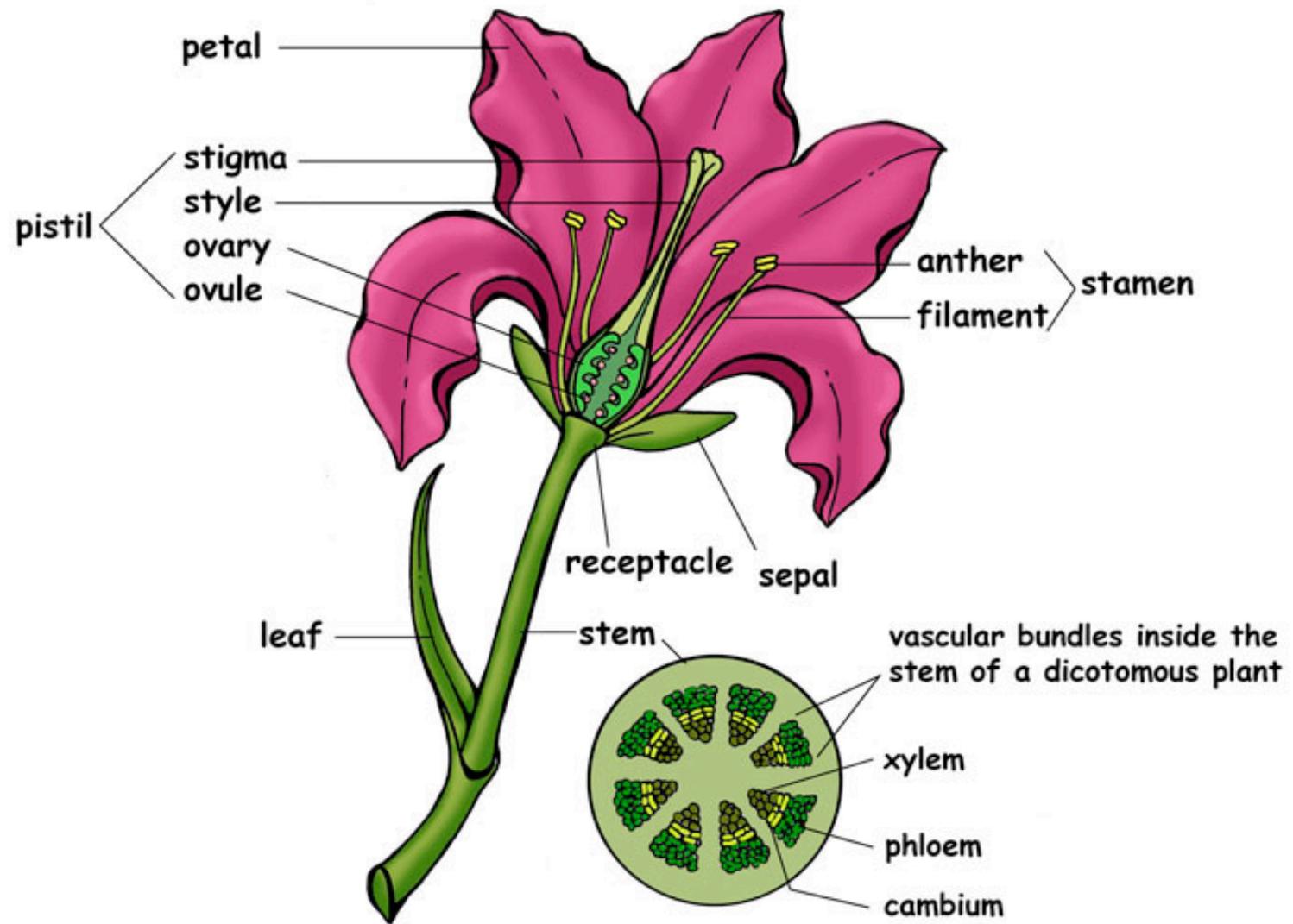


Plantae: Holz

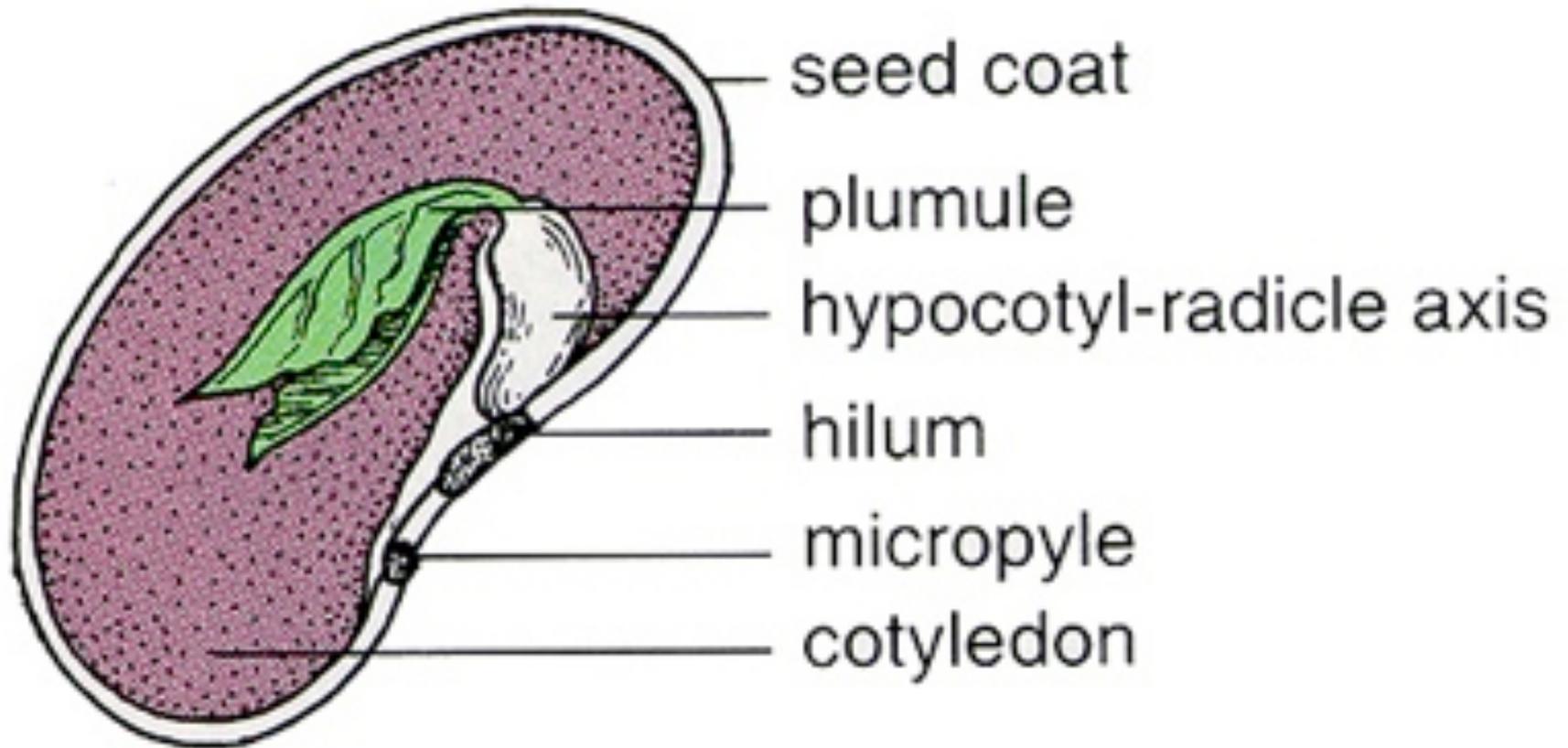
**Pith at center, then
3 annual rings, and
then bark on outside**



