

Reagent Contamination Shown to Distort Pathogen Detection in mNGS

New study demonstrates brand- and lot-specific microbial DNA signatures; Micronbrane Medical establishes mNGS-grade as a measurable quality standard.

ZHUBEI CITY, TAIWAN, August 28, 2025 /EINPresswire.com/ -- A newly published study in

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The study shows extraction kit contaminants impact results. However, mNGS-grade reagents support accurate pathogen detection by providing lot-specific microbial DNA profiles in advance.”

Dr. Mengchu Wu

Microbiology Spectrum confirms that contaminating DNA in extraction reagents is a critical source of error in metagenomic next-generation sequencing (mNGS). The research demonstrates that microbial DNA contaminants, sometimes referred to as the kitome, are both brand- and lot-specific, capable of producing false positives and, in some cases, masking clinically important pathogens.

The study compared four widely used extraction kits and found substantial variation in background microbial DNA. Some lots contained organisms associated with infection, raising the risk of misinterpretation in both research and

clinical contexts. Lot-to-lot variation within the same brand was also observed, underscoring the challenge of reproducibility in mNGS.

“Our results confirm that contaminating DNA in extraction reagents is not incidental. In a clinical context, false positives and unreliable negatives are unacceptable, and reproducibility across sites is essential,” said Dr. Zi-Lun Lai, Postdoctoral Research Fellow at China Medical University Hospital and first author of the study. “This study highlights the importance of transparent characterization of reagent backgrounds and the use of proper controls as necessary safeguards if mNGS is to be trusted in infectious disease diagnostics.”

[Micronbrane Medical](#) has established [mNGS-grade](#) as a quality framework to directly address this problem. All extraction reagents are manufactured under stringent protocols, tested for background microflora, and released only with a Certificate of Analysis (COA) documenting lot-specific contaminant profiles.

“Contamination is a pervasive issue across the entire mNGS workflow. In research, workarounds are possible, but in clinical applications accuracy cannot be compromised,” said Dr. Mengchu Wu, Co-Founder, CEO, and Chairwoman of Micronbrane Medical. “We developed mNGS-grade as

a measurable quality framework based on lot-level testing and certification. By qualifying every lot and documenting background microflora, Micronbrane Medical provides the transparency needed for researchers and clinicians to separate background signals from true pathogens and to trust the accuracy of their results.”

The Micronbrane Medical Microbial DNA Enrichment Kit supports multiple genomic applications including mNGS, 16S rRNA sequencing, qPCR, and end-point PCR. By depleting host nucleated cells in the samples, it increases microbial composition by 10–1000 fold, reduces extraction time to 1.5 hours, and delivers high-yield DNA from both Gram-positive and Gram-negative bacteria.

The full article, Deciphering the impact of contaminating microbiota in [DNA extraction reagents](#) on metagenomic next-generation sequencing workflows (Lai Z-L, Su Y-D, Lin H-H, Wang S-Y, Lin Y-C, Liang S-J, Chen W-C, Hsueh P-R), was published online in Microbiology Spectrum on August 20, 2025.

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