Data Sheet

Agilent
Trusted Answers

Agilent SureSelect Max DNA Library Preparation and Target Enrichment Kits

Maximize your NGS journey with reagents adapted to your workflow

Key features:

- Generate high-complexity and uniformity libraries with as little as 10 ng of DNA input from intact or highly degraded FFPE samples.
- Provide a streamlined workflow that enables consistent, high-quality results in a true single-shift turnaround time.
- Offer high flexibility with fully modularized portfolio, including optional standalone purification beads, adapters, primers, and blockers tailored to your needs.
- Support seamless integration of everything you need for next-generation sequencing (NGS) library preparation, target enrichment, custom panels, sample quality control, and automation from one vendor.

Overview

The Agilent SureSelect Max DNA reagents are a novel NGS library preparation and target enrichment solution. Optimized for FFPE samples, which are essential for cancer research, the workflow also maintains robust performance starting with low input samples or cell-free DNA (cfDNA). Achieve cost savings with superior complexity, uniformity, and on-target rate, for reproducible data and less repeats. The new product portfolio features fully modularized reagents, designed for greater workflow flexibility, including standalone purification beads and non-enrichment-based assays. Use molecular barcode (MBC) adaptors to accurately detect variants down to ≤1% variant allele frequency or opt for MBC-free adaptors to provide additional sequencing throughput for germline applications. With as little as 6.5 hours turnaround time, manually prepare enriched and sequencing ready DNA libraries within a single shift to enhance productivity and efficiency. Choose between fast and overnight hybridization workflow options adapted to your work schedule. Compatible with Agilent Bravo automation, this solution enables high-throughput labs to process and sequence hundreds of samples in parallel, increase walkaway time, and achieve consistent sample handling. From quality control and fully compatible automation solutions and sequencer-ready libraries, Agilent offers end-to-end support for your NGS library preparation needs (Figure 1).

Sample
10 – 200 ng DNA input
FFPE and high-quality samples

→

Library Preparation and Target Enrichment
Mechanical/enzymatic shearing
384 unique dual sample indexing
+/– MBC
1–day/2–day workflow
Standalone Agilent-branded purification beads option
Bravo automation

Figure 1. The Agilent SureSelect Max DNA reagent kit offers one streamlined and comprehensive features to satisfy your NGS library preparation needs workflow with high flexibility

Superior performance of unenriched libraries for whole genome sequencing (WGS)

