Targeted Sequencing Library Preparation

CleanPlex® Custom NGS Panels

Custom and cost-effective targeted sequencing NGS panels to accelerate assay development

Highlights

- **Fast Turnaround Time**
  Get custom assays delivered in 2 to 4 weeks
- **Scalable and Flexible Gene Content**
  Multiplex 20,000+ amplicons per primer pool and update panel content as needed with new insights
- **Sensitive Detection**
  Detect somatic mutations down to 1% MAF using just 10 ng of input DNA or down to 0.1% MAF with molecular barcoding (coming soon)
- **Fast, Streamlined Workflow for All Platforms**
  Generate libraries for Illumina® or Ion Torrent™ platforms in just 3 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

The CleanPlex® Custom NGS Panels are made-to-order multiplex PCR-based targeted resequencing assays designed for rapid variant analysis. The panels are powered by advanced primer design algorithm and proprietary background cleaning and molecular barcoding technologies. Our expert scientists are ready to build custom panels to meet your desired specifications. Custom panels are designed and iteratively optimized in-silico to generate the highest level of performance. Wet-lab validation is also available to ensure the success of your NGS-based assays.

CleanPlex Streamlined Targeted Sequencing Workflow

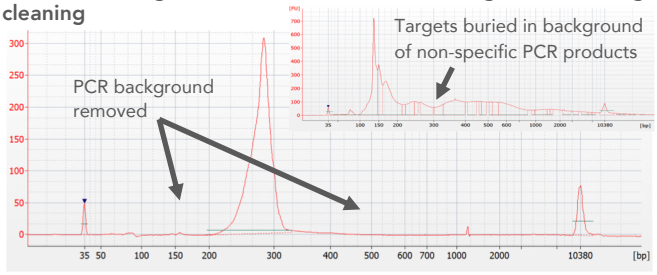
CleanPlex Custom NGS Panels offer a simple and streamlined workflow. Starting from purified and quantitated DNA, the protocol can be completed to generate target-enriched NGS libraries in just 3 hours, with 75 minutes of hands-on time, using a three-step workflow with minimal tube-to-tube transfers.

High Quality Libraries Powered by Background Cleaning

CleanPlex Custom NGS Panels are powered by Paragon Genomics' proprietary CleanPlex Technology, which uses a proprietary multiplex PCR background cleaning chemistry to effectively remove non-specific PCR products, resulting in best-in-class target enrichment performance and efficient use of sequencing reads. Platform-specific index primers are used to generate CleanPlex target-enriched libraries that are compatible with either Illumina or Ion Torrent platforms.

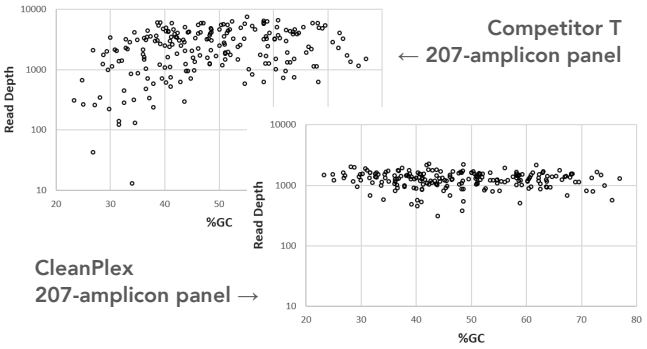
Library generated *with* CleanPlex background cleaning

Library generated *without* CleanPlex background cleaning



High Performance Translates to Cost-Effective Sequencing

A 207-amplicon panel was used to generate target-enriched libraries using either the CleanPlex or Competitor T's library preparation chemistry. The results indicate that 60% less sequencing would be required using CleanPlex, which means 2.5X more samples can be sequenced on a run. To achieve similar data quality, CleanPlex's mean read depth could be reduced to 600X while Competitor T's would need to be increased to >1,500X.



CleanPlex Target Enrichment and Library Preparation

3 hours of total assay time, 75 minutes of hands-on time

FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.

