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INTEGRATED ROBOTIC AND BIOINFORMATICS TOOLS FOR HIGH-THROUGHPUT MTDNA CONTROL REGION DATABASING

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The discriminatory power of forensic mtDNA testing is often limited by the availability of high-quality reference databases for specific populations. To address this problem, the Armed Forces DNA Identification Laboratory (AFDIL) has undertaken a large-scale project to generate mtDNA control region data suitable for forensic comparisons. In order to monitor progress and efficiency on this project, a custom Access database has been developed. The database tracks samples through all stages of processing (sample receipt, laboratory testing and data analysis), monitors various parameters associated with each stage, and dynamically collects/organizes data that may be relevant to independent research projects. The system has been designed to adhere to strict forensic guidelines, particularly for data processing and review. Yet, it maintains the flexibility required in a research environment - where standardized protocols do not necessarily apply to all samples/situations and information relevant to other research questions must be easily accessible. We will report on the various features of this custom system, and describe its utility in high-throughput sample processing, and other large-scale data analysis projects.