Cover Art Caption: Phylogenetic and structural analyses reveal the molecular basis for the variability of mitoribosomes across species. Rapidly evolving mitochondrial RNA causes structural instabilities in mitoribosomes that are patched by acquisition of pre-existing compensatory elements, thus creating opportunities for accelerated and species-specific evolution. The artwork illustrates the incorporation of a tRNA into the human mitoribosome (designed by Beata Edyta Mierzwa, BeataScienceArt.com). (Volume 36–2, pp. 207–219).