

## **OSIRIS: OPEN-SOURCE SOFTWARE STR ANALYSIS TOOL EXPANDED PROCESS QUALITY CONTROL CAPABILITY**

Robert Goor, George Riley, Douglas Hoffman

National Center for Biotechnology Information, National Library of Medicine, NIH

OSIRIS, the Open Source Independent Review and Interpretation System, is a free, open-source software tool for Short Tandem Repeat (STR) analysis, downloadable from the National Center for Biotechnology Information (NCBI) OSIRIS homepage and GitHub. As part of its routine sample analyses, OSIRIS computes unique quality metrics that can be used for sample and process quality control. Mathematical analyses of STR characteristics and artifact signatures show indications of color separation mismatch, indicating spectral color matrix failure, sample degradation, over or under loading, impending capillary failure, and other process failure conditions.

In addition, OSIRIS can: automate real-time checking of control samples in a high throughput lab; accelerate acceptance and export of high quality samples; automate export of high quality samples; automate the selection of the better of two injections; and automate queuing samples for reanalysis. OSIRIS is validated and in use as a CODIS expert system and is designed so that it can be used as a standalone tool or can be incorporated into an analysis pipeline. Current uses include clinical chimerism testing, cell line authentication, bio-specimen identification, biometric identification, forensic testing and kinship analysis.