

Editorial: Could Speciation Across Evolution be Governed by Genetic Switch Codes at Short Tandem Repeats?



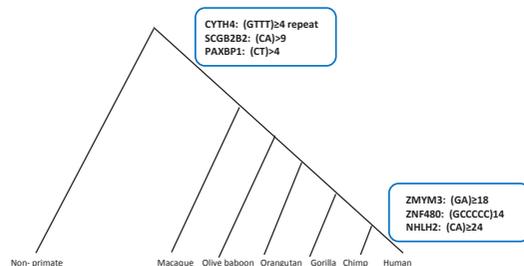
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The field of rehabilitation and social welfare may seem irrelevant to the issues concerning evolution. However, many of the disorders leading to severe disability and dependence on rehabilitation measures belong to the category that is human-specific. In this category, neuropsychiatric and movement disorders may be of particular interest. Understanding the basic mechanisms underlying those disorders promise to pave the way for better therapeutic and interventional measures.

Numerable events are crucial to an evolutionary path leading to a particular species. However, how many of those events have been decisive, and were of prime importance? In other words, were there only a few crucial events that triggered the successive evolutionary events, exemplified by the differential evolution of the AMY1 gene in agricultural vs. hunter-gatherer humans [1], or highly restricted initial divergence in butterfly hybridization models [2].

Short Tandem Repeats (STRs) may provide additional models for those hypothetical few events that might have resulted in speciation in evolutionary/adaptive terms. And if



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Figure 1. Proposed evolutionary model for the contribution of short tandem repeats (STRs) to speciation. The nature of STRs to expand or contract makes them an ideal source of evolutionary adaptation and speciation. The mathematical combination of certain STRs might have been used as spectacular codes for the evolution of different species, exemplified by a few STRs in the promoter sequence of certain genes such as CYTH4, ZMYM3, SCGB2B2, and PAXBP1.

they could, would they consist of specific codes at different evolutionary crossroads? To this end, STRs have been identified, expansion or identical co-occurrence of which appear to be decisive in specific evolutionary divergence points [3-6] (Figure 1). In those instances, the threshold number of repeats for each STR seems to be crucial to species divergence (i.e. a mathematical switch code combination of STRs). The present editorial is intended to stir up thoughts, research, and commentary in this largely untouched area of evolutionary biology.

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