

Do Older Taxa Have Older Proteins?

Ricardo Ferreira^{a,b,*}, Frederico J. S. Pontes^a, Benício de Barros Neto^a, and Patrícia M. A. Farias^b

^a Departamento de Química Fundamental/CCEN, Universidade Federal de Pernambuco, 50670-901, Recife, Pernambuco, Brasil. Fax: (55)-81-32 71-8442.

E-mail: rferreira100@yahoo.com

^b Departamento de Biofísica e Radiobiologia/CCB, Universidade Federal de Pernambuco, 50670-901, Recife, Pernambuco, Brasil

* Author for correspondence and reprint requests

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We have confirmed through an enlarged set of 728 species with 10,000 or more compiled codons, and a subset of 237 species with at least 50,000 compiled codons, that the mean values of a previously described index Φ [the mean value of the ratio between the relative (G, C) content of Class II and Class I codons, where G and C are guanine and cytosine] decrease monotonically across five large taxa, viz archaea, bacteria, eukaryotes (excluding metazoa), metazoa (excluding vertebrates) and vertebrates. It is proposed that these main taxa diverge successively from an ancestral progenome along lines which have persisted over long periods of time, leading to a primordial non-symmetrical phylogenetic tree. Further divergence, *i.e.* from eukaryotes to plants, fungi and protozoans, has followed symmetrical branching with approximately equal numbers of replacements and fixations. A statistical analysis of the Φ values of twelve distinct proteins, distributed over more than one thousand species belonging to the five main groups, was made to verify whether older taxa have older proteins. This supposition was confirmed for the first four taxa, but it was inconclusive for the last pair, metazoa/vertebrates.

Key words: Proteins, Compiled Codons, Evolution