CleanPlex® for MGI SARS-CoV-2 Research and Surveillance Panel
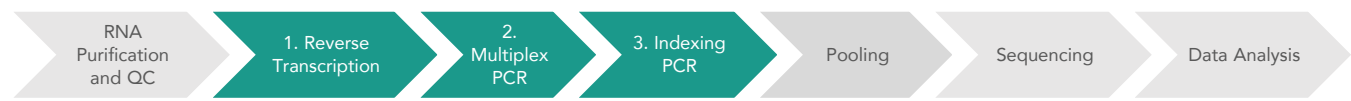
Targeted Sequencing NGS Panels to Support SARS-CoV-2 Research and Surveillance

Highlights

- **Complete Coverage and Comprehensive Data**
  Sequence the entire SARS-CoV-2 genome with 99% coverage

- **Ultra-sensitive Detection**
  Detect down to one copy per reaction for degraded or limited sample input

- **Fast, Streamlined Workflow**
  Generate libraries for DNBSEQ™ platforms in just 5 hours using a simple, three-step protocol

- **Superb Performance**
  Prepare high-quality NGS libraries with excellent coverage uniformity and on-target performance to enable efficient use of sequencing reads and reduce costs

Real Time RT-PCR and antibody-based methods are the main tools for detecting infectious agents, however, such methods can only focus on a limited number of targets and can at times suffer from low assay sensitivity and false negatives results These methods also do not provide additional information other than a positive or negative diagnosis. The CleanPlex technology specializes in highly-multiplexed PCR-based targeted sequencing assays. This technology provides an easy to use, fast, and comprehensive solution for detection, identification, and mutation analysis of infectious pathogens all via a quick and easy workflow.

The CleanPlex® for MGI SARS-CoV-2 Research and Surveillance Panel was expertly designed from reference sequence MN908947 (NC_045512.2) using a proprietary design pipeline to cover the entire genome. For additional flexibility, the panel is available on two major sequencing platforms including DNBSEQ™. The NGS panel not only allows high sensitivity detection and confirmation of questionable qPCR results, but also enables mutation analysis, tracking, surveillance, and informed infection control through comprehensive sequence information generated.

CleanPlex for MGI SARS-CoV-2 Research and Surveillance Panel Specifications

| Parameter	Specification
Enrichment Method	Multiplex PCR
Platform	DNBSEQ™
Strain Compatibility	Above 97% coverage of over 107 known strains
Cumulative Target Size	29,903 bp
Number of Amplicons	343
Amplicon Size	116 - 196 bp, Median 149bp
Number of Primer Pools	2
Input DNA Requirement	~50ng purified total RNA
Sample Types	Bronchoalveolar lavage, tracheal aspirate, Sputum, NP/OP swab, Nasopharyngeal wash/aspirate or nasal aspirate
Total Assay Time	5 hours
Hand on Time	Less than 1 hour
Design Coverage	complete coverage (except 92 bp at the ends of the genome)
Coverage Uniformity (targets with > 0.2X mean coverage)	whole genome sequencing metrics coming soon
On-Target Aligned Reads	whole genome sequencing metrics coming soon
Total Reads per sample	0.2 to 0.3 M per sample for complete genome sequencing with PE100 reads

CleanPlex Streamlined Targeted Sequencing Workflow

CleanPlex for MGI SARS-CoV-2 Panels offer a simple and streamlined workflow. Starting from purified RNA, the protocol can be completed to generate target-enriched NGS libraries in just 5 hours, with less than 1hr of hands-on time, using a three-step workflow with minimal tube-to-tube transfers.

RNA Purification and QC → 1. Reverse Transcription → 2. Multiplex PCR → 3. Indexing PCR → Pooling → Sequencing → Data Analysis

CleanPlex Target Enrichment and Library Preparation
5 hours of total assay time, with less than 1 hour of hands-on time.

PARAGON GENOMICS

High Performance Translates into Cost-Effective Sequencing and Confident Analysis

CleanPlex Panels exhibit highly uniform coverage even with low template input and ultra high multiplexing. Without the need for deep sequencing to capture all targets, high sequencing performance allows for more cost-effective sequencing with more samples run per chip for higher throughput. With as little as 0.2M reads per sample, one can confidently capture the entire genome for mutation monitoring and phylogenetic analysis.

