EVALUATION OF OSIRIS FOR FORENSIC DNA CASEWORK AND INCORPORATION INTO LABORATORY WORK FLOW

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OSIRIS (Open Source Independent Review and Interpretation System) is a public domain software package developed by NIH for the analysis of .fsa and .hid files generated by the Forensic DNA analysis process. OSIRIS searches for peaks in an iterative fashion by fitting expected parametric data signatures to the observed data. Unlike traditional sizing methods for STR fragment analysis, OSIRIS does not use Southern methods to compare a sample to the ILS for base pair estimates. Instead, OSIRIS compares the ILS of a sample to the ILS of a ladder, and then does a direct comparison of the center of sample peaks to those of the ladder. OSIRIS incorporates numerous artifact elimination strategies to minimize the number of human edits required for casework samples. These advanced artifact elimination algorithms allow for a lower peak calling threshold than otherwise possible. This in turn allows for more information to be preserved from a sample, particularly in instances of lower level amplification . The USACIL developed and uses ArmedXpert software for all aspects of DNA casework other than the analysis of .fsa files. Because OSIRIS is open source, we set about the task of integrating OSIRIS into the ArmedXpert software we currently use as much as possible. Some advantages are that we can now work in one continuous software environment, are not as limited by noise and/or artifacts, and can use the OSIRIS engine in the more user-friendly environment of ArmedXpert.