Bringing Clinical Value Through Enhanced Panel-based Testing

Genetic testing technology must continuously evolve to keep up with our ability to diagnose rare diseases. To maximize the diagnostic potential, the analysis must go beyond what is considered routine. Blueprint Genetics has set a new standard for panel-based testing by including clinically relevant deep intronic variants, superior copy number variant (CNVs) detection, and highly sensitive calling of single nucleotide variants (SNVs), insertions, and deletions (indels) to all our tests.

Our panels bring you exceptional testing performance, enabled by high-quality sequencing and a proprietary bioinformatic pipeline. For many difficult-to-sequence genes, including *PKD1* and *RPGR* ORF15 region, we offer excellent coverage with customized bioinformatic analysis that increases the likelihood of identifying a variant in these otherwise challenging regions.

Test Performance of Blueprint Genetics Panels

Number of genes included	Over 4,000
Number of deep intronic variants	Over 2,000
Sequencing Coverage at >20x	99.86%
Mean Sequencing Depth	143x
Single Nucleotide Variant (SNV) Sensitivity	99.89%
INDEL Sensitivity	
1-10 bps	96.9%
11-50 bps	99.13%
Copy Number Variant (CNV) Sensitivity	
1 exon deletion	100%
2-7 exon deletion	100%

Panels for 15 medical specialties

Blueprint Genetics' panel testing includes sequencing and copy number variant analysis for all of our over 220 panels. Tests additionally include clinically relevant, deep intronic variants. Mitochondrial DNA (mtDNA) analysis has been added to panels where the differential diagnoses include diseases explained by a mtDNA mutation. Panels can be customized by adding up to 200 genes from any of the 4,000 genes included in our panel assay. The full mitochondrial genome can be added or removed from any panel through our customization option available in our online ordering portal, Nucleus.

More information can be found at **blueprintgenetics.com**

Blueprint Genetics

Setting the Industry Standard for Mitochondrial DNA Testing

Full analysis of the mitochondrial genome

A high-quality mitochondrial DNA analysis combines deep, uniform coverage across the whole mitochondrial genome, exceptional testing performance, and high resolution detection for mitochondrial deletions. Our approach is to analyze the entire mitochondrial genome instead of focusing on single variants. Combining a comprehensive analysis with high performance in a single test is key to identifying the cause of rare inherited diseases.

Most comprehensive validation study

Currently, a gold standard reference assay, sample set or validation study for Mitochondrial DNA (mtDNA) testing is not readily available. Using a unique set of analytical, clinical, and simulated samples, we have carried out the largest and most comprehensive analytic and clinical validation study for mtDNA variant detection to date. Blueprint Genetics is aiming to set the industry standards for mitochondrial DNA testing.

Performance of Blueprint Genetics Mitochondrial DNA Sequencing Assay

Heteroplasmy detection capabilities	
SNVs	100% sensitivity at 10% heteroplasmy
	92.3% sensitivity at 5% heteroplasmy
INDELs	100% sensitivity at 15% heteroplasmy
	>94% sensitivity at 5% heteroplasmy
Large 500bp – 5,000kb deletions	~ 10% heteroplasmy detected at 99%
Coverage	
Mean sequencing depth	18,224x
100% of base pairs covered	1,000x

Over 7,000 cases were further tested for mtDNA mutations to determine assay's clinical performance and to gather more information on clinical utility. End-to-end validation was complemented using a bioinformatic approach that demonstrated the successful detection of thousands of simulated mtDNA variants at very low heteroplasmy levels.

Blueprint Genetics Mitochondrial Testing

Blueprint Genetics' mtDNA testing includes sequencing and copy number variant analysis of the entire mitochondrial genome (37 genes) which can be ordered alone or added to any panel. It has also been added to 30 existing panels where the addition of mitochondrial DNA testing is expected to have an impact on the diagnostic yield.
Blueprint Genetics' mitochondrial DNA analysis is a highly sensitive and validated assay based on hybridization-based capture of mtDNA and next generation sequencing (NGS). The technology detects low heteroplasmy levels of mtDNA SNVs, INDELs, and deletions.

More information about our mitochondrial testing can be found on our website: **blueprintgenetics.com**

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