The identification of foodborne pathogens is important to prevent and track major outbreaks and to identify potential sources of contamination in food processing plants. Next Generation Sequencing (NGS) is a powerful tool to identify such organisms, but considerable effort is first required to isolate and prepare the required DNA libraries. To simplify the process, DNA isolation and library preparation were integrated on a single instrument that automated both processes. Sequencing was performed on MiSeq instruments.

**RESULTS**

Purified, well-characterized DNA was initially used to optimize the library preparation portion of the fully automated process. Sequence-ready DNA libraries were prepared from these DNA samples on the Encompass workstation within approximately 3 hours, which included about 30 minutes of hands-on-time. Sequencing of these libraries by CFSAN on MiSeq instruments yielded excellent quality metrics. In the case of the 12 strains of *Salmonella* received from CFSAN, quality scores exceeded Q30 with depth of coverage exceeding 112X (Table I). For the PP samples, the quality scores for both forward and reverse reads exceeded Q30 with the depth of reads in the range 30X – 40X. In addition, 95% of the reads could be mapped to the reference genomes (Table II). The additional studies were performed with cultured *Salmonella* and *E. coli* microbes to optimize the combined DNA isolation and library preparation on a single instrument. Sequencing of these libraries on MiSeq instruments yielded similar results and quality scores.

**CONCLUSIONS**

The ability to reduce the hands-on time and improve quality metrics using automated DNA isolation and subsequent NGS library preparation will help to reduce costs, improve turn-around time, and provide consistently reliable data. Automation of the entire process on a single instrument will also significantly reduce the amount of training required as well as the capital equipment costs and required laboratory space as compared to manual processes using multiple pieces of equipment.