

# Twist Pan-Viral Panel

Confident identification of over 1,000 viral human pathogens from a single sample

## KEY BENEFITS

### Screen for Over 1,000 Viral Genomes in a Single Sample

- Contains over 600,000 probes to screen for over 1,000 viral human pathogens
- Sequences compiled from RefSeq; known to affect humans

### Increase Accuracy and Sensitivity of Detection

- NGS-based quality control of the probe library ensures high uniformity
- High capture efficiency for sensitive, specific NGS-based identification
- Circumvents the problem of low levels of virus within high levels of host genetic material

### Save Time and Money

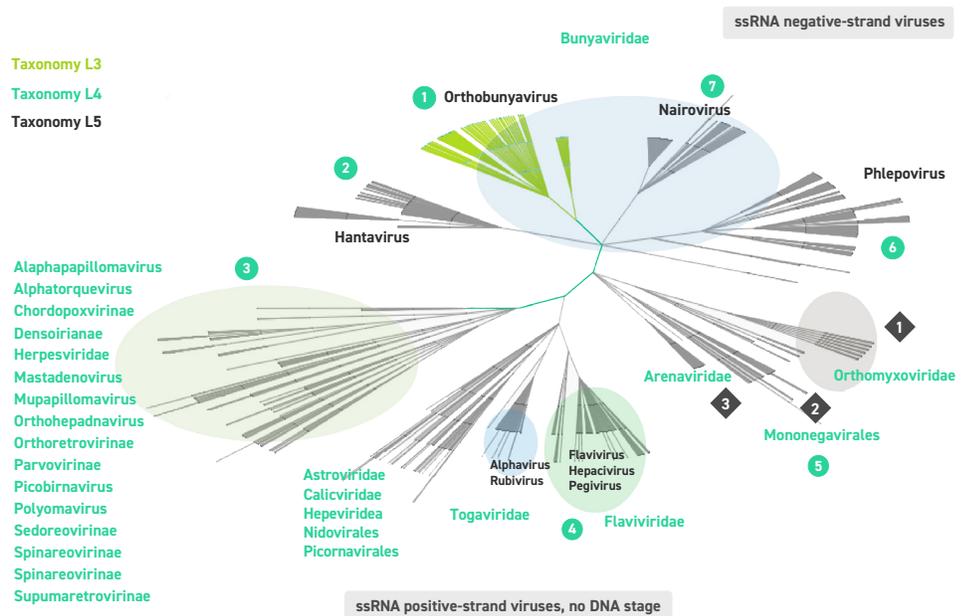
- Eliminates the need for costly, time-consuming PCR-based amplification or transcriptome-based sequencing approaches
- Expedites diagnosis and simplifies tracking of emerging viral infections

Next-generation sequencing (NGS) offers high-throughput, specific identification of infections in blood samples. In the case of viral infections, however, obtaining genetic material sufficient for sequencing can be a challenge due to the extremely low levels of virus often present. In these situations, target enrichment — which uses DNA-based hybridization probes to isolate specific sequences out of a mixed genomic sample — can increase the sensitivity and specificity of NGS-based efforts.

The Twist Pan-Viral Panel contains over 600,000 probes for the targeted enrichment of over 1,000 viral human pathogens from a single sample. It offers a simplified, efficient, and accurate method for screening patient samples to both improve diagnosis and track emerging viral infections.

## Comprehensive, Curated Content

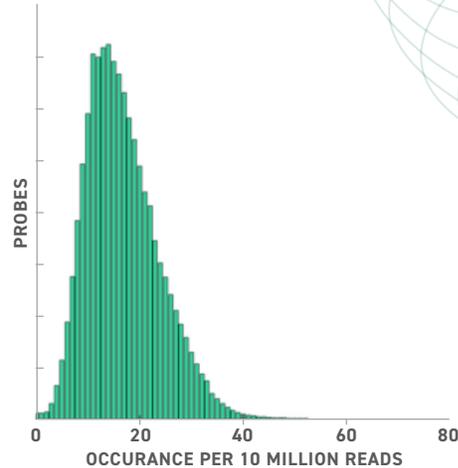
Compiled from the RefSeq database, the probe sequences in the Twist Pan-Viral Panel are complementary to viral sequences known to be associated with human infectious disease. The panel enables enrichment of these viral sequences for high-resolution NGS leading to high-sensitivity detection and confident identification of viral infections.



**Figure 1. Phylogenetic tree depicting the Twist Pan-Viral Panel probe composition.** The Pan-Viral Panel was developed in a joint effort between Twist Bioscience®, Illumina®, and U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). This map shows the general diversity of the over 1,000 genomes represented.

## Consistent, High-Quality Probes Verified by NGS

Twist applies a proprietary NGS-based method to test each panel of probes to ensure they are uniform and consistent across batches. Uniform probe representation prevents missing probes and possible biases. We check every lot before shipment to be certain the probe representation meets our specifications for high-quality, highly uniform capture performance.



**Figure 2. NGS data illustrating the high uniformity of the Twist Pan-Viral Panel.** Shown are the average counts per probe; 0.2% of probes are below 10x the mean (0.1x mean probe count).

## Sensitivity and Specificity

Using the Twist Pan-Viral Panel allows specific enrichment and sequencing of viral sequences at high resolution using NGS. In this manner, even low concentrations of viral genetic material can be separated from a mixed sample and enriched, facilitating highly sensitive detection and confident identification of viral infection, even at low copy numbers.

### Proven Performance

Using the Twist Pan-Viral Panel, researchers in Senegal were able to screen blood samples for viral content to provide rapid answers about the genetic makeup and origin of a recent monkeypox virus epidemic in Nigeria (Faye et al. 2018). In the future, the Twist Pan-Viral Panel aims to enable rapid and effective screening of patient samples to allow more efficient diagnosis and a simplified way of tracking emerging viral infections to lessen the impact of disease epidemics on a global scale.

SAMPLE	ZIKA READS (%)	FOLD ENRICHMENT
1	4.8%	2,900
2	0.91%	10,000
3	0.039%	6,200
4	0.0083%	7,700

**Table 1. Sensitive, accurate identification of Zika virus in blood samples enriched with the Twist Pan-Viral Panel.** Four samples containing Zika virus at different viral loads were enriched using the Twist Pan-Viral Panel and sequenced using NGS. Using the OneCodex database, Zika virus was identified in all samples relative to the negative control.

The Twist Pan-Viral Panel is a component of the Twist portfolio of products for NGS Target Enrichment.

### LEARN MORE

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## ORDERING INFORMATION

### 100516: Twist Pan-Viral Panel v1, 12 Reactions

Probes for 12 enrichment reactions; for pooling of up to 4 samples per hybridization reaction.

*The Twist products described herein are for research use only. These products may be subject to additional use restrictions as set forth in Twist's Supply Terms and Conditions ([www.twistbioscience.com/supply-terms-and-conditions](http://www.twistbioscience.com/supply-terms-and-conditions)). Twist Bioscience assumes no liability regarding the use of these products for applications in which they are not intended.*

*Twist Bioscience's quality management system governing the design and manufacture of NGS Target Enrichment Panels is ISO 9001:2015 and ISO 13485:2016 certified (San Francisco, CA).*