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TITLE

All we need now is fossils; a new phylogenetic dating method (PATHd8) allowing thousands of taxa and multiple fossil constraints.

ABSTRACT

Estimation of divergence times in phylogenetic trees using DNA sequence data becomes increasingly popular, but so far dating studies have given widely different results, and especially datings of the lower nodes within the angiosperms and metazoans, have given much older ages than those obtained from the fossil record. It has been concluded in different studies that more taxa, and more fossils are needed for more reliable age estimates. For this reason, a dating method that can handle very large data sets with multiple fossil constraints is necessary.

Chronograms obtained by the currently most used methods often adds a large "ghost range" to the fossil record. Compared to the other methods, our recently developed method, PATHd8, gives the most reasonable results, with the best agreement with the fossil record, in all studies performed so far.

The only way to improve the datings further, and hopefully obtain divergence time estimates which approximate the real ages, is to include more fossils. The combination of allowing an arbitrary number of fossil age constraints with the capability to analyse thousands of taxa instantaneously, makes PATHd8 a strong alternative to other methods. All we need now to accomplish better studies, is cooperation between biologists and paleontologists.