



Why Pathogen Surveillance Matters

Post-COVID, surveillance plays a critical role in outbreak response, variant tracking, vaccine development, and biodefense preparedness.

Key Challenges in Real-World Samples

- 1 Low-quality, Low-amount Samples**
 Clinical and field samples often contain **fragmented nucleic acids with low pathogen abundance**, limiting detection sensitivity.
- 2 Emerging Variants and Co-infections**
 Mutations can affect PCR-based detection, while co-infections complicate analysis.
- 3 Inefficient Sequencing with WGS**
 Host DNA dominates sequencing data, limiting effective pathogen detection.

Why Celemics Target Enrichment?

<p>1 High Sensitivity in Challenging Samples</p> <p>Enables detection in low viral load samples (Ct >30), even in host-dominant or degraded conditions.</p> 	<p>2 Detection Across Variants and Multiple Pathogens</p> <p>Supports detection across diverse pathogens and variants with simultaneous multi-target analysis.</p> 	<p>3 Efficient and Cost-Effective Sequencing</p> <p>Minimizes host-derived reads and enriches pathogen signals, enabling efficient use of sequencing capacity and cost-effective surveillance.</p> 	<p>4 End-to-End Workflow Integration</p> <p>From library preparation to automated bioinformatics, the workflow is designed for reproducibility and ease of use.</p> 
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Proven Performance in Real Clinical Samples

Detect Pathogens with High Sensitivity at Low Viral Load

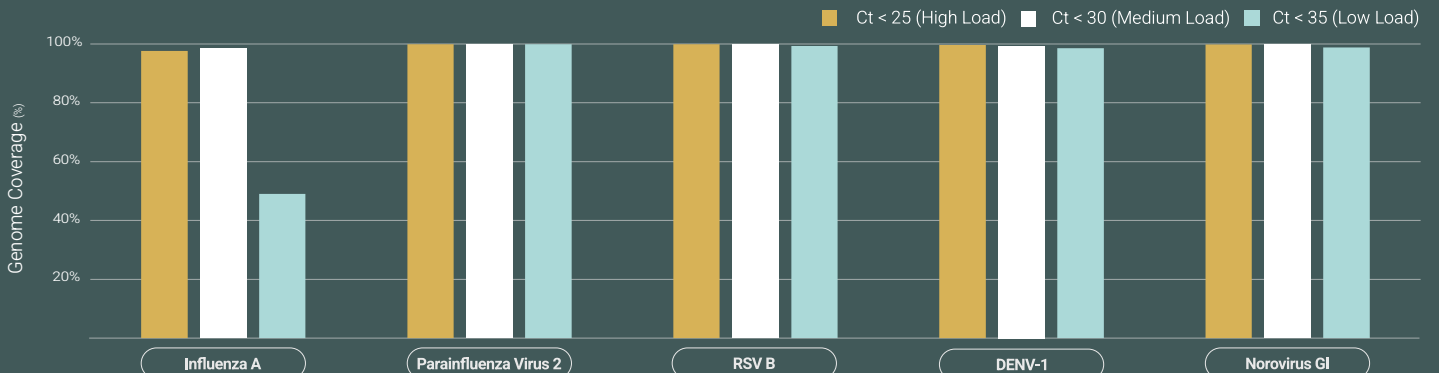


Figure. Genome Coverage at Elevated Ct Values. Genome coverage remained high at Ct < 30 and was retained at Ct < 35 across multiple viral targets, supporting reliable detection in low viral load clinical samples (Ct > 30).



From Detection to Insight in Pathogen Surveillance

- ✔ **Ready-to-use and customizable pathogen panels** for routine surveillance and emerging and re-emerging pathogens
- ✔ In-house probe design and rapid panel development enabling **timely response to newly identified pathogens**
- ✔ **High-sensitivity target enrichment** for reliable detection in low-abundance and complex clinical samples
- ✔ **Cloud-based bioinformatics** for streamlined analysis and actionable insights in public health surveillance

Comprehensive Panel Portfolio

Beyond ready-to-use panels, custom panel development enables rapid expansion to cover emerging and evolving pathogens.

Product Category	Panel Name	Targets	Key Application
Syndromic Panels	Infectious Respiratory Syndrome Panel	50 Targets (Virus 27, Bacteria 19, Fungi 4)	Pneumonia, URI/LRI
	Hemorrhagic Fever Syndrome Panel	37 Targets (Virus 22, Bacteria 15)	Hemorrhagic Fever
	Rash with Fever Syndrome Panel	32 Targets (Virus 16, Bacteria 16)	Rash with fever
	Diarrhea Syndrome Panel	34 Targets (Virus 11, Bacteria 18, Fungi 5)	Foodborne illness, Outbreaks
CRV Panel	Comprehensive Respiratory Virus Panel	9 Types / 39 Strains	Variant tracking, Novel strain discovery
Amplicon Panels	Influenza / RSV / HMPV Panels	Key Respiratory Viruses	High-throughput screening, Surveillance

Key Surveillance Applications

Genomic surveillance of high-risk and emerging pathogens

+ 100+ Additional Pathogens in Surveillance Panels

1 National Defense Pathogen Surveillance

Monitoring high-risk pathogens relevant to national biosecurity programs.

Bacillus anthracis / Yersinia pestis / Vibrio cholerae / Shigella spp. / Salmonella Typhi / Yellow fever virus / Hantaan orthohantavirus / Variola virus

2 Public Health Pathogen Monitoring

Genomic analysis of pathogens for outbreak investigation and infectious disease monitoring.

SARS-CoV-2 / Influenza A/B viruses / Respiratory syncytial virus (RSV) / Human parainfluenza virus / Human adenovirus / MERS coronavirus

Collaboration Opportunities

Flexible collaboration models, including **custom panel development, sequencing, and bioinformatics services.**

- ✔ Public Health Surveillance
- ✔ National Defense & Biosecurity
- ✔ Emerging & Zoonotic Diseases
- ✔ Outbreak Investigation & Variant Analysis



Celemics, Inc. (HQ)

20F, BYC Highcity Bldg. A, Gasandigital 1-ro 131,
Geumcheon-gu, Seoul, Korea 08506
support@celemics.com / www.celemics.com

US Office

1100 Olympic Dr. Ste 106
Corona California USA 92881
Tel. +1.951.805.8845

India Private Limited

8th Floor, Whitefield Rd, Brigade Metropolis, Garudachar
Palya, Mahadevapura, Bangalore, Karnataka - 560048
Tel. +91.80000.57106