The Parts of the Flower



Plantae: Samen



Plantae: Erhaltung/Gesteinsbildung



Torf



Braunkohle



Steinkohle



Anthrazit

Plantae: Erhaltung/Parataxonomie



Wurzel



Stamm



Blatt



Frucht

Plantae: Erhaltung/Frassspuren



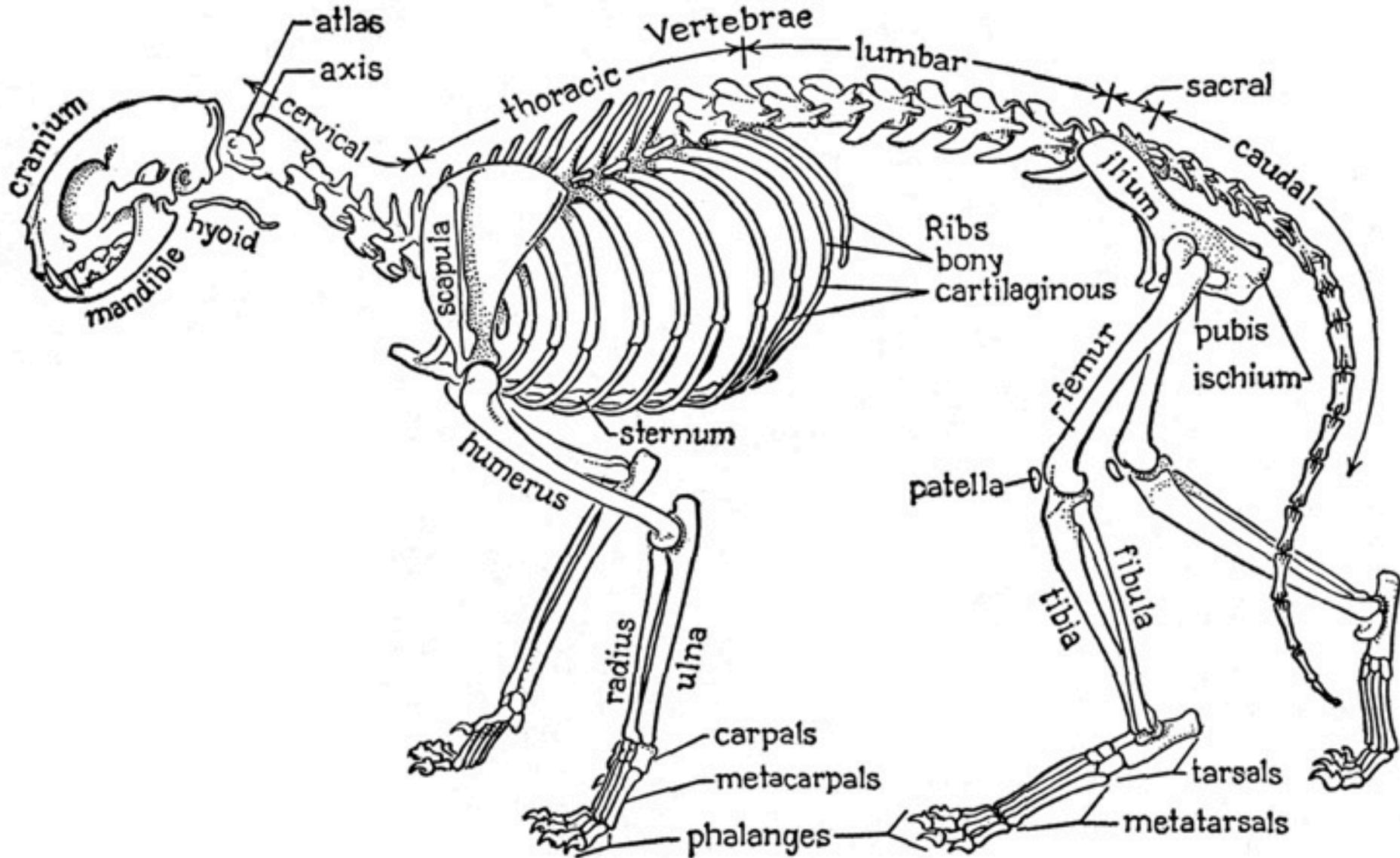
Plantae: Erhaltung/Bernstein