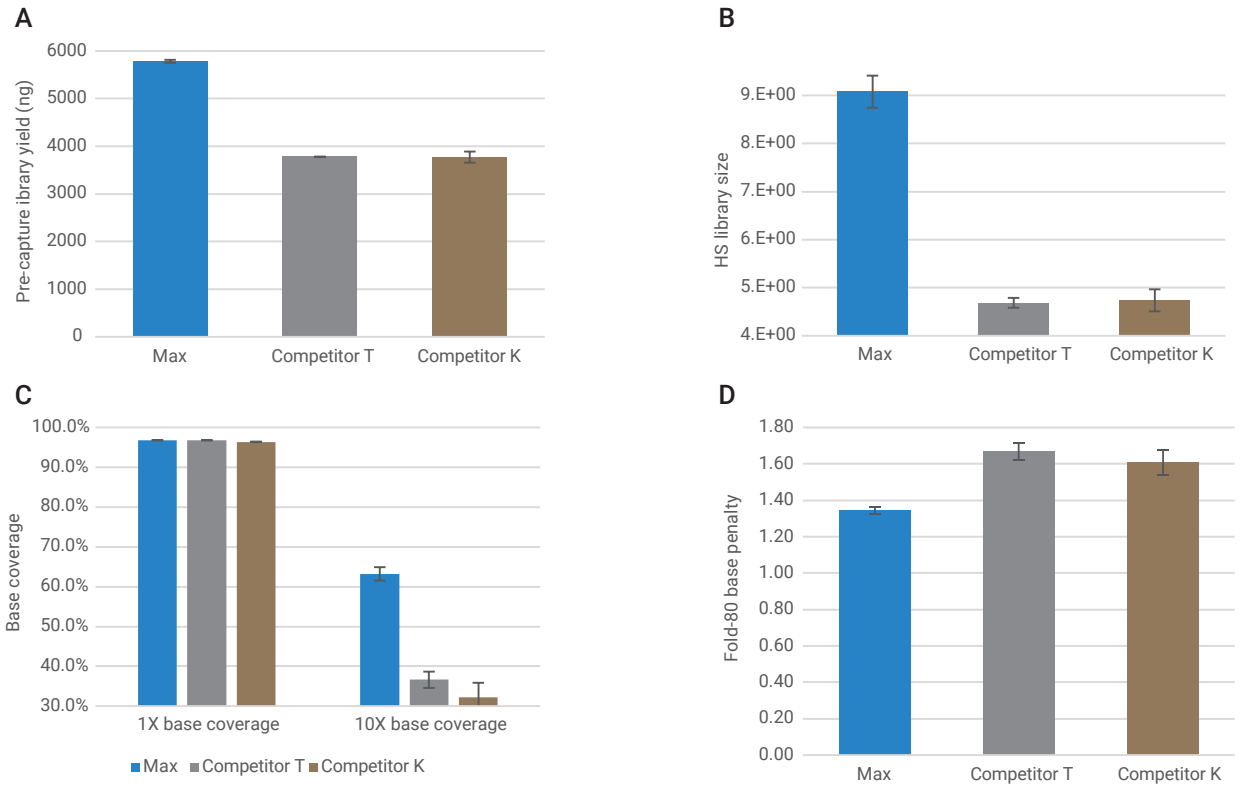


Figure 2. Performance comparison of unenriched libraries between Agilent SureSelect Max and competitor kits, demonstrating the optimal solution for WGS applications. A) The SureSelect Max library prep kit generates superior prep-capture library yield, indicative of high library construction and amplification efficiency. **B)** At least 4-folds higher library complexity compared to the competitors' kits, more unique DNA molecules are sequence-able in the final library, reducing sequencing cost. **C)** Achieve better 1X and 10X base coverage with SureSelect Max for structural variant discovery and population screening applications. **D)** Delivers excellent coverage uniformity, measured by a lower fold-80 base penalty.

All libraries were prepared following standard operating procedures using 100 ng HapMap sample (NA12878) as input. Vendor specific adaptors were used to prepare the libraries, amplified with 7 cycles of PCR. Sequencing and analysis were conducted by Agilent. All samples were sequenced at 2 x 150 on the Illumina HiSeq system and were normalized to 310 M reads (46.5 Gb). Reads were aligned to hg38, and coverage of each exon/variant was calculated based on the bam file generated.