Using plasmids containing the N and S genes of SARS-CoV-2 with a single pool workflow for detection, the panel was able to on average capture all targets within 10 fold read depth range for 2.8 viral copies, and similarly for all but one target for 1.4 viral copies. All targets were also uniformly distributed across the GC range.
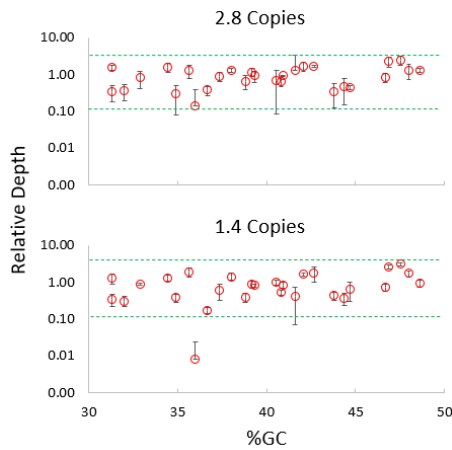
Using only one out of the two primer pools included in the panel, the detection rate was shown to be 56% at 1.1 copies and 100% when more than 2 copies were present. With the use of both pools to cover the entire viral genome, the sensitivity is expected to only further increase.
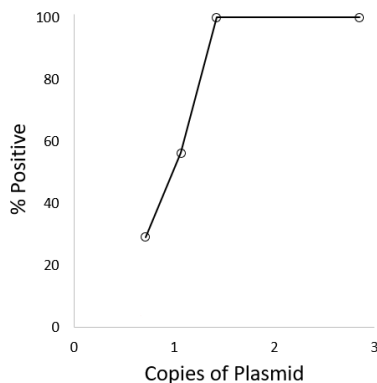
Sequencing suggestions CleanPlex for MGI SARS-CoV-2 Research and Surveillance Panel on DNBSEQ

CleanPlex for MGI panels are specifically designed for 100bp PE reads on the DNBSEQ platforms. Suggested average read depth is 1000x or 0.34M unique reads per sample when using both pools for complete genome sequencing.

Ordering Information

The CleanPlex for MGI SARS-CoV-2 Research and Surveillance Panels contain CleanPlex Multiplex PCR Primers and CleanPlex Targeted Library Kit with RT reagents. CleanPlex Indexed PCR Primers and CleanMag® Magnetic Beads are ordered separately to complete the workflow from input RNA to sequencing-ready NGS libraries. For more indexing options and additional product configurations, please visit www.paragongenomics.com/store_mgi/

Product	SKU
CleanPlex for MGI SARS-CoV-2 Panel (8 reactions)	918001
CleanPlex for MGI SARS-CoV-2 Panel (96 reactions)	918002
CleanPlex for MGI Single-Indexed PCR Primers, Set A (16 indexes, 32/96 reactions)	318001 318007
CleanPlex for MGI Single-Indexed PCR Primers, Set B (16 indexes, 32/96 reactions)	318002 318008
CleanPlex for MGI Single-Indexed PCR Primers, Set C (16 indexes, 32/96 reactions)	318003 318009
CleanPlex for MGI Single-Indexed PCR Primers, Set D (16 indexes, 32/96 reactions)	318004 318010
CleanPlex for MGI Single-Indexed PCR Primers, Set E (16 indexes, 32/96 reactions)	318005 318011
CleanPlex for MGI Single-Indexed PCR Primers, Set F (16 indexes, 32/96 reactions)	318006 318012
CleanMag Magnetic Beads (1 mL)	718001
CleanMag Magnetic Beads (5 mL)	718002
CleanMag Magnetic Beads (60 mL)	718003

Learn More

To learn more about NGS applications for Infectious Diseases, please visit
www.paragongenomics.com/applications/infectious_disease/

To learn more about CleanPlex Technology, please visit
www.paragongenomics.com/cleanplex_technology/