Next Gen Diagnostics CEO Paul Rhodes Announces that Patricia Simner has Joined NGD's Scientific Advisory Board

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Next Gen Diagnostics announces that Dr. Patricia Simner, Director of Bacteriology at Johns Hopkins Medical Center, has joined its Scientific Advisory Board. Dr. Simner is author of over 150 peer-reviewed publications at the cutting edge of developing a genome-level understanding of antimicrobial resistance (AMR) mechanisms and treatment, and is a national leader in the application of whole genome sequencing (WGS) to infectious disease.

"NGD is deeply involved in developing machine learning methods to predict antibiotic resistance from WGS, and is now using those models to begin to discover novel mechanisms of resistance and susceptibility," noted Paul A. Rhodes, Ph.D., NGD's founder and CEO. "Trish's interests and remarkable record of research into the complex genomic underpinnings of AMR will make our engagement together one of genuine mutual interest and benefit."

NGD has developed some of the most accurate ML models for the determination of resistance in Gram negative bacteria from WGS, including resistance to the clinically important drug cefepime in *E. coli*, with accuracy higher than that of the *in vitro* methods that comprise the current standard of care as recently validated by Humphries et al in the Journal of Clinical Microbiology (1). NGD has also shown that WGS-based predictive ML models can be analyzed to identify mechanisms of resistance and susceptibility (2), indicating the ML results are driven by biologically causal regions of the genome, which fosters credibility needed for clinical use, and may provide guidance for the discovery of new inhibitors of resistance. "Dr. Simner's work and interests fit well with this compelling research agenda," Dr. Rhodes noted.

As sequence-based determination of resistance and susceptibility increasingly proves to be more accurate than the standard of care (3), with an appropriate quality framework, validation, and regulatory review and clearance, coupled with the low cost and automation of sequencing and bioinformatic analysis, WGS can increasingly be the basis for routine pathogen diagnostics.

"I am looking forward to working with NGD as they continue to pioneer the development of methods to use whole genome sequence to predict susceptibility and resistance," said Dr. Simner. "I look forward to joining them as an advisor in this scientifically compelling and clinically important work supporting the continuing transition to whole genome sequence-based diagnostics."

1 Humphries *et al*, *Journal of Clinical Microbiology*, 2023
2 Rhodes *et al*, *ASM Microbe Abstract 2023*
3 Kumar *et al*, *Clinical Infectious Disease* 2020

About Next Gen Diagnostics

NGD, founded by Dr. Paul A. Rhodes along with Sanger Institute group leaders in Cambridge, has built and validated world-leading automation of pathogen bioinformatics enabling high throughput low cost clinical use of WGS. In addition, NGD holds the exclusive rights to a unique microfluidic sample preparation system for clinical and commercial applications of pathogen WGS. NGD offers a high volume turn-key sequencing services to enable detection of transmission in hospitals, and is working with leading collaborators in the US, Europe and Israel to be among the first to bring WGS-based regulated diagnostics to patient care. NGD is based in the US, with subsidiaries based in Cambridge, UK and in Israel.

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