

An analysis of palindromes and n-nary tracts' frequencies applied in a genomic sequence

Dan Ophir

Ariel University, Israeli

Abstract

The motivation of an investigation of n-nary and palindrome tracts has arisen following the discovery of Chargaff and coworkers of over-representation of some sort of binary tracts in a DNA genomes. The research has been made to investigate the frequencies of various ternary tracts in diverse locations in genes and in various types of species. The current research looks even further toward the ternary tracts and the palindromes will be herein called the designated tracts. Does a designated tract have any extraordinary frequencies of lengths and locations? This is an intriguing question the research tries to answer and even more. A theoretical mathematical analysis is being done to analyze the amount of designated tracts according to the frequencies of its single elements. The designated tracts are categorized to such which have mixed elements (according to some criteria) and to such which compose a long tract of lower n-nary order. For example tract analysis searches for an answer if the special phenomena are due to the ternary tract or due to a long binary tract which is included in it.

The maximal n-nary tract order of interest in the genomics is of three (ternary); four is the whole gene itself. But the higher order of n-nary tracts is of interest in other areas like: "Reliability theory". Therefore a general formulation and treatment of designated tracts is presented here and is demonstrated on the genomics aspects which were immensely investigated in the two past decades.