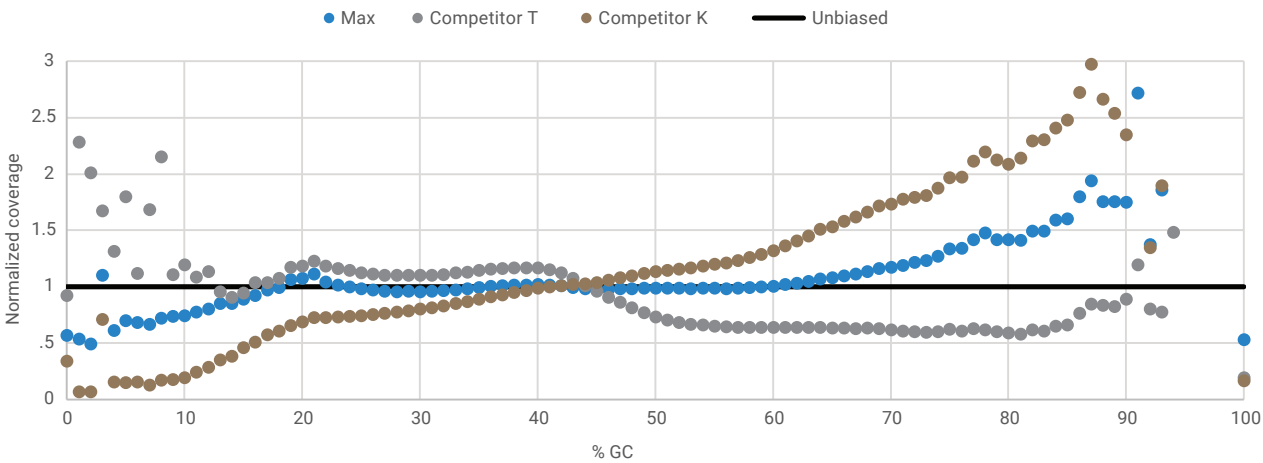
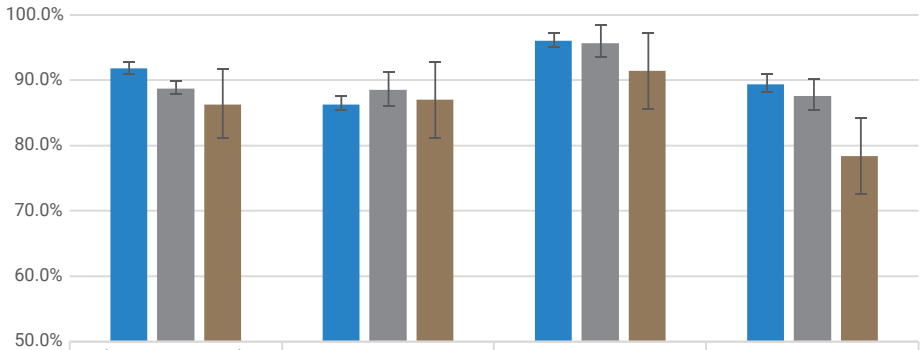


Figure 3. The Agilent SureSelect Max library preparation solution provides more consistent coverage distribution across varying GC content. SureSelect Max shows minimized GC bias compared to competitors, thereby reducing the need for additional sequencing to achieve uniform coverage and better detection of variants in the high/low GC content regions.

Excellent enrichment performance for exome sequencing



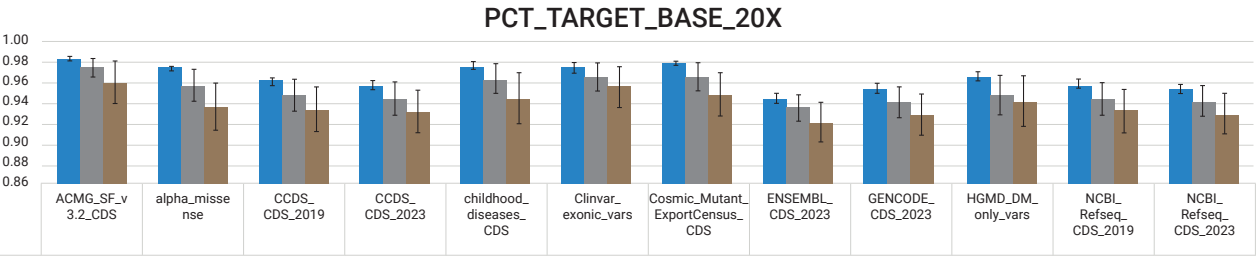
	% bases in targeted regions +/- 200bp	Uniformity	20X base coverage	30X base coverage
Max_8plex	91.8%	86.3%	96.1%	89.4%
Competitor T_8plex	88.7%	88.6%	95.7%	87.6%
Competitor K_8plex	86.3%	87.1%	91.4%	78.4%

Figure 4. Performance comparison of targeted capture libraries between Agilent SureSelect Max and competitor kits demonstrate excellent performance for whole exome sequencing. SureSelect Max library preparation with fast hybridization generates a top percentage of bases on-target (with 200 bp flanking region), indicative of a highly specific enrichment of exonic sequences. In addition, superior 20X and 30X base coverage against competitors was observed, while uniformity is comparable among the three kits.