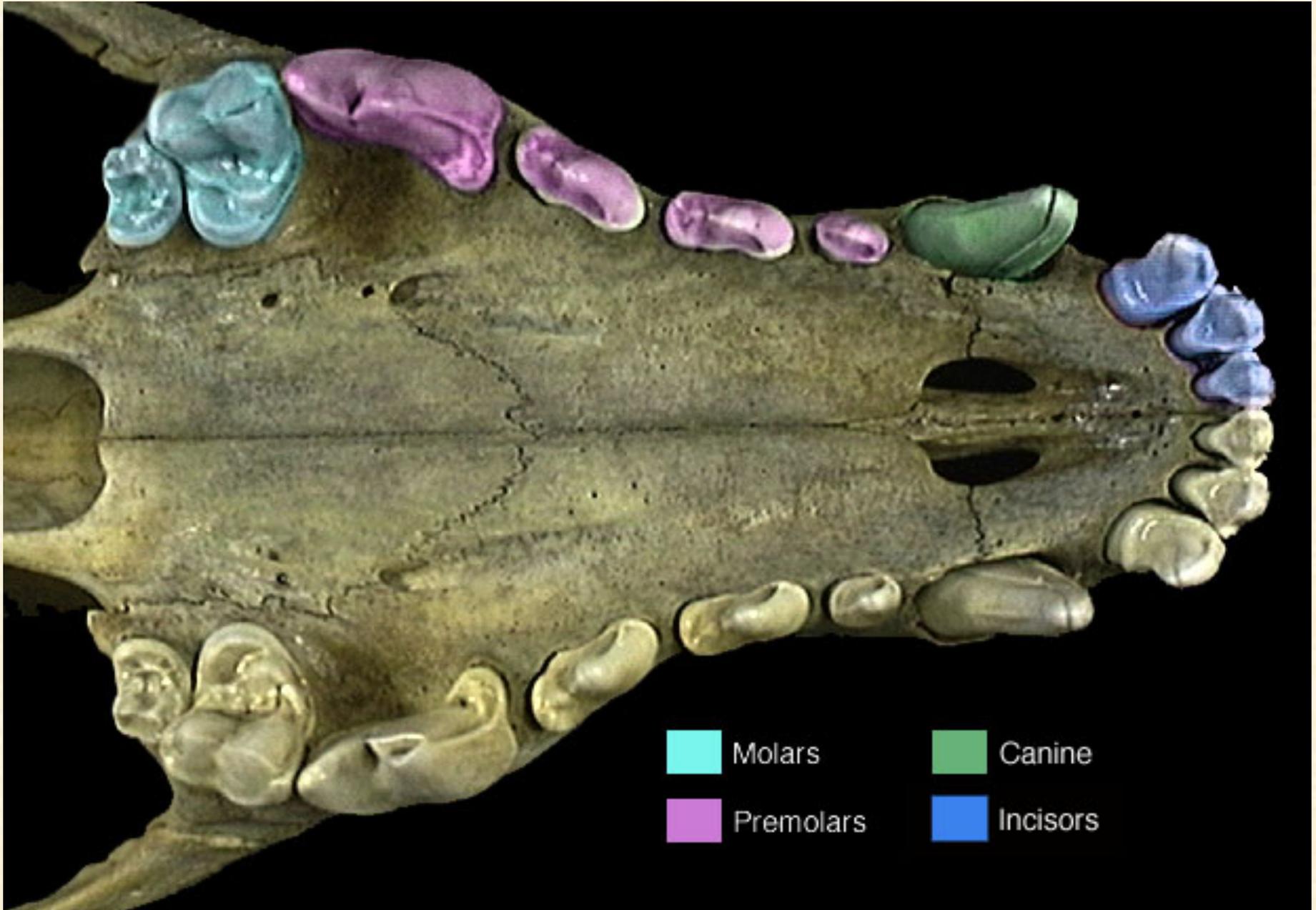
Vertebrata: moderne Diversität



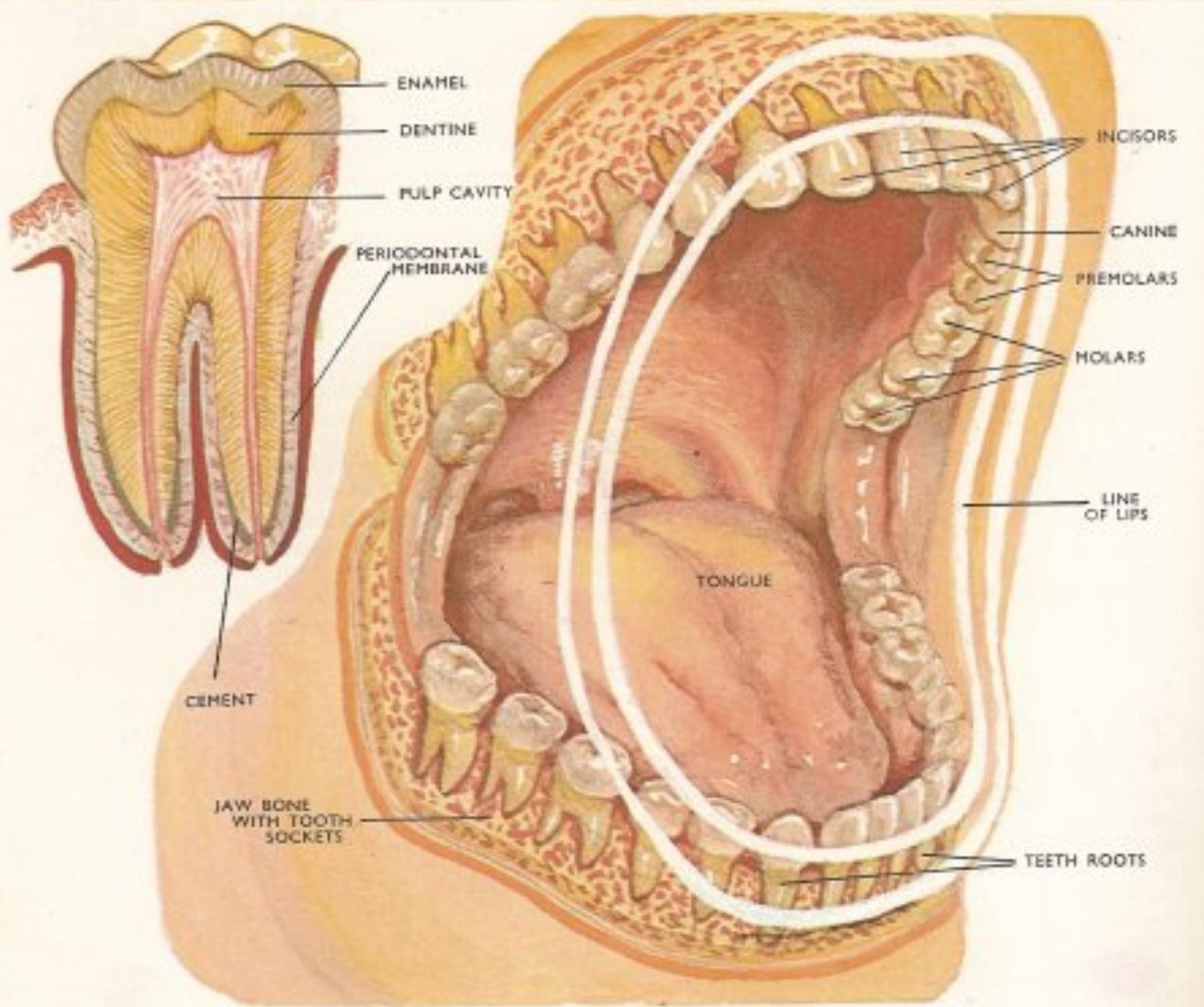
Vertebrata: das Skelett



