Séminaire de Biologie

Towards a better understanding of how and why evolutionary rates vary across the tree of life

jeudi 21 février 2019

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11:00 AM

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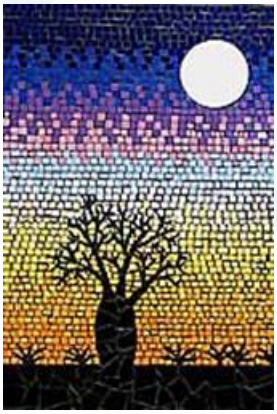
Understanding how groups of species diversified, and how species phenotypes evolved during evolutionary history, is key to our understanding of patterns of biodiversity as we see them around us today. Phylogenetic comparative methods have highlighted that macroevolutionary rates (i.e. rates of diversification and phenotypic evolution) are strikingly heterogeneous in time and across lineages. However, describing and quantifying this heterogeneity, as well as understanding its drivers, remain challenging. I will present recent developments that allow a better consideration of smooth changes in diversification rates when estimating branch-specific rates across phylogenetic trees. I will also present models that allow better understanding and testing the effect of past environmental changes and interspecific interactions on diversification and phenotypic evolution. Empirical applications demonstrate the preponderance of many small (versus few important) diversification rate shifts in clades' evolution and the pervasive effect of past environmental changes on evolutionary rates across diverse clades spanning macro and microorganims.



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