Development of a Software System for Management and Genetic Analysis of Biological Samples for Forensic Laboratories

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Abstract : Due to the high reliability reached by DNA tests, since the 1980s this kind of test has allowed the identification of a growing number of criminal cases, including old cases that were unsolved, now having a chance to be solved with this technology. Currently, the use of genetic profiling databases is a typical method to increase the scope of genetic comparison. Forensic laboratories must process, analyze, and generate genetic profiles of a growing number of samples, which require time and great storage capacity. Therefore, it is essential to develop methodologies capable to organize and minimize the spent time for both biological sample processing and analysis of genetic profiles, using software tools. Thus, the present work aims the development of a software system solution for laboratories of forensics genetics, which allows sample, criminal case and local database management, minimizing the time spent in the workflow and helps to compare genetic profiles. For the development of this software system, all data related to the storage and processing of samples, workflows and requirements that incorporate the system have been considered. The system uses the following software languages: HTML, CSS, and JavaScript in Web technology, with NodeJS platform as server, which has great efficiency in the input and output of data. In addition, the data are stored in a relational database (MySQL), which is free, allowing a better acceptance for users. The software system here developed allows more agility to the workflow and analysis of samples, contributing to the rapid insertion of the genetic profiles in the national database and to increase resolution of crimes. The next step of this research is its validation, in order to operate in accordance with current Brazilian national legislation.

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