PARAGON GENOMICS

Scalable Content that Can Evolve to Meet New Challenges

CleanPlex Custom NGS Panels can be designed to multiplex from 7 to 20,000+ amplicons per primer pool to interrogate hundreds of genes simultaneously. New gene targets can be easily added without sacrificing performance, allowing your assays to evolve and stay current to the latest discoveries. Our superior primer design ensures that targets, including those in difficult regions, are successfully amplified to generate maximum coverage, minimizing assay failure due to dropouts of the desired targets.

CleanPlex Custom Panel Specifications

	CleanPlex	**CleanPlex UMI** (coming soon)
Input DNA	10–40 ng per pool	20–80 ng per pool
Amplicon Size	105–500 bp	70–100 bp
Panel Size	7-20,000 amplicons per pool	7-1,000 amplicons per pool
Target Design Rate	>95%	>95%
On-Target Rate	>95%	>95%
Coverage Uniformity	>95%	>95%
Limit of Detection (LOD)	1% MAF using 10 ng input DNA	0.1% MAF using >30 ng input DNA
Compatible Platforms	Illumina Ion Torrent	Illumina

High-Performance NGS Panels for Every Application

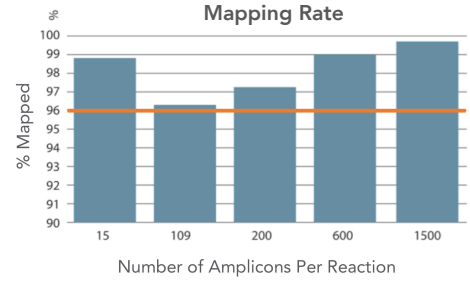
Customer Application	Custom Panel Delivered
Tumor Mutation Burden (TMB) Profiling Coding sequence of 365 genes Short amplicon size (105 bp – 120 bp)	~2.2 Mb covered by ~19,800 amplicons >91% target design rate
Early Cancer Detection Molecular barcoding Ultra-sensitive detection of cancerous mutations (MSI) from biofluid	~10 amplicons 100% target design rate
Non-Invasive Prenatal Screening (NIPS) 700+ hotspots plus regions to distinguish gender Cell-free DNA compatible	~100 kb covered by ~740 amplicons > 99.8% target design rate
Infectious Disease Research Bacterial detection and strain identifications >1,000 references per loci High interspecific variations & homology	> 95% target design rate
Methylation Analysis Extremely low GC content due to bisulfite treatment	~110 kb covered by ~730 amplicons > 98% target design rate
Agrigenomics High-Throughput Genotyping 20,000 loci on a highly repetitive genome	~3 Mb covered by ~15,000 amplicons > 95% target design rate

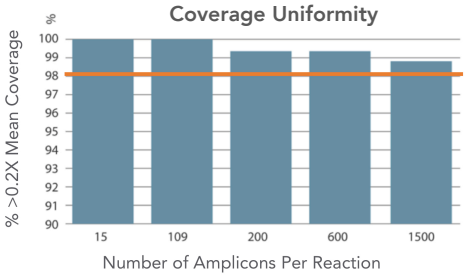
Design Custom NGS Assays Online with ParagonDesigner™

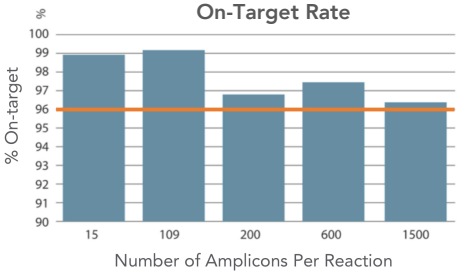
Use ParagonDesigner, our free, web-based tool, to submit target regions of interest and instantly receive a design coverage report to review. Our experts will be available through the process to provide you a quote, help you with any questions, and make further optimization to meet your needs. Once you approve the design, your custom NGS panel will be ready for shipment in 2 to 4 weeks.

Start a new design with ParagonDesigner at www.paragongenomics.com/paragon_designer/

High-Quality NGS Panels for All Panel Sizes







Learn More

To learn more about CleanPlex Custom NGS Panels, visit www.paragongenomics.com/custom_panels/

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

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