

Achieving Superior Coverage and Precision with Helaxy’s Fluidic Workflow

Leveraging Illumina’s DNA Prep for Automated WGS

Overview

This application note highlights the Helaxy Eazy – NGS Extraction & Library Device (RUO) and its integration with Illumina’s DNA Prep Tagmentation Kit for automated NGS library preparation. The system streamlines the entire process, from sample extraction to library preparation and clean-up, delivering superior genome coverage and yield for both simple and complex bacterial samples. With reduced hands-on time and faster turnaround, the device offers an efficient solution for smaller labs and hospitals, enabling high-throughput sequencing with minimal user intervention.

Materials and Methods

Adaptation of Illumina’s DNA Prep Tagmentation Kit onto Helaxy Eazy

The Helaxy Eazy device was integrated with Illumina’s DNA Prep Tagmentation Kit to perform automated tagmentation-based WGS library preparation. The workflow involved minimal user touchpoints, focusing on sample lysate to cleaned NGS library.

Simple sample type: *Lactobacillus* culture

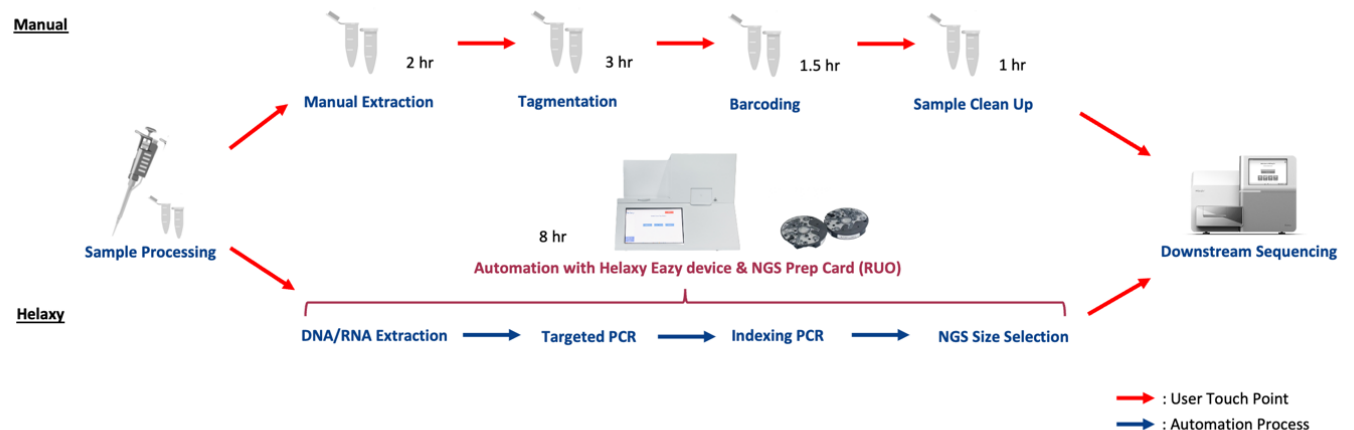
Complex sample type: ZymoResearch Microbial Community Standard (Cat. No: D6300)

Assay: Illumina DNA Prep Kit, (M) Tagmentation (Cat No: 20060059)

Sequencing Platform: MiSeq RUO

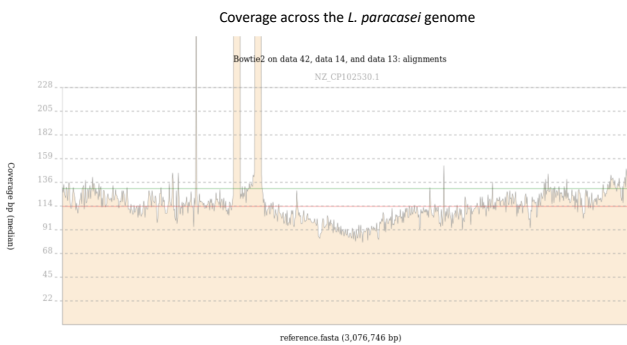
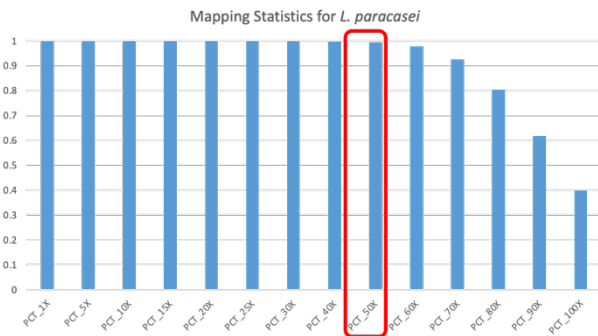
Turnaround Time: <24 hrs

Manual vs Helaxy Workflow



Results

Simple Sample Type – single bacteria



Conclusion

The Helaxy’s workflow provides an automated, efficient solution for NGS library preparation, reducing time, labor, and errors. It offers up to 50x genome coverage for simple samples and accurately identifies bacterial species in complex samples. With minimal contamination risk and a turnaround time under 24 hours, Helaxy Eazy is ideal for high-throughput sequencing in smaller labs and hospitals.

Complex Sample Type – bacteria community

Expected Pre-characterized Bacteria		Helaxy Eazy Workflow (No. of reads)
<i>Pseudomonas aeruginosa</i>	Gram negative	1004777
<i>Escherichia coli</i>	Gram negative	55336
<i>Salmonella enterica</i>	Gram negative	159309
<i>Lactobacillus fermentum</i>	Gram positive	20467
<i>Enterococcus faecalis</i>	Gram positive	8813
<i>Staphylococcus aureus</i>	Gram positive	1587
<i>Listeria monocytogenes</i>	Gram positive	12651
<i>Bacillus subtilis</i>	Gram positive	3194

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Email: info@helaxy.com

Please visit our website: <https://helaxy.com>

16 Ayer Rajah Crescent
#03-02 Tempco Technominium
Singapore 1399965



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