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Dyadic groups, dyadic trees and symmetries in long nucleotide sequences

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The conception of multi-alphabetical genetics is considered. Matrix forms of the representation of the multi-level system of molecular-genetic alphabets have discovered algebraic properties of this system. These properties are connected with well-known notions of dyadic groups and dyadic-shift matrices. Matrix genetics shows relations of the genetic alphabets with some types of hypercomplex numbers including dual numbers and bicomplex numbers together with their extensions. A possibility of new approach for modelling genetically inherited phenomena of biological spirals and phyllotaxis laws on the base of screw theory and Fibonacci matrices is noted. Dyadic trees for the whole human genome are constructed. Described results testify that living matter possesses a profound algebraic essence. They show new promising ways to develop algebraic biology.

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