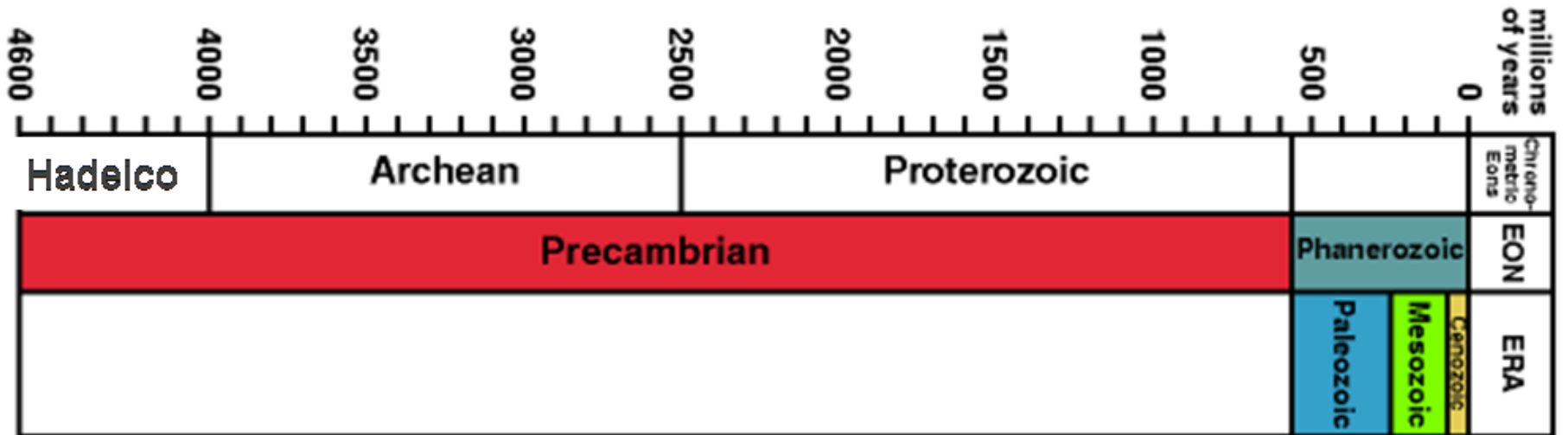




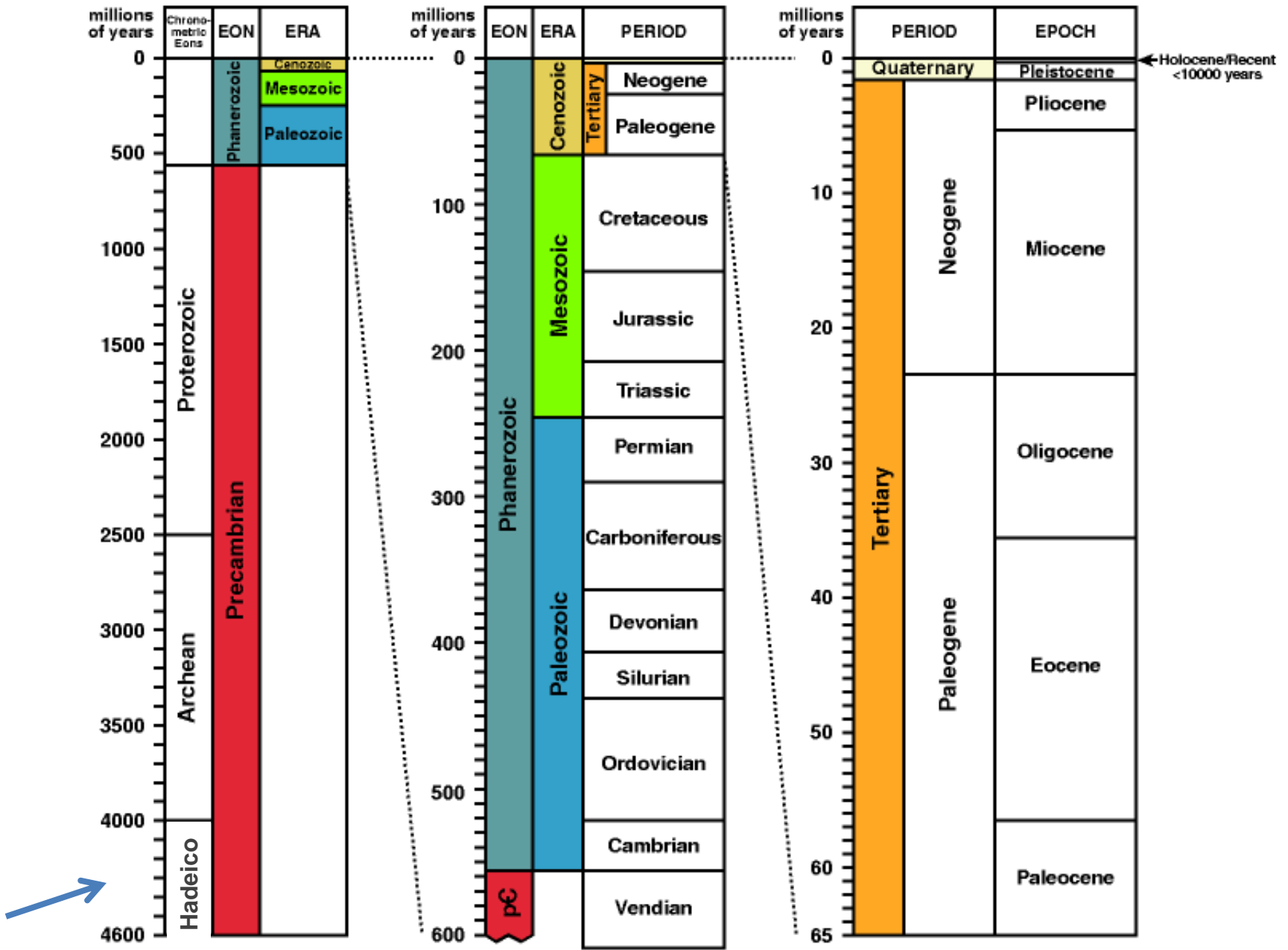
Astrobiology maganz

4600 millones de años



Métodos

- Fósiles
- Registros estratigráficos
- Isótopos
- Relojes moleculares



Hadeano tardío

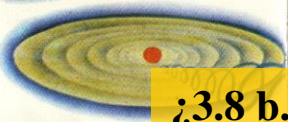


<http://galaxiasyfosiles.blogspot.com.ar/>

ORIGEN DEL UNIVERSO
13-15 mil millones de años



ORIGEN DEL SISTEMA
SOLAR Y DE LA TIERRA
4.600 millones de años



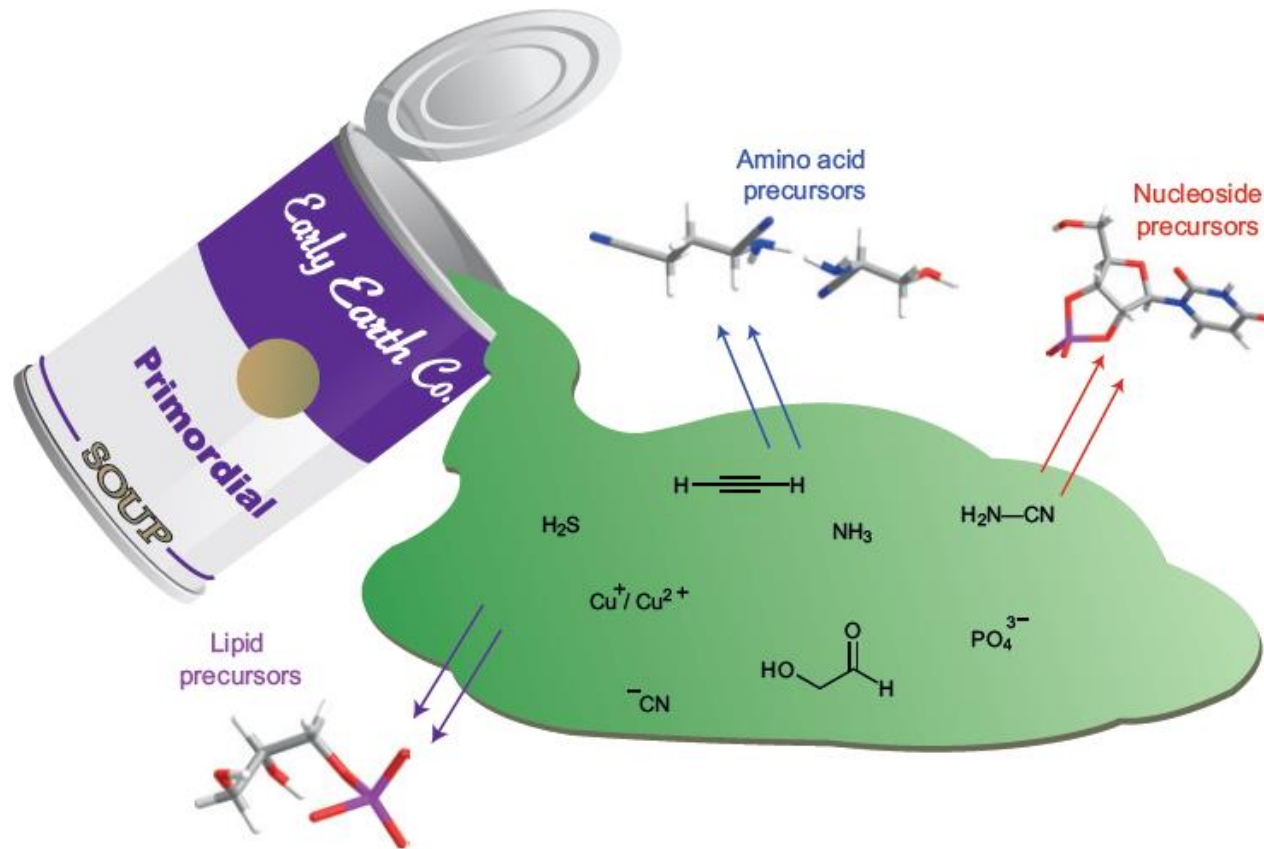
¿3.8 b. origen de la vida?

Common origins of RNA, protein and lipid precursors in a cyanosulfidic protometabolism

Bhavesh H. Patel, Claudia Percivalle, Dougal J. Ritson, Colm D. Duffy and John D. Sutherland*

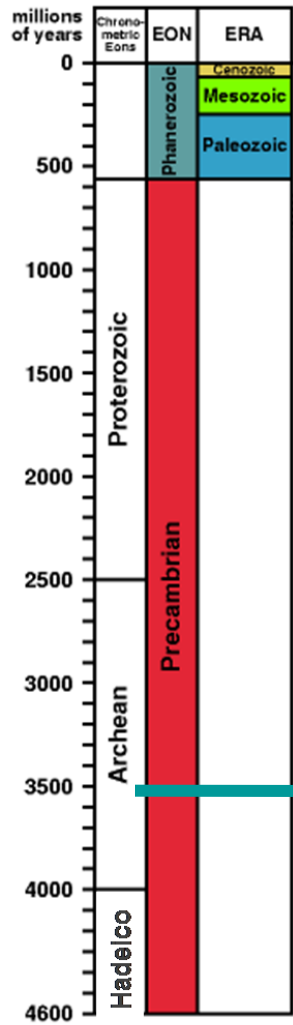


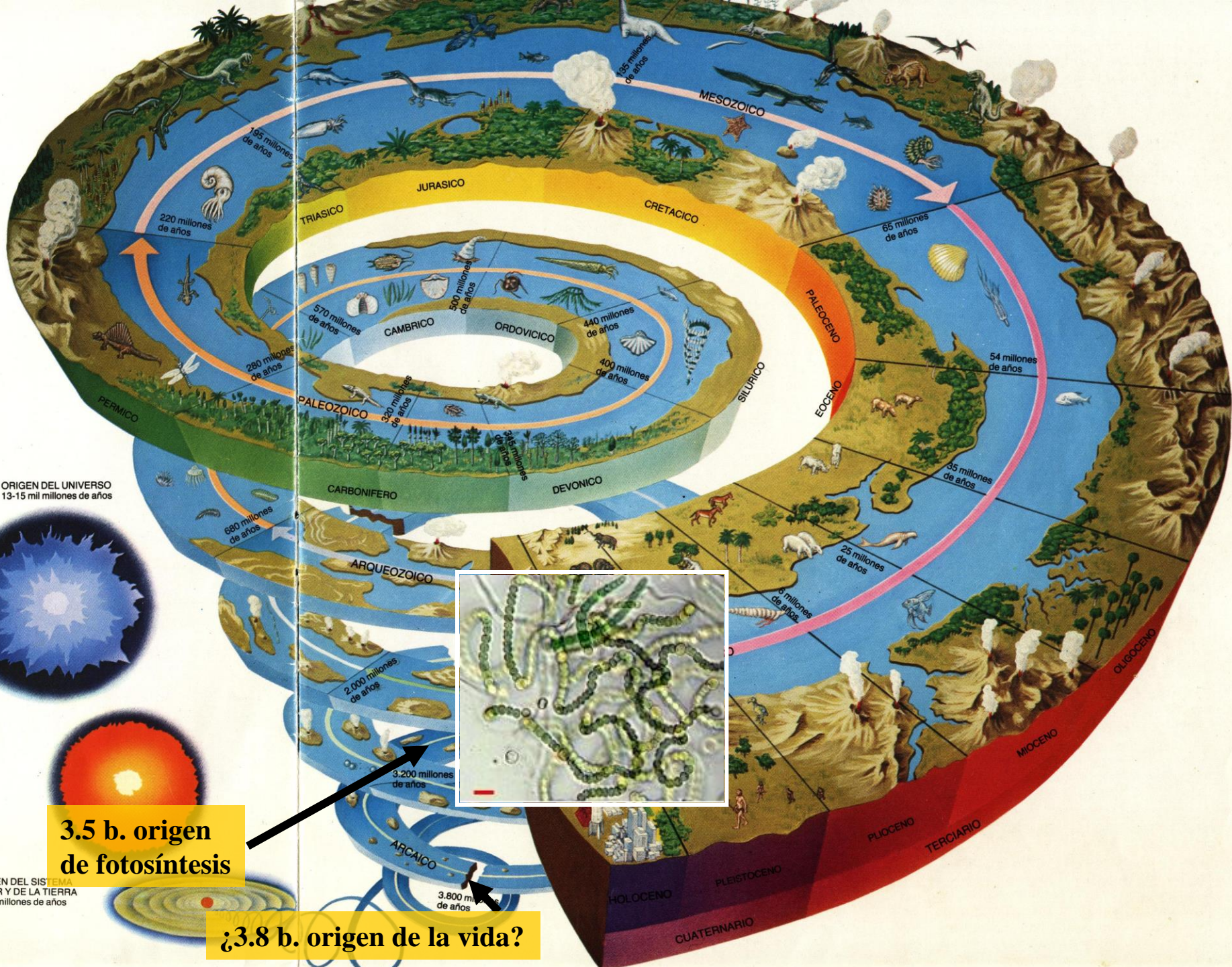
- Precusores de ácidos nucleicos a partir de cianuro de hidrógeno (HCN), sulfuro de hidrógeno (H₂S) y rayos ultravioletas (UV) .
- Las mismas condiciones crearon las moléculas iniciales para la generación natural de aminoácidos y lípidos



-HCN abundante en los cometas, (H₂S) elemento común en el planeta

Arqueano

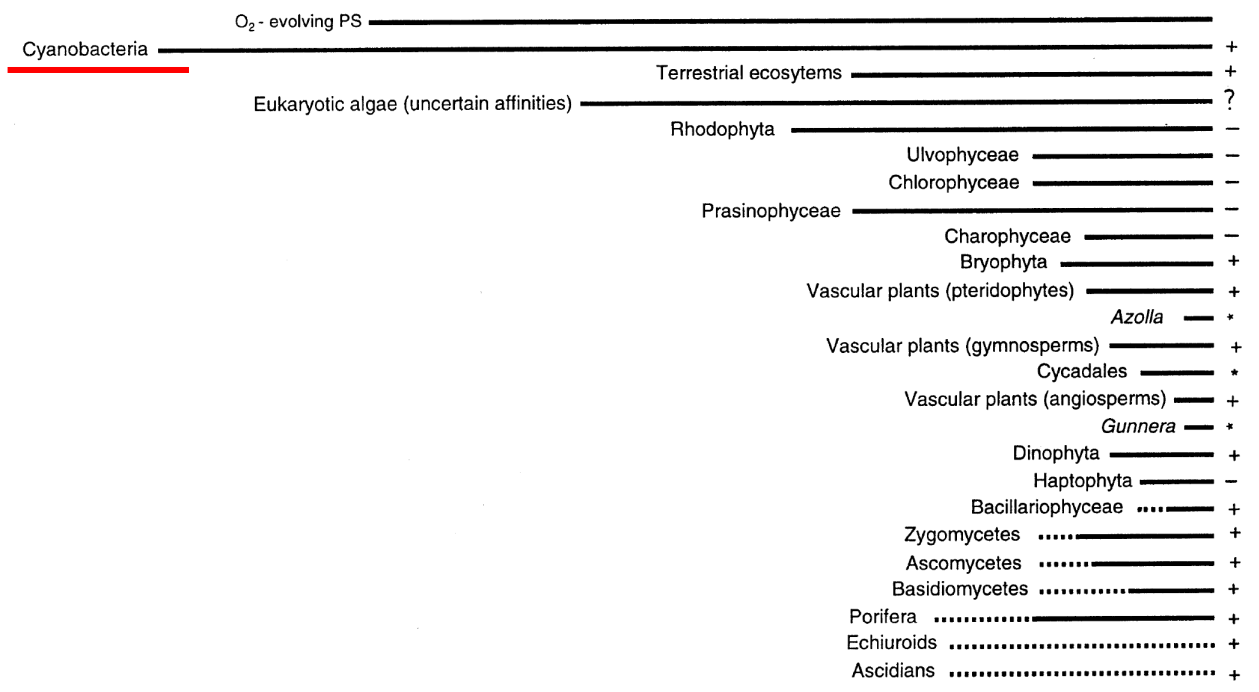
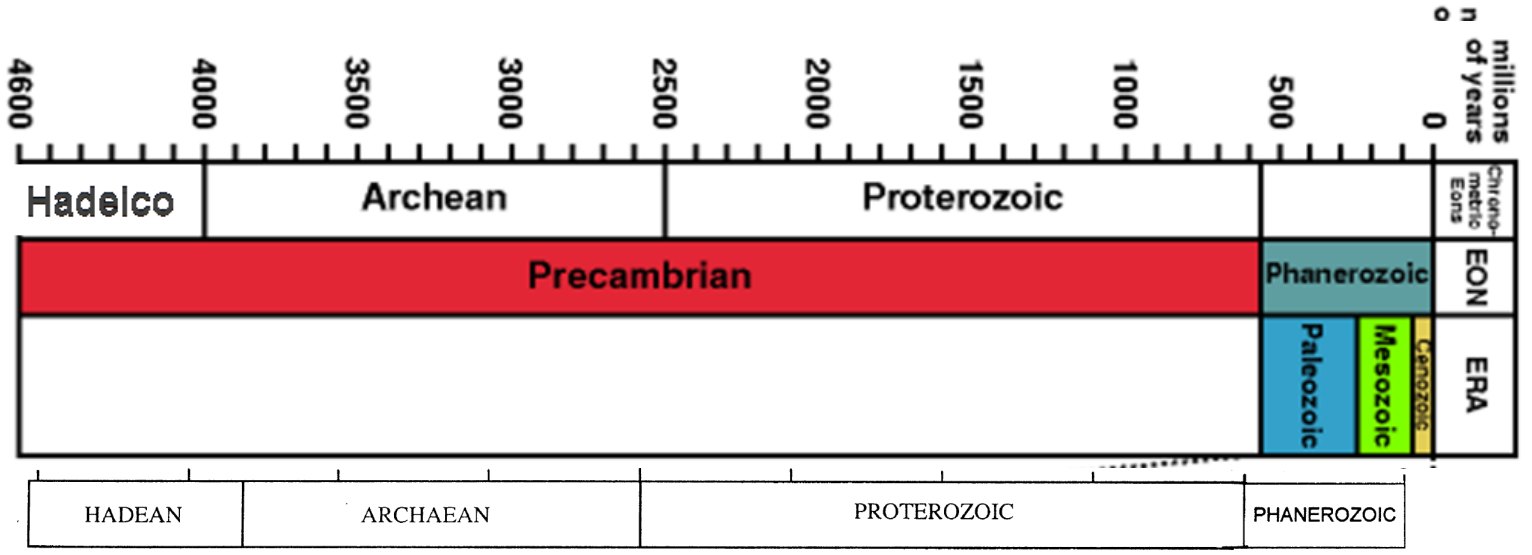




3.5 b. origen de fotosíntesis

¿3.8 b. origen de la vida?

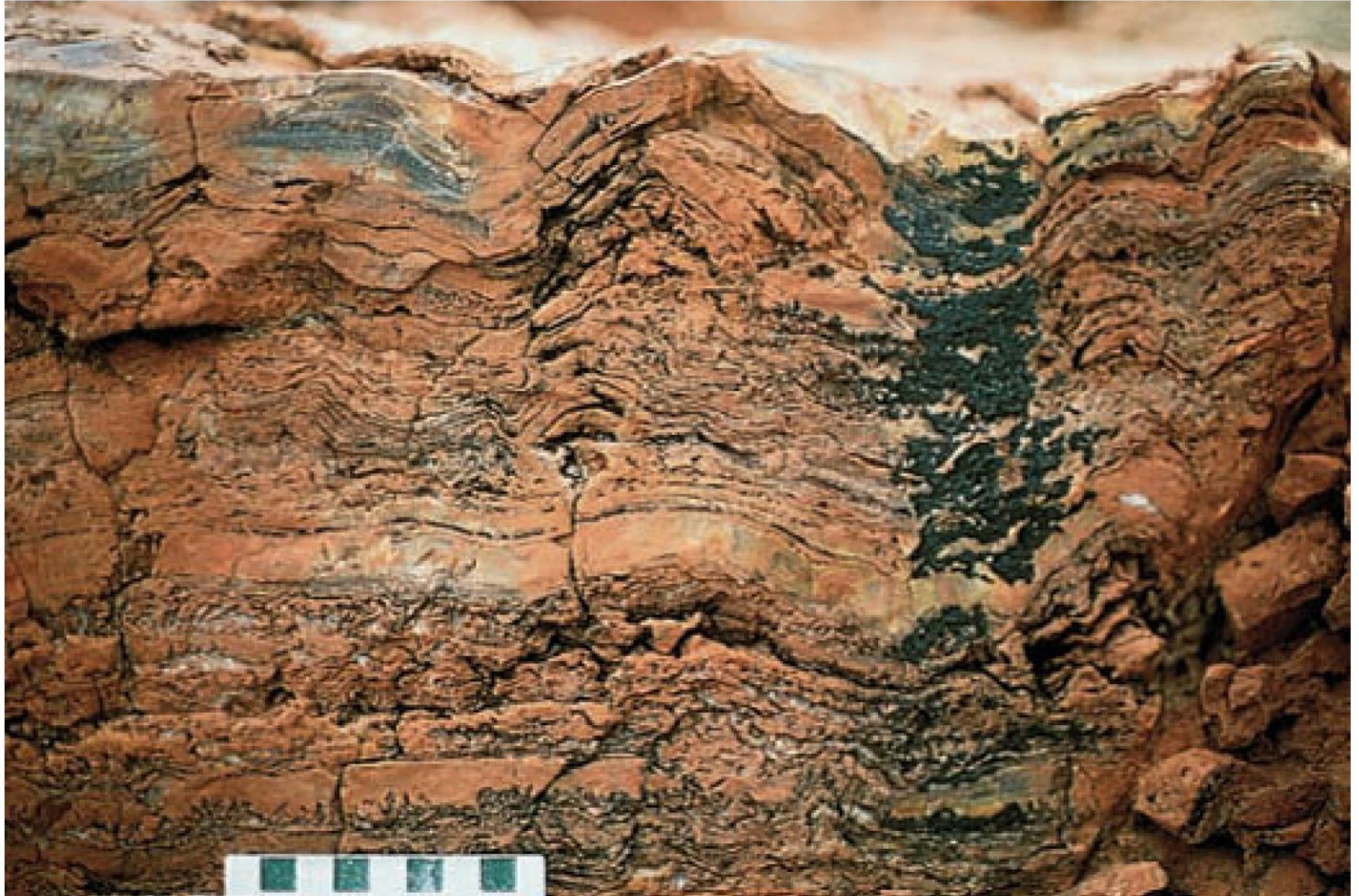
ORIGEN DEL SISTEMA SOLAR Y DE LA TIERRA
4.600 millones de años



Estromatolitos de Hamlin Pool en el oeste de Australia – consisten en matas de cianobacterias, minerales y carbonato de calcio – tienen miles de millones de años de antigüedad



Corte transversal de **estromatolito fósil** donde se observan capas de microorganismos y sedimentos que se fueron acumulando en el tiempo. Este estromatolito, también del oeste Australiano, tienen unos 3.500 millones de años



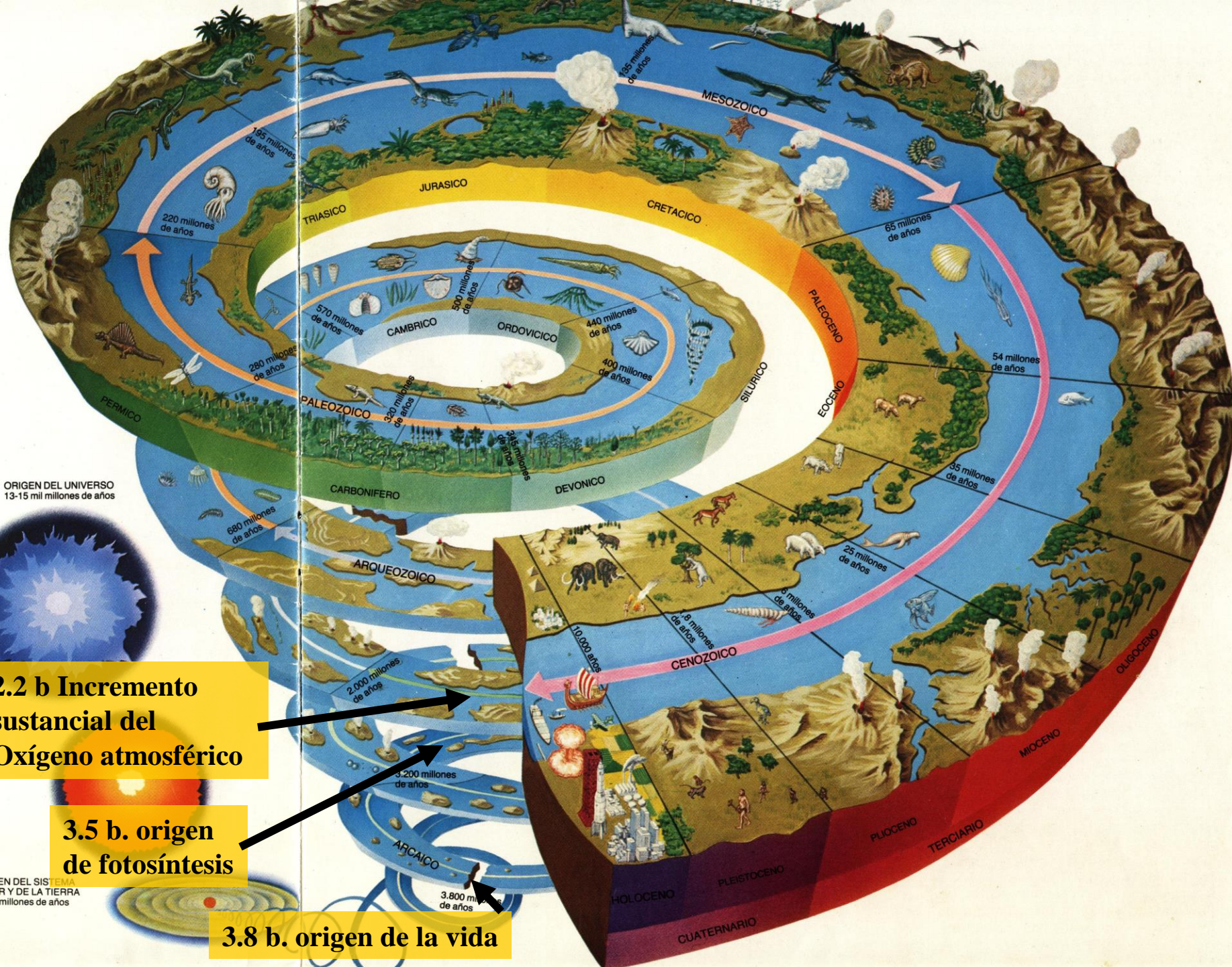
ORIGEN DEL UNIVERSO
13-15 mil millones de años

2.2 b Incremento sustancial del Oxígeno atmosférico

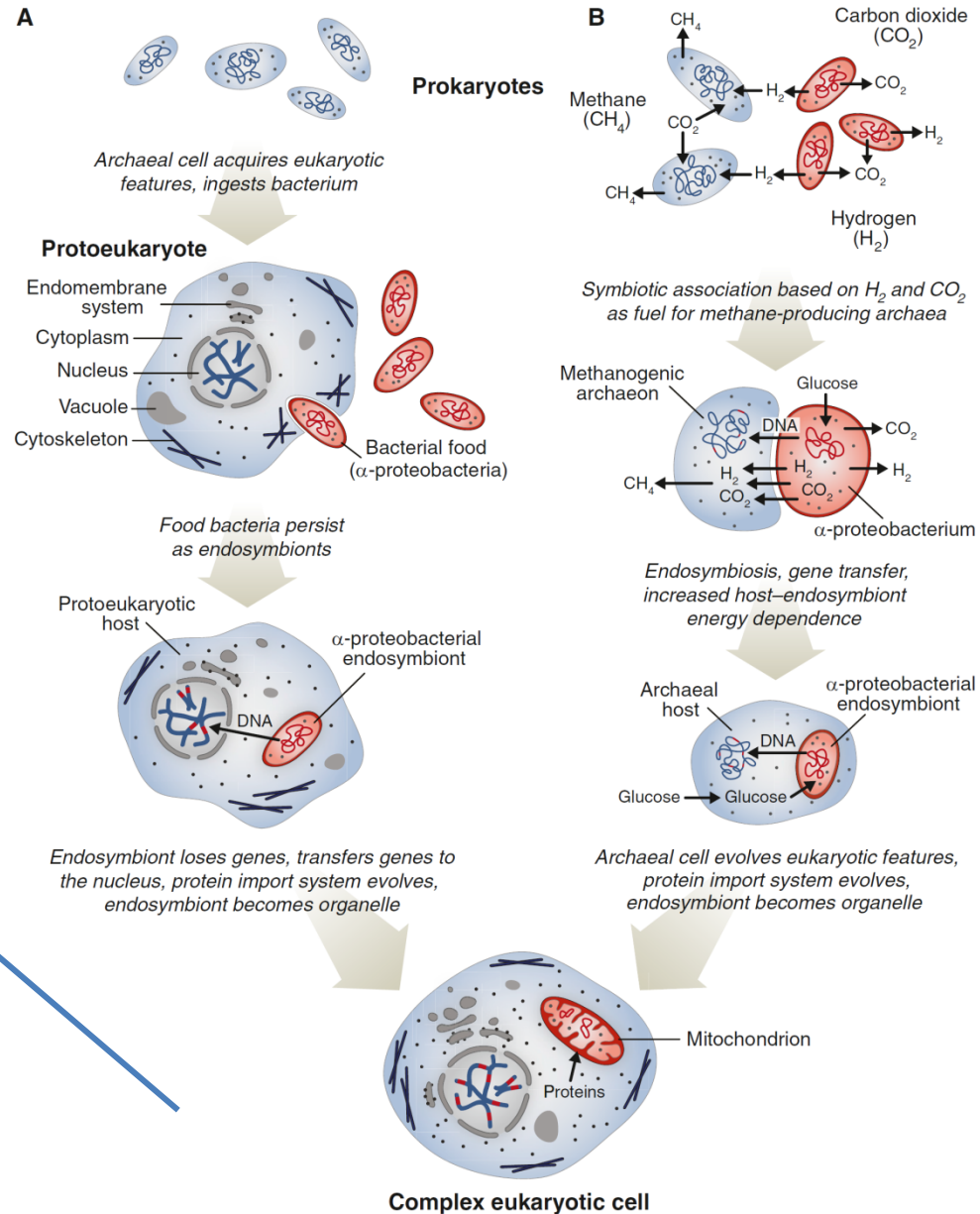
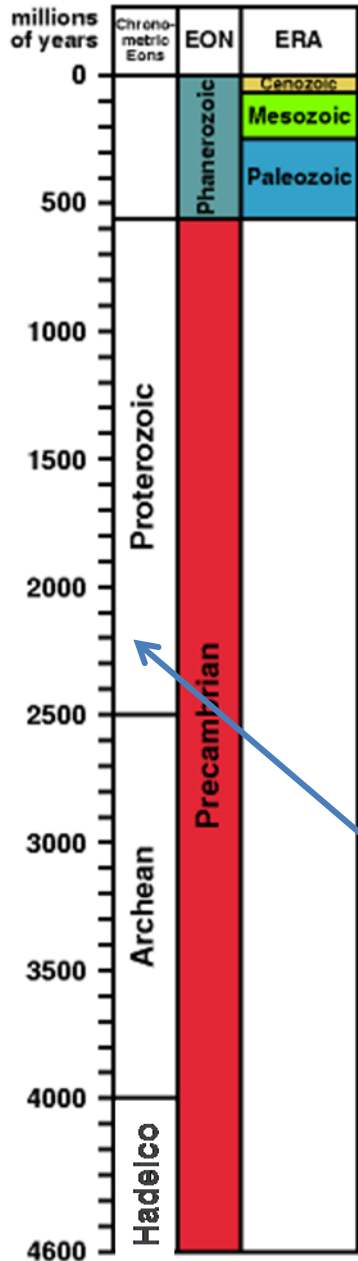
3.5 b. origen de fotosíntesis

3.8 b. origen de la vida

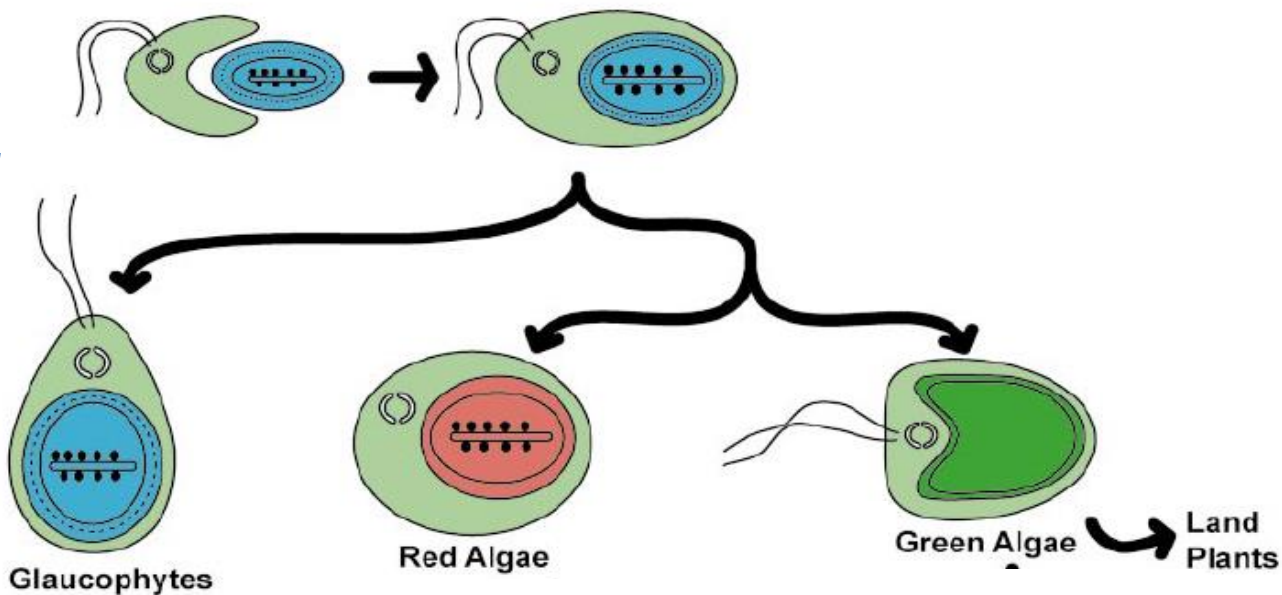
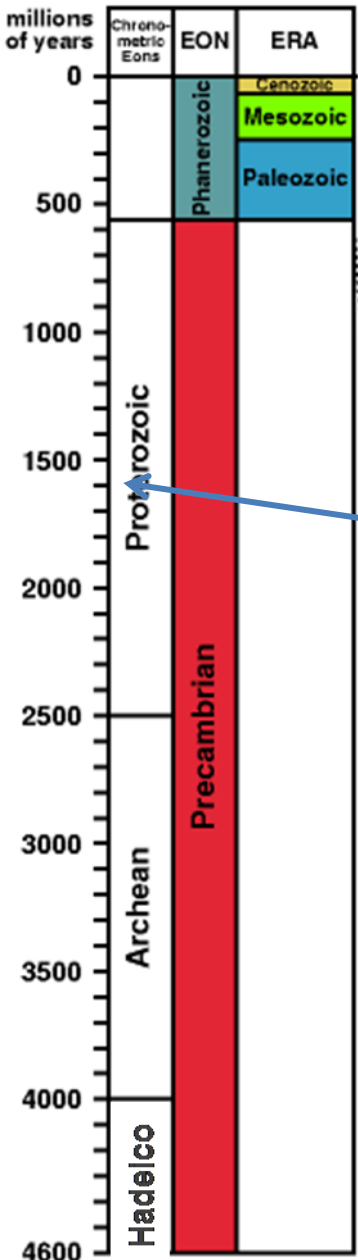
ORIGEN DEL SISTEMA SOLAR Y DE LA TIERRA
4.600 millones de años



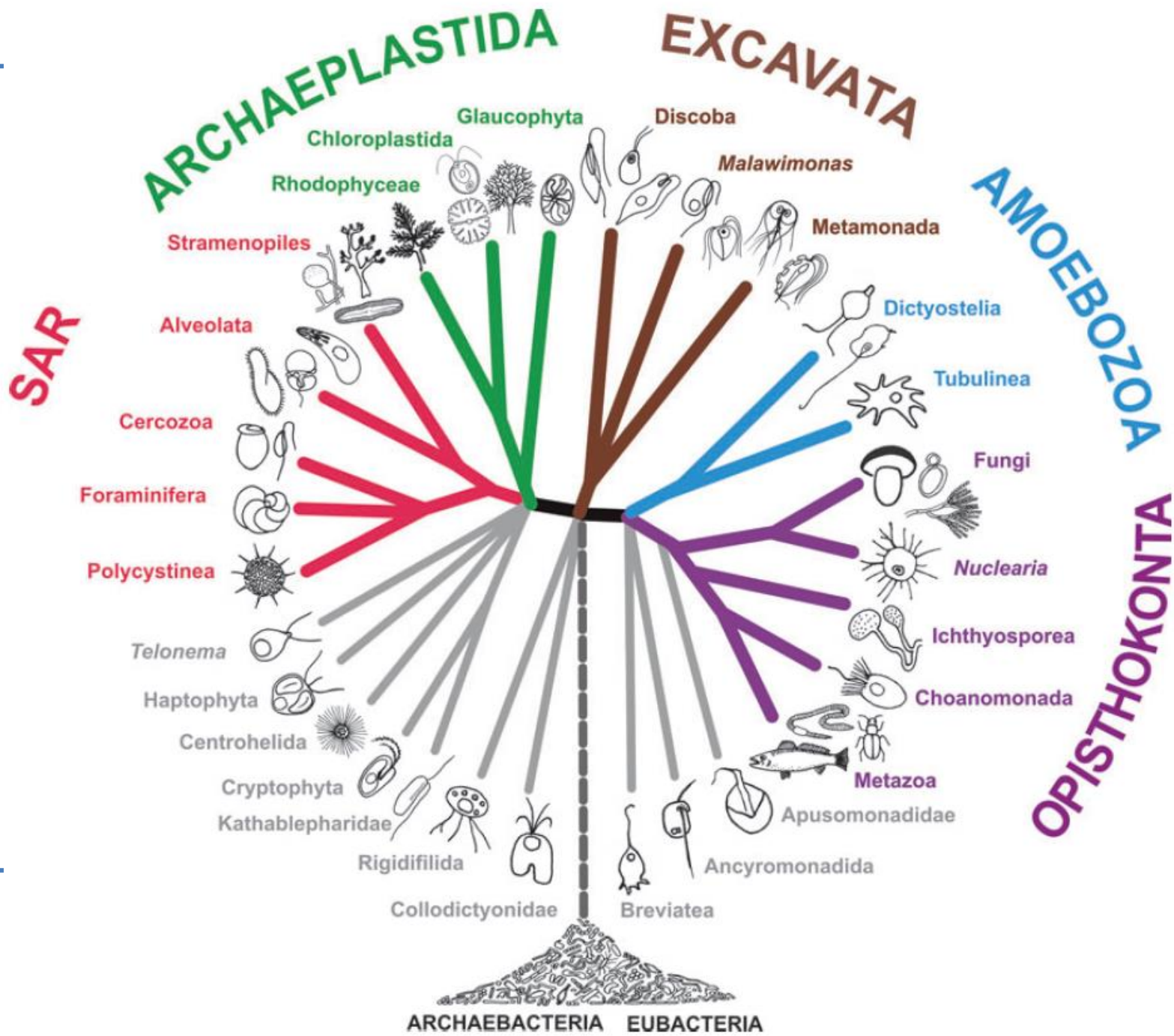
Origen de la célula eucariota aerobia (e. 2.200 m.a.)



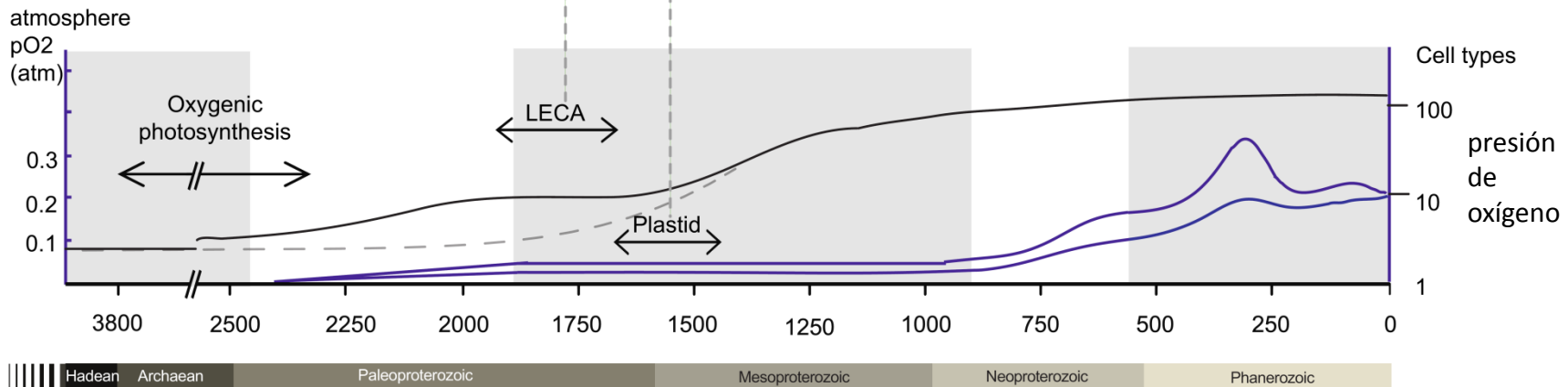
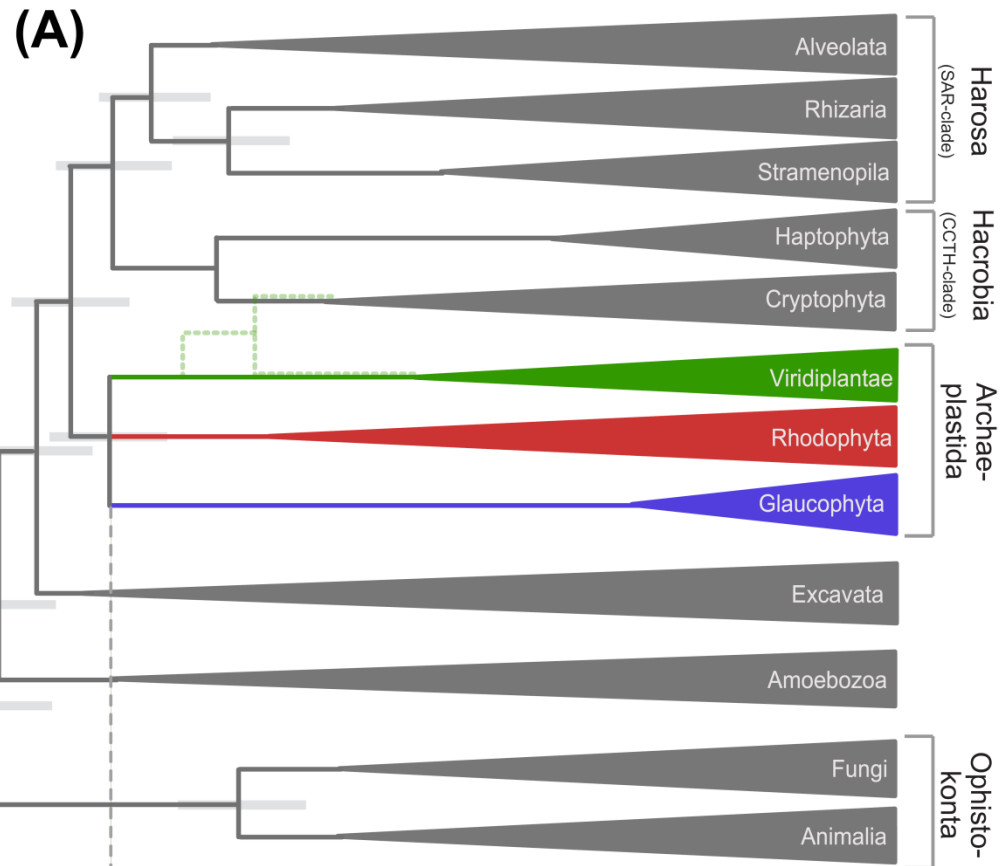
Origen del eucariota fotosintetizador (e. 1.600 m.a.)

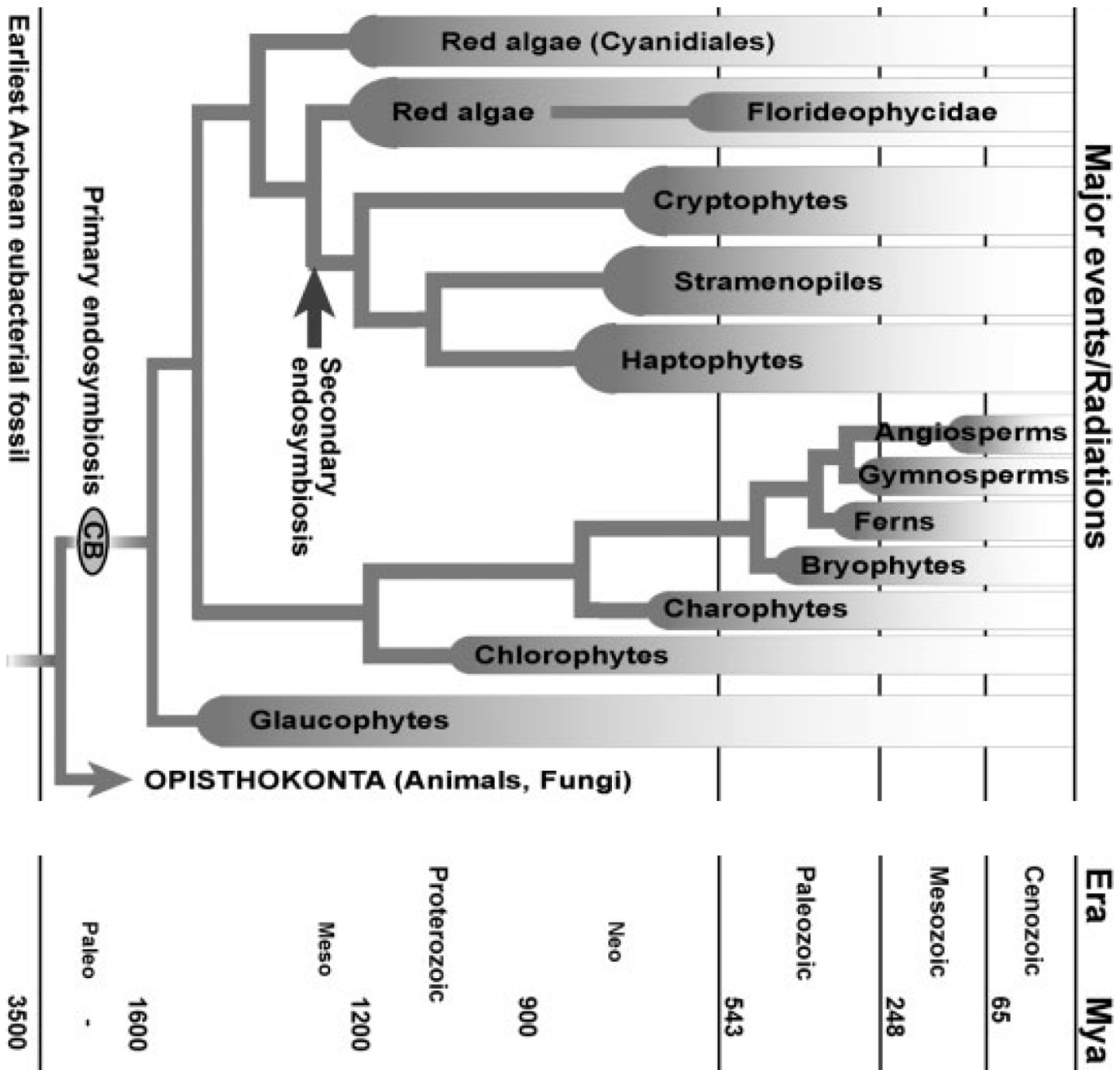


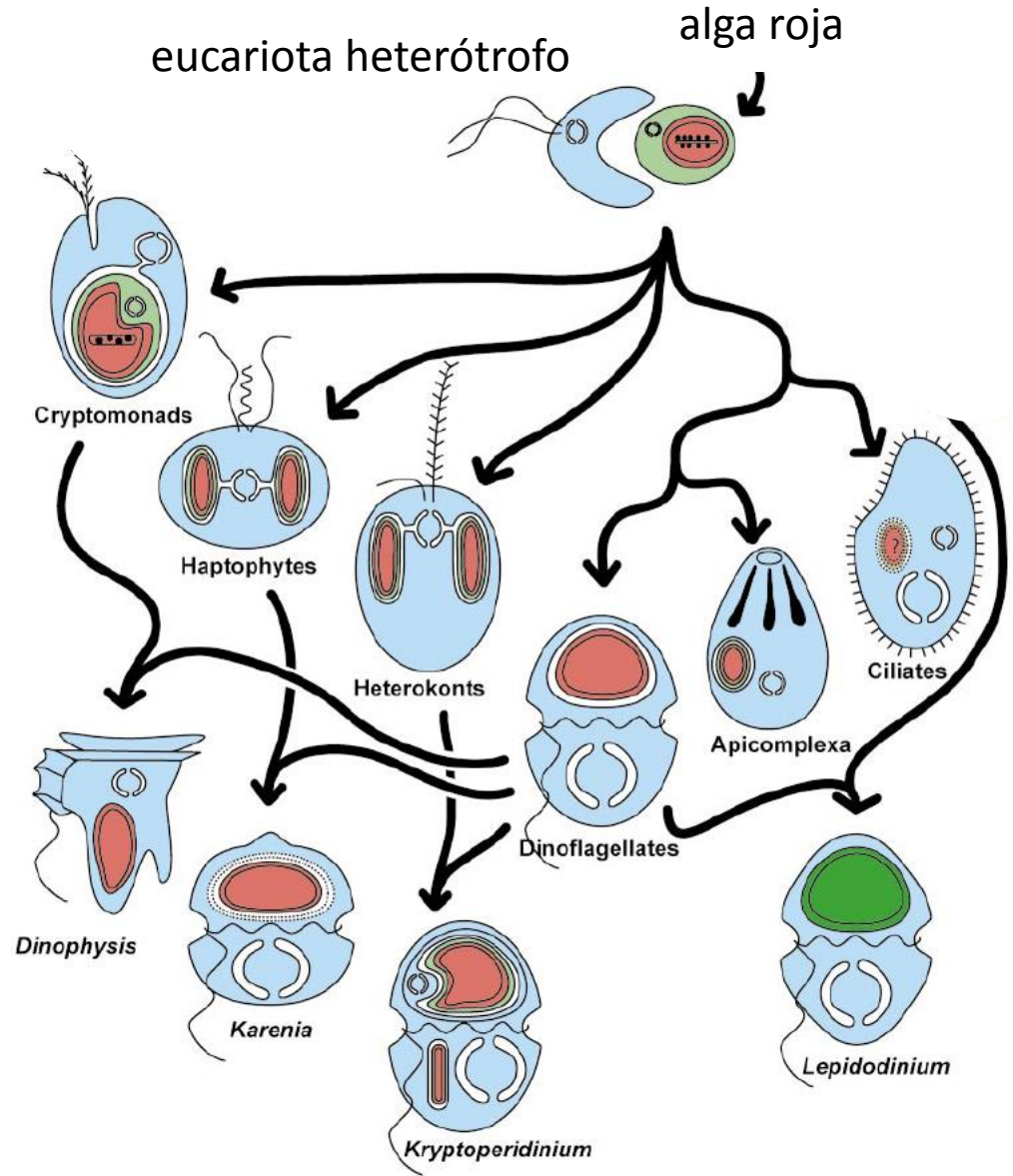
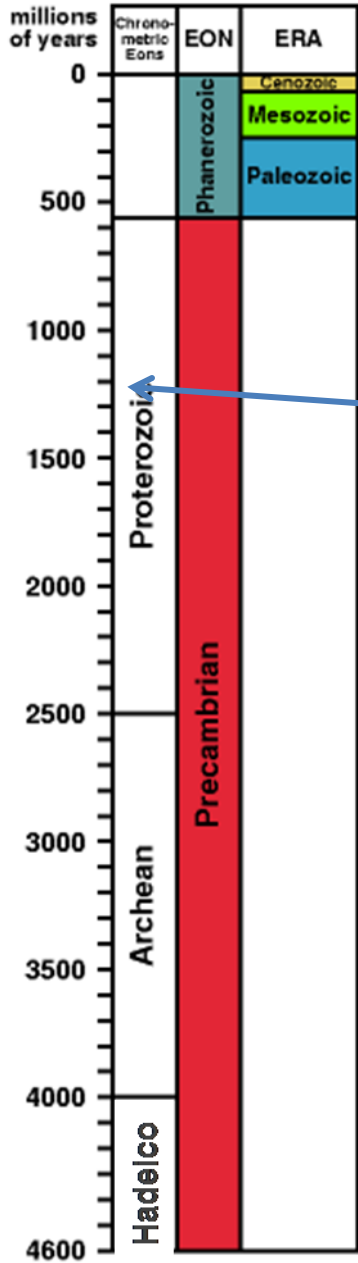
Eucariotas



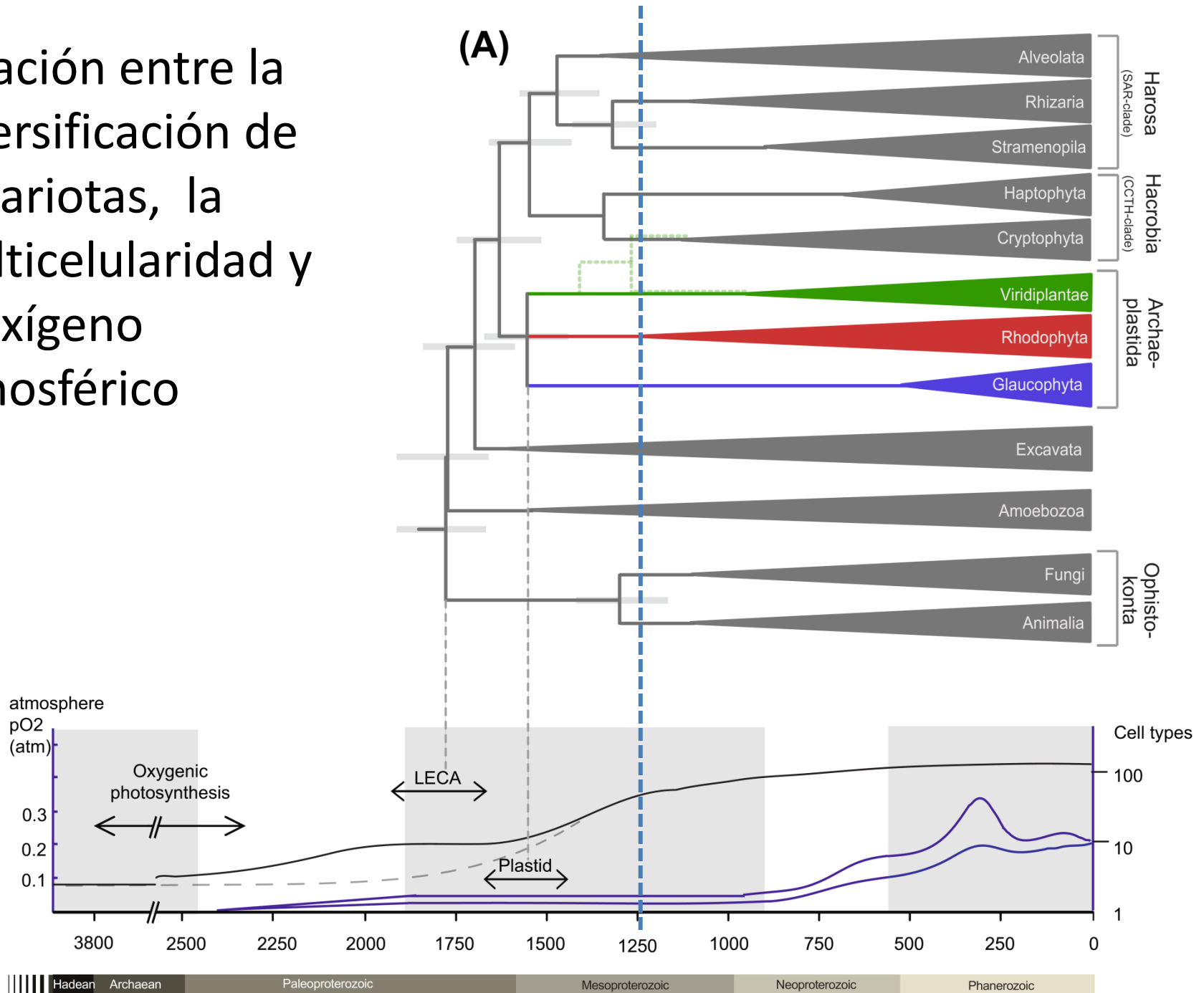
Relación entre la diversificación de eucariotas, la multicelularidad y el oxígeno atmosférico

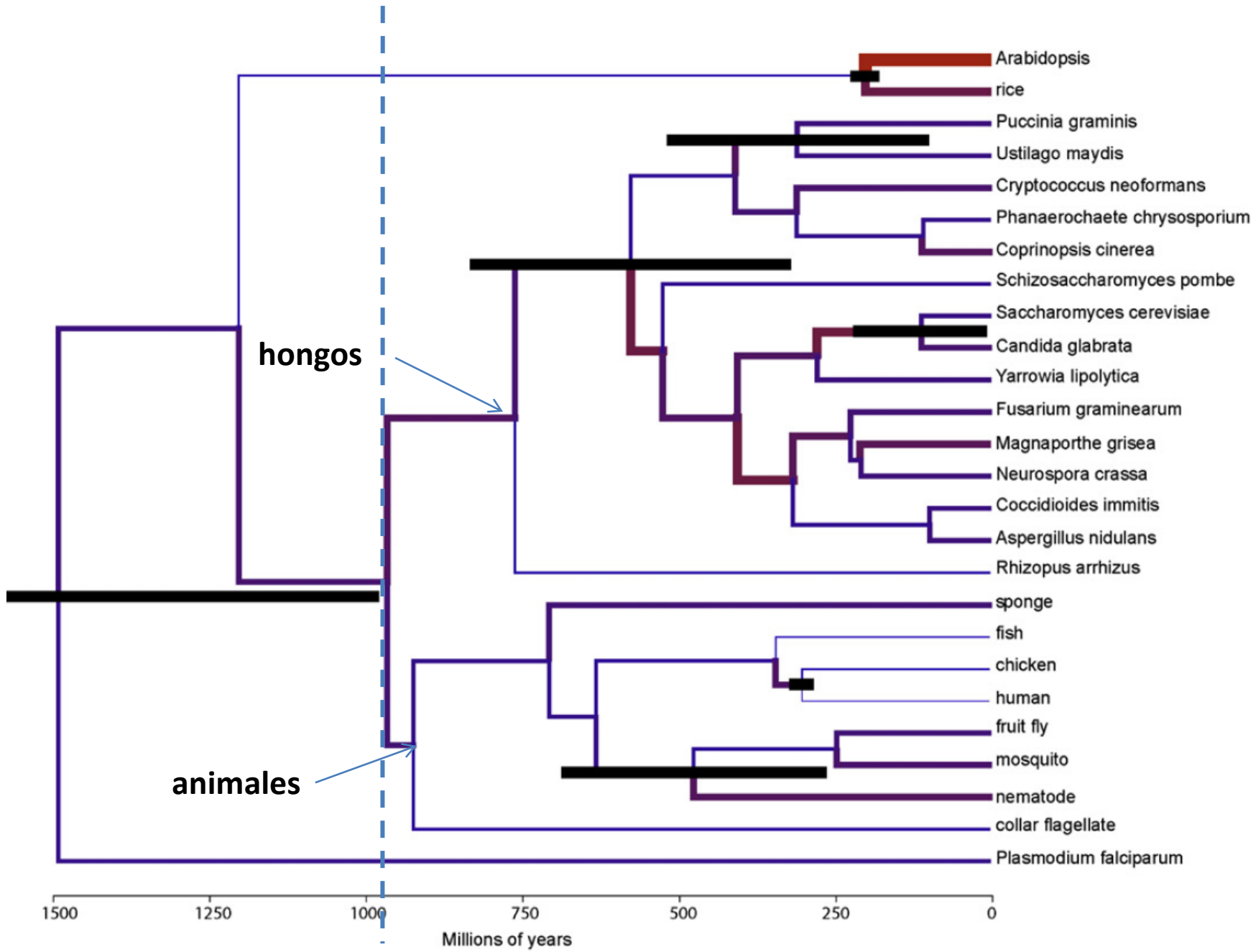


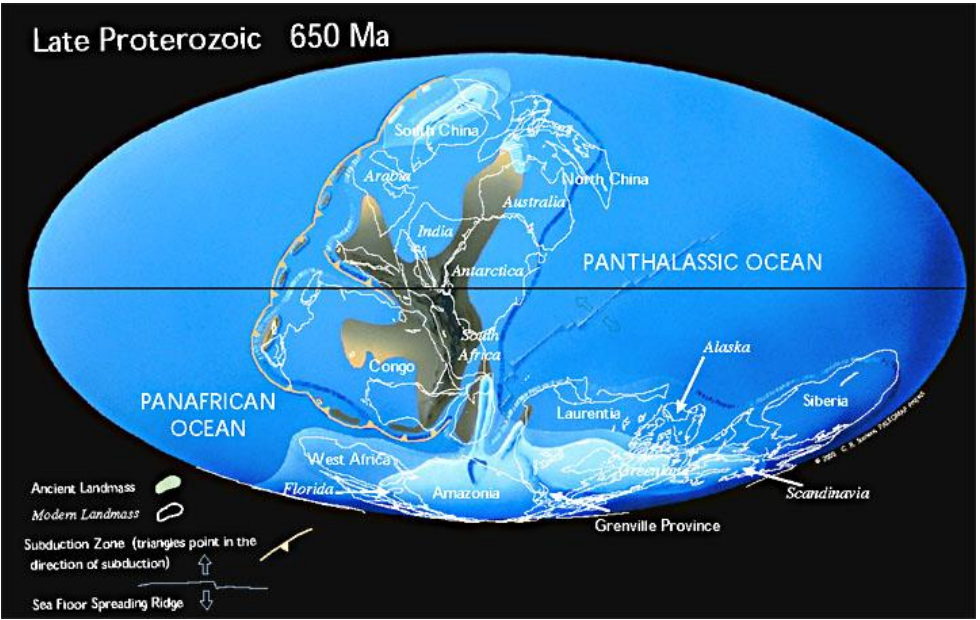
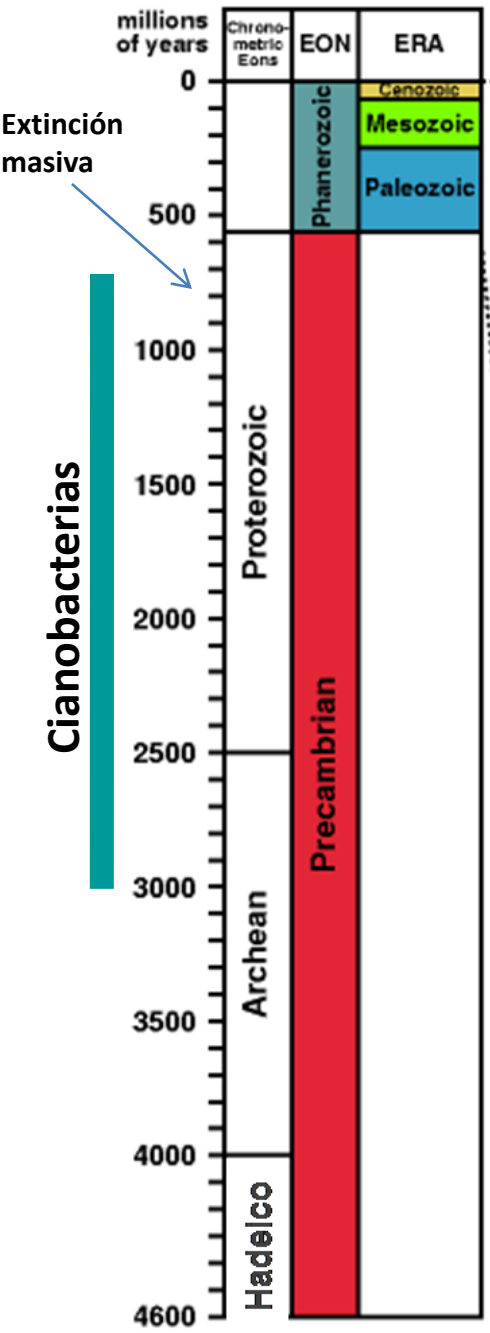




Relación entre la diversificación de eucariotas, la multicelularidad y el oxígeno atmosférico







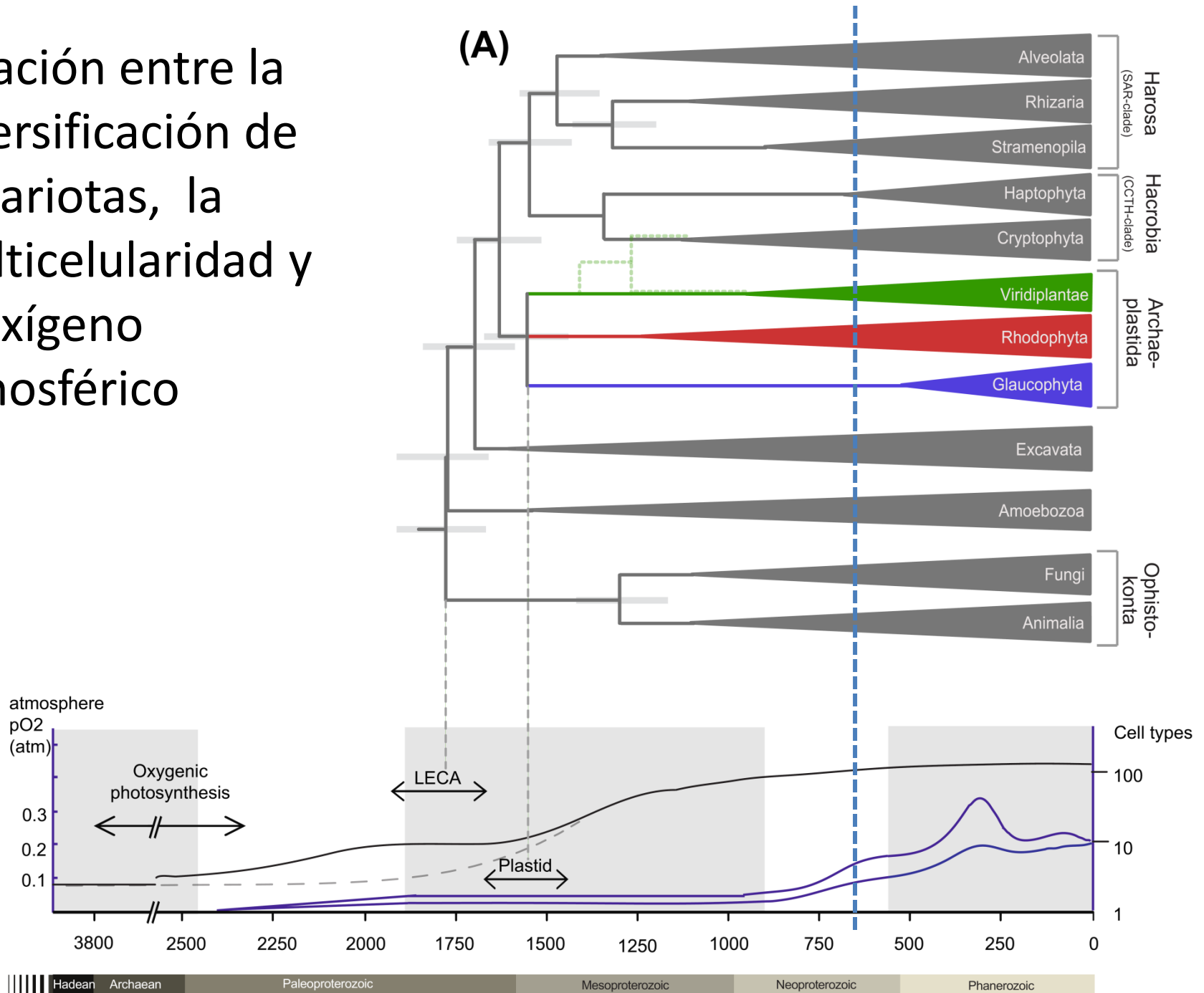
www.scotese.com

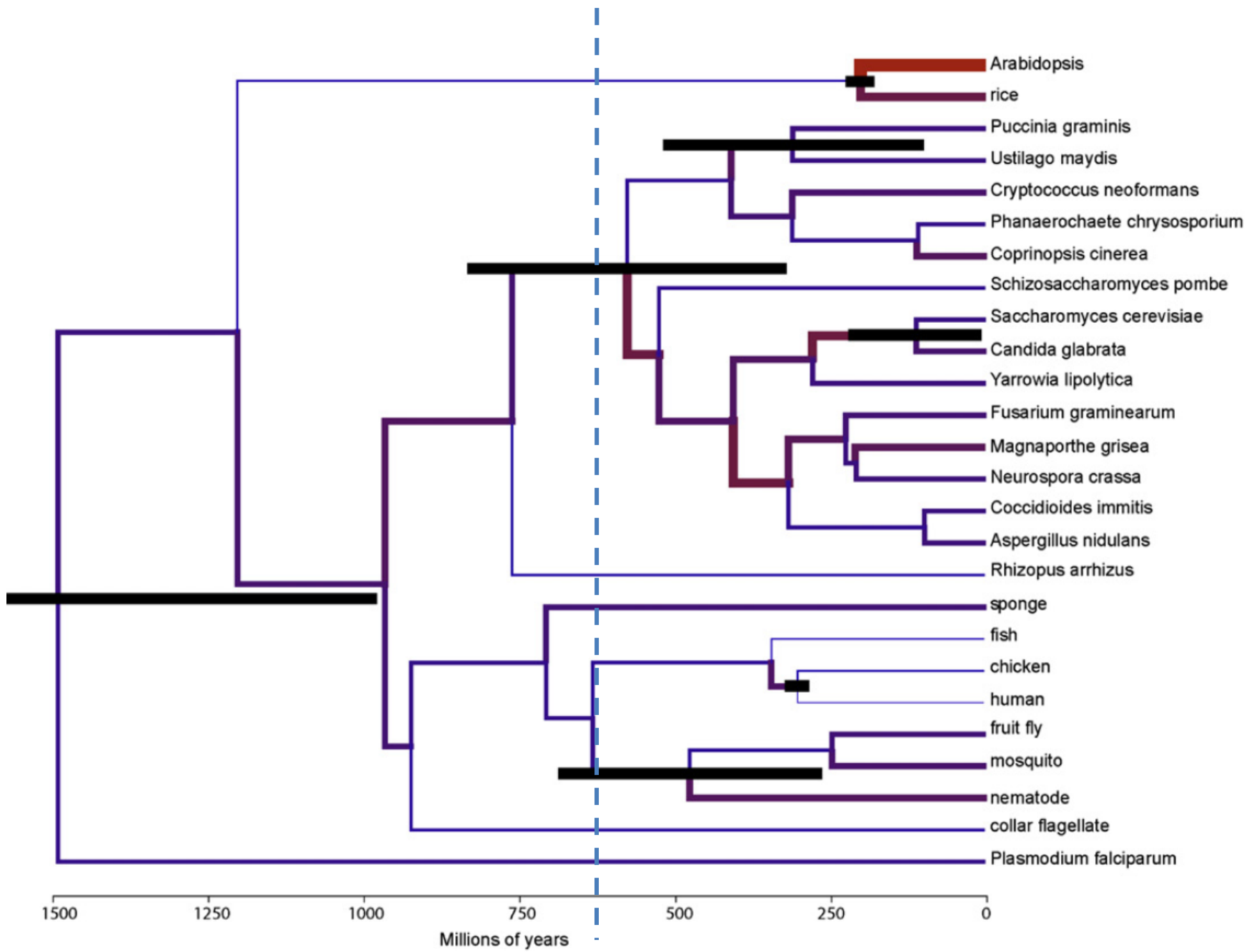


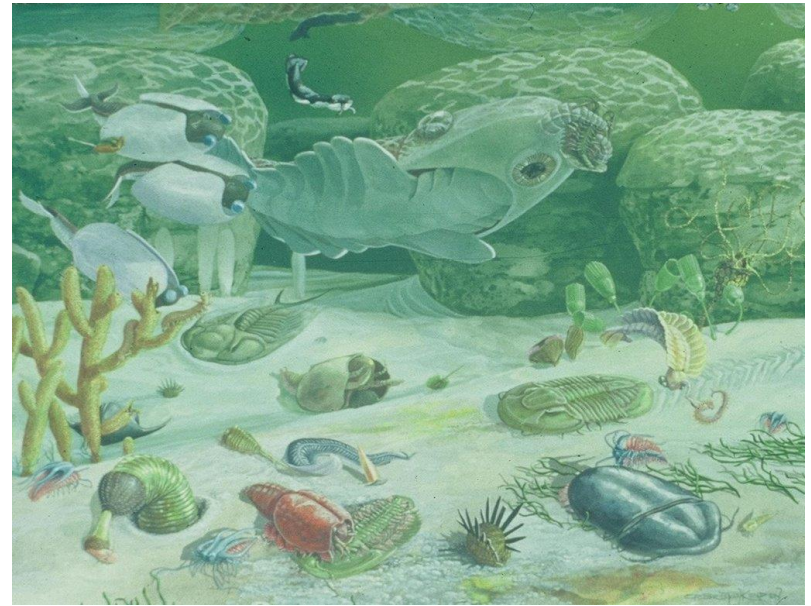
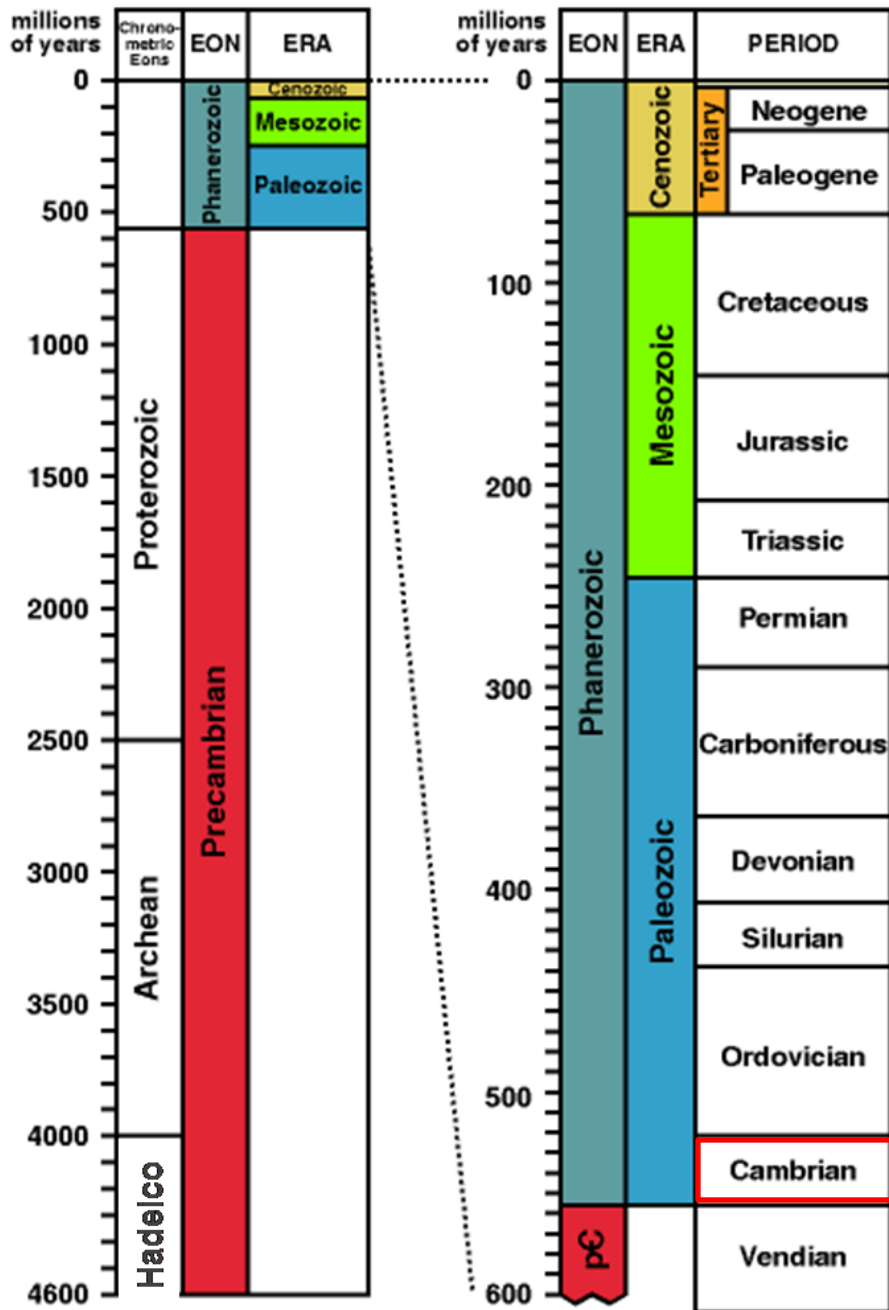
Chase Studio/Photo Researchers, Inc.

Salomon et al 2008

Relación entre la diversificación de eucariotas, la multicelularidad y el oxígeno atmosférico



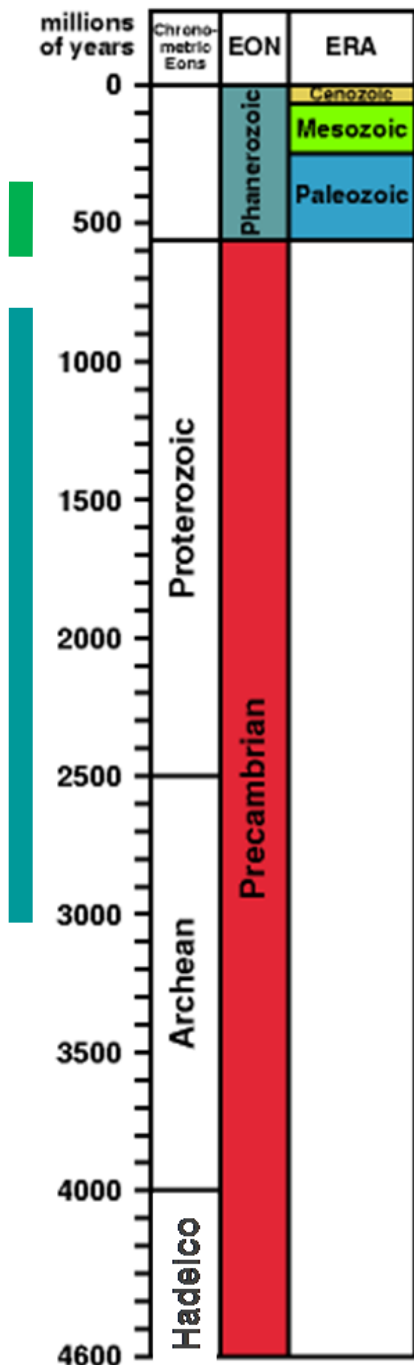




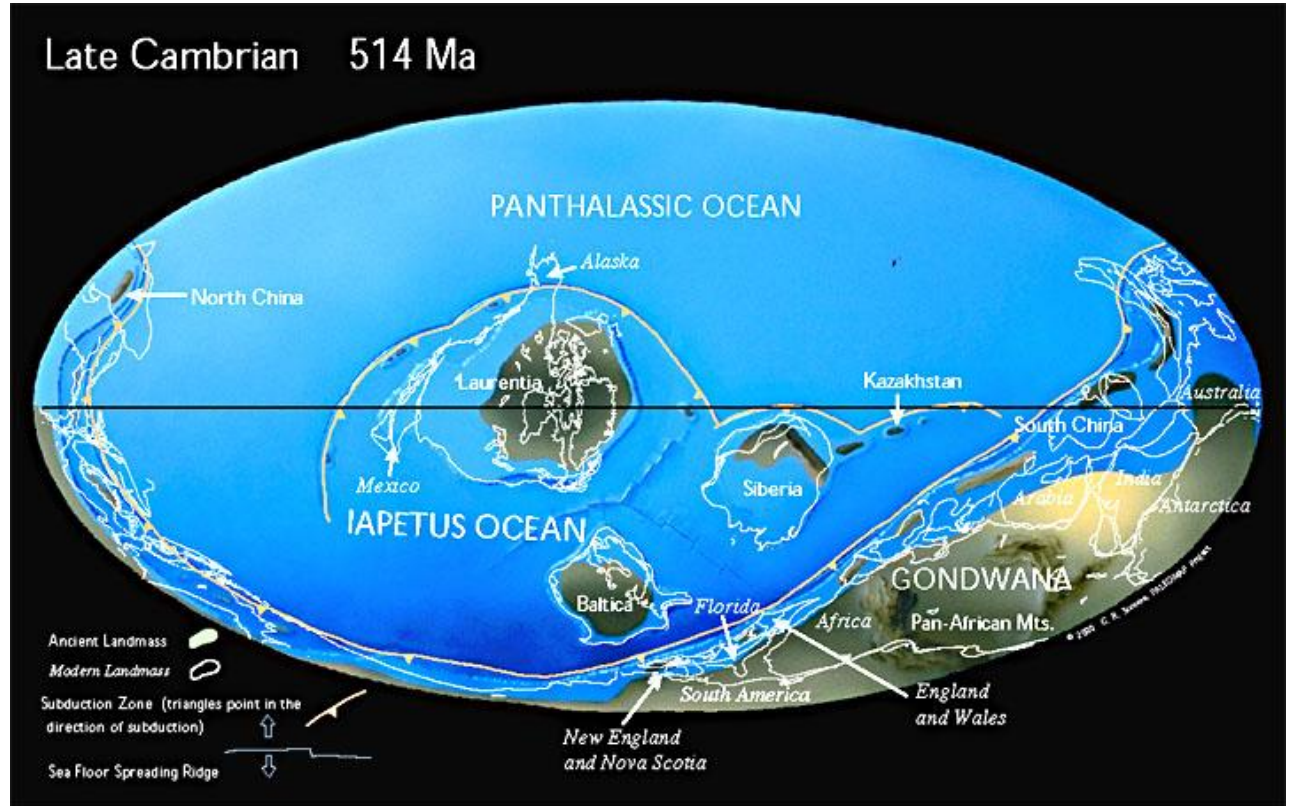
scienceblogs.com



www.biologyreference.com



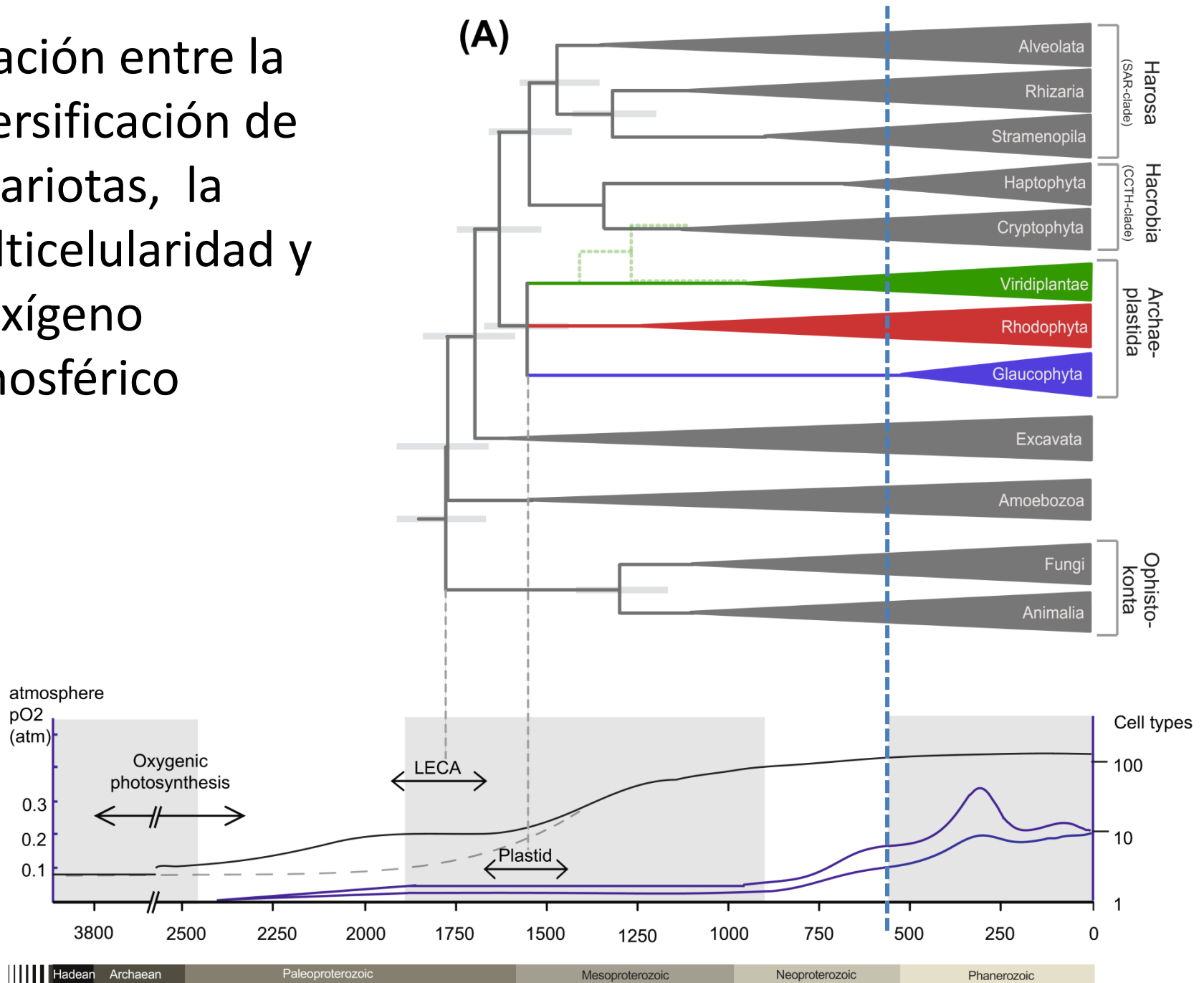
<http://palaeos.com>

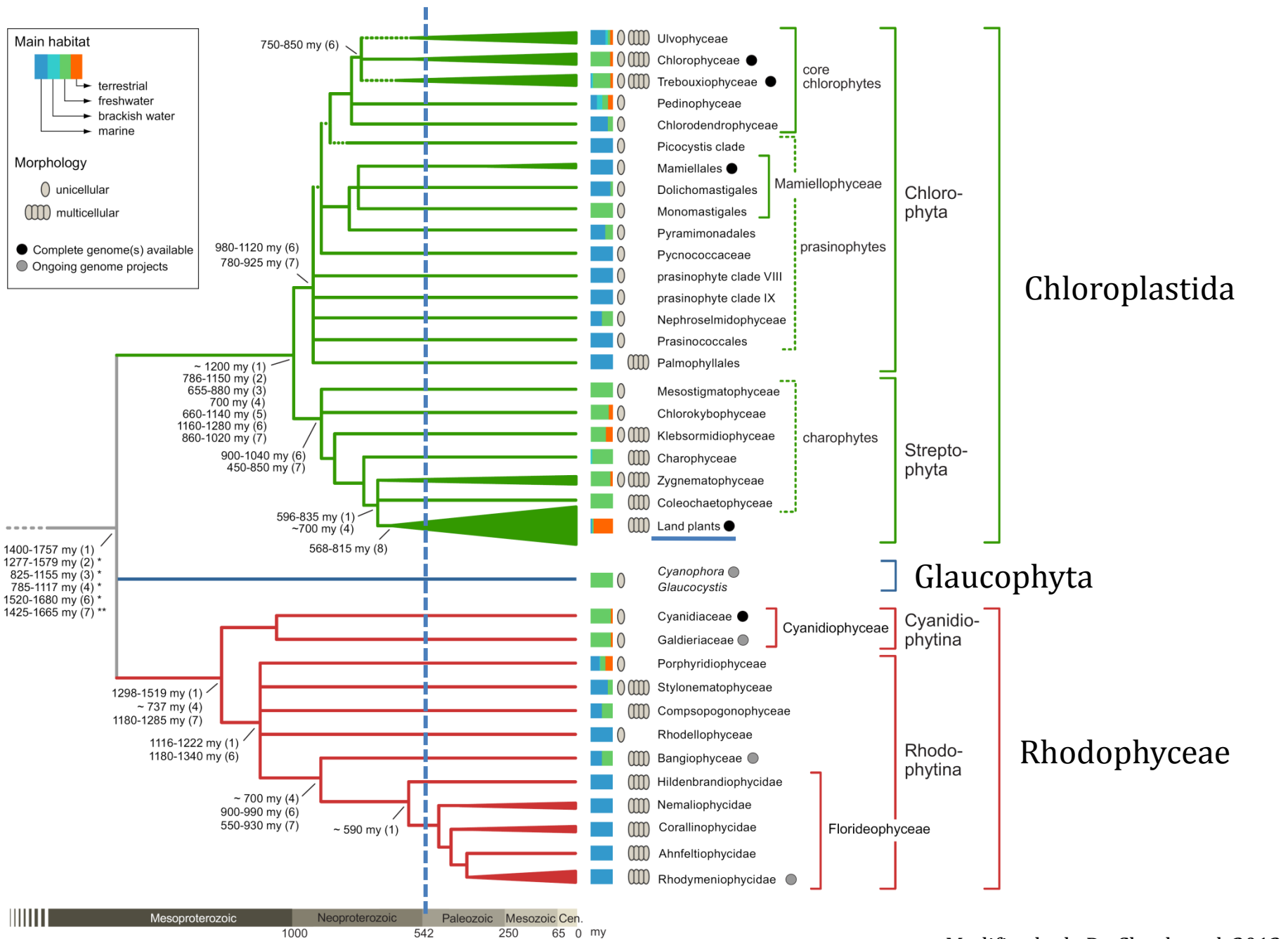


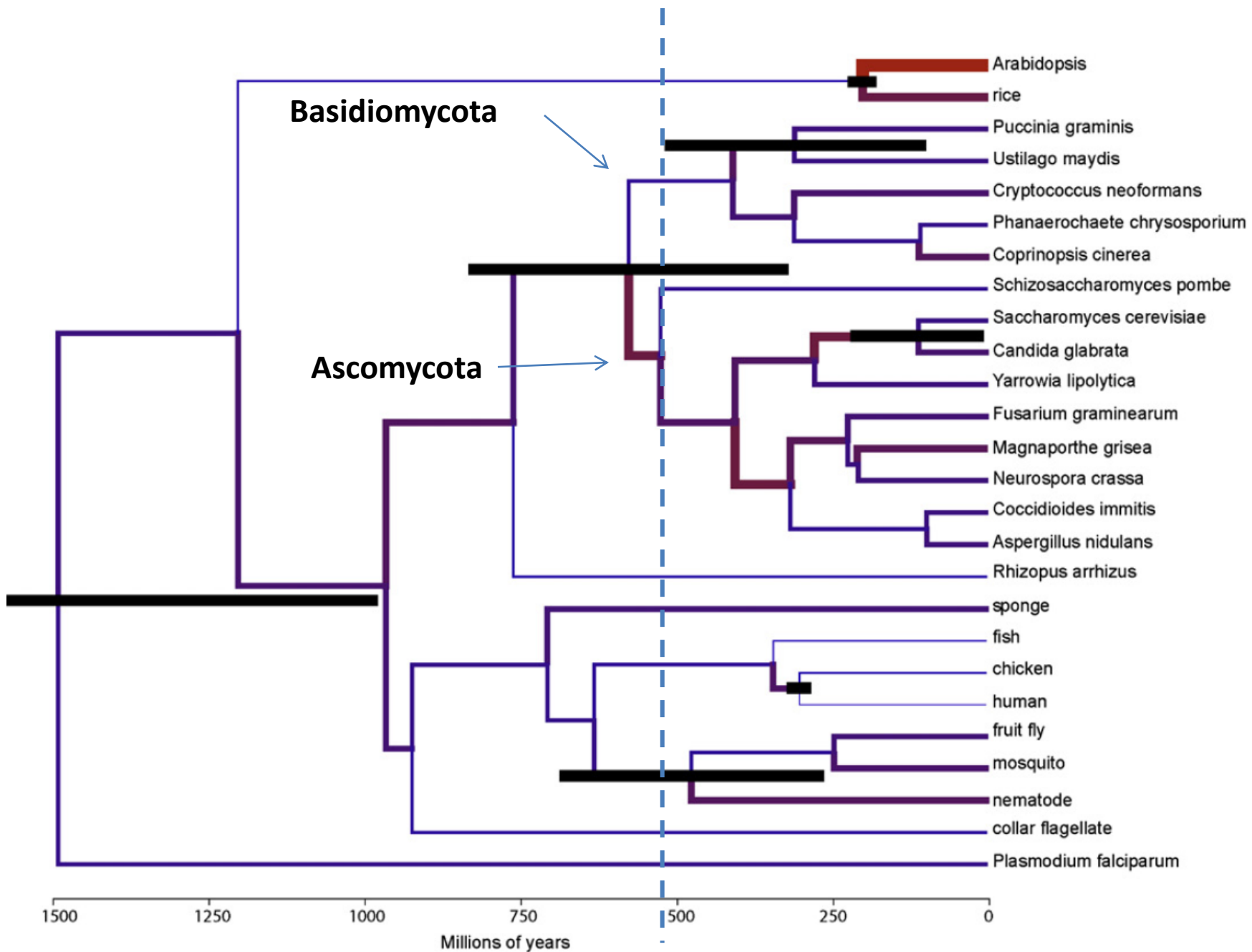
www.scotese.com

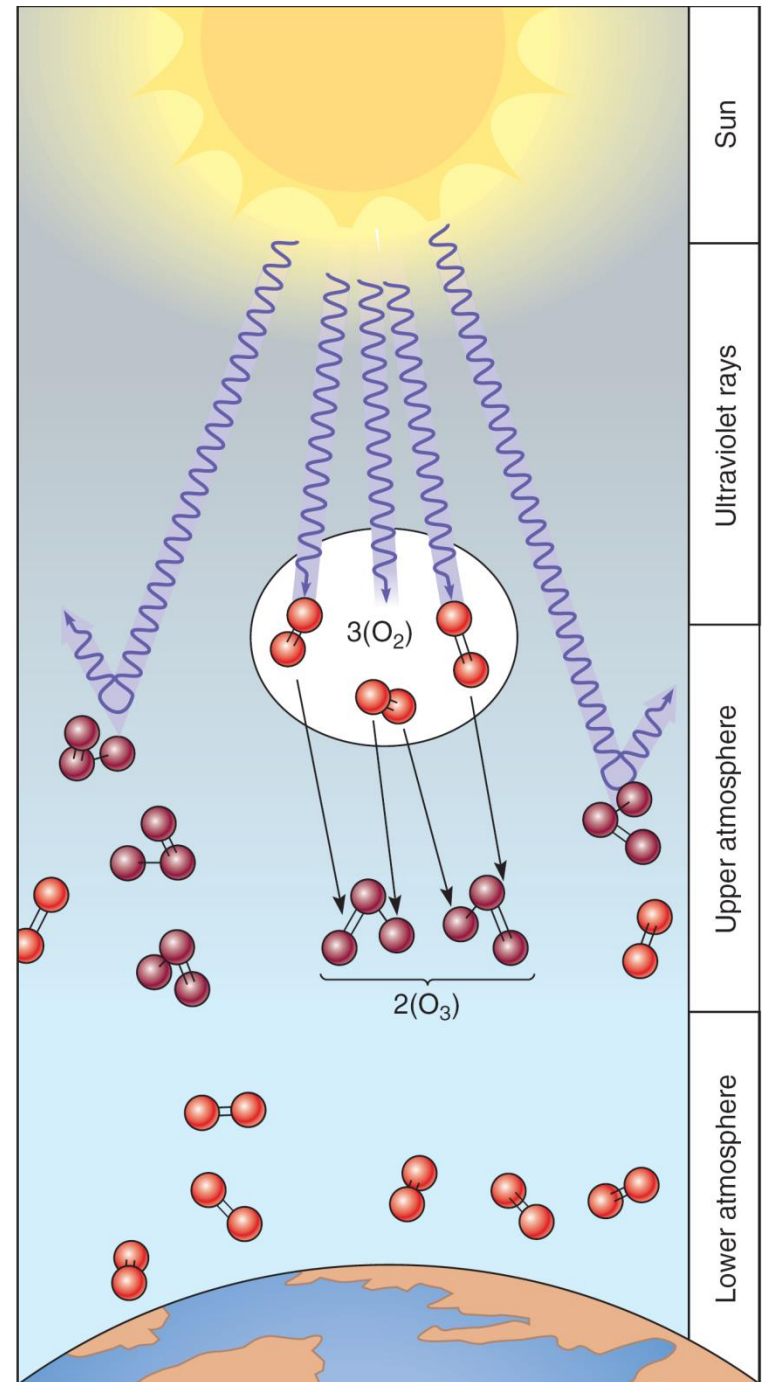
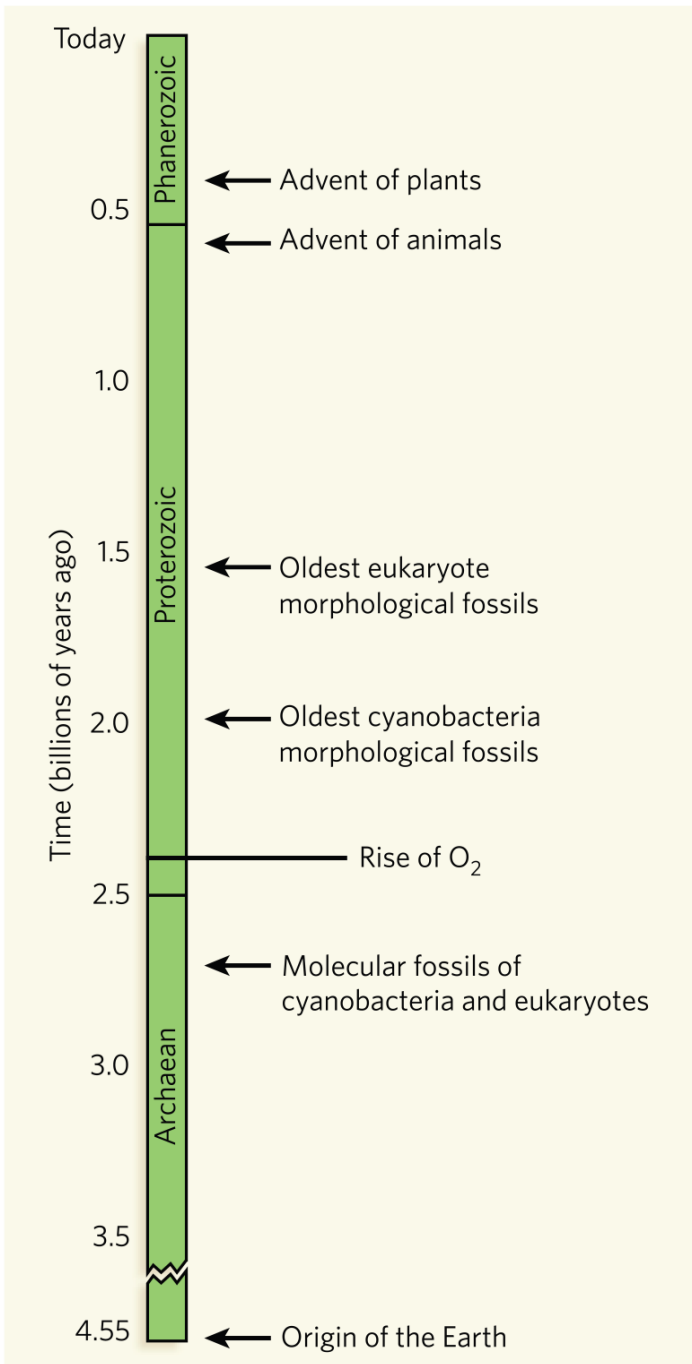
- Cyanobacteria**
- Chlorophyceae**

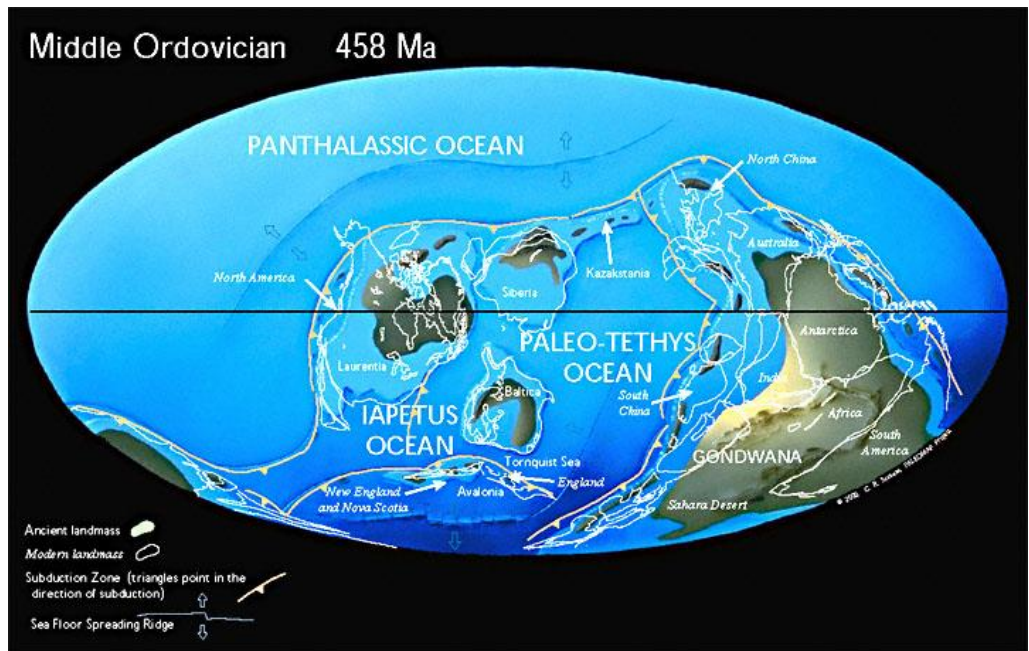
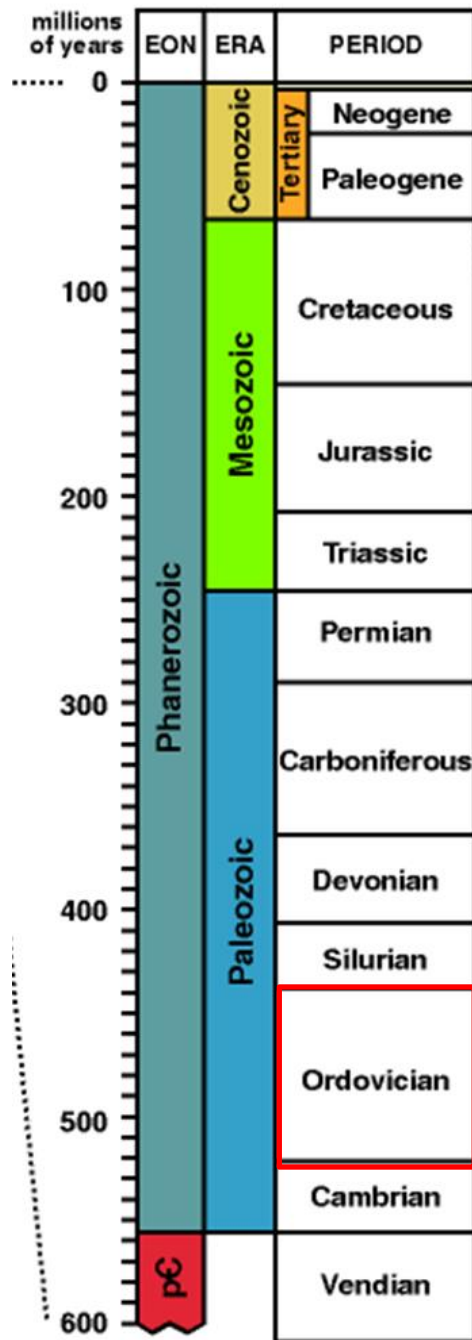
Relación entre la diversificación de eucariotas, la multicelularidad y el oxígeno atmosférico

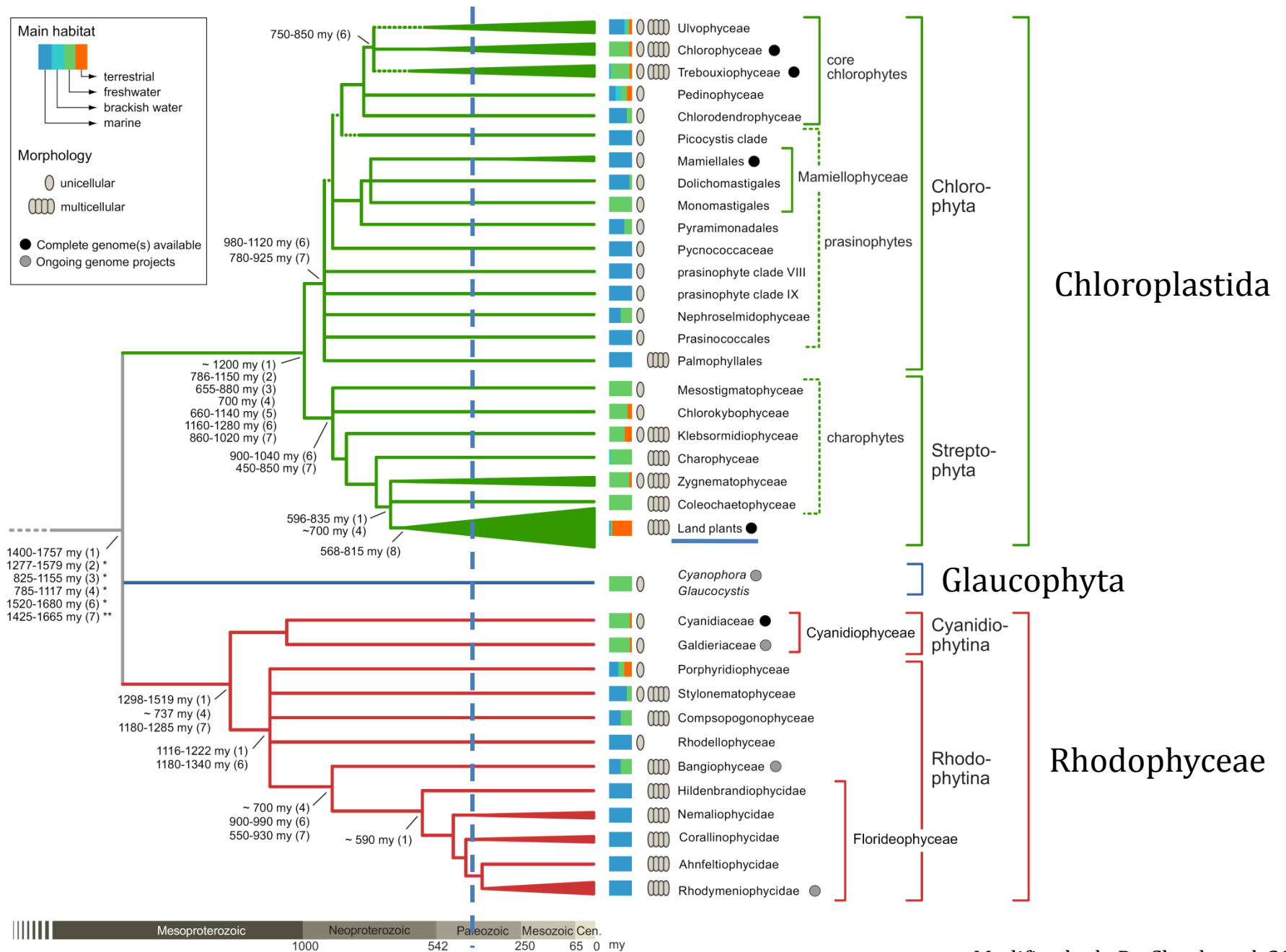
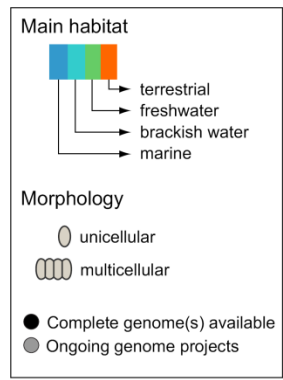


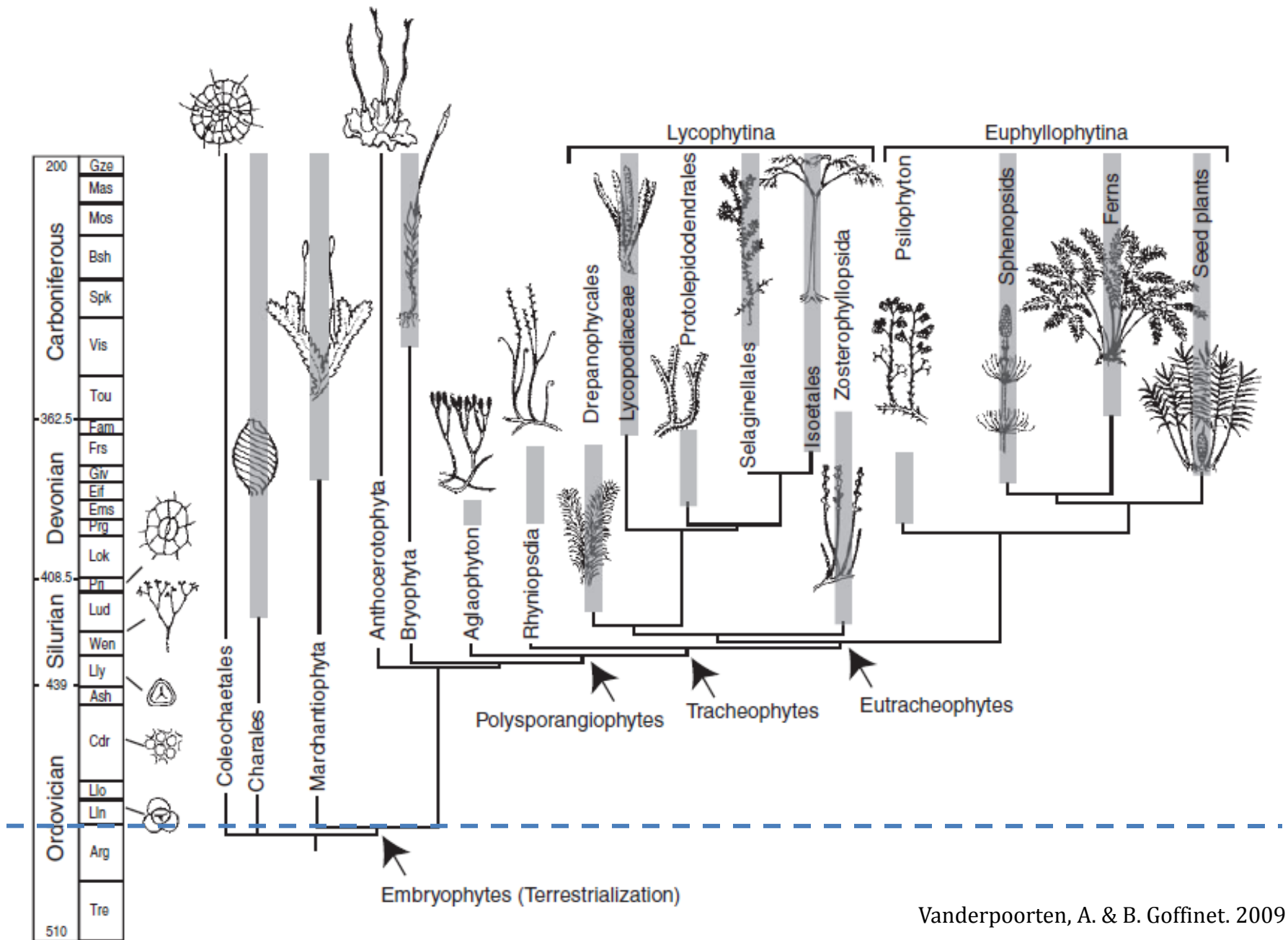


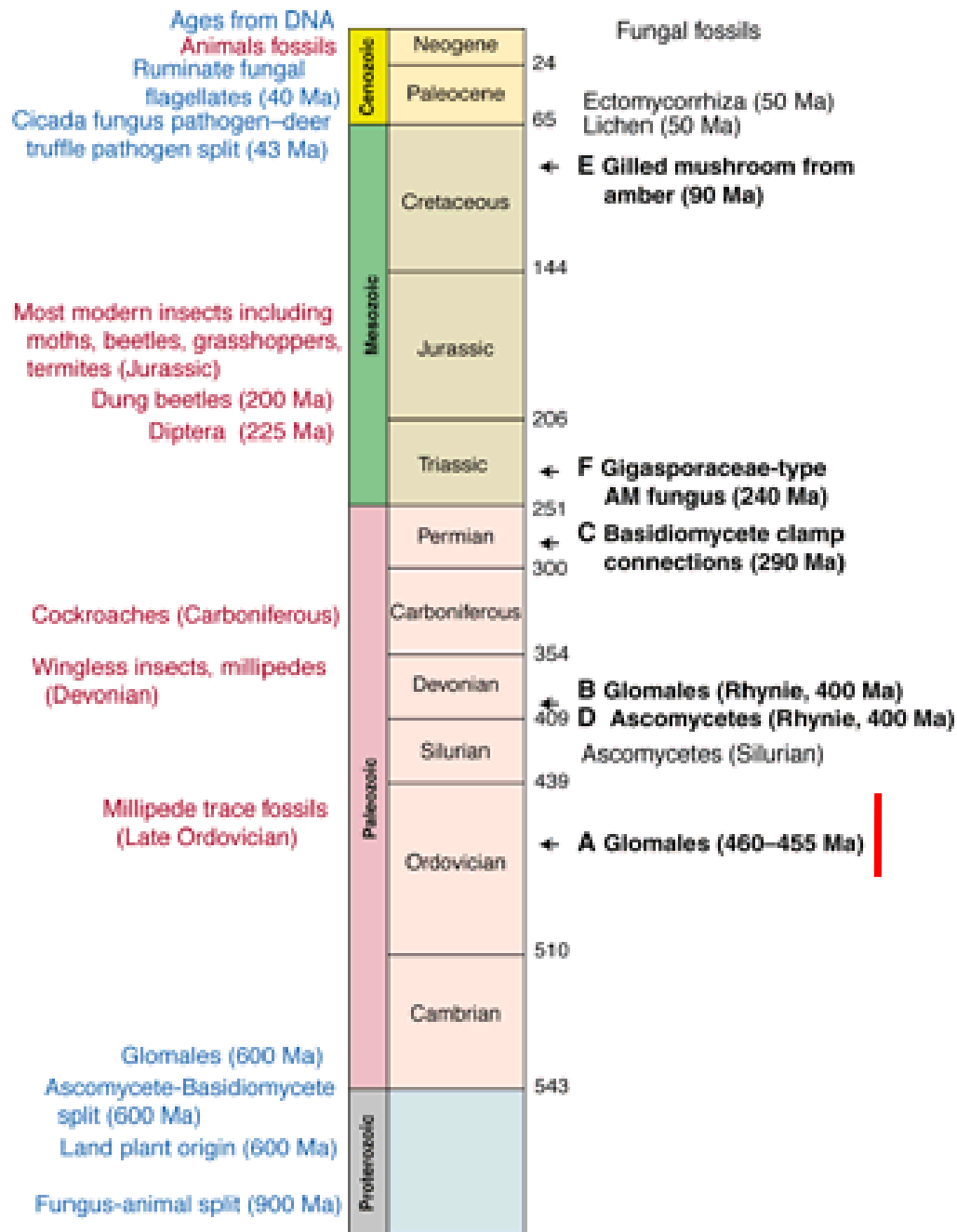












ORIGEN DEL UNIVERSO
13-15 mil millones de años

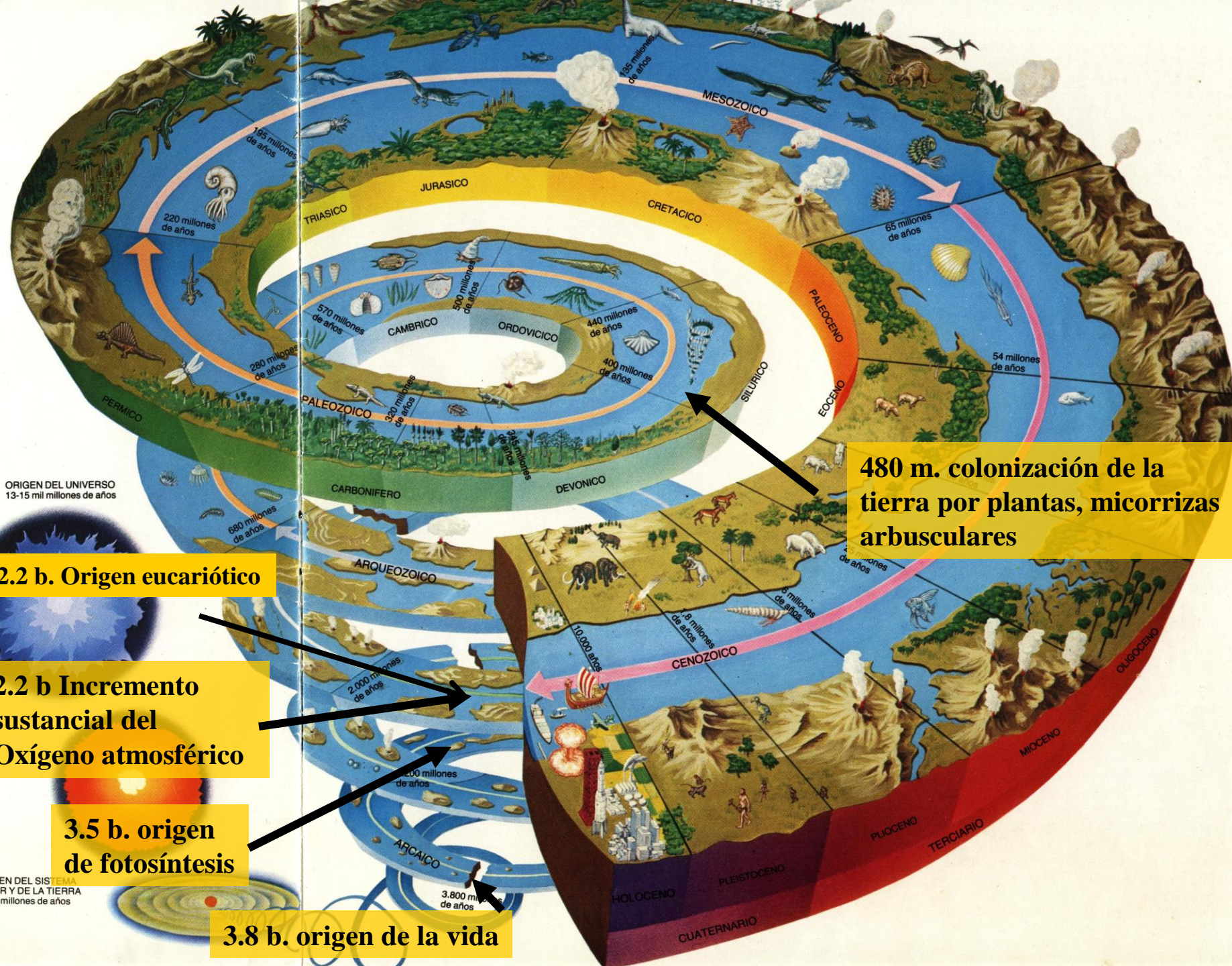
>2.2 b. Origen eucariótico

2.2 b Incremento sustancial del Oxígeno atmosférico

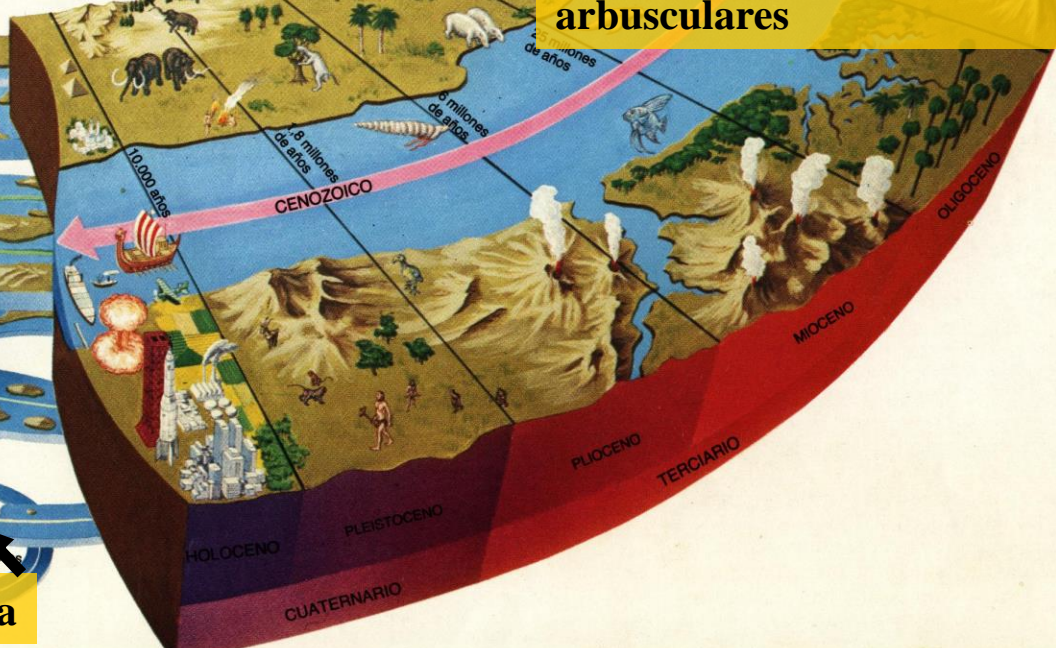
3.5 b. origen de fotosíntesis

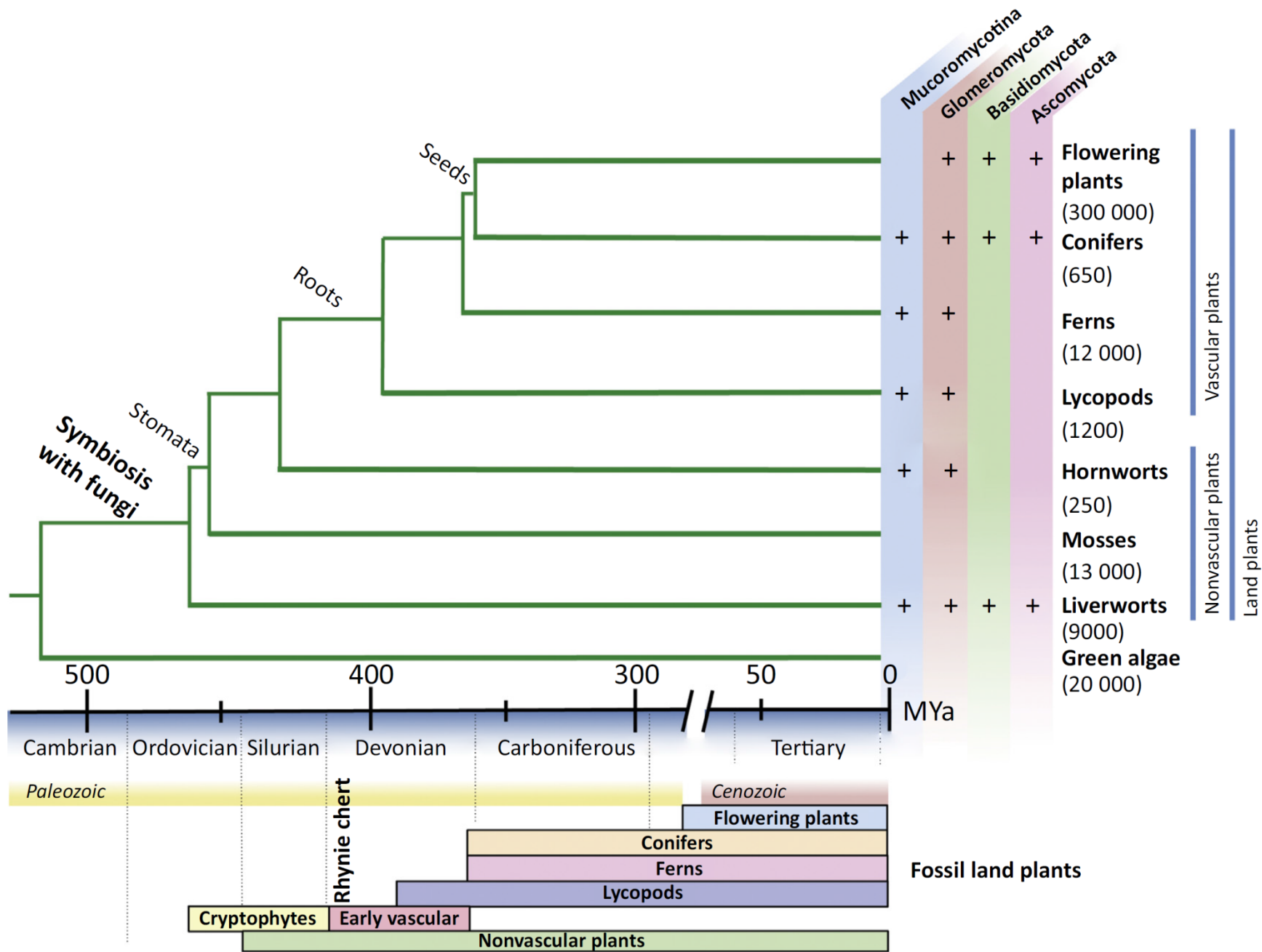
3.8 b. origen de la vida

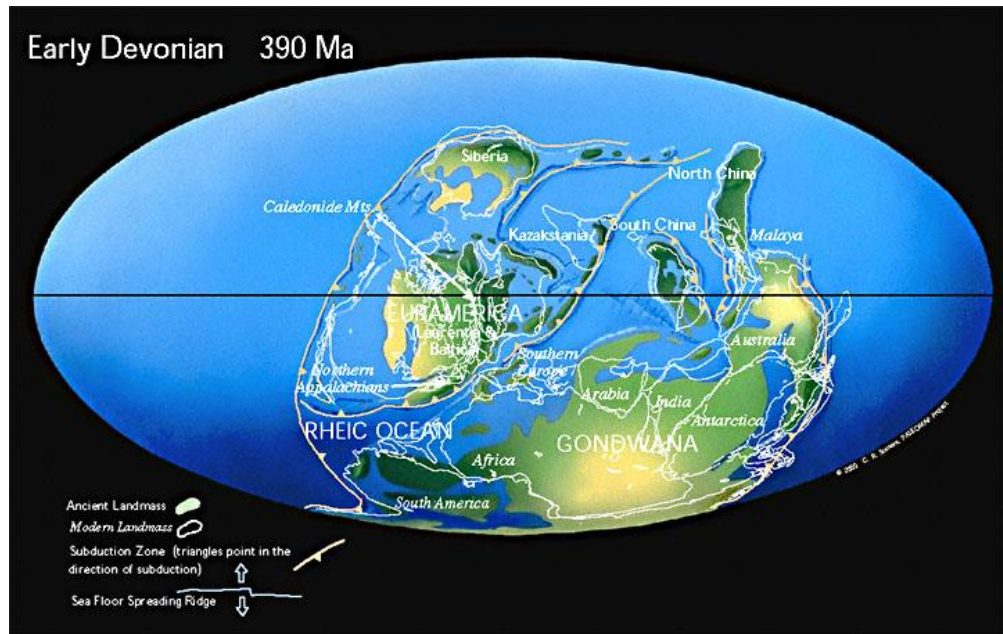
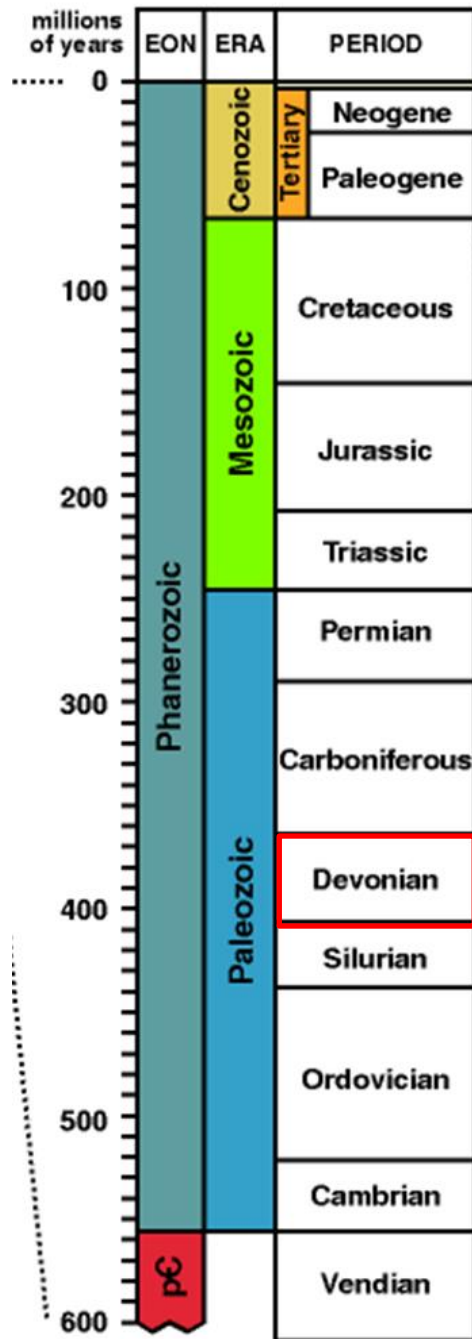
ORIGEN DEL SISTEMA SOLAR Y DE LA TIERRA
4.600 millones de años

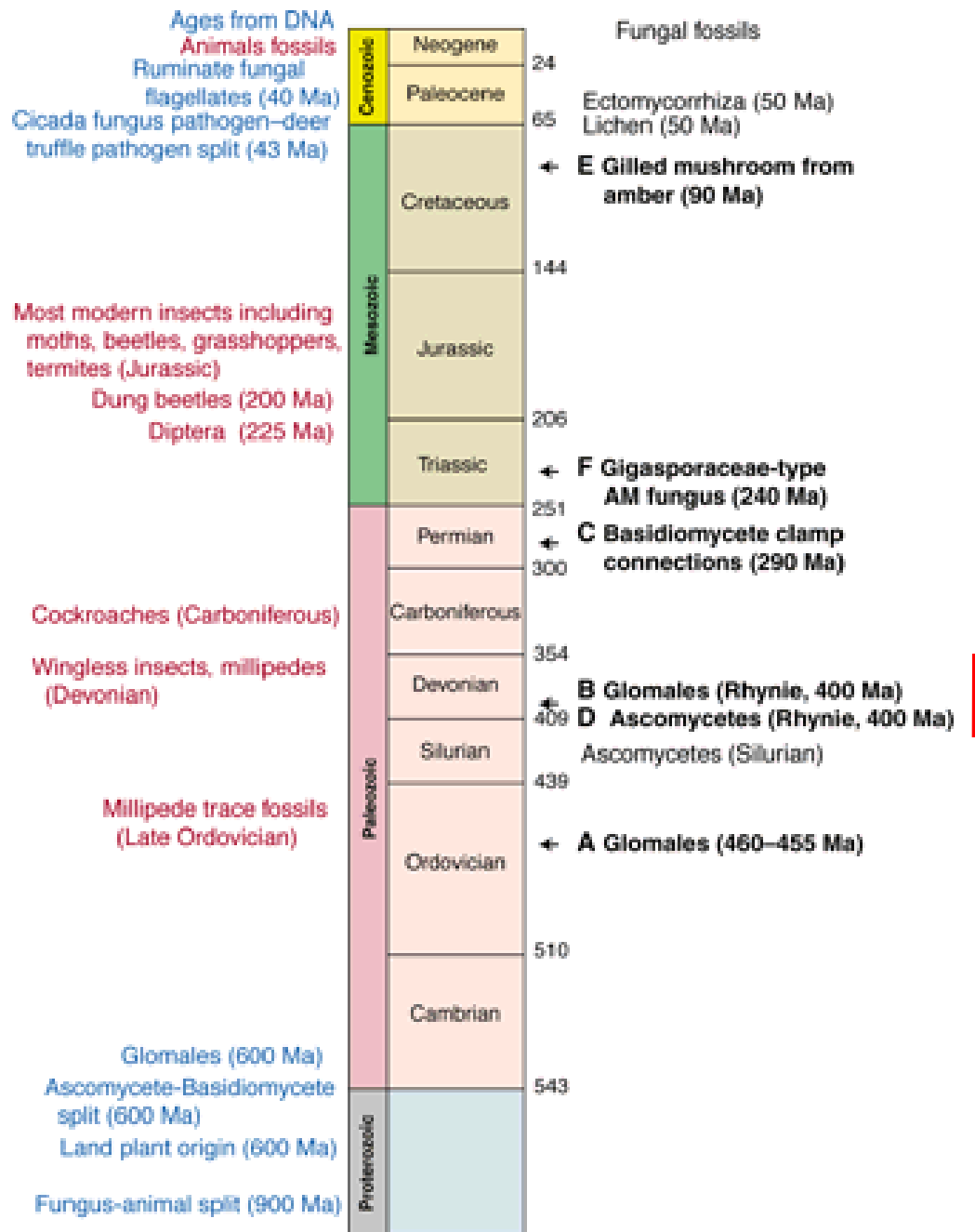


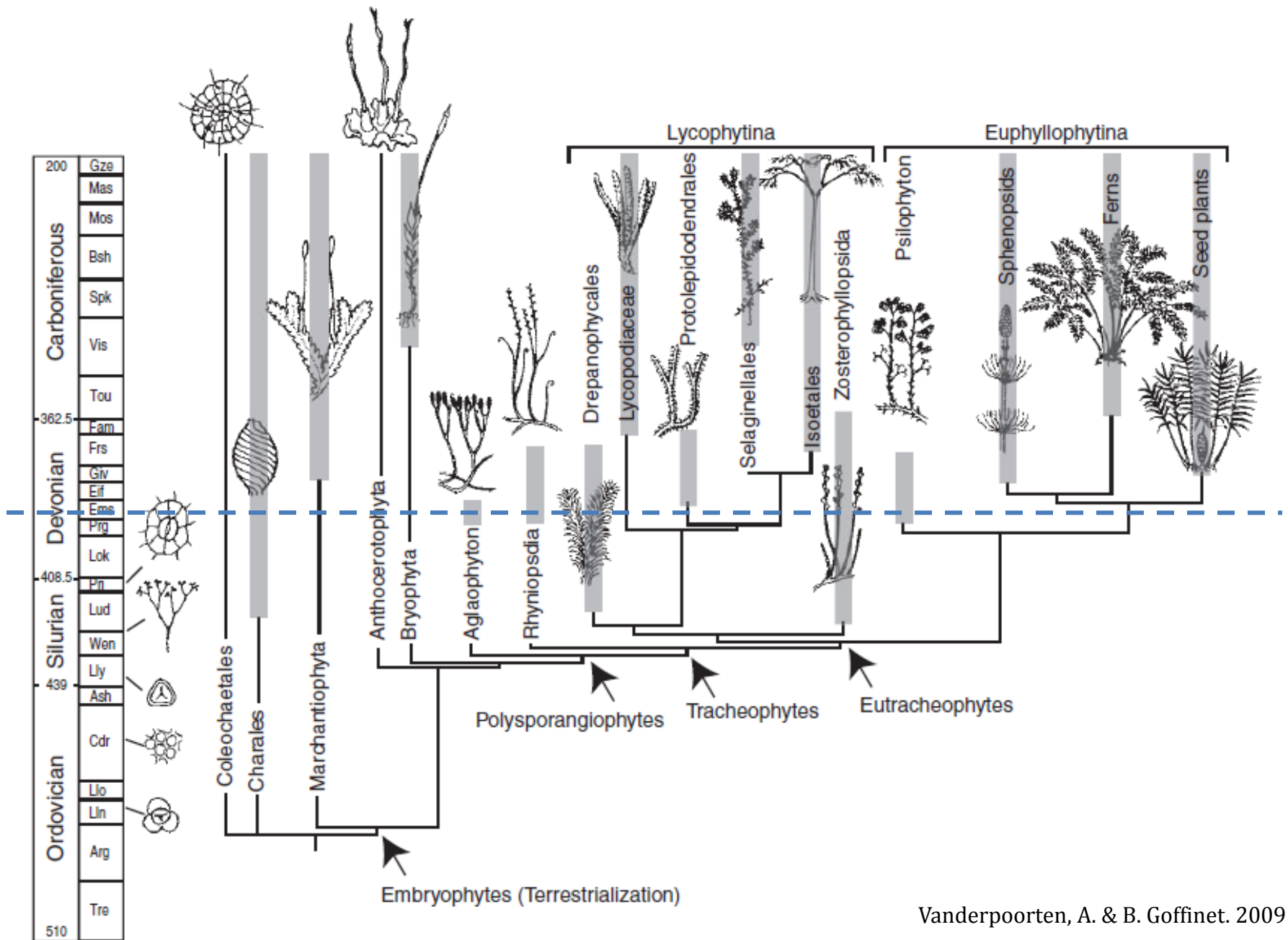
480 m. colonización de la tierra por plantas, micorrizas arbusculares

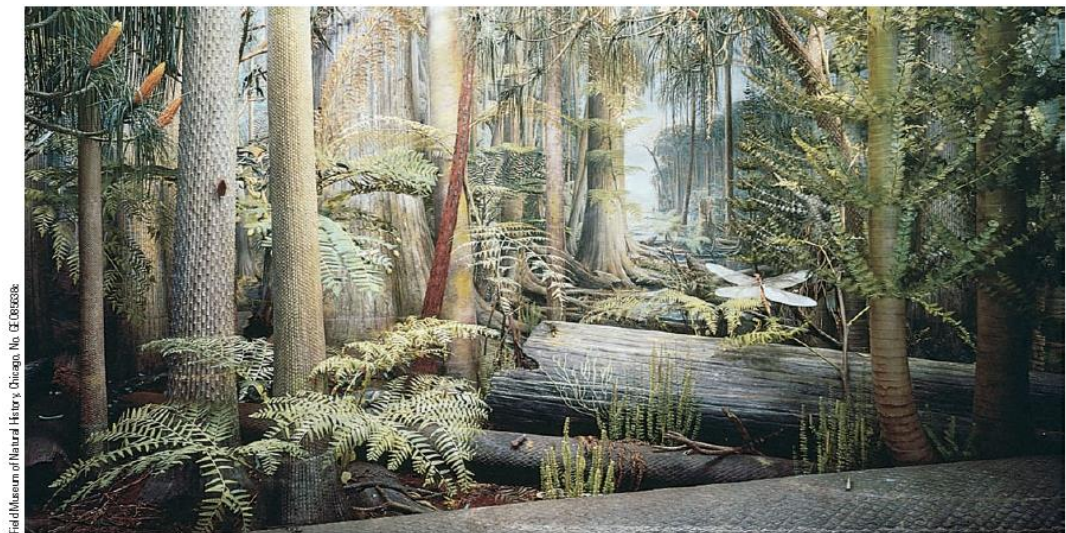
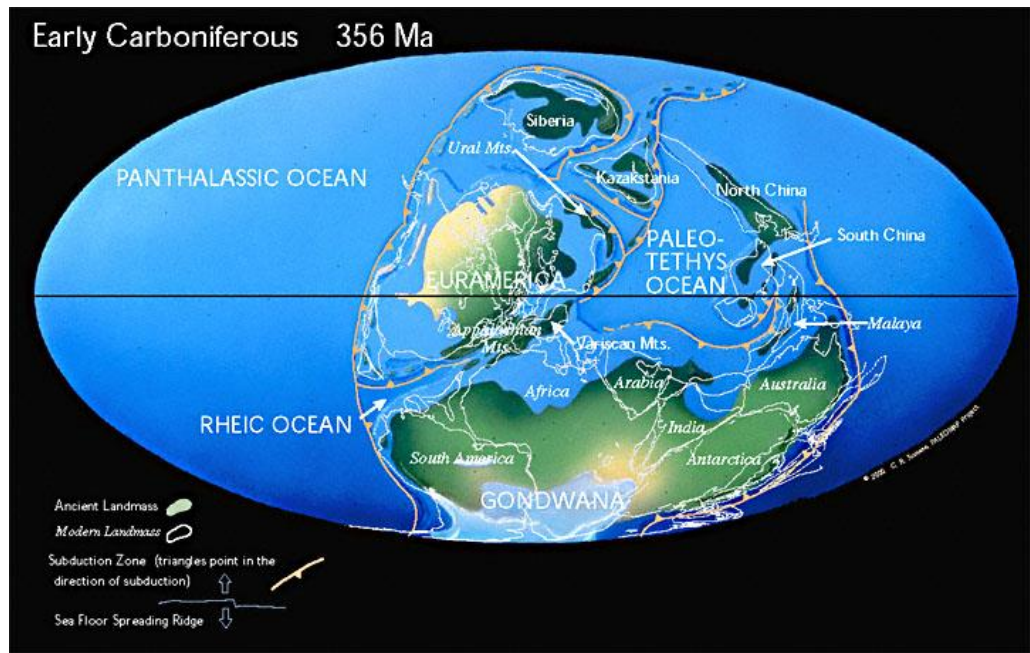
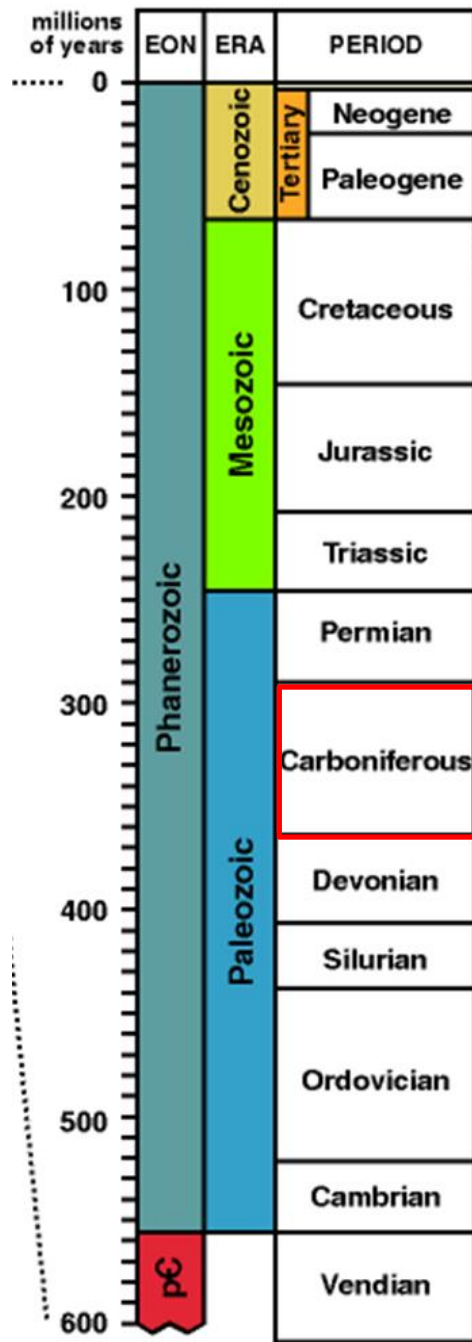




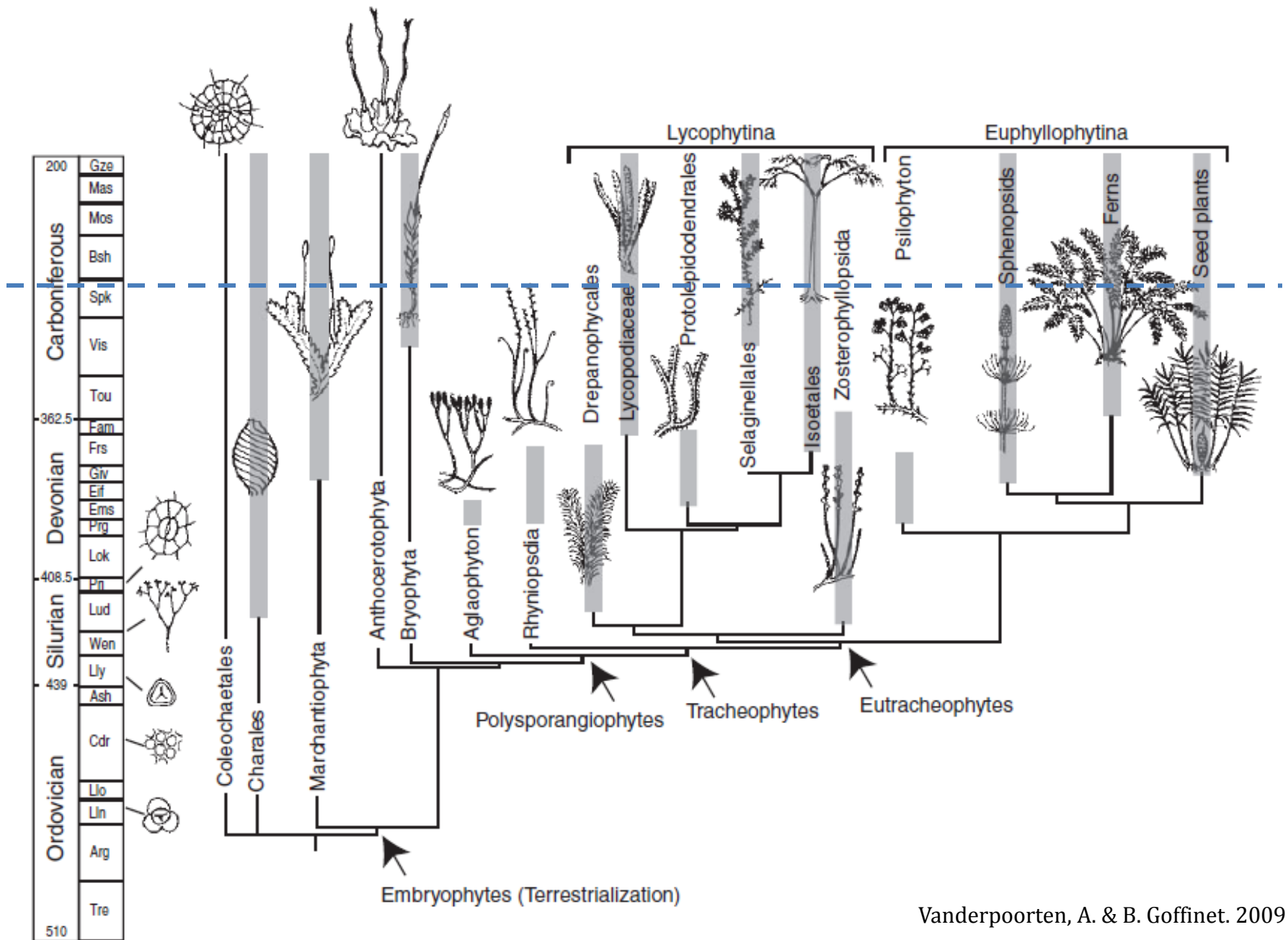


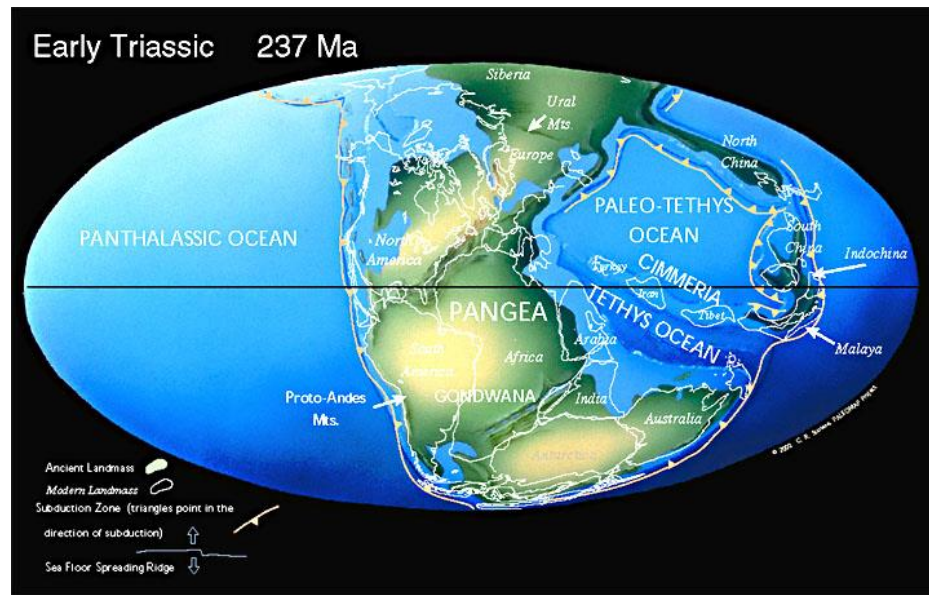
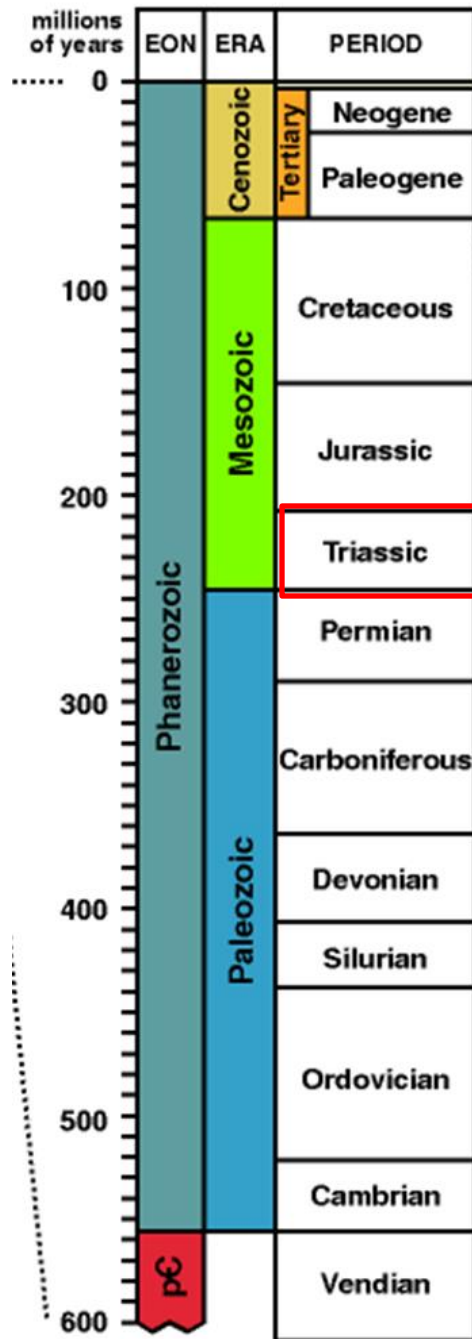


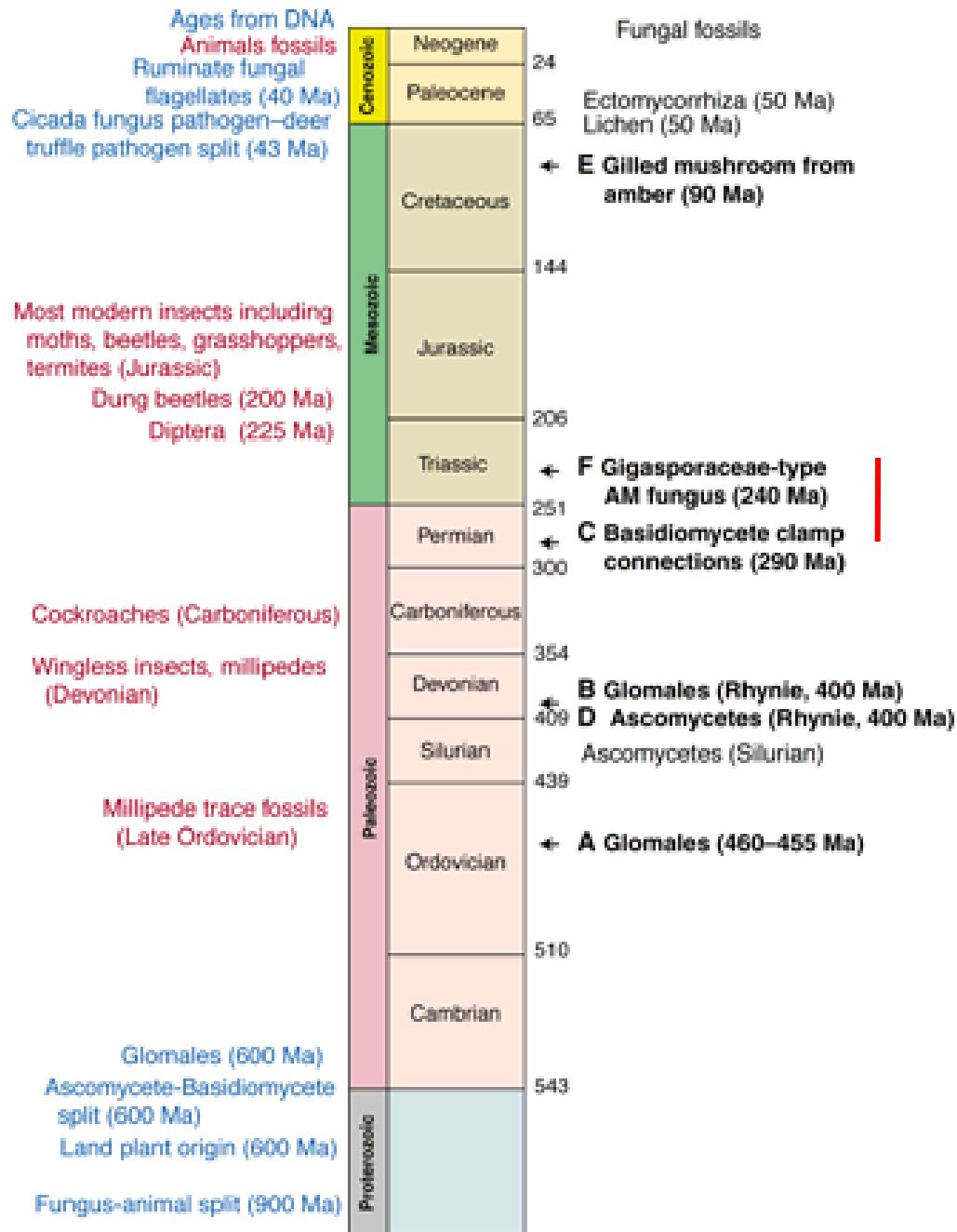


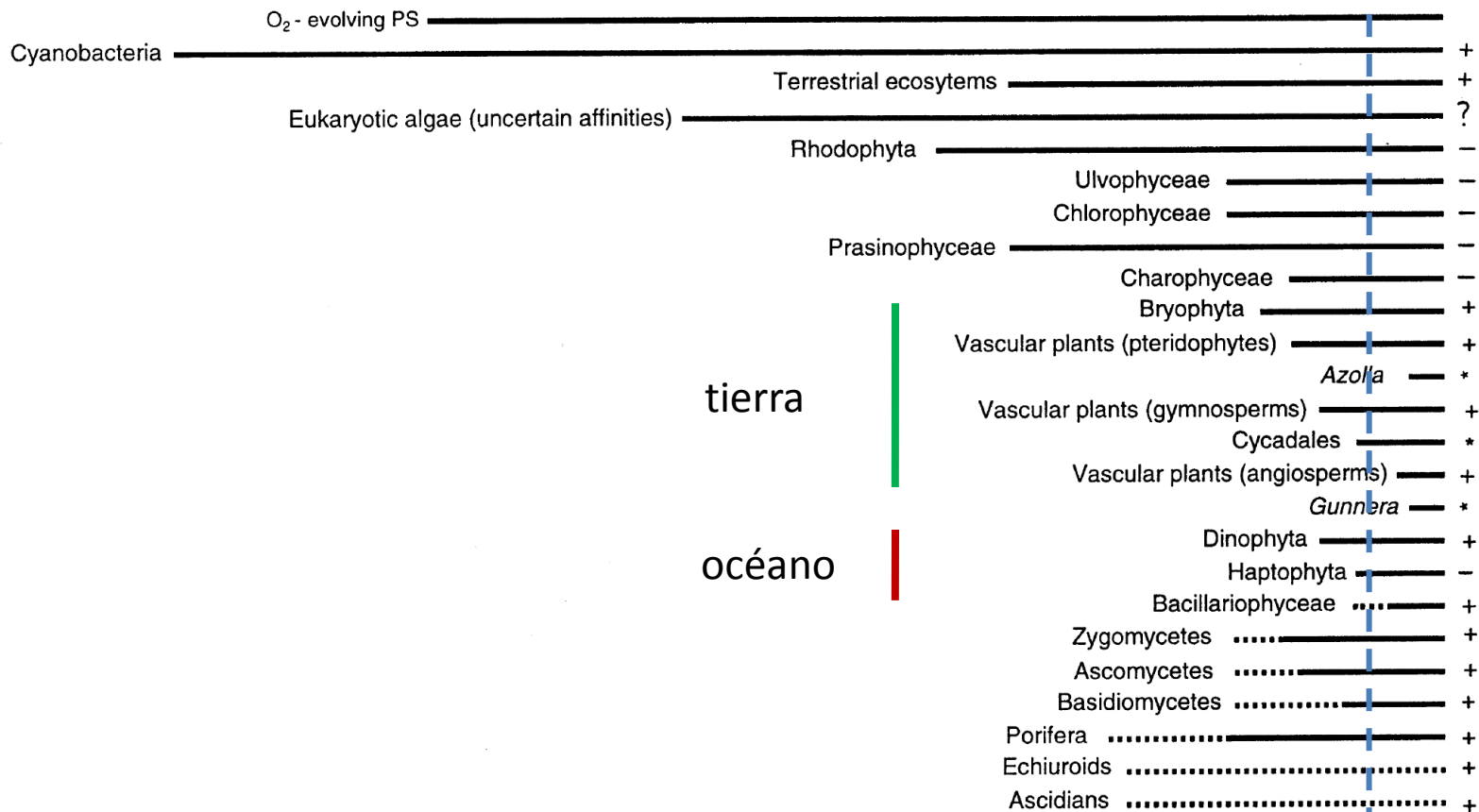
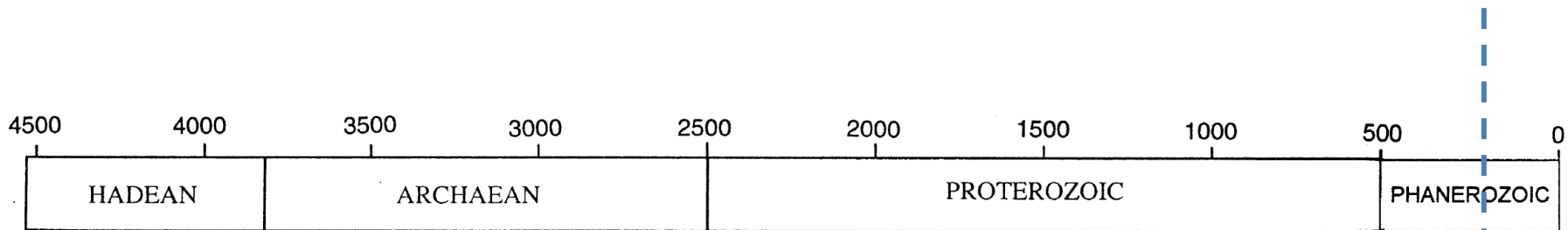


Field Museum of Natural History, Chicago, No. GE080208



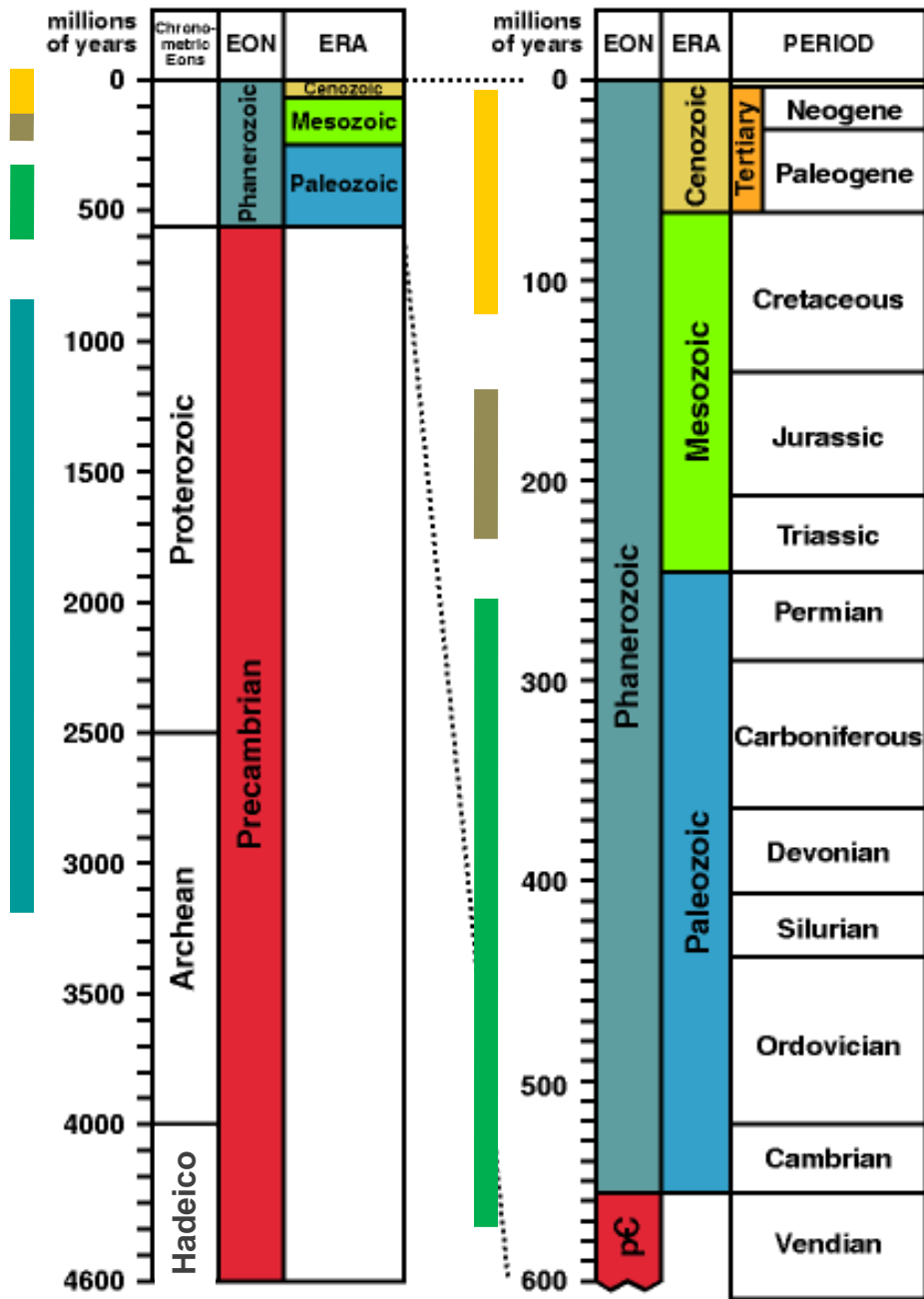






tierra

océano

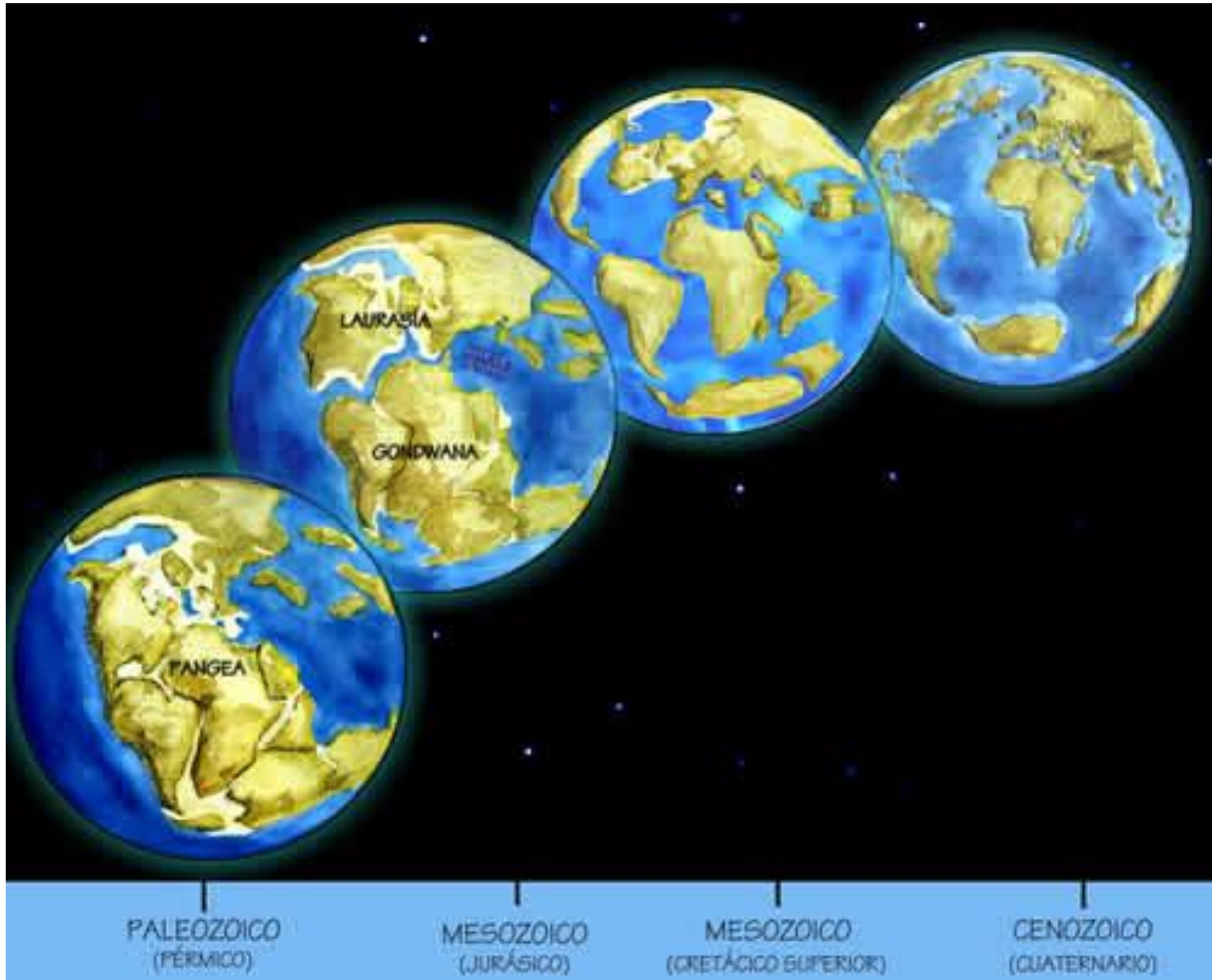


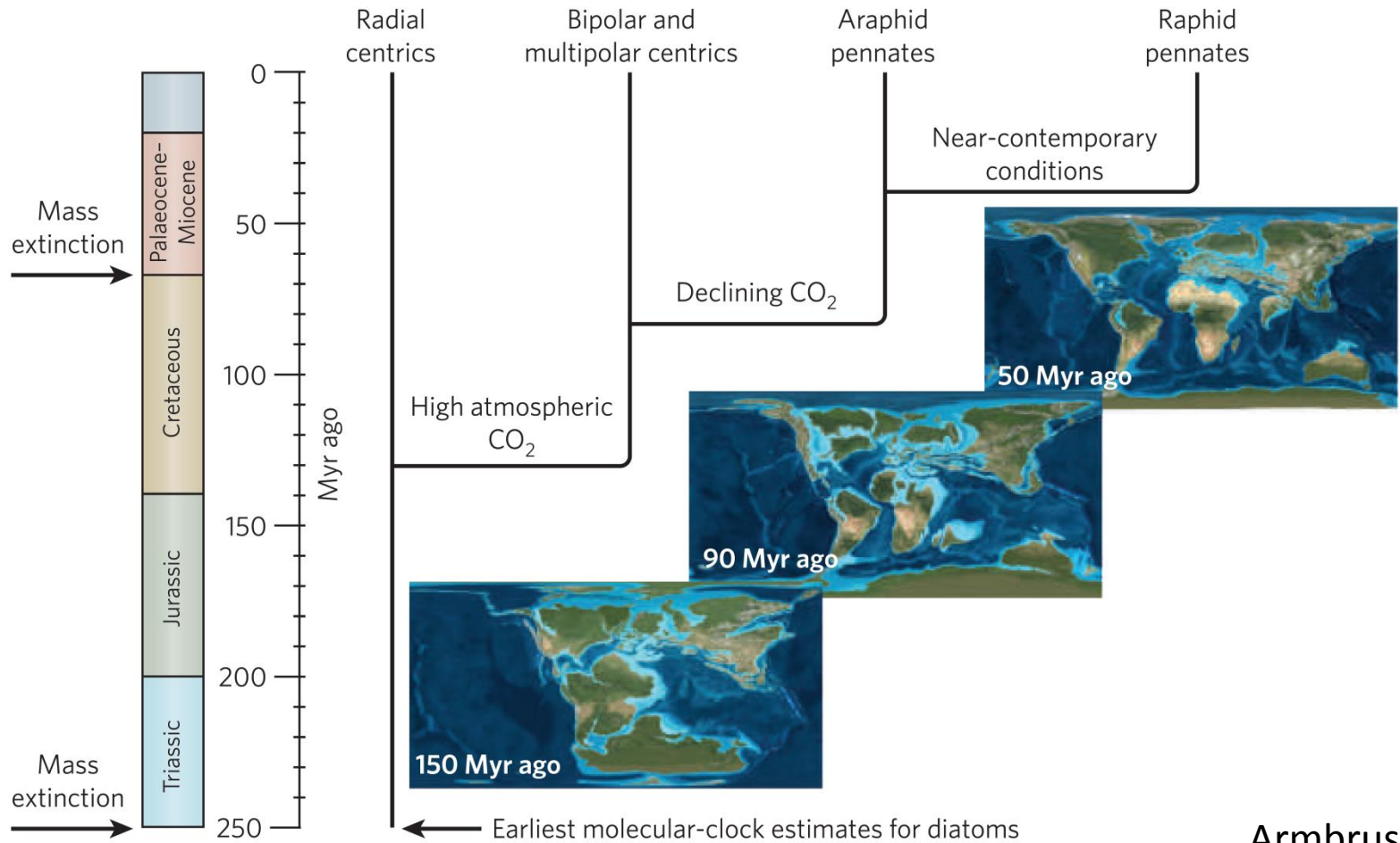
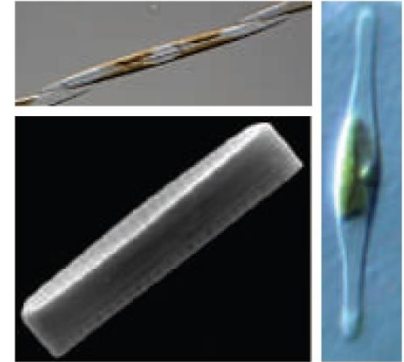
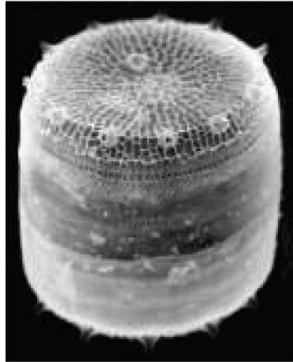
← Extinción masiva (90% de las especies)

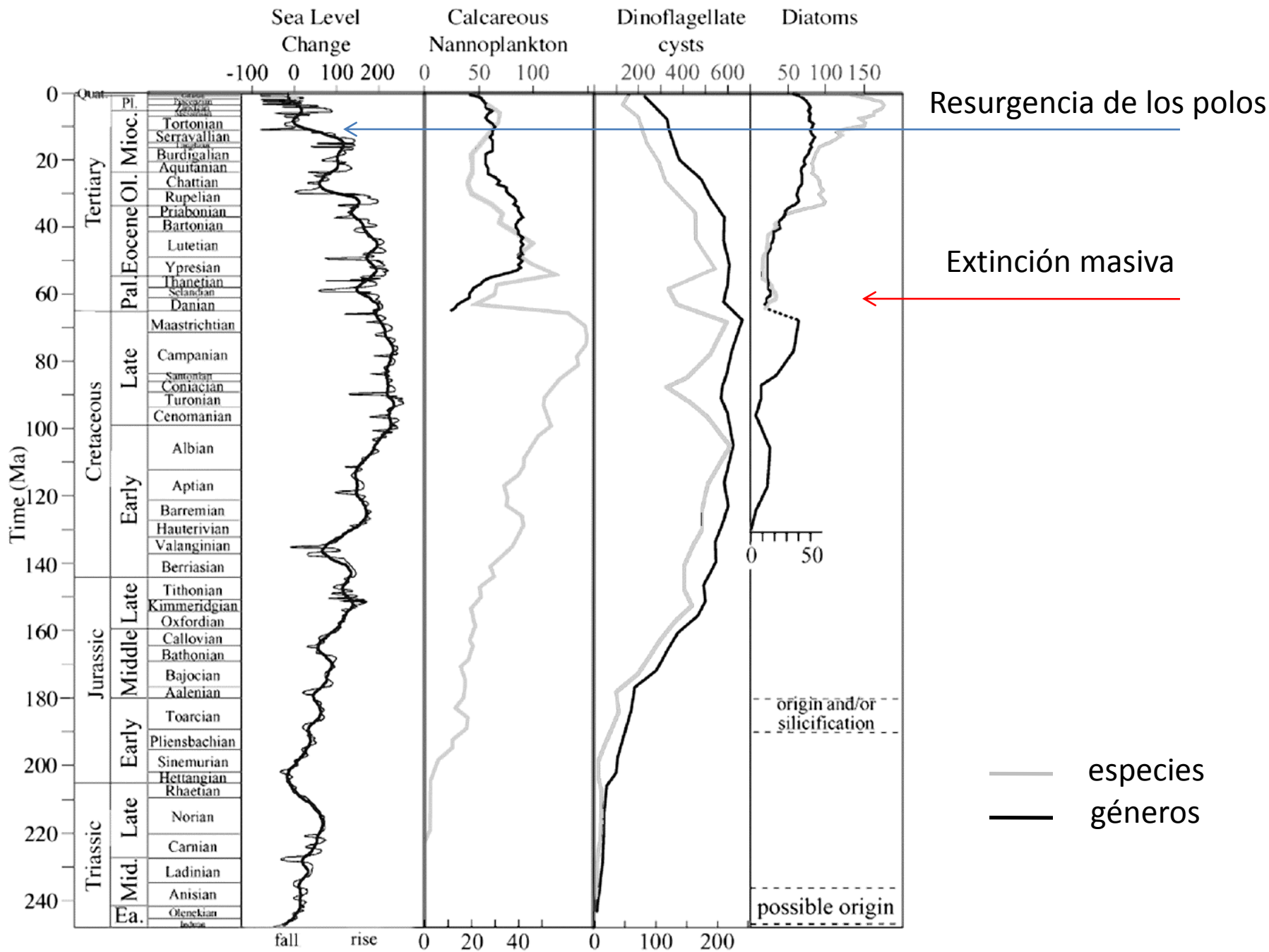
De acuerdo a los registros fósiles, en los **océanos...**

- Cianobacterias
- Chlorophyceae
- Dinophyceae y Cocolitofóridos
- Diatomeas

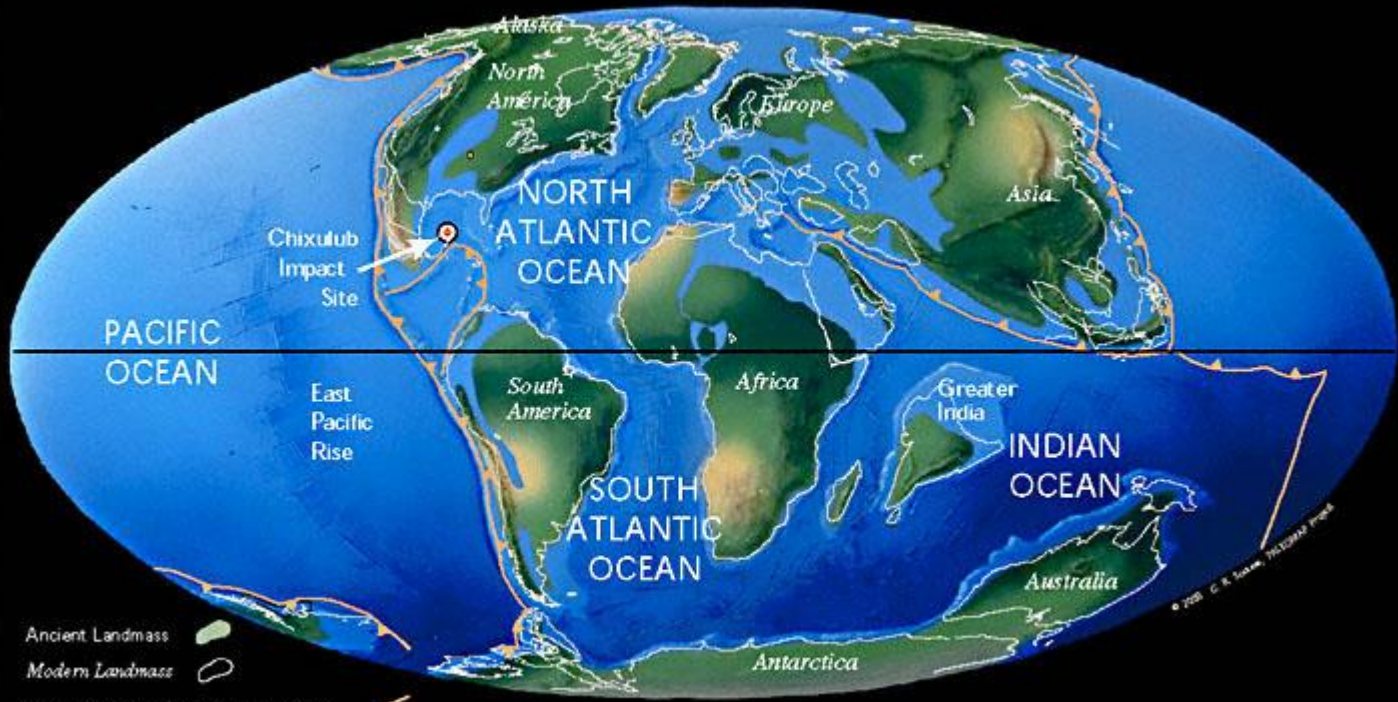
Tectónica de placas – deriva continental

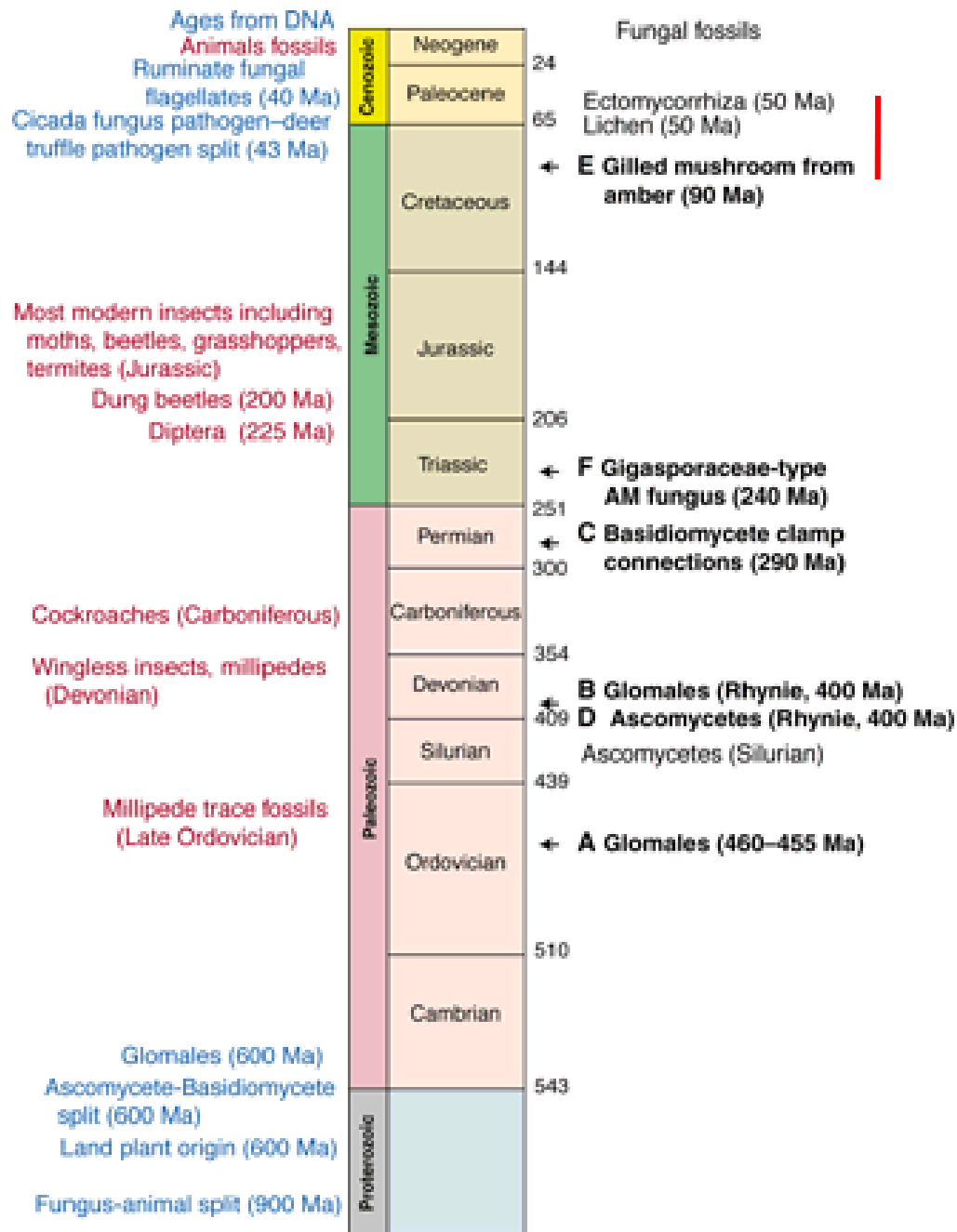




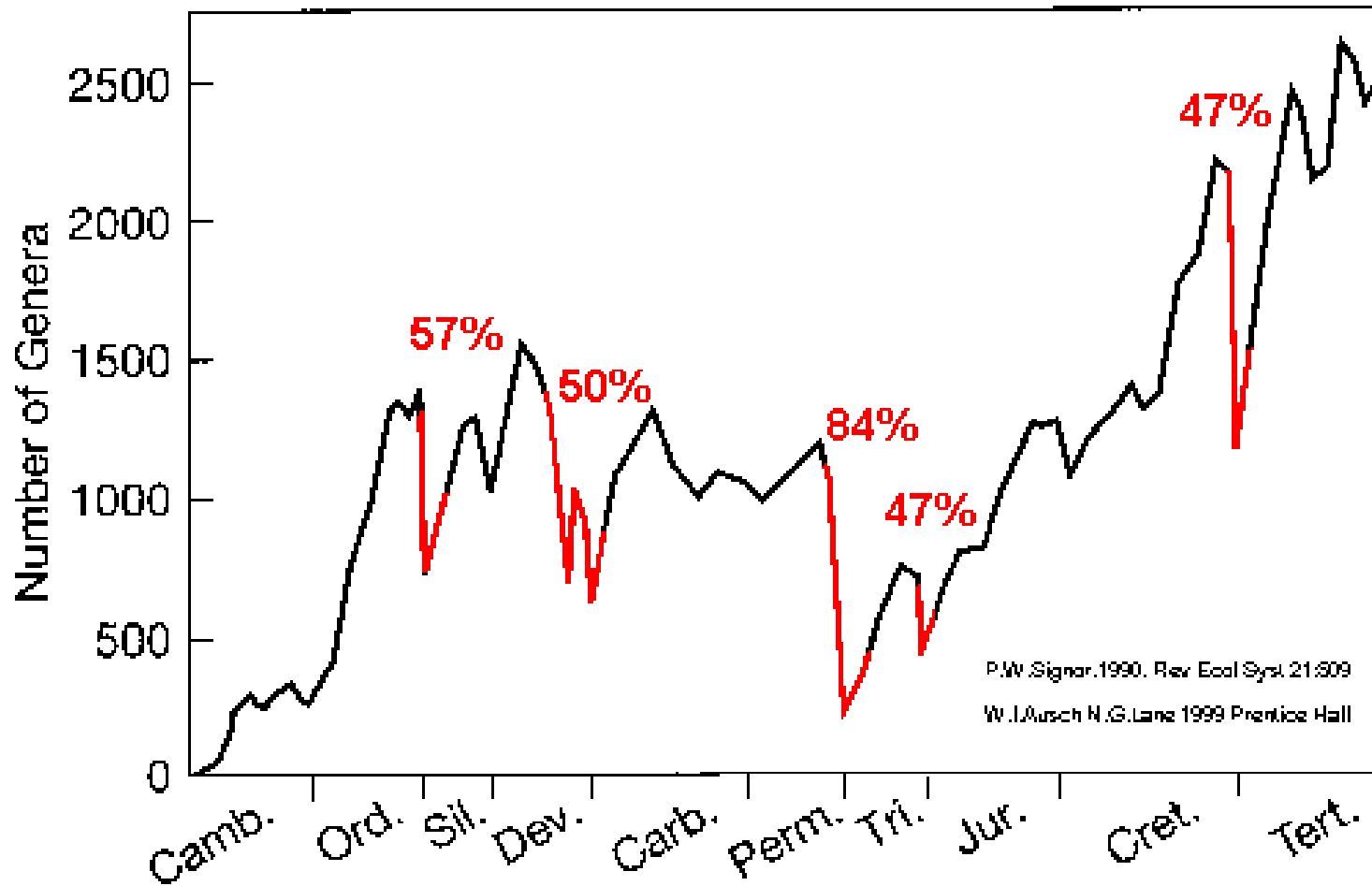


K/T Boundary 66 Ma

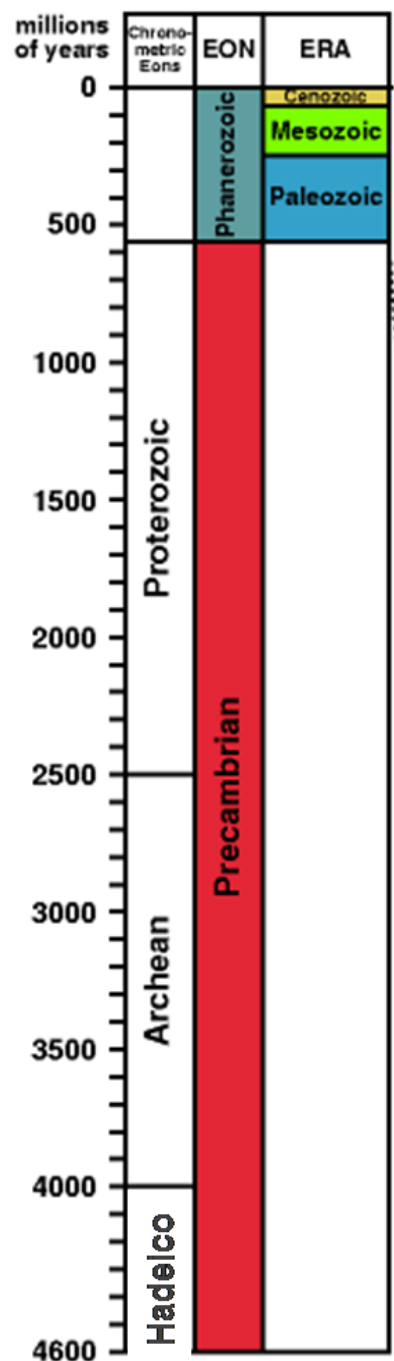




Extinciones masivas



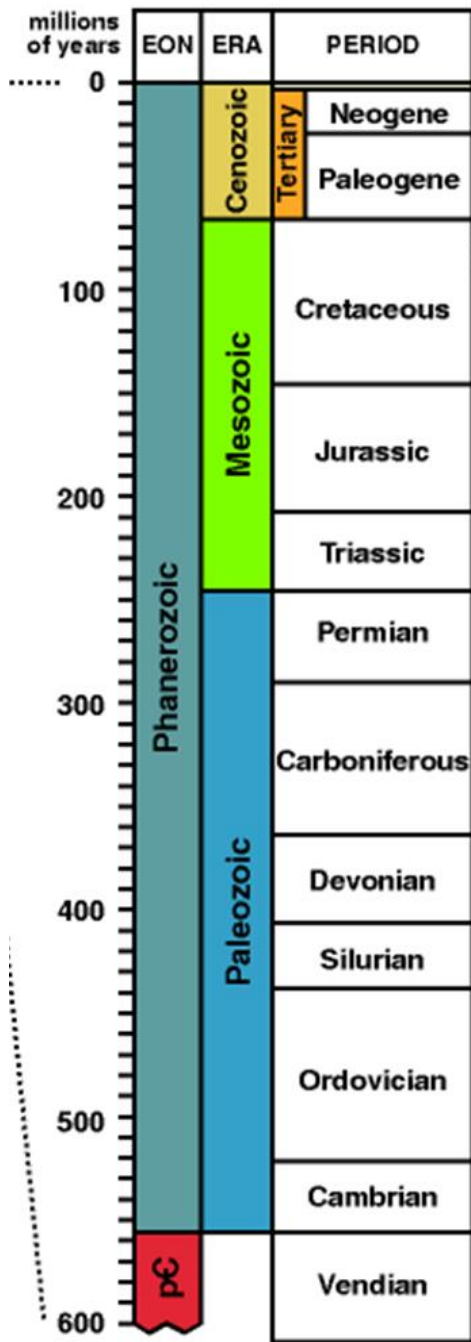
Síntesis



Extinción masiva

- ← Extinción masiva
- ← Divergencia Ascomycota-Basidiomycota
- ← Divergencia animales - hongos
- ← Origen de endosimbiosis secundaria
- ← Origen de eucariota fotosintetizador endosimbiosis primaria
- ← Origen de la célula eucariota
- ← Incremento de oxígeno
- ← Origen de la fotosíntesis
- ← Origen de la vida
- ← Origen de la tierra





← Extinción masiva

← Extinción masiva

← Extinción masiva

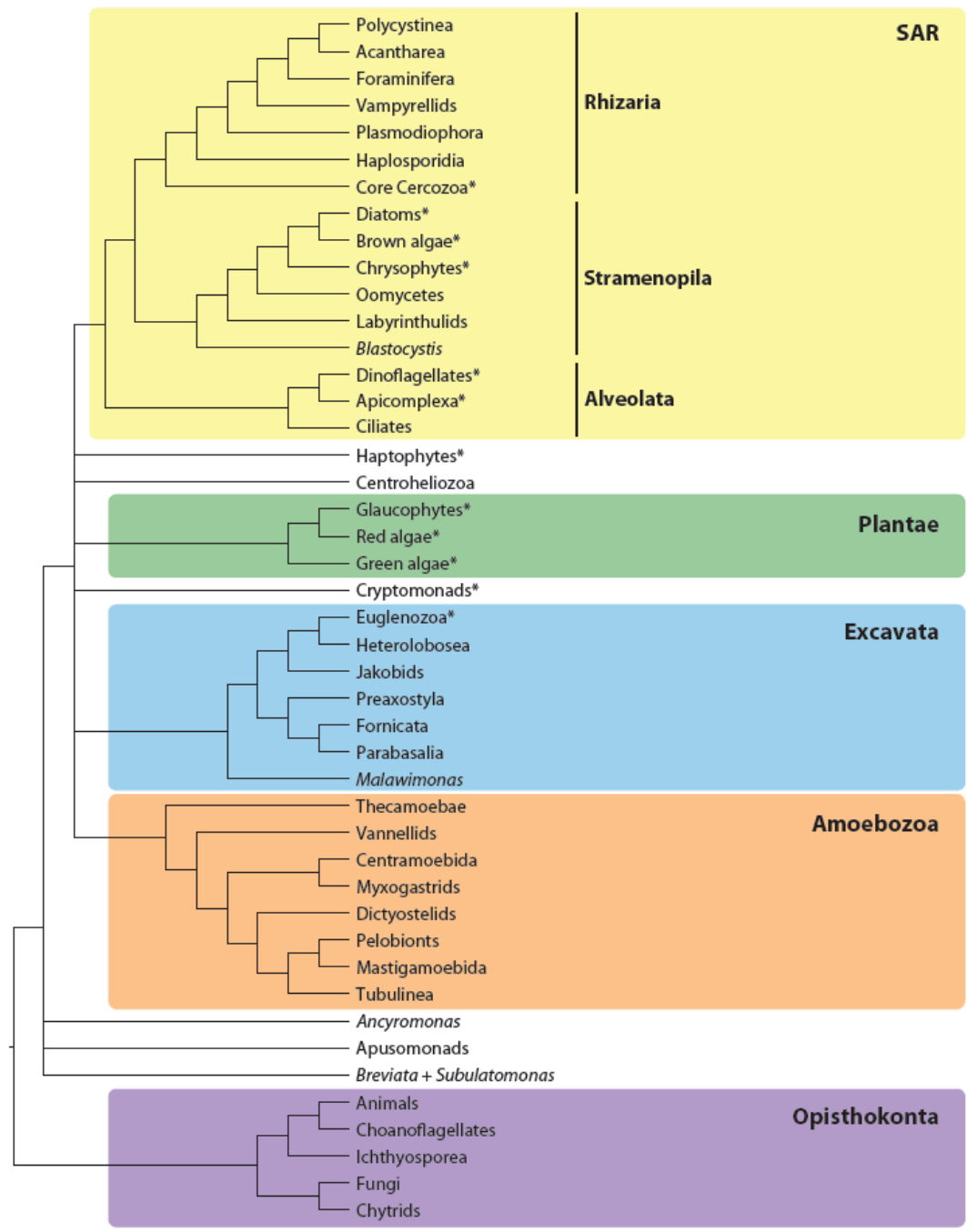
← Extinción masiva
 ← Origen de plantas con semillas

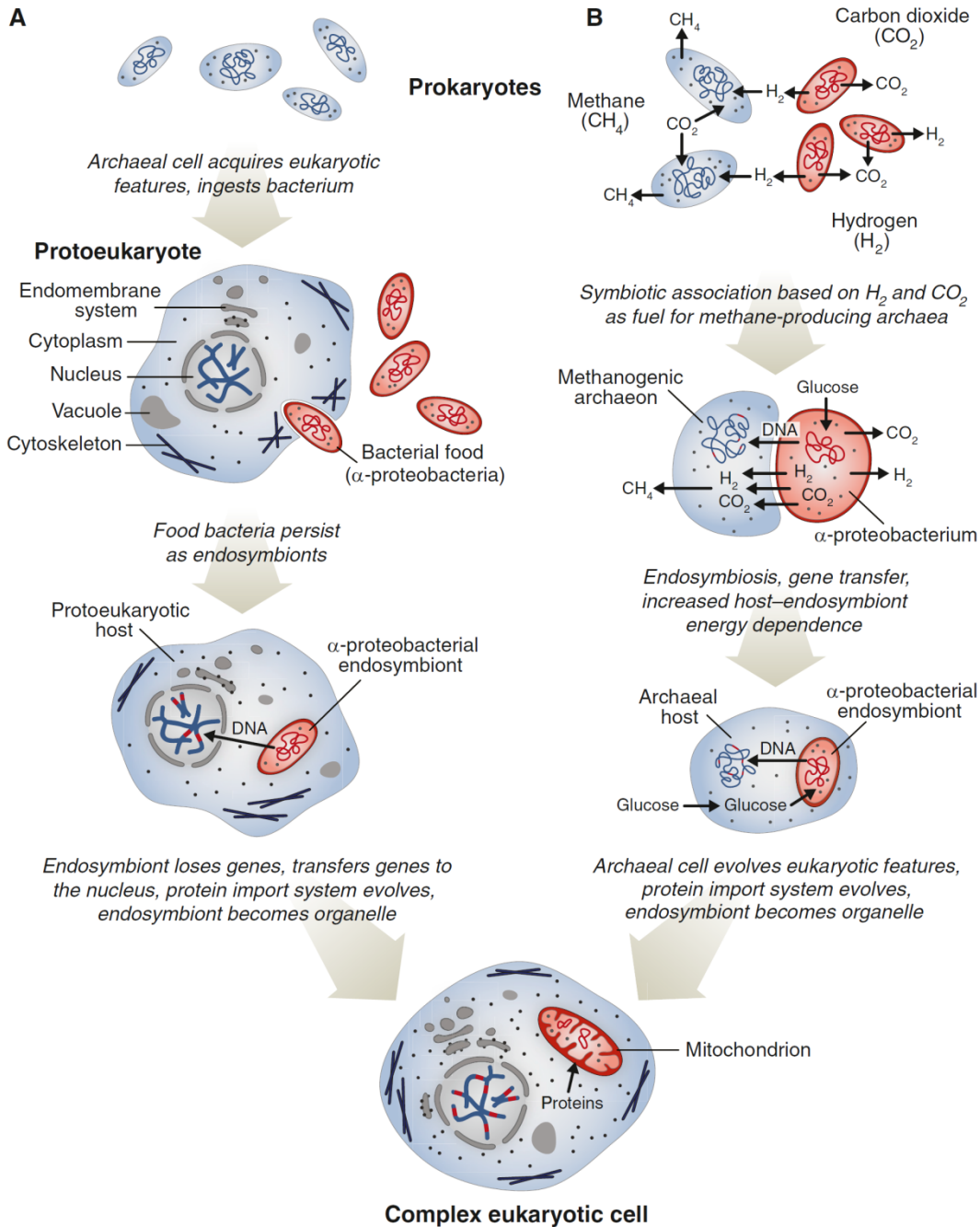
← Extinción masiva

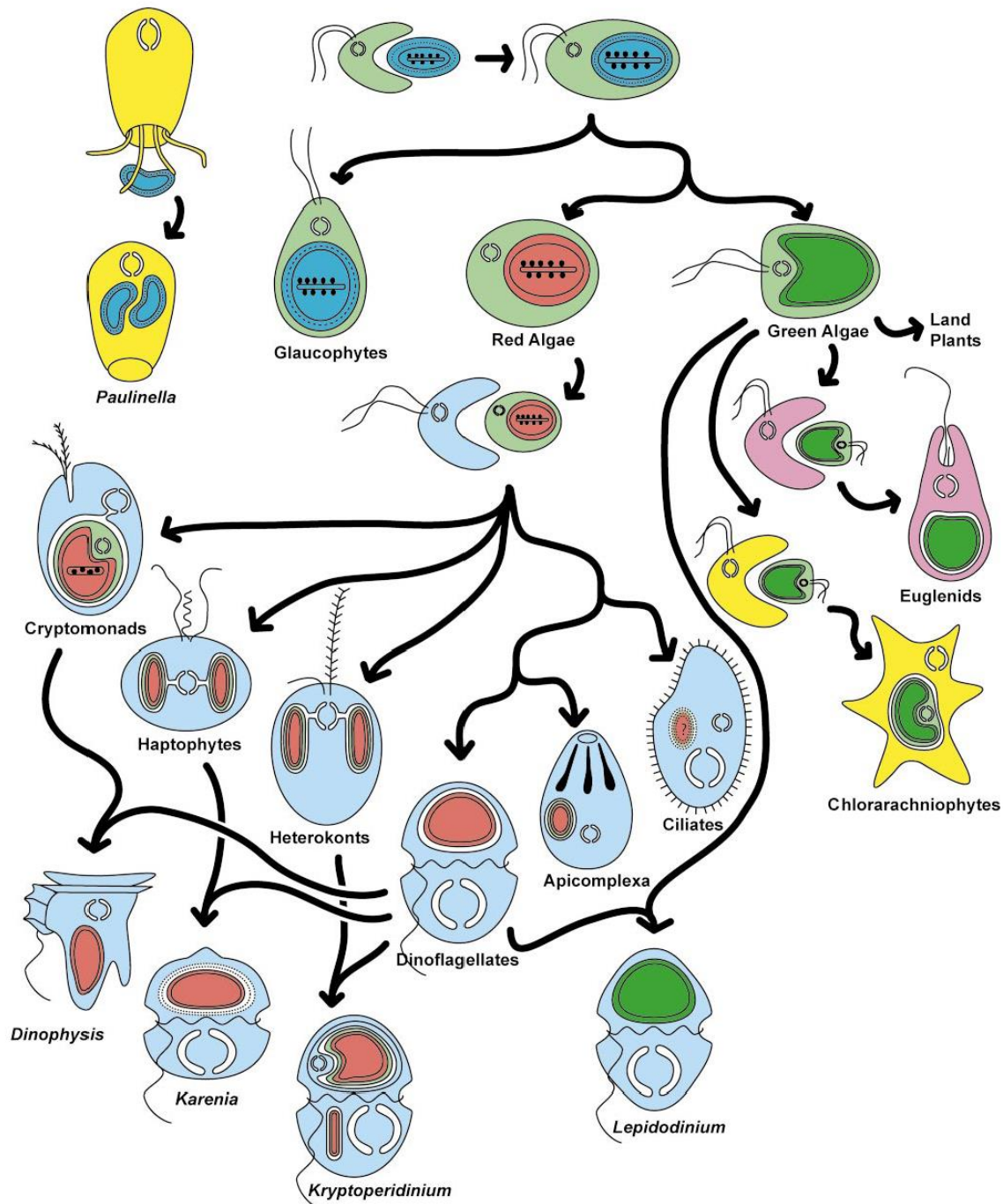
← Colonización de la tierra por las plantas



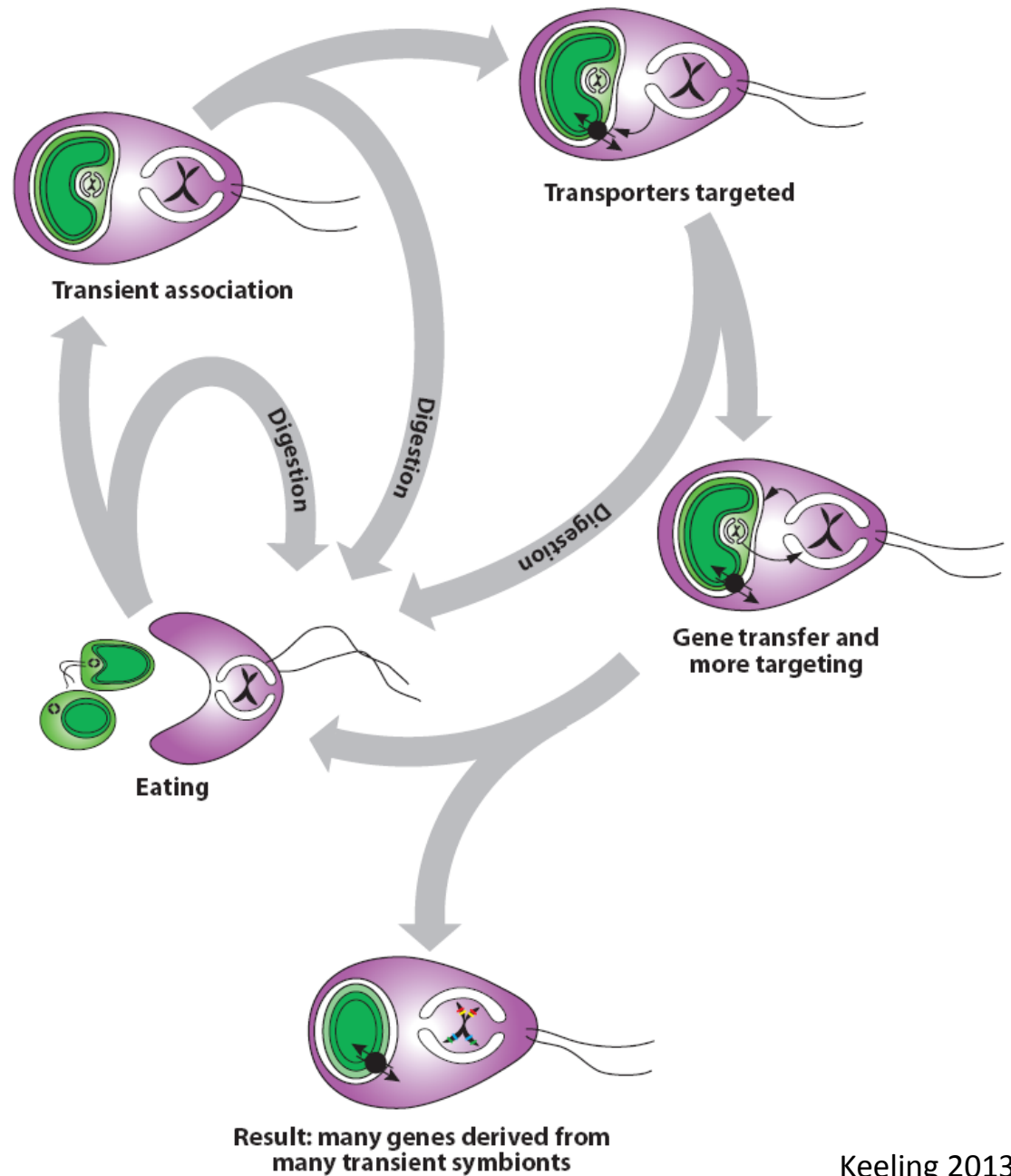
Transferencia horizontal de genes

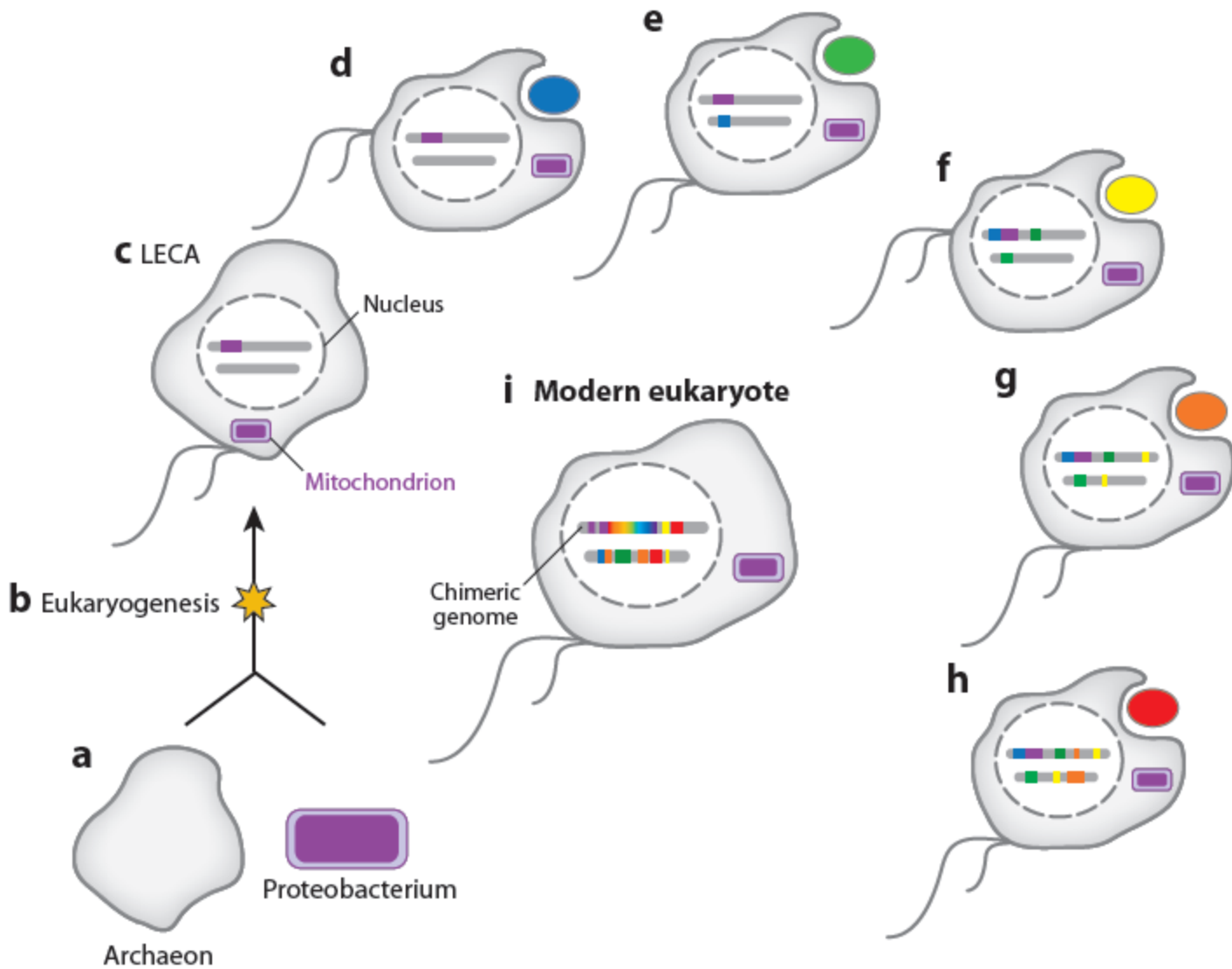






Múltiples procesos
endosimbióticos y
transferencia
horizontal de genes



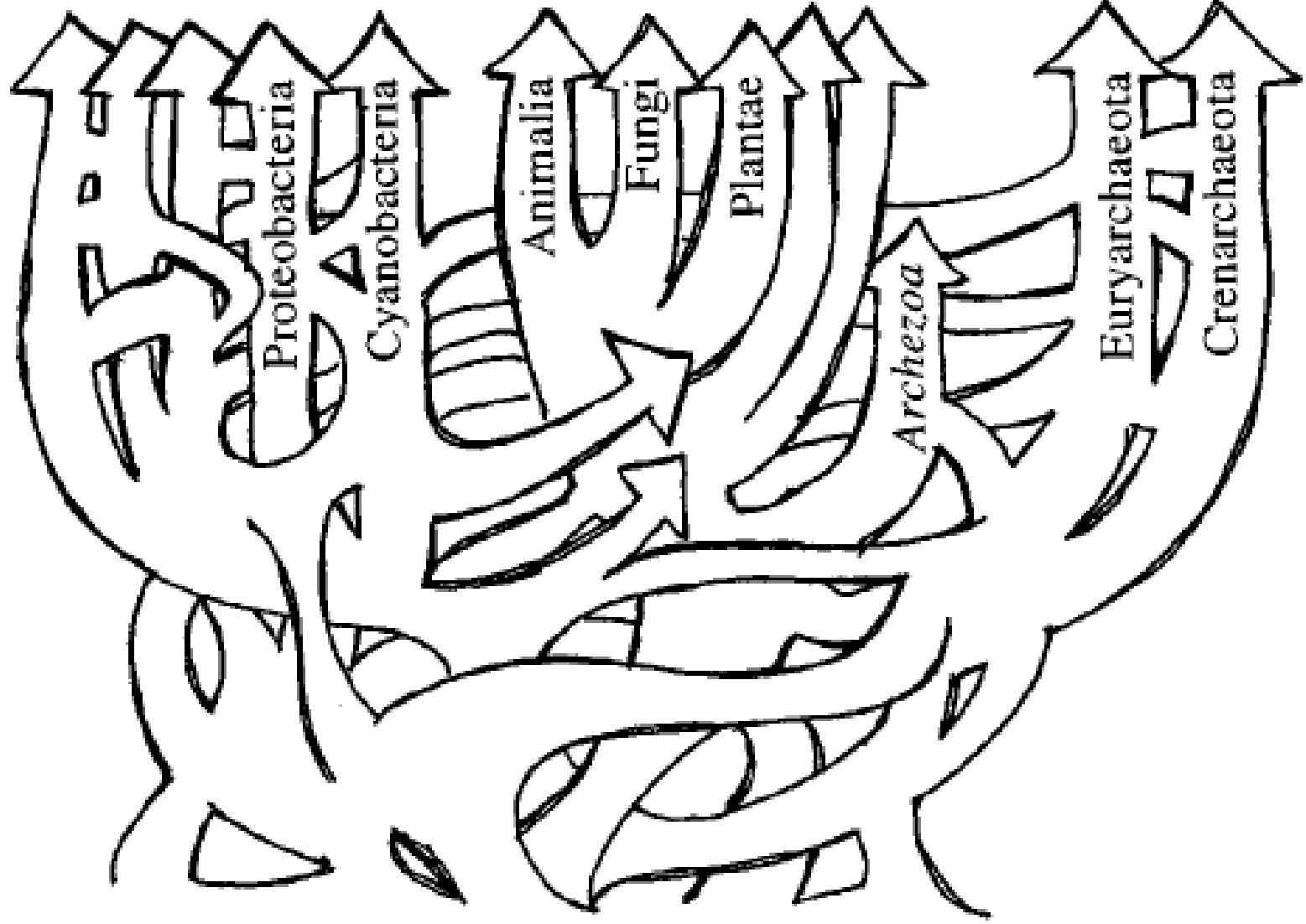




Bacteria

Eukarya

Archaea



Proteobacteria

Cyanobacteria

Animalia

Fungi

Plantae

Archezoa

Euryarchaeota

Crenarchaeota

