

Wastewater-Based Epidemiology (WBE) of SARS-CoV-2

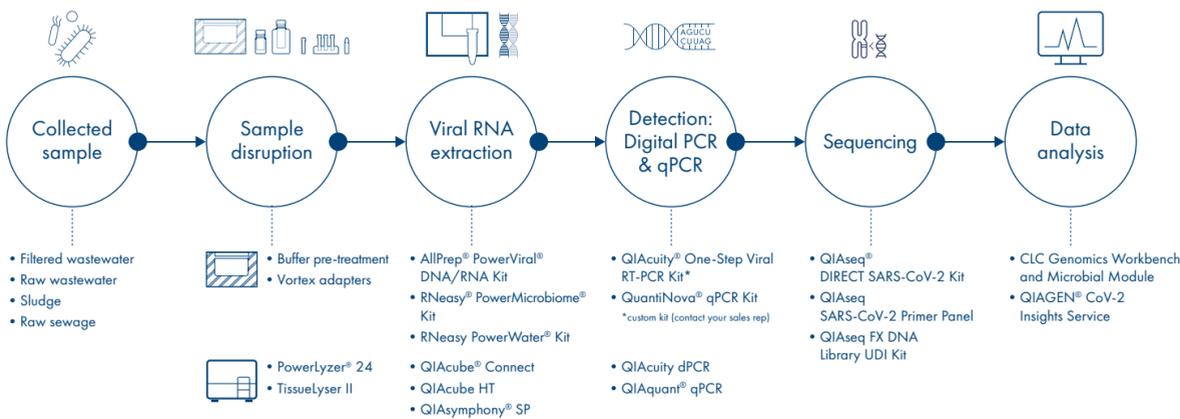
Wastewater-based epidemiology is a game-changing technology for predicting and tracking local outbreaks of COVID-19. Based on the detection of SARS-CoV-2 viral RNA in wastewater or natural sewage, it's an extremely powerful and effective surveillance tool.

Did you know?*

<ul style="list-style-type: none"> WBE can detect the virus several days before people show symptoms Only about 30% of SARS-CoV-2 infected individuals seek medical attention One infected individual theoretically is detectable among 100 to 2,000,000 people 2.1 billion people could be monitored globally in 105,600 sewage treatment plants 	<ul style="list-style-type: none"> More than 200 labs worldwide are doing wastewater testing Epidemiological trends (from diagnosed cases) can be verified daily without testing patients WBE cost-effectively complements clinical surveillance where resources are limited Worldwide wastewater monitoring could save up to US\$1 billion
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* Hart, O.E. and Halden, R.U., 2020 Computational analysis of SARS-CoV-2/COVID-19 surveillance by wastewater-based epidemiology locally and globally: Feasibility, economy, opportunities and challenges

Research workflow for reliable data



Unleashing the power of digital PCR for COVID-19 monitoring

Wastewater-based epidemiology can be greatly enhanced by using digital PCR in the workflow, particularly for applications requiring high precision and sensitivity.

How to extract SARS-CoV-2

- Dedicated high-yield kits efficiently purify SARS-CoV-2 (or other) viral RNA from a variety of sample types
- Patented **Inhibitor Removal Technology®** eliminates inhibitory components that negatively affect analysis
- Kits are automatable on different platforms for hands-free processing, standardized results and high productivity

Benefits of nanoplate dPCR

- Absolute target quantification**
Does not require references or standard curves
- High tolerance to inhibitors**
Provides excellent viral detection from complex wastewater samples (due to partitioning and endpoint measurement)
- Superior precision**
Nanoplates/partitions detect very small fold change differences
- Increased sensitivity**
Detects rare mutations and low-abundance targets
- High reproducibility**
Eliminates amplification efficiency bias and provides better inter-laboratory comparability
- Fast and easy**
Familiar plate handling, 5plex multiplexing detects SARS-CoV-2 variants in a single assay and gives results in 2 h

NGS solutions to identify and monitor new variants

NEW – QIAseq DIRECT SARS-CoV-2 Kit



- True single-box solution with dramatically less hands-on time and 50% less plasticware
- Overlapping amplicons and redundant primer pools reduce risks of mutation-read dropout
- No fragmentation, tagmentation or ligation
- Highly uniform viral genome coverage

QIAseq SARS-CoV-2 Primer Panel



- Includes only materials needed for RT and enrichment for whole genome sequencing of SARS-CoV-2
- Compatible with any downstream library-prep methods
- Paired with QIAseqFX DNA Library Kits, having up to 384 unique dual indices (UDIs)
- Compatible with Oxford Nanopore Technology (ONT) sequencers



For more information about QIAGEN's solutions for SARS-CoV-2 WBE research, visit www.qiagen.com/wastewater

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