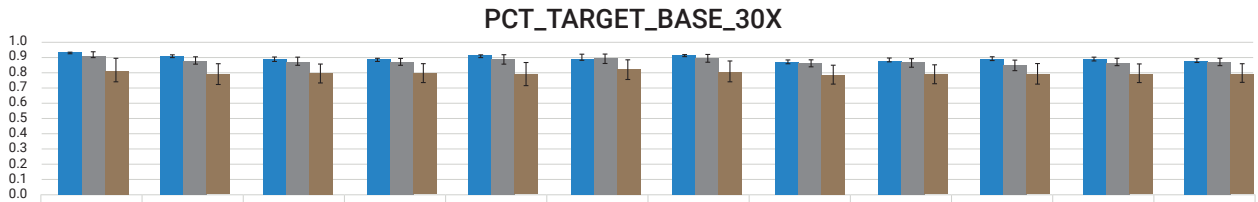
All samples were enzymatically fragmented, and libraries were prepared using 50 ng input amount of HapMap sample (NA12878). For SureSelect Max, library construction and target enrichment were performed using the SureSelect Max DNA library preparation and target enrichment reagent kits and All Exon V8 panel from Agilent. For competitors, libraries were prepared using library preparation reagents from vendor T and vendor K following standard operating procedures. Target enrichment was performed from 8-plex capture using vendor specific reagents and exome panels. Libraries were sequenced (2 x 150 bp) on the Illumina HiSeq system and were normalized to 40 M reads. Reads were mapped to hg38, and coverage of each exon/variant was calculated based on the output bam file.

Generate maximum base coverage in target region with reproducibility

A



	ACMG_SF_v 3.2_CDS	alpha_misse nse	CCDS_ CDS_2019	CCDS_ CDS_2023	childhood_ diseases_ CDS	Clinvar_ exonic_vars	Cosmic_Mutant_ ExportCensus_ CDS	ENSEMBL_ CDS_2023	GENCODE_ CDS_2023	HGMD_DM_ only_vars	NCBI_ Refseq_ CDS_2019	NCBI_ Refseq_ CDS_2023
Max	0.98	0.97	0.96	0.96	0.98	0.97	0.98	0.94	0.95	0.97	0.96	0.95
Competitor T	0.97	0.96	0.95	0.94	0.96	0.97	0.97	0.94	0.94	0.95	0.94	0.94
Competitor K	0.96	0 94	0 93	0.93	0.94	0.96	0.95	0.92	0.93	0.94	0.93	0.93



	ACMG_SF_v 3.2_CDS	alpha_misse nse	CCDS_ CDS_2019	CCDS_ CDS_2023	childhood_ diseases_ CDS	Clinvar_ exonic_vars	Cosmic_Mutant_ ExportCensus_ CDS	ENSEMBL_ CDS_2023	GENCODE_ CDS_2023	HGMD_DM_ only_vars	NCBI_ Refseq_ CDS_2019	NCBI_ Refseq_ CDS_2023
Max	0.94	0.92	0.90	0.90	0.92	0.91	0.92	0.88	0.89	0.90	0.90	0.89
Competitor T	0.93	0.89	0.88	0.88	0.90	0.90	0.90	0.87	0.88	0.86	0.88	0.88
Competitor K	0.83	0.80	0.81	0.80	0.20	0.83	0.82	0.80	0.00	0.80	0.80	0.80

