

Enhanced Coverage and Yield with Helaxy’s Fluidic Workflow

Optimizing 16S Metagenomics for Bacterial Samples

Overview

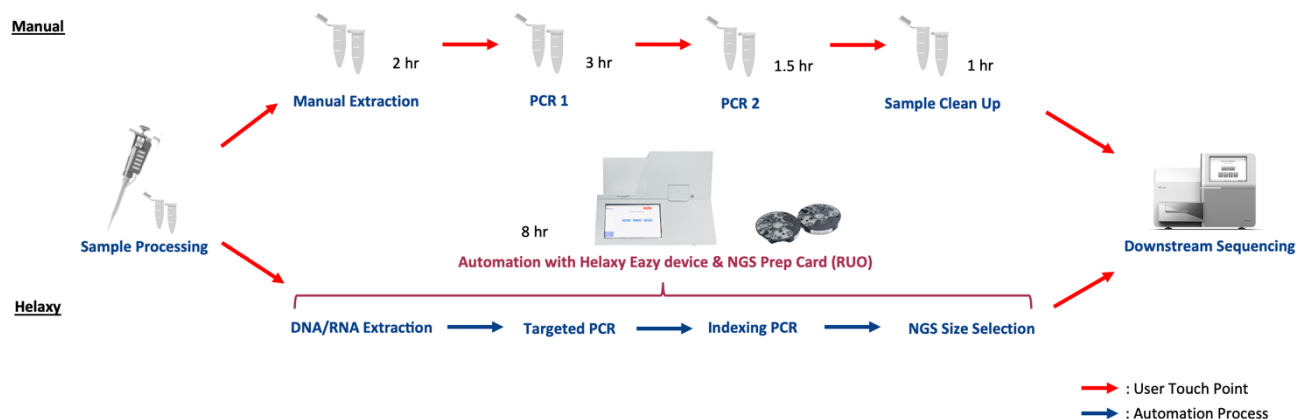
The Helaxy 16S Metagenomic NGS Kit (RUO), integrated with the Helaxy Eazy – NGS Extraction & Library Device (RUO), offers a streamlined and efficient automated workflow for NGS library preparation. Designed to decentralize NGS library preparation, this system allows smaller hospitals and laboratories to process and analyze bacterial samples onsite, reducing the turnaround time for metagenomic diagnostics to less than 9 hours. With increased amplicon yield, superior sequence coverage, and minimal user intervention, the Helaxy platform provides reliable, high-quality results. The enclosed system reduces the risk of contamination, making it particularly beneficial for high-throughput metagenomic studies.

Materials and Methods

The Helaxy 16S Metagenomics NGS Kit (RUO) combined with the Helaxy Eazy Device provides an automated solution for NGS library preparation. The device supports two main user touchpoints – Sample Pre-Processing & Pre-Sequencing Quantification and Loading onto the Desired Sequencing Platform.

Sample Tested: ZymoResearch Microbial Community Standard (Cat. No: D6300)
Assay: Helaxy 16S Metagenomics NGS Kit (RUO) (Cat No: 3000016)
Sequencing Platform: MiSeq RUO
Turnaround Time: <24 hrs

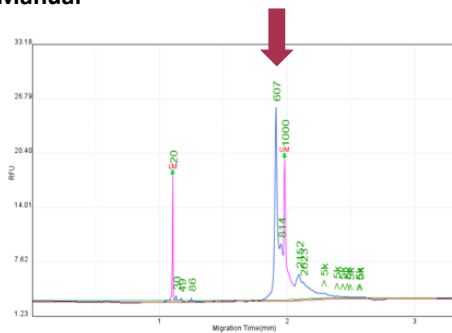
Manual vs Helaxy Workflow



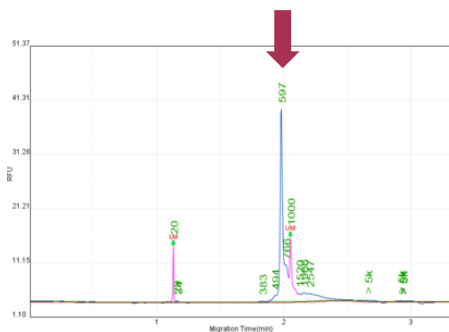
Results

Comparing manual and Helaxy workflows reveals that the automated system significantly improves sequencing coverage and reduces contamination. Helaxy’s workflow delivered higher reads for key bacteria, such as *Pseudomonas aeruginosa* (70% vs. 9.7% in manual). Other bacteria, such as *Bacillus subtilis* and *Salmonella enterica*, also saw enhanced sequencing accuracy.

Manual



Fluidic



Pre-characterized Bacteria Panel		Manual Workflow		Helaxy Eazy Fluidic Workflow			
		No. of reads		No. of reads			
<i>Pseudomonas aeruginosa</i>	Gram negative	37	9.7%	98226	70%		
<i>Escherichia coli</i>	Gram negative	29		5051			
<i>Salmonella enterica</i>	Gram negative	50		111042			
<i>Lactobacillus fermentum</i>	Gram positive	53		45179			
<i>Enterococcus faecalis</i>	Gram positive	7		21288			
<i>Staphylococcus aureus</i>	Gram positive	68		13929			
<i>Listeria monocytogenes</i>	Gram positive	1		419			
<i>Bacillus subtilis</i>	Gram positive	25469		214382			
Others		240374		90.3%		106826	30%

Conclusion

The integration of the Helaxy 16S Metagenomics NGS Kit with the Helaxy Eazy Device provides a robust automated solution for NGS library preparation. Helaxy’s workflow offers superior coverage of target bacteria with reduced contamination compared to manual methods. The enclosed system and minimal user intervention further enhance sequencing accuracy and reliability.

To place an order or receive technical assistance

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