Gamification on Chromothripsis' Signatures [1]

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Chromothripsis is a newly identified process on aggressive carcinomas development, where a one-time catastrophic event shatters innumerous chromosome genes, forcing a large scale DNA repair.This process causes random mutations, with a repair pattern that differs from subsequent mutations. The signatures for Chromothripsis distinction are yet being studied, however, some researches already suggested around six patterns identified to be related to this event. Some of them have already been tested and are in process of verification and improvement, as an example, we cite in the initial approach of this work, the *Alternating Fraction*[1], suggested as a better signature than the previous one documented, the *Ability to Walk the Derivative Chromosome*[2]. Our motivation on this work is to develop an environment where those signatures can be confronted, generating data for better analysis, possible study on more adequate signatures and an IA trainning. Aware of the limitations computers yet face on pattern processing, a different approach is proposed, a game development. Citizen Science[3] is a concept that is already a reality and development catalyst on other known researches on health field[4]. Gamify the process of signatures identification on genomes, making the problem available for technical and non-technical players, using the human brain natural ability of patterns processing, to solve the matter. The game is presented in modules, which in each, one different key will be assigned as the puzzle to be solved. The game is being designed to receive as an input, genome reads in pairs, one wild-type and one mutated. The aim of this process is to provide a probabilistic answer on whether a mutation can be considered resultant of a Chromothripsis event or not.

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