B

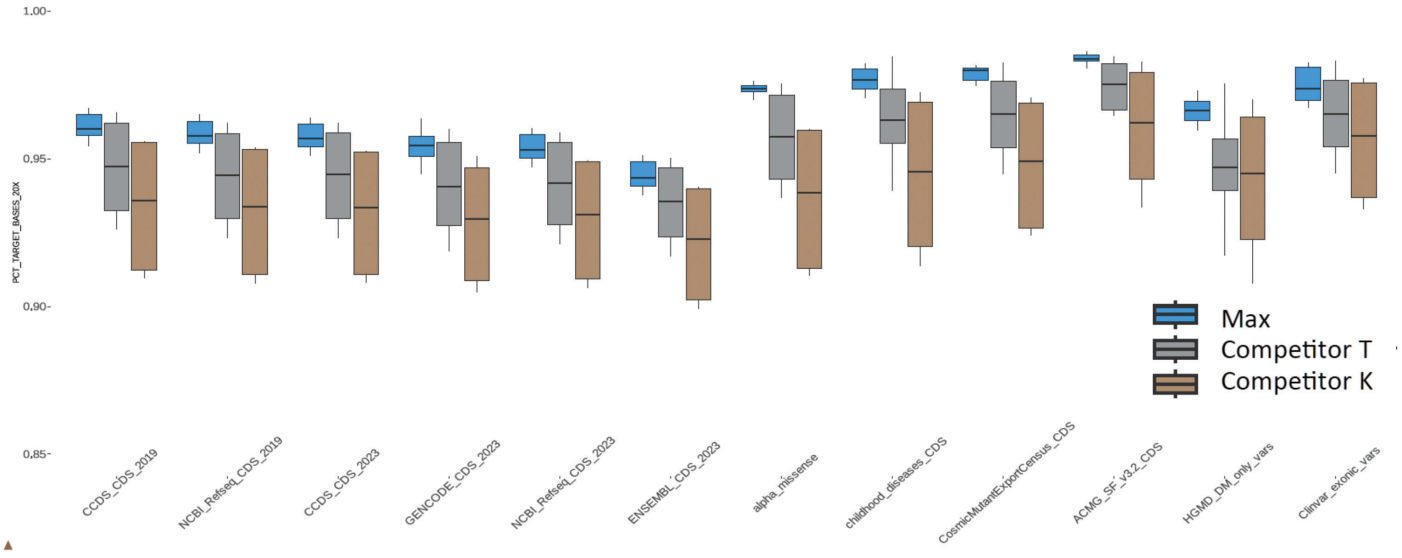
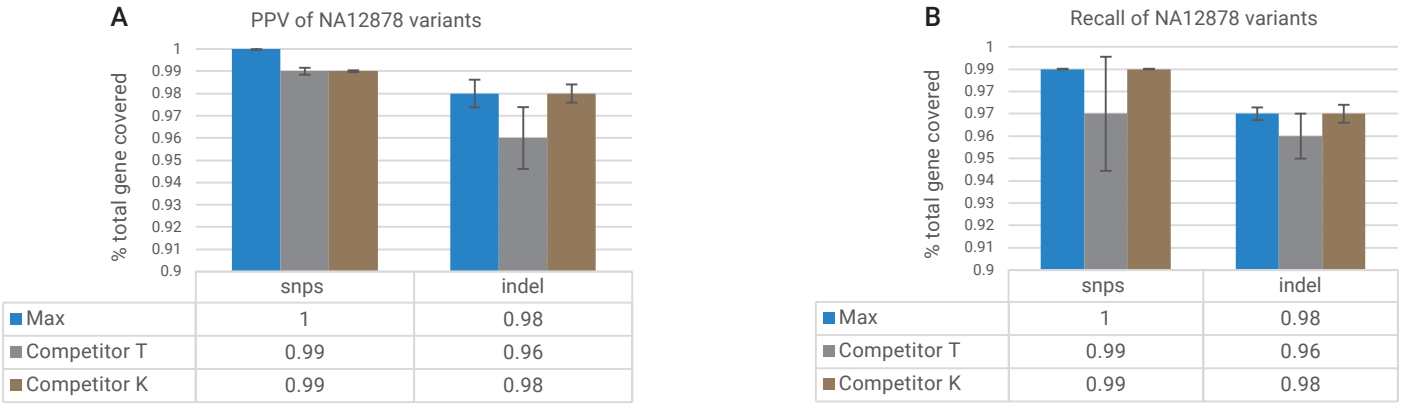


Figure 5. Robust and superior base coverage for germline variant analysis compared to competitors' kits. A) The Agilent SureSelect Max library preparation with fast hybridization workflