

LARGE-SCALE MORPHOLOGICAL CONVERGENCE COINCIDES WITH REPLICATE RADIATIONS OF DIATOMS INTO FRESHWATERS

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Salinity represents a substantial barrier to the distribution of diatoms and other algae. A phylogeny of the Thalassiosirales revealed multiple independent freshwater colonization events, two of which led to major evolutionary radiations. These two lineages share a number of independently derived phenotypes, including thickened costae, marginal chambers, and several strutted process characters. Comparative analyses show a strong correlation between the evolution of these traits and their occurrence in freshwater taxa, providing compelling evidence that the convergent traits confer some adaptive value to life in freshwaters.