

TDT2L - A computer program for linkage disequilibrium detection between a pair of polymorphic markers and a phenotypic trait.

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ABSTRACT

The transmission disequilibrium test (TDT) is a method that detects segregation distortions in samples that are composed by trios (mother, father and son/daughter), where the offspring has some phenotypic feature that distinguish it from the rest of the population [3]. It was developed as an alternative to the case/control design to study association between genetical markers and human genetical diseases. Recently, the human genome was hypothesised, after empirical analyses, to be constituted by blocks that present little recombination within them [1]. Therefore, the populational history of each block may preserve some marker combination that is physically linked to one allele that may be a causative agent of a genetical disease. In this case, the number of haplotypes would be dramatically reduced by considering only those that are effectively segregating within the population [4]. This feature permits to increase the statistical power of the association analysis. The TDT2L program was designed to extract haplotype information from trios data and test if the segregation distortion between a pair of markers and its linkage to a putative disease allele is different from the null hypothesis (random segregation). This is accomplished by a bootstrap

algorithm where trios offspring are produced by random segregation of haplotypes present in the sampled parents. The positive impact on the statistical power was studied through simulations. This computer program is distributed under the GNU public license [2]. (FAPESP, CNPq)

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