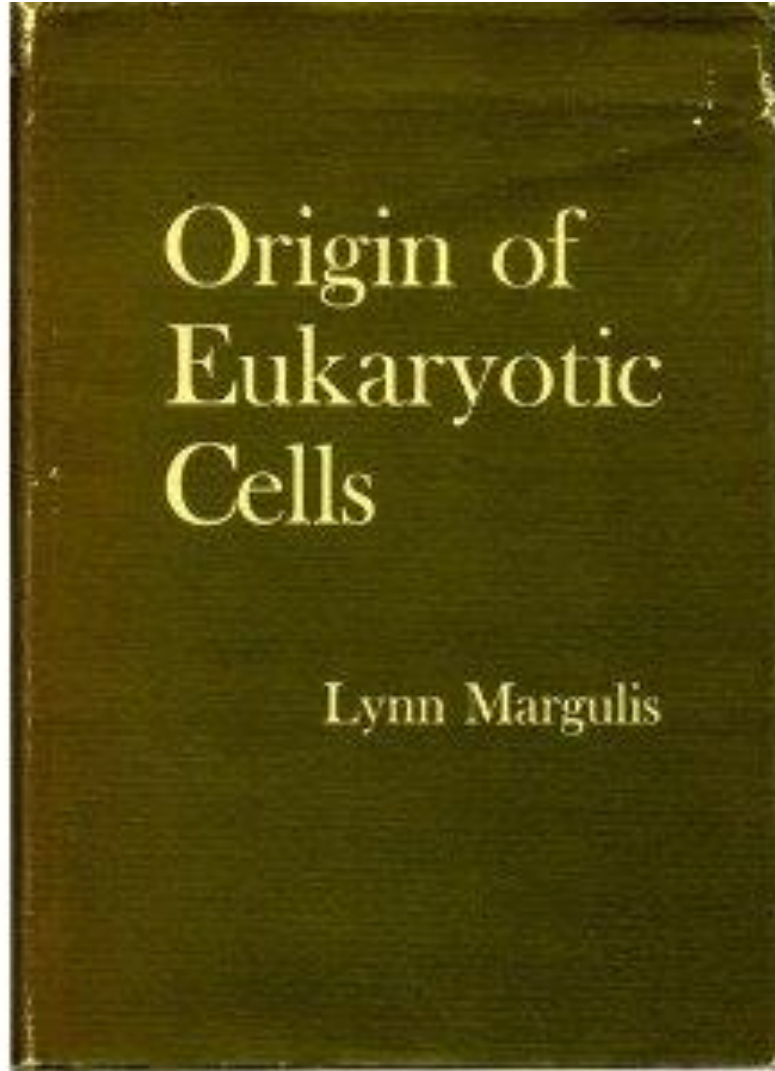
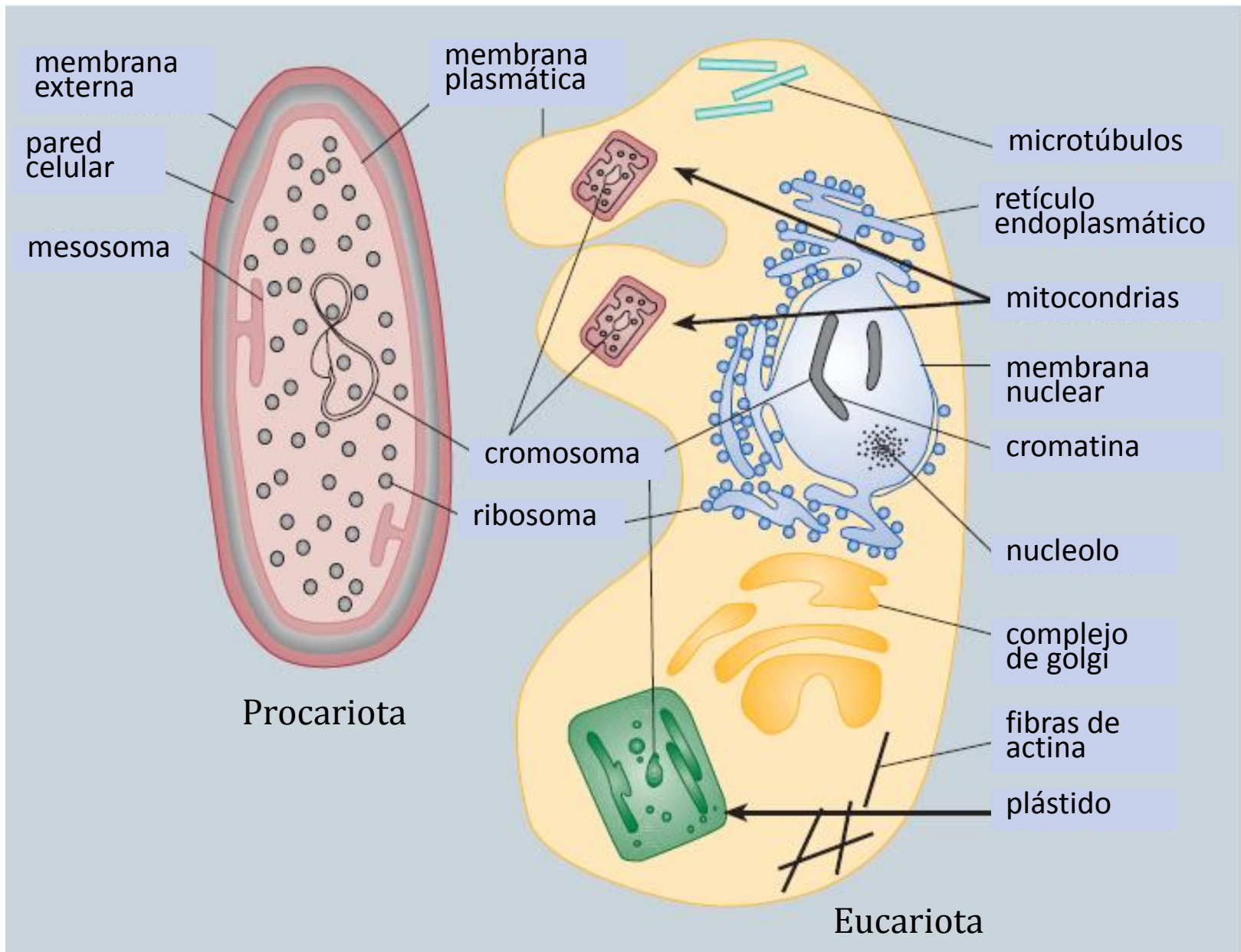
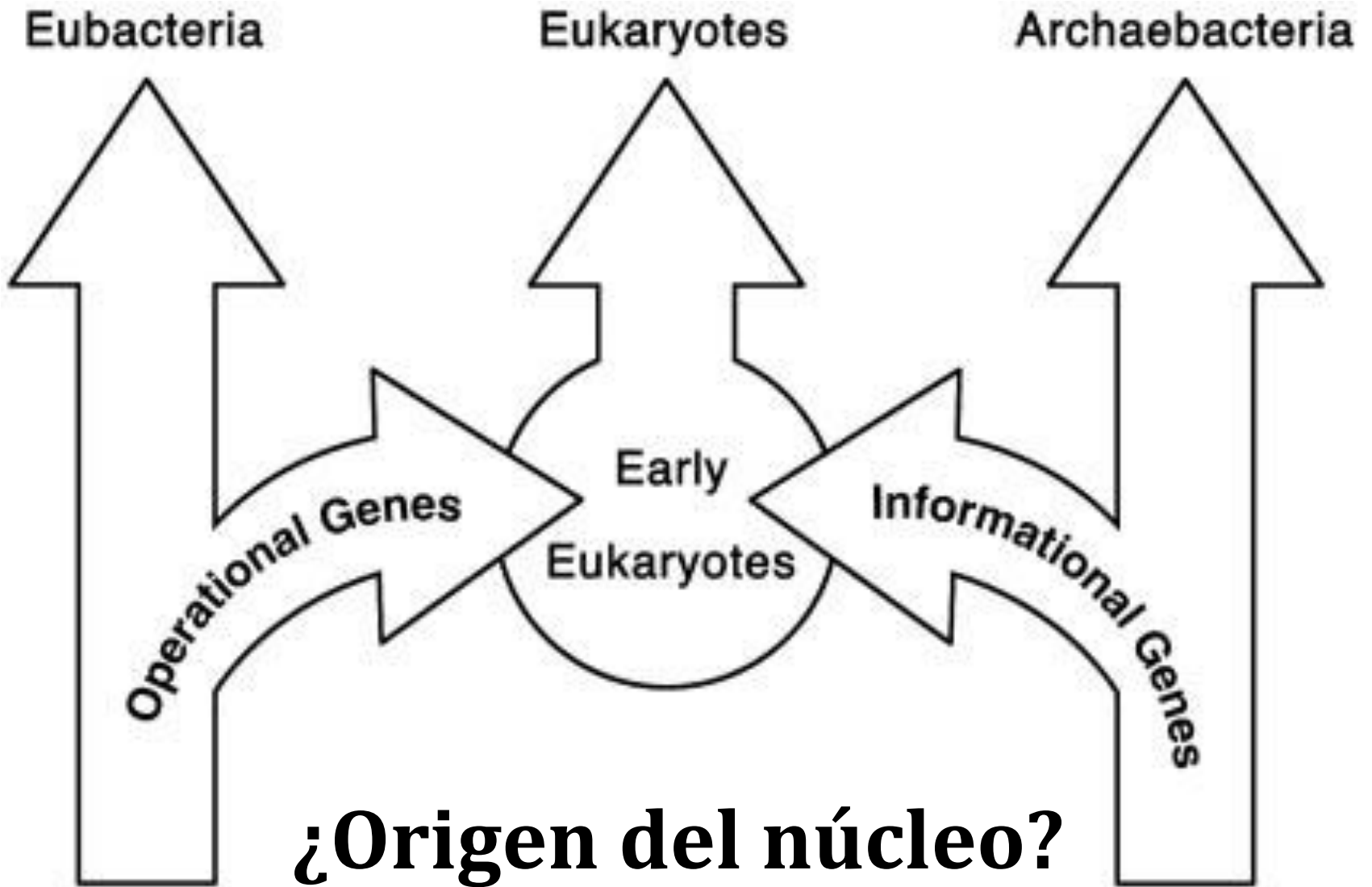


Teoría endosimbiótica

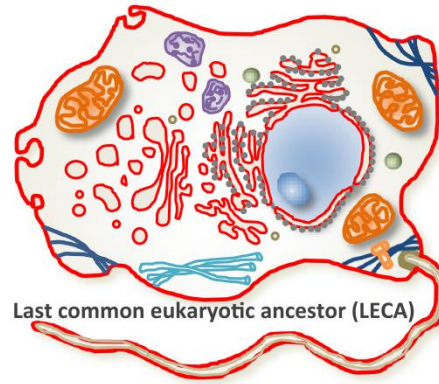


Margulis, L. 1970. *Origin of Eukaryotic Cells*. Yale University Press, New Haven





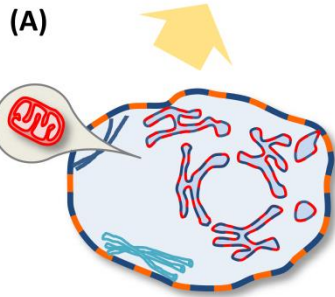
Eukaryotic radiation



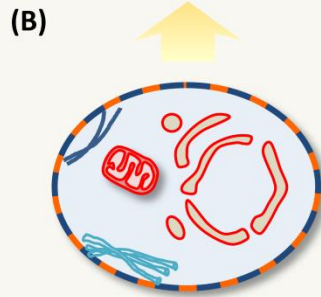
Last common eukaryotic ancestor (LECA)

Eukaryogenesis

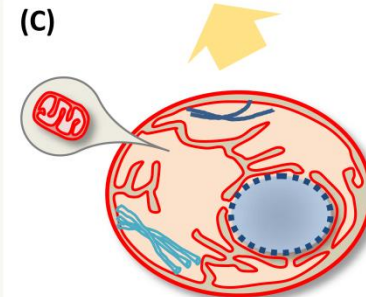
Intermediate stage



Having developed most eukaryotic features (phagocytosis, nucleus), the proto-eukaryote engulfs the alphaproteobacterial ancestor of mitochondria

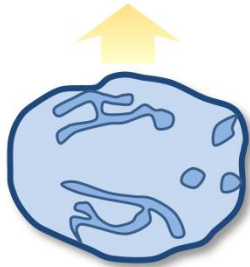


De novo appearance of nuclear membrane (bacterial genes) and transition of plasma membrane from archaeal-to-bacterial-like lipids

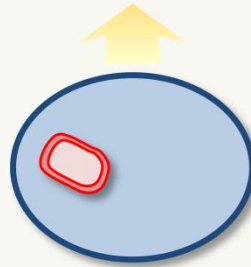


Evolution of endomembrane secretory system to transport hydrolytic enzymes from archaeon to periplasm, endosymbiosis with the ancestor of mitochondria and secondary loss of archaeal membrane

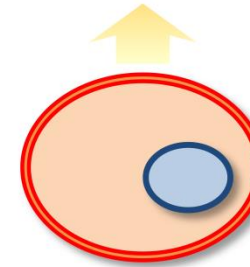
Initial triggering event from prokaryotic ancestors



Evolution of a proto-eukaryotic lineage (likely from within archaea) with endomembranes



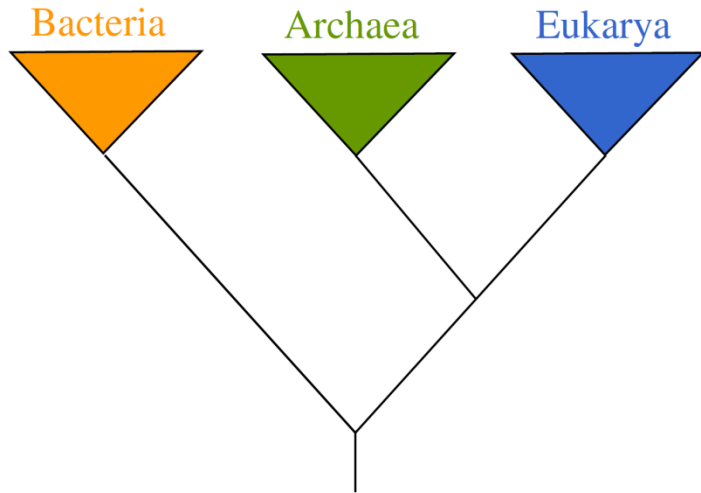
Metabolic endosymbiosis of an alphaproteobacterium (future mitochondrion) within an archaeon



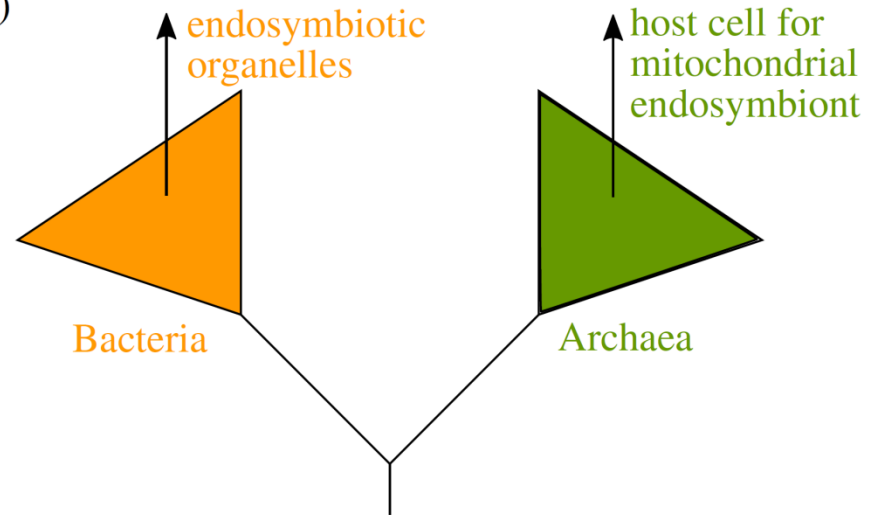
Metabolic endosymbiosis of an archaeon within a bacterium (different from mitochondrial ancestor)

Hipótesis en competencia

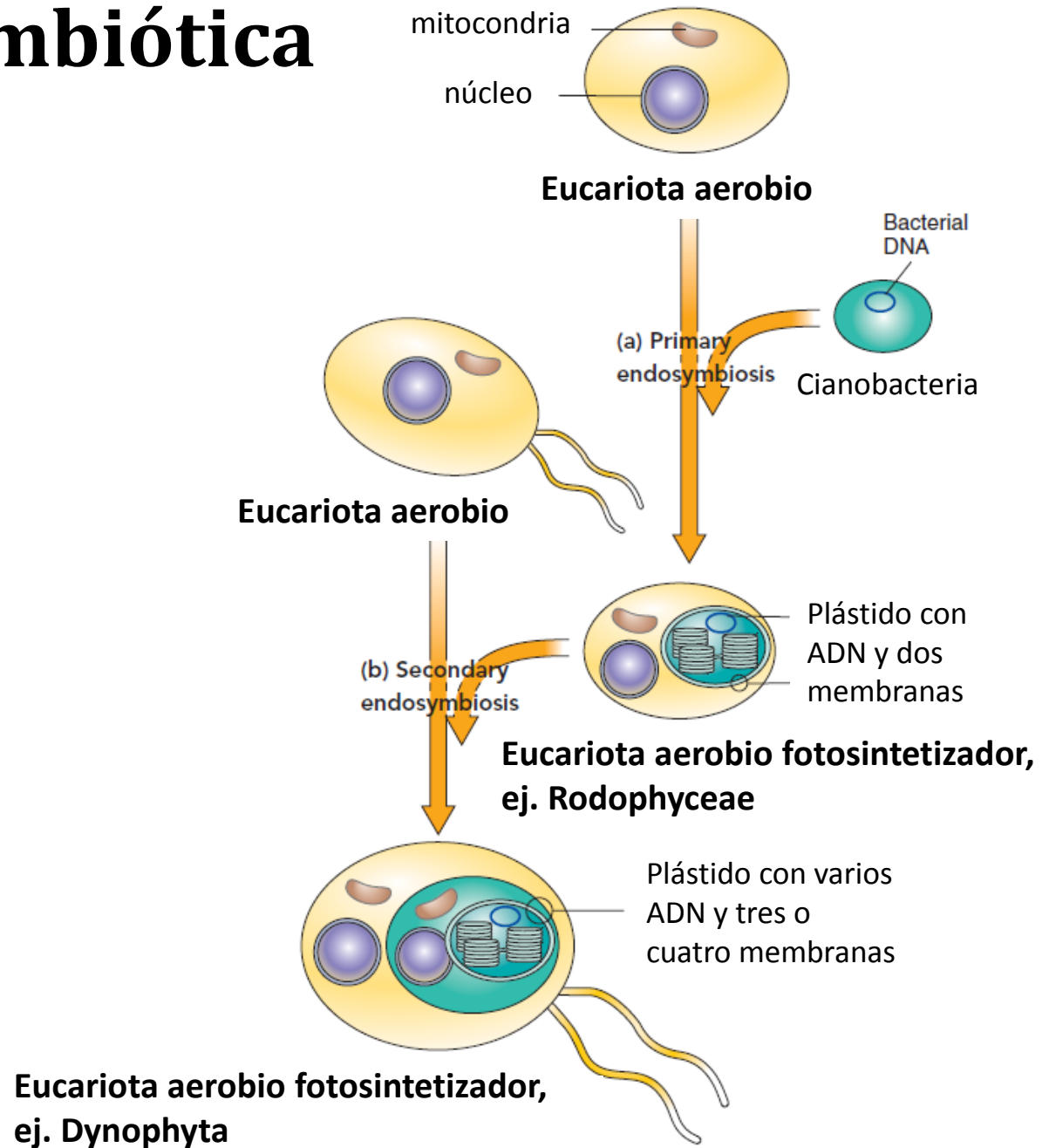
(a)



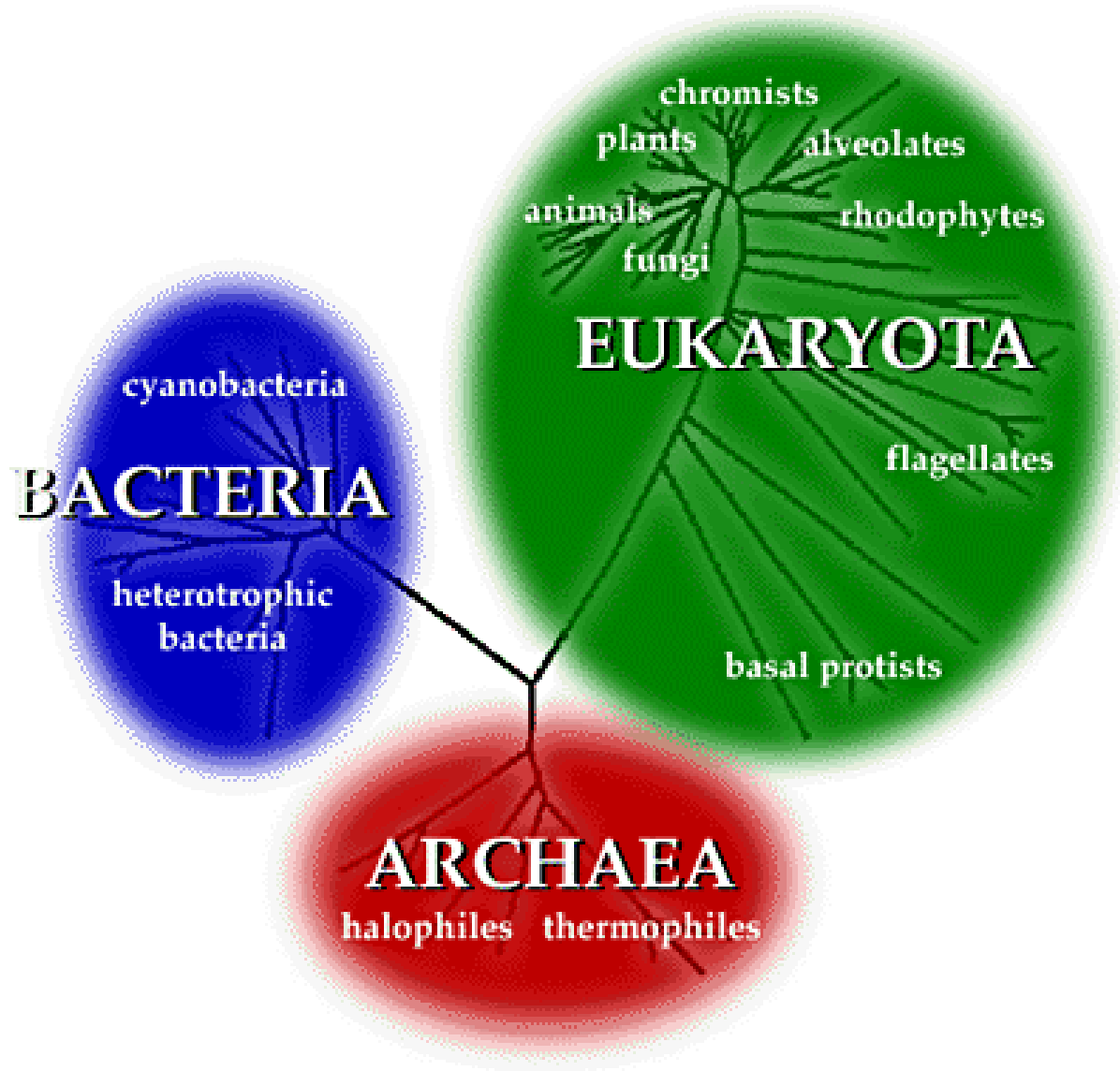
(b)

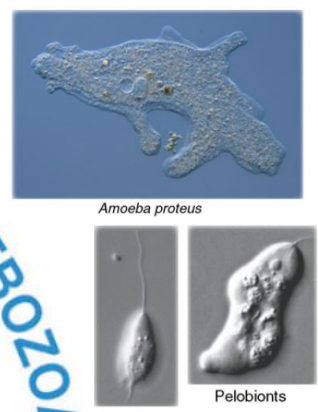
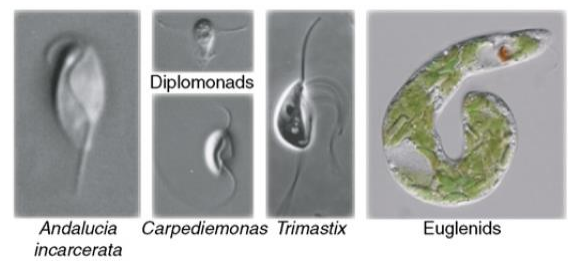
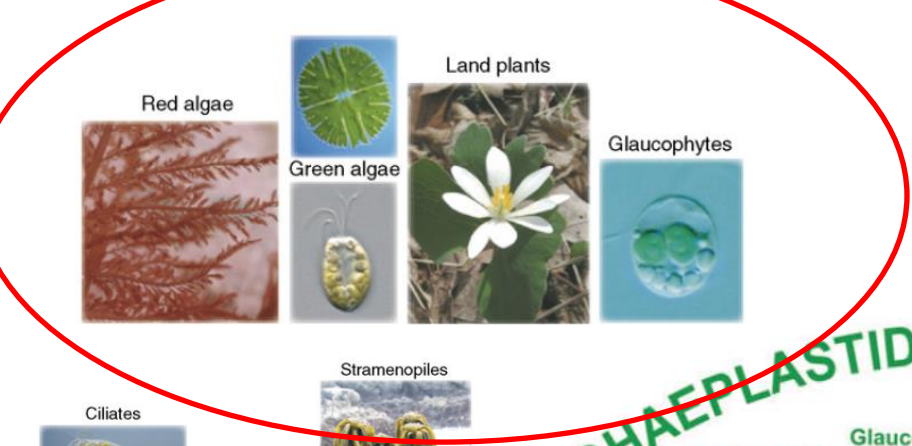


Teoría endosimbiótica serial



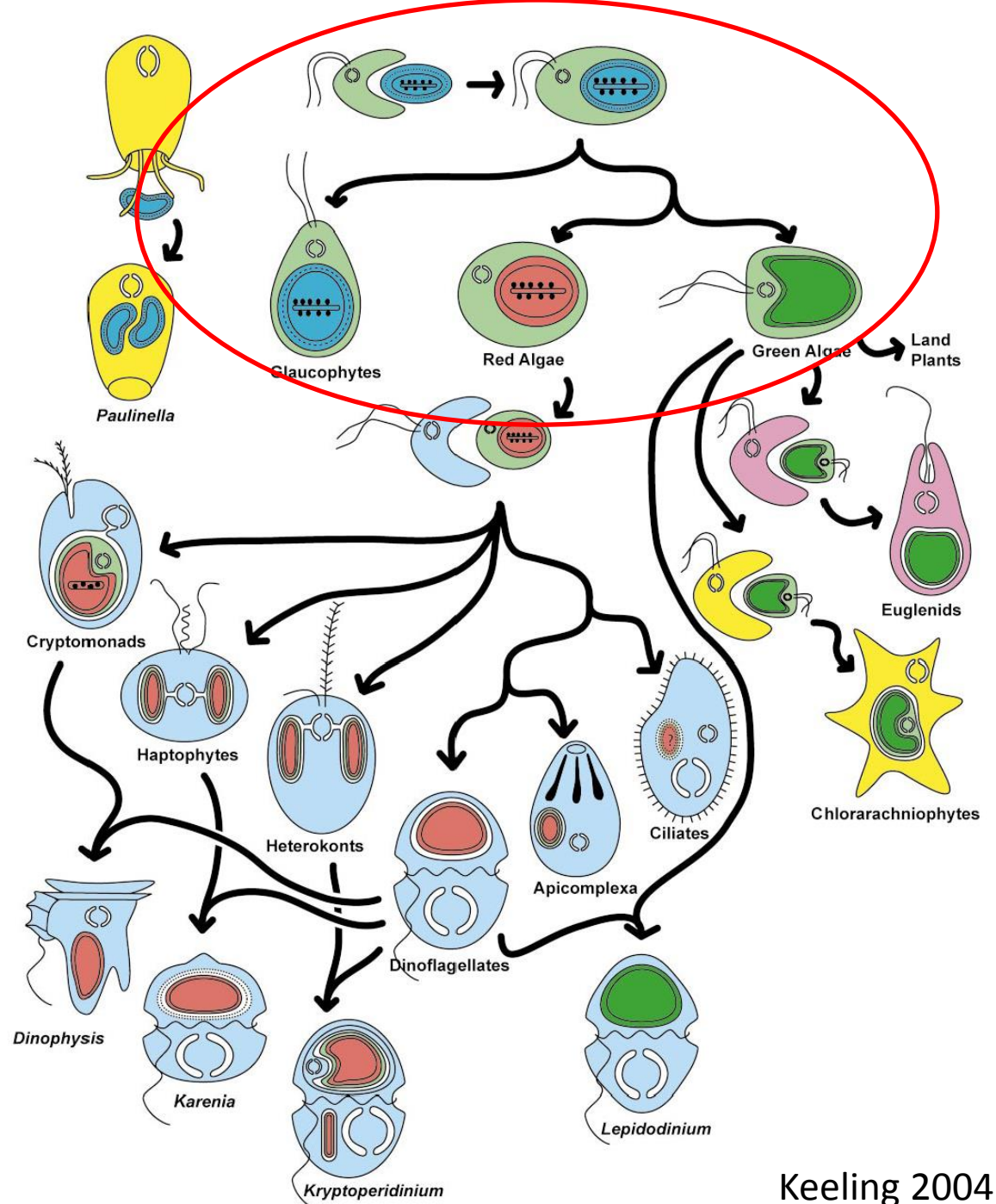
Dominios biológicos

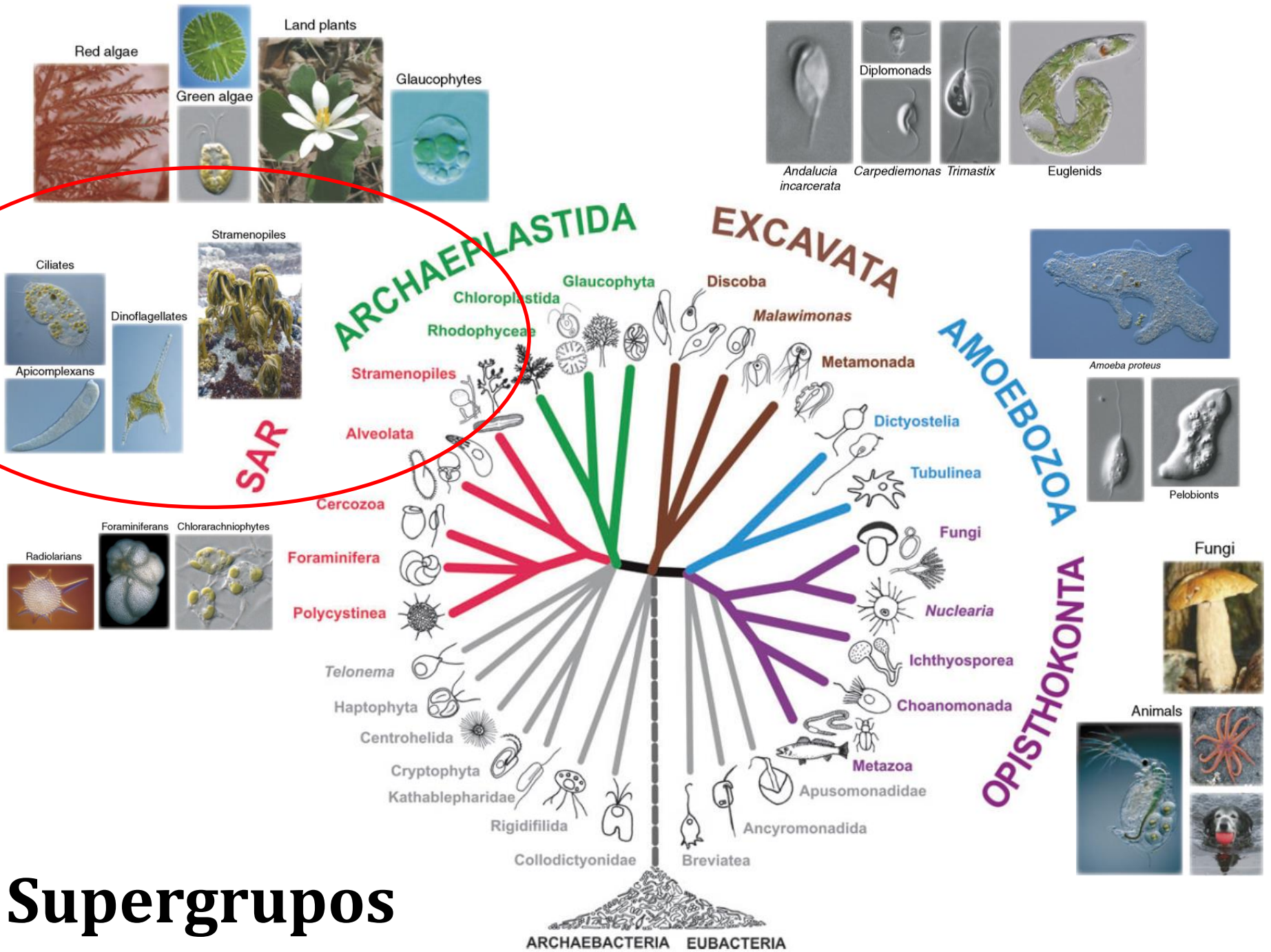




Supergrupos

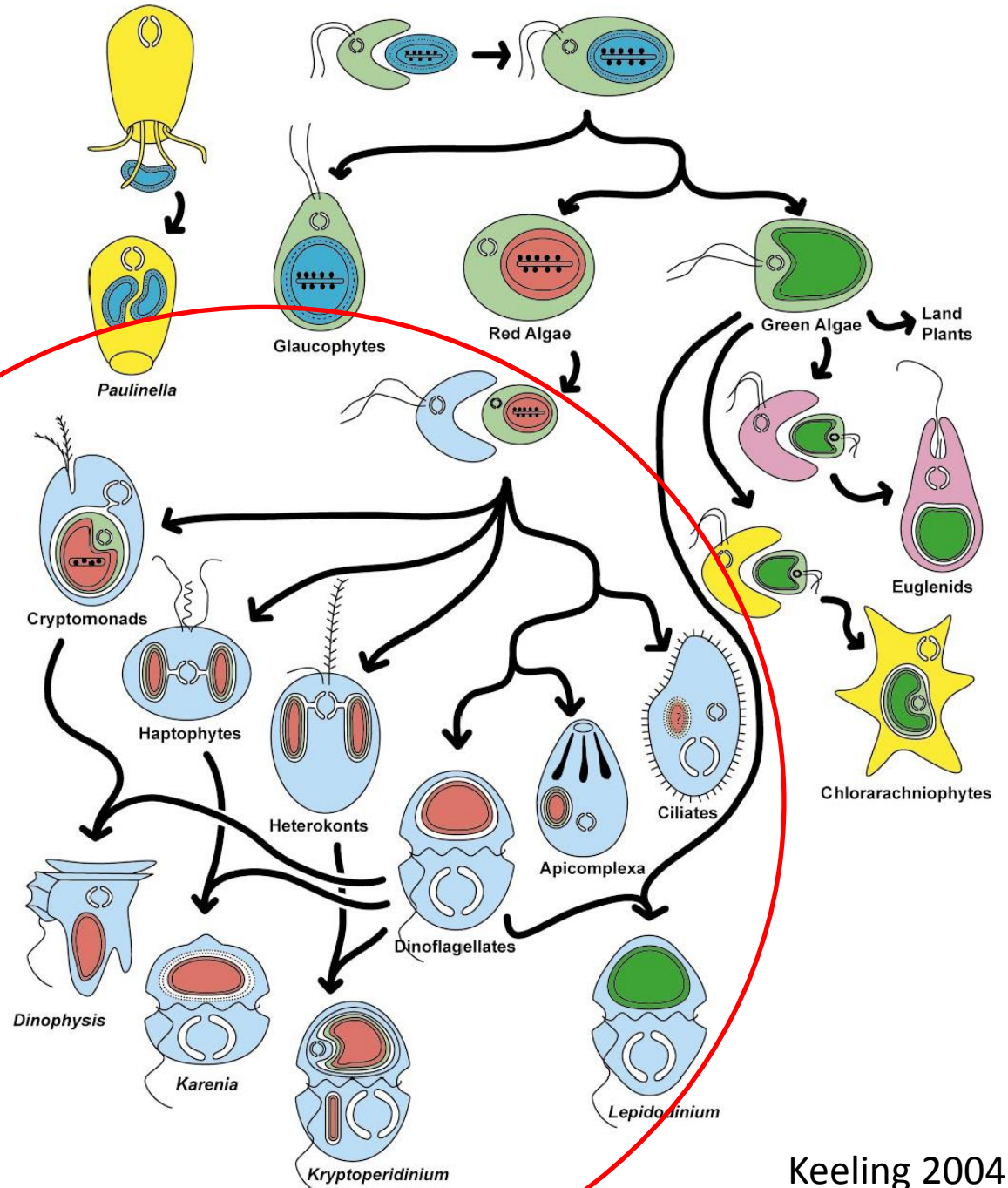
Origen de los plástidos en cada supergrupo

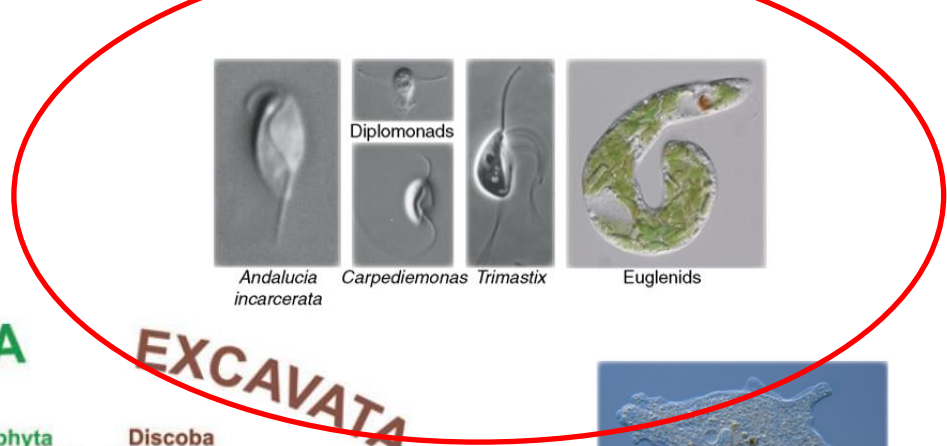
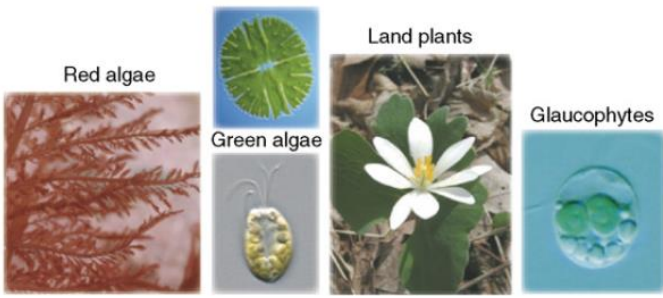




Supergrupos

Origen de los plástidos en cada supergrupo





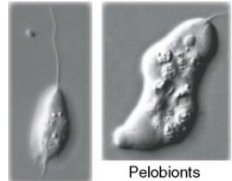
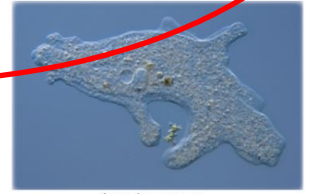
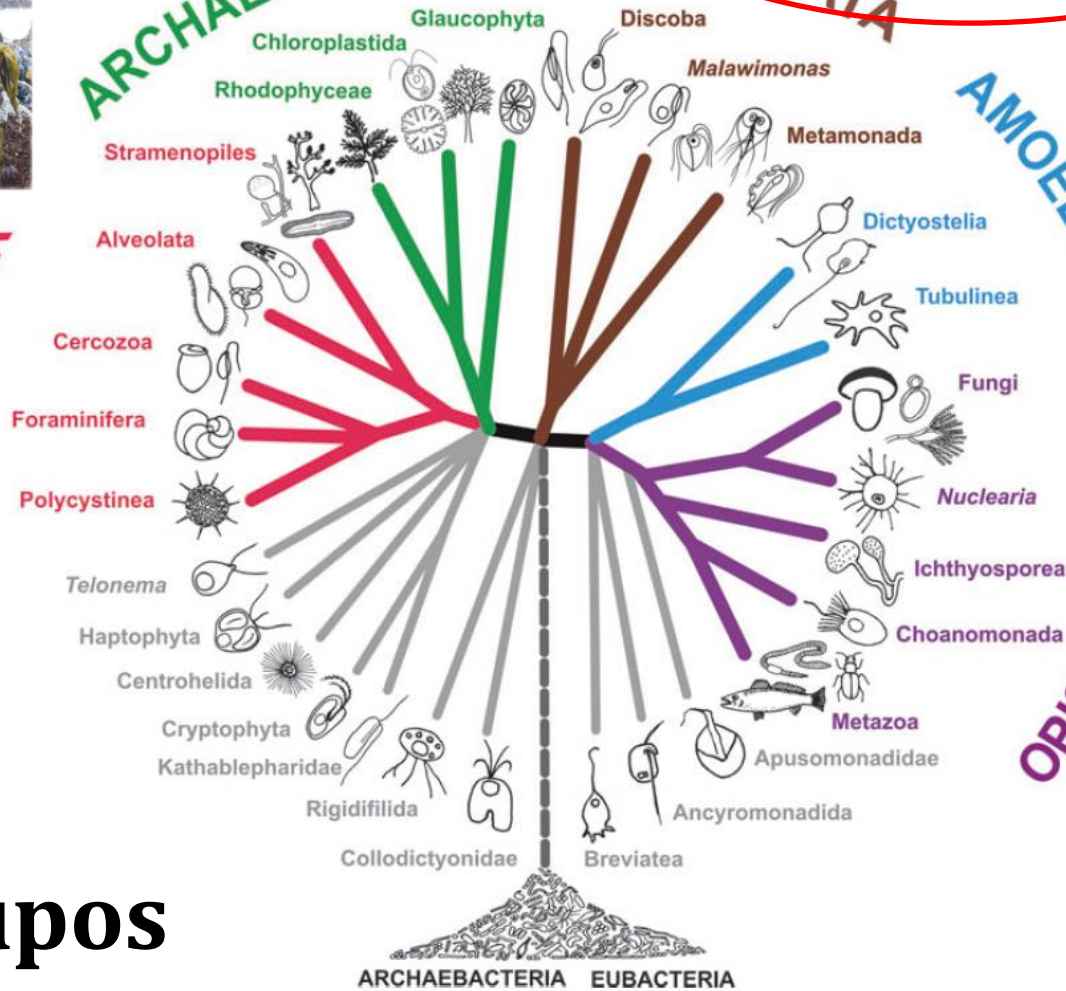
SAR

ARCHAEPLASTIDA

EXCAVATA

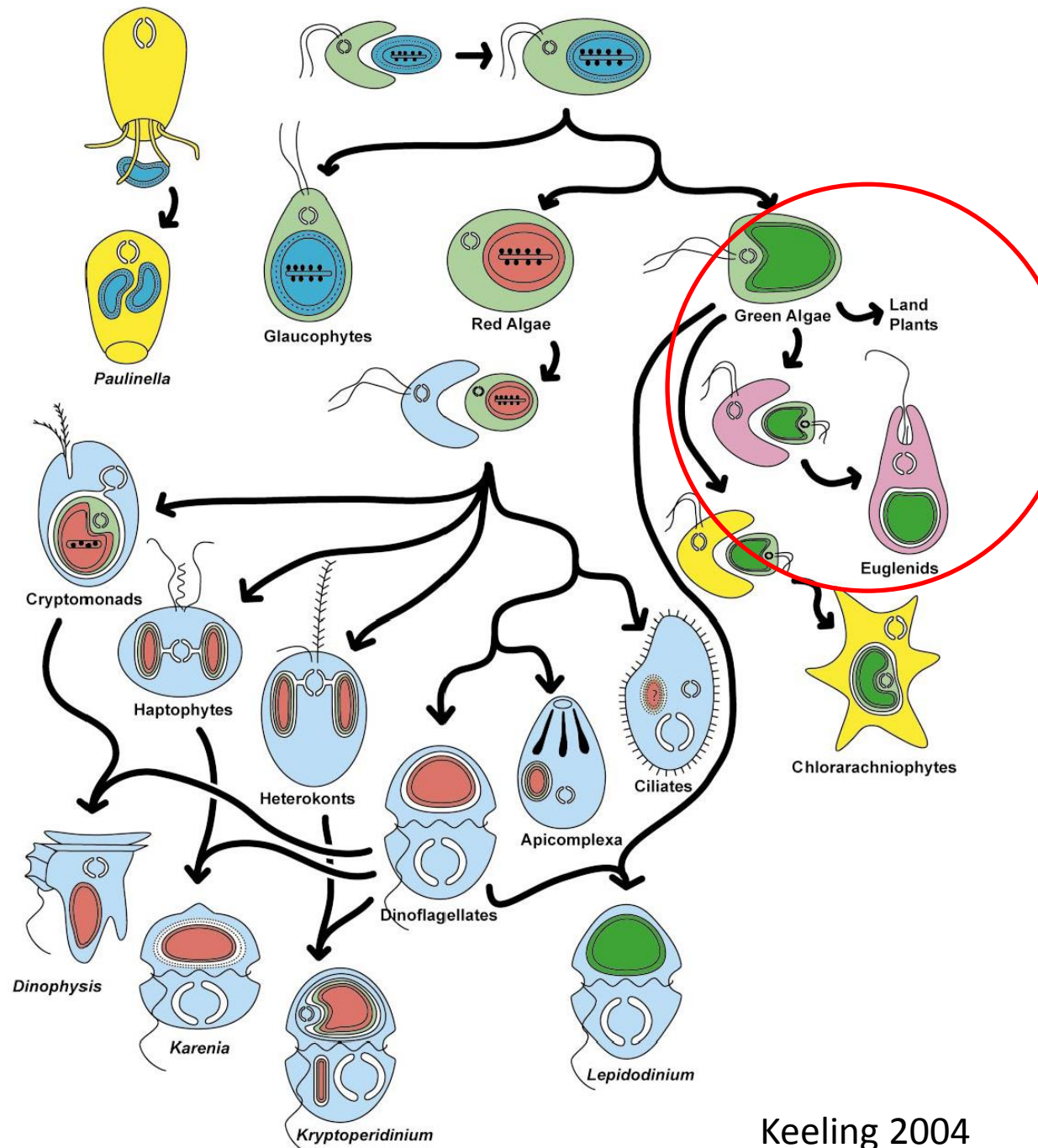
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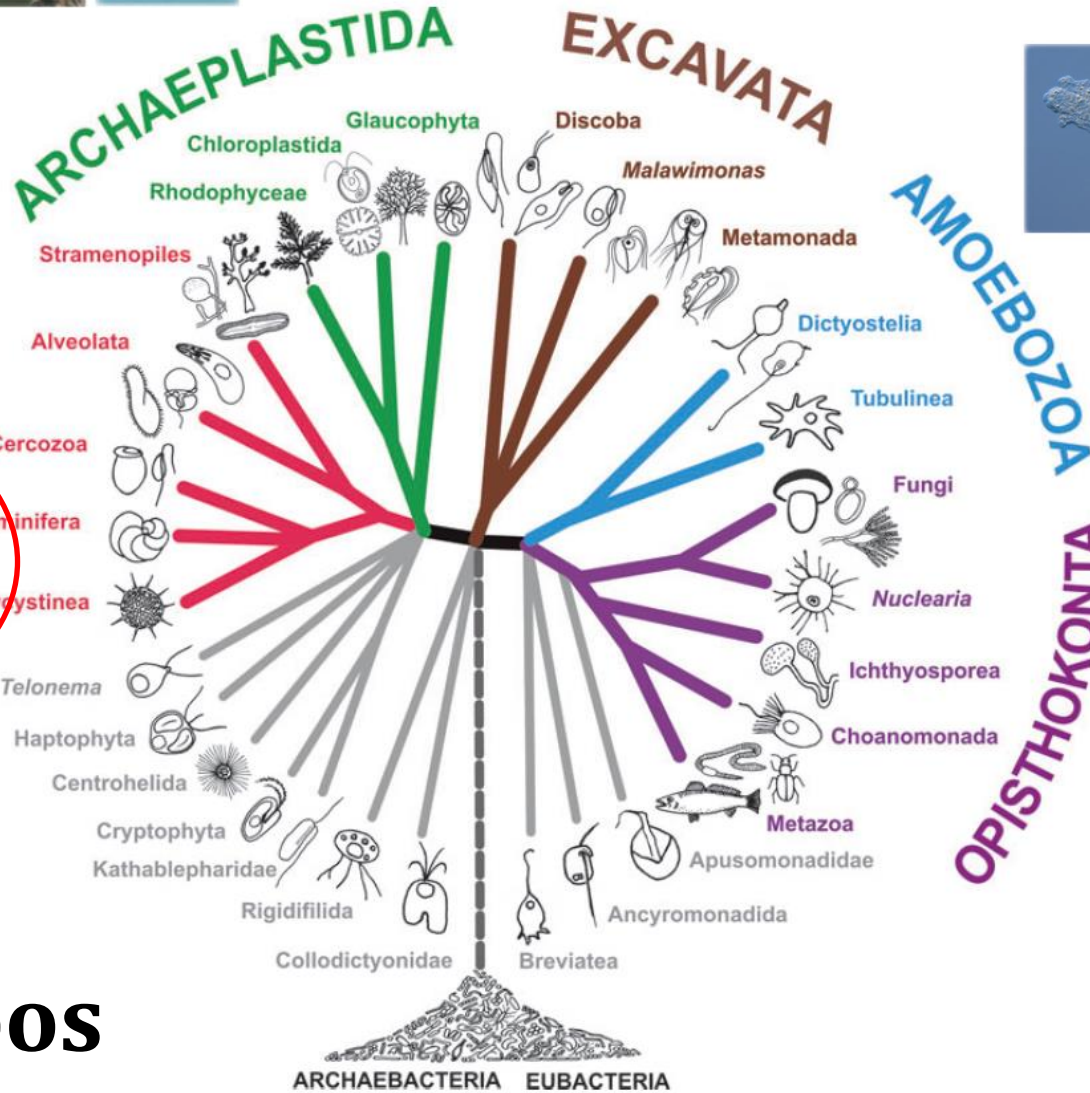
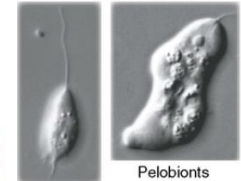
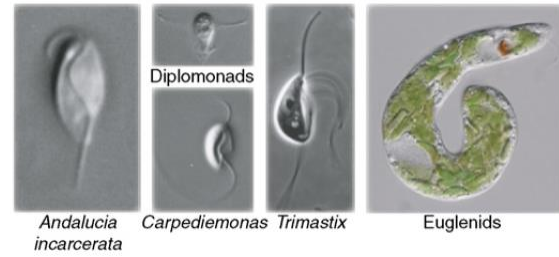
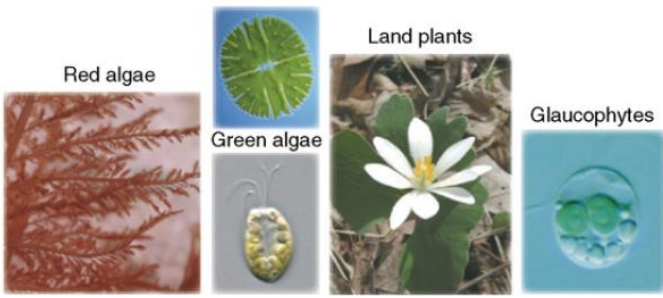
OPISTHOKONTA



Supergrupos

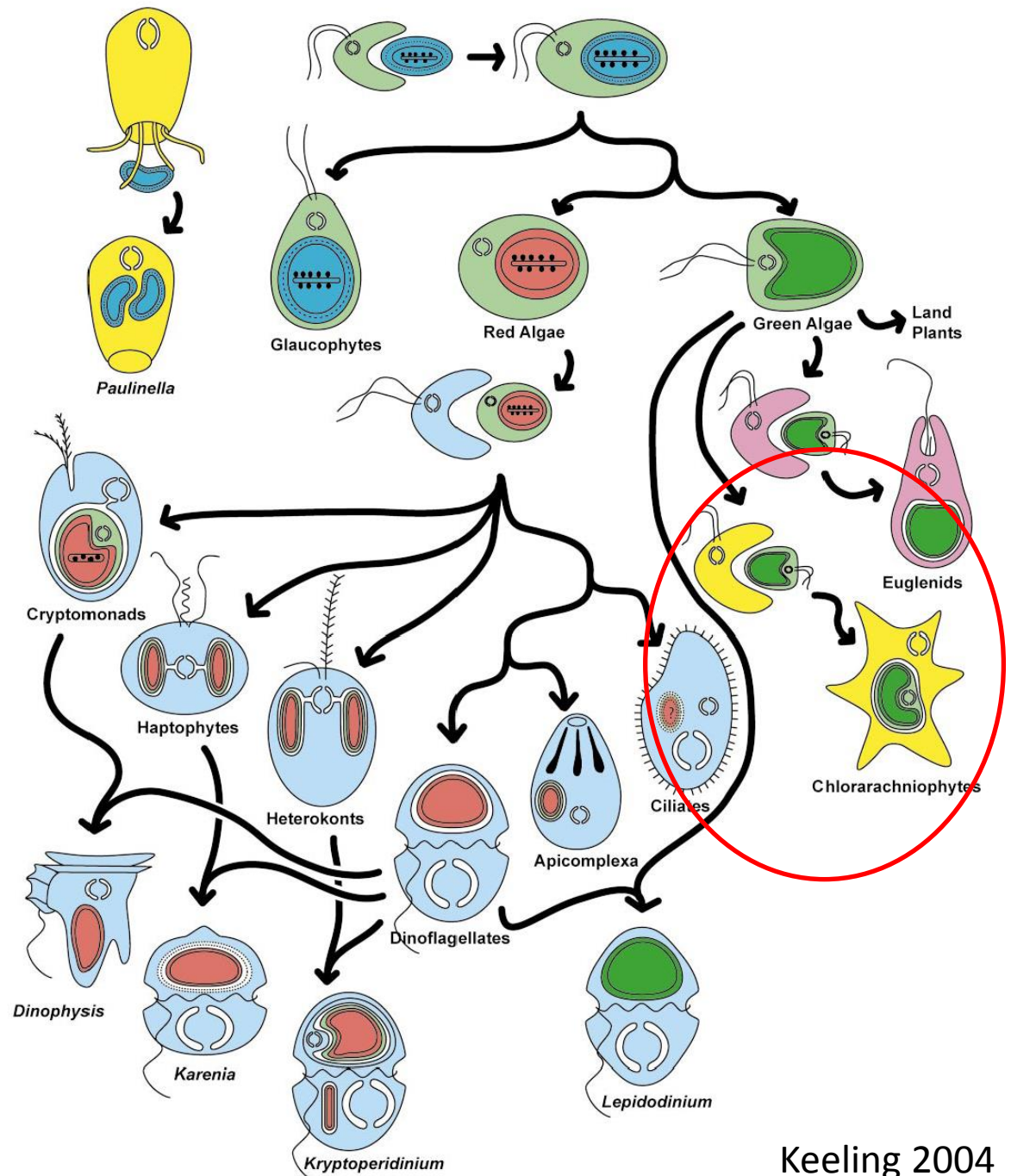
Origen de los plástidos en cada supergrupo





Supergrupos

Origen de los plástidos en cada supergrupo



Plástidos con dos membranas



Plástidos con tres membranas



Plástidos con tres y cuatro membranas



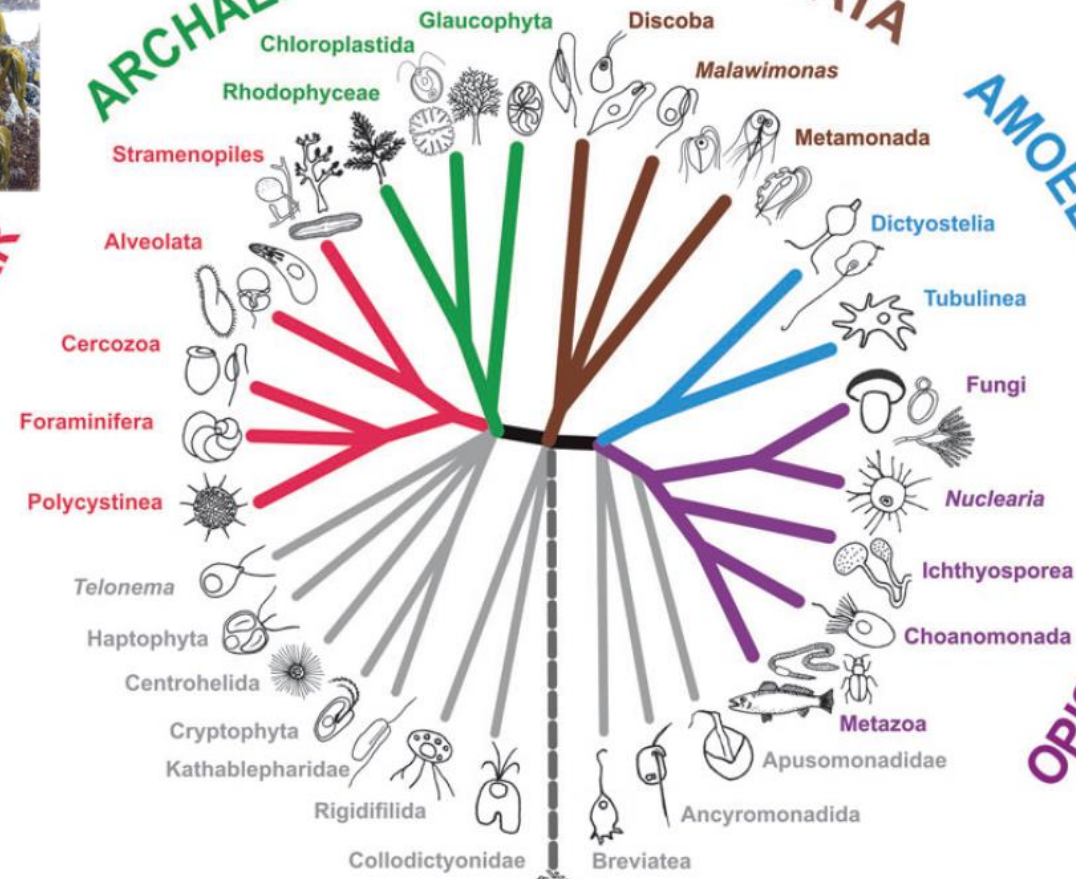
SAR

ARCHAEPLASTIDA

EXCAVATA

AMOEBOSOA

OPISTHOKONTA



ARCHAEBACTERIA EUBACTERIA

Supergrupos