A NEW INTEGRATED SAMPLE COLLECTION TO REPORT GENERATION WORKFLOW SOLUTION FOR PATERNITY AND RELATIONSHIP TESTING

Jaiprakash G. Shewale, Dennis Wang, Chang Zhong, Siddhita Gopinath, Julio Mulero, Jie Deng, Phil McClurg, Carolina Dallett and Allan Minn, Human Identification, Life Technologies

Sample processing efficiency for Short Tandem Repeat (STR) profiling, a global standard for paternity and relationship testing, has been significantly improved in the past decade. This process improvement is a result of development of PCR compatible cell lysis reagents, robust PCR amplification systems, and automation. Nevertheless, there is an acute need to improve the efficiency of upstream and downstream steps in the relationship testing workflow to achieve greater laboratory efficiency and reduce total program costs. Major bottlenecks include performing statistical calculations to determine paternity index, generating reports, and seamless flow of information among different systems, instrument and software, in the laboratory. We developed a new integrated end-to-end workflow solution for relationship. The enhancements include a range of efficient sample collection devices, such as 4N6FLOQSwab™ and NUCLEIC-CARD™, PCR compatible cell lysis system Prep-n-Go™, robust STR amplification kits like Identifiler® Direct and VeriFiler™ Direct kits that enable analysis for 21 autosomal STR loci for resolving difficult paternity cases, GeneMapper® ID-X expert system and our recently developed Converge™ software system for complete data storage, access, analysis, statistical calculation and report generation. Probability of paternity value for the 21 STR loci is 2.09E-25, 1.51E-26, and 2.61E-25 for Caucasian, African American, and Hispanic populations, respectively. Our novel Converge™ system is configurable to meet the requirements of the laboratory enabling seamless integration of the instrumentation and software. In addition, the relationship statistical calculation and reporting tool of the Converge™ system is useful for simple paternity, complex relationship analysis and report generation. Principles and advantages of the new integrated workflow over traditional approaches will be presented.

Note: For Forensic or Paternity Use Only.