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Mitochondrial evolution of crown gastropods: insight from large subunit sequences and gene order data

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Crown gastropods exhibit high levels of homoplasy in multiple morphological characters. A well-characterized example is the independent reduction and loss of shell in several lineages with associated detorsion and regain of bilateral symmetry. We are comparing sequences of the RNA genes of the mitochondrial large ribosomal subunit (16S) for the euthyneuran clade (i.e. opisthobranchs plus pulmonates). We intend to map traits of interest, both morphological and molecular, onto this phylogeny. The second aspect of our research focuses on the evolution of mitochondrial (mtDNA) gene order within this clade. In the evolution of mitochondrial genomes in mollusks, there is a long period of stasis followed by major rearrangements, which likely occurred some time before the divergence of Euthyneura from a prosobranch ancestor. We are obtaining complete mtDNA sequences from several taxa (i.e. caenogastropods, heterobranchs and opisthobranchs) to try to reconstruct the pattern of these rearrangements in gastropod evolution.