

Automated Library Preparation Using ForenSeq[®] DNA Signature Prep Kit and the VERSA 1100 Gene Workstation

Enable greater efficiency and higher reproducibility while freeing up valuable time for other tasks.

Verogen and Aurora Biomed have partnered to automate library preparation using the ForenSeq DNA Signature Prep Kit on the VERSA 1100 Gene liquid handling robot. The VERSA 1100 Gene Workstation is designed to smoothly handle post-PCR processing for up to 96 samples simultaneously, with the precision and accuracy needed for smaller runs as well. This flexibility complements the practical batch sizes needed in the forensic genomics laboratory: high capacity for databasing or backlog reduction, and smaller throughput for casework and other applications.



Figure 1: The Verogen MiSeq FGx[®] Forensic Genomics Solution using the VERSA 1100 Gene. Beginning with post-PCR processing, the pre-programmed VERSA 1100 Gene creates sequencing-ready libraries with minimal user input. The Illumina MiSeq FGx sequencing instrument and ForenSeq Universal Analysis Software complete the workflow with intuitive set-up guidance and semi-automated data analysis.

The ForenSeq DNA Signature Prep Kit is part of the first fully validated massively parallel sequencing (MPS) solution designed for forensic genomics, the Verogen MiSeq FGx Forensic Genomics Solution (Figure 1). This innovative solution generates more comprehensive data than conventional capillary electrophoresis-based methods, with higher resolution than ever before possible, particularly for highly degraded or low-quality DNA, or complex DNA mixtures. The system interrogates over 200 genetic markers simultaneously and can provide a wide range of additional information beyond traditional STRs, such as biogeographical ancestry and phenotypic-informative SNPs.

The unique features of the VERSA 1100 Gene make it a natural match for Verogen forensic genomics sequencing tools. The UV/HEPA filtered safety hood protects samples from external contamination. The efficient 96-channel aspirator and bulk-dispensing ReagentDrop decrease processing time, and the magnetic bead vortexer increases reagent uniformity for improved performance.

Experiments performed by Verogen indicate read depth performance of the automated protocol using the VERSA 1100 Gene is comparable to a manual preparation of the ForenSeq DNA Signature Prep kit for a 16-sample run (Figure 2). Both methods recovered the same number of loci from the comprehensive primer set B (Figure 3).

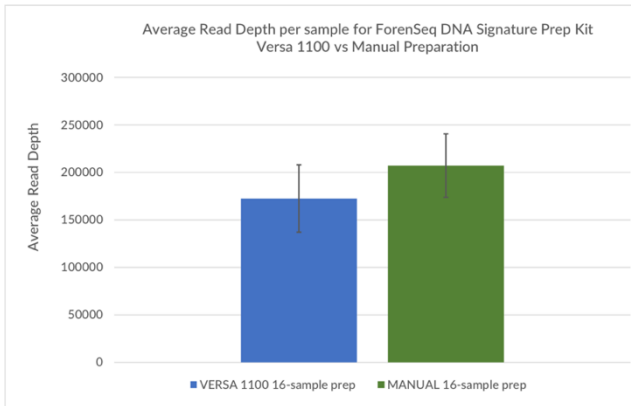


Figure 2: The average read depth observed for the automated preparation and a manual preparation of 16 samples with the DNA primer mix A is comparable.

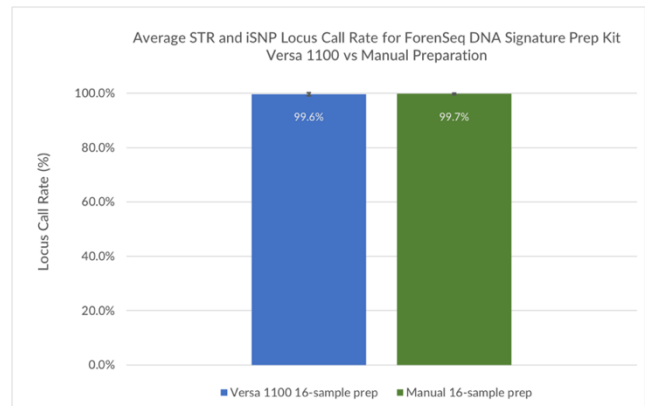


Figure 3: A comparison of the percent of loci called for an automated and manual preparation. Both methods recovered the same number of loci from DNA primer mix A for 16 samples.

In addition to increasing throughput, the automated system helps avoid repetitive strain and fatigue for users and frees analysts to refocus their time on data interpretation and other activities. Automating the ForenSeq DNA Signature prep kit on the pre-programmed VERSA 1100 Gene simplifies the onboarding of massively parallel sequencing with comparable performance to manual library preparation. Forensic laboratories of any size can efficiently prepare MPS libraries for up to 96 DNA samples extracted from even the most challenging biological evidence, while maintaining a high degree of confidence in their results.

For more information on how to make the MPS vision an automated reality in your lab please visit www.aurorabiomed.com or email info@verogen.com

About Aurora Biomed

Since 1990, Aurora Biomed has provided analytical instruments and automated liquid handling platforms to advance research in the academic, industry and law enforcement communities. Aurora Biomed continually develops innovative solutions to solve laboratory workflow pain-points. This is complemented by personalized, unmatched customer support. For more information, visit www.aurorabiomed.com



About Verogen

Verogen serves those who pursue the truth using genetic tools. Powered by gold standard Illumina sequencing technology and working in partnership with forensic laboratories, Verogen is advancing science to unlock the true potential of forensic genomics. For more information, visit www.verogen.com

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