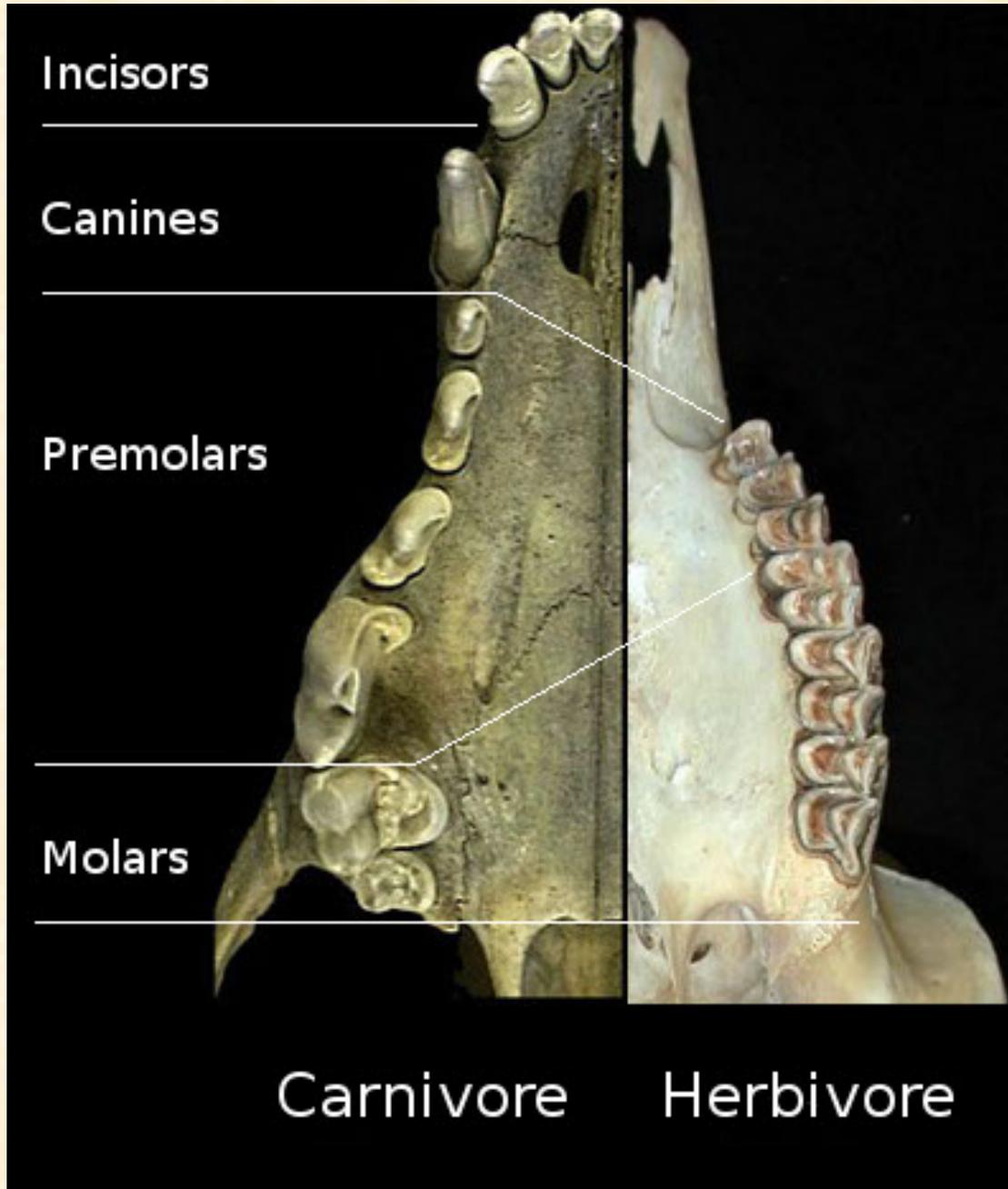
Vertebrata: das Gebiss bei Säugetieren



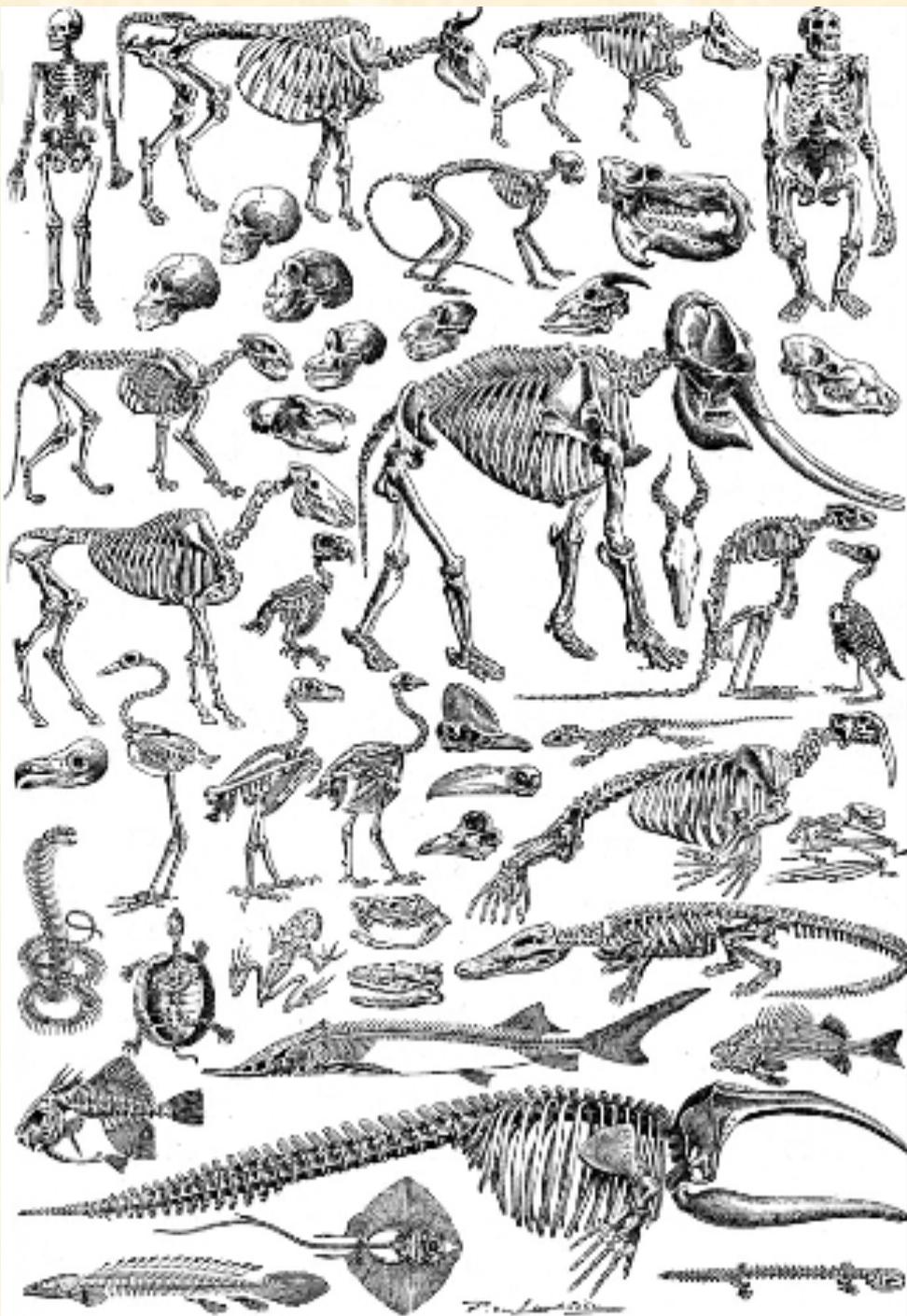
Vertebrata: das Gebiss bei Säugetieren



