

Analysis of Monomer Sequences in Protein and tRNA and the Manifestation of Compensated Pathogenic Deviations in Their Evolution

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Abstract—Sequence analysis of protein and mitochondrially encoded tRNA genes shows that substitutions producing pathogenic effects in humans are often found in normal, healthy individuals from other species. Analysis of stability of protein and tRNA structures shows that the disease-causing effects of pathogenic mutations can be neutralized by other, compensatory substitutions that restore the structural stability of the molecule. Further study of such substitutions will, hopefully, lead to new methods for curing genetic diseases that may be based on the correction of molecule stability as a whole instead of reversing an individual pathogenic mutation.