Vertebrata: das Gebiss bei Säugetieren



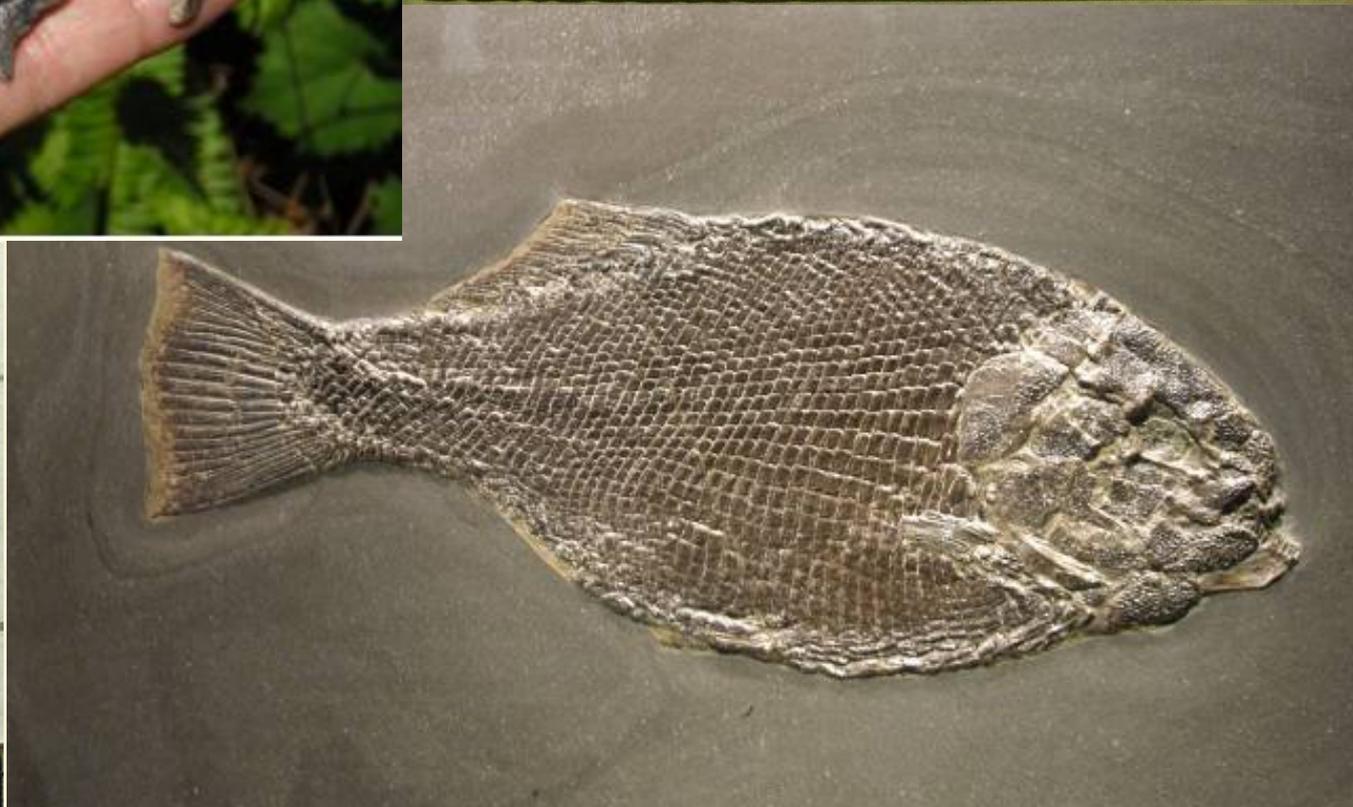
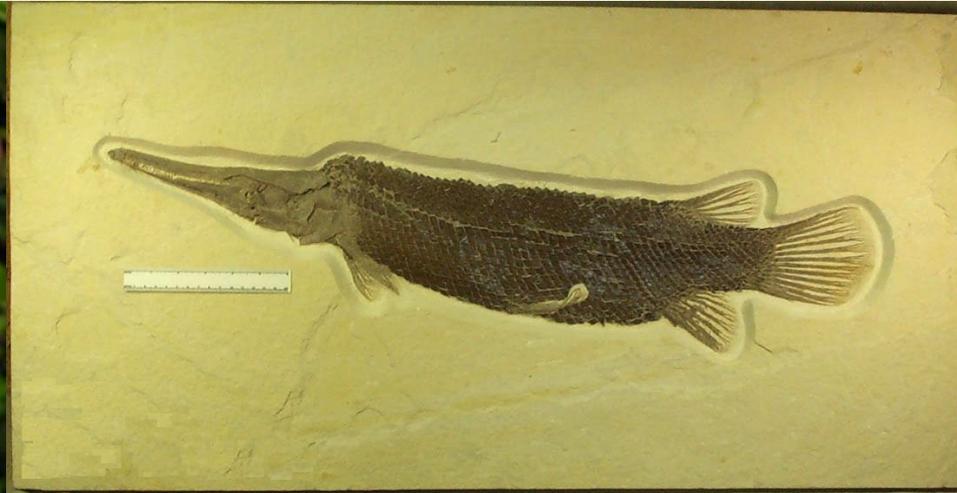
Vertebrata: Variabilität



Vertebrata: Erhaltung/Knorpel



Vertebrata: Erhaltung/Ganoin



Vertebrata: Erhaltung/Knochen



Vertebrata: Erhaltung/Zähne



Vertebrata: „Fishe“/Skelette



Vertebrata: „Fische“/Fragmente



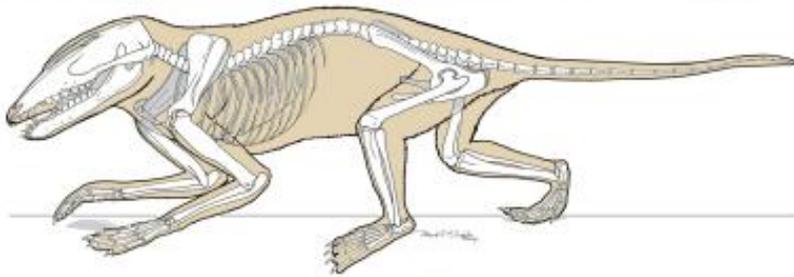
Vertebrata: Reptilien/Skelette



Vertebrata: Reptilien/Fragmente



Vertebrata: Säugetiere/Skelette



Cretaceous Mammal *Matherium asiaticus* (123 million years old)

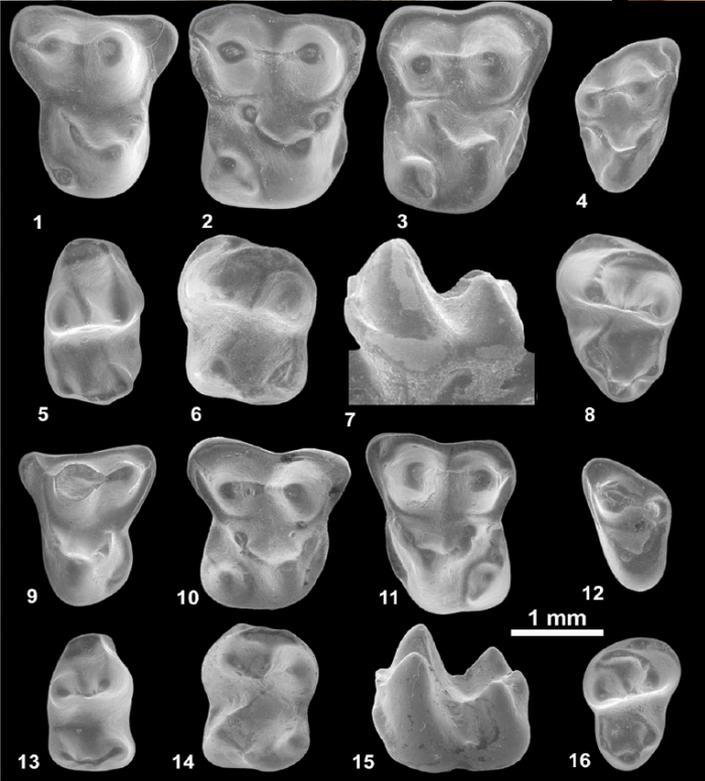
Top: Photo of fossil (scales in millimeter) (ZX Luo)

Middle: Skeletal Restoration of *Matherium* as a terrestrial mammal (M. A. Klingler)

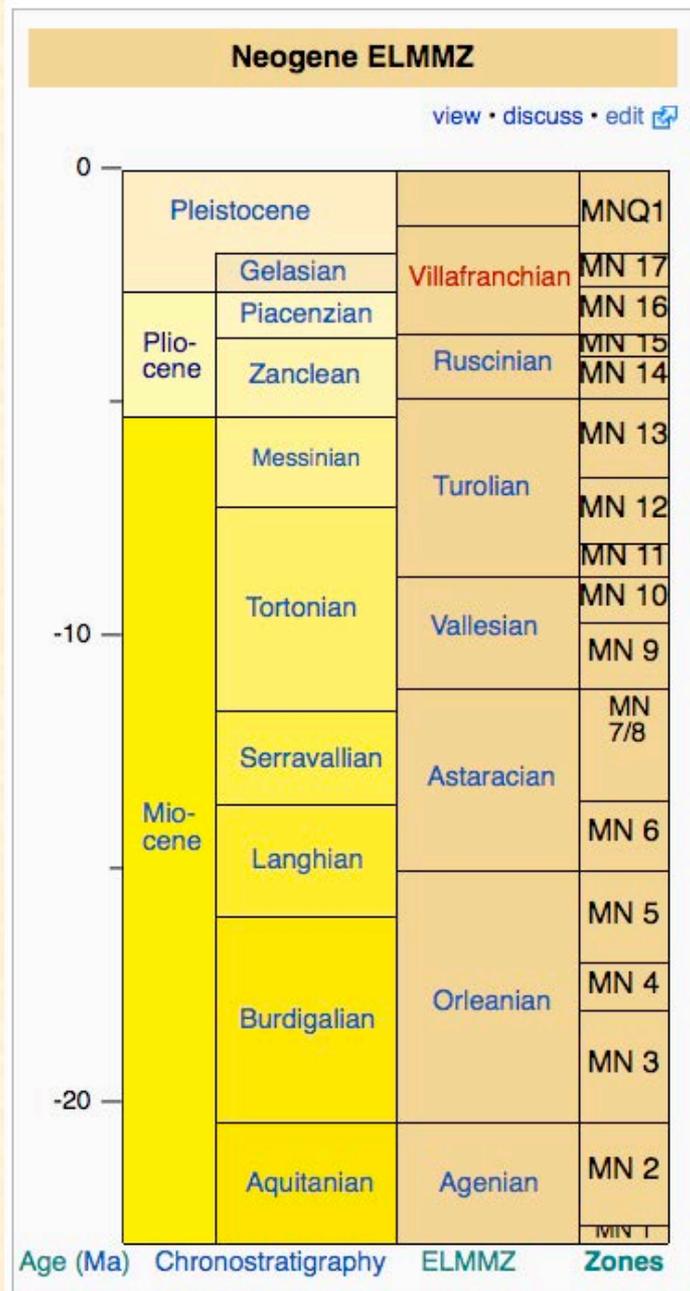
Bottom: Restoration of *Matherium asiaticus*

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Vertebrata: Säugetiere/Fragmente



Vertebrata: Säugetiere/stratigraphische Bedeutung



- **Rancholabrean**: Lower boundary ~0.24 Ma. Upper boundary 0.011 Ma.
- **Irvingtonian**: Lower boundary 1.8 Ma. Upper boundary ~0.24 Ma.
- **Blancan**: Lower boundary 4.9 Ma. Upper boundary 1.8 Ma.
- **Hemphillian**: Lower boundary 10.3 Ma. Upper boundary 4.9 Ma.
- **Clarendonian**: Lower boundary 13.6 Ma. Upper boundary 10.3 Ma.
- **Barstovian**: Lower boundary 16.3 Ma. Upper boundary 13.6 Ma.
- **Hemingfordian**: Lower boundary 20.6 Ma. Upper boundary 16.3 Ma.
 - **Late Hemingfordian**: Lower boundary 20.4 Ma. Upper boundary 16.3 Ma.
- **Arikareean**: Lower boundary 30.8 Ma. Upper boundary 20.6 Ma.
- **Geringian**: Lower boundary 30.8 Ma. Upper boundary 26.3 Ma.
- **Whitneyan**: Lower boundary 33.3 Ma. Upper boundary 30.8 Ma.
- **Orellan**: Lower boundary 33.9 Ma. Upper boundary 33.3 Ma.
- **Chadronian**: Lower boundary 38 Ma. Upper boundary 33.9 Ma.
- **Duchesnean**: Lower boundary 42 Ma. Upper boundary 38 Ma.
- **Uintan**: Lower boundary 46.2 Ma. Upper boundary 42 Ma.
- **Bridgerian**: Lower boundary 50.3 Ma. Upper boundary 46.2 Ma.
- **Wasatchian**: Lower boundary 55.4 Ma. Upper boundary 50.3 Ma.
- **Clarkforkian**: Lower boundary 56.8 Ma. Upper boundary 55.4 Ma.
- **Tiffanian**: Lower boundary 60.2 Ma. Upper boundary 56.8 Ma.
- **Torrejonian**: Lower boundary 63.3 Ma. Upper boundary 60.2 Ma.
- **Puercan**: Lower boundary 66.5 Ma. Upper boundary 63.3 Ma.

North American Land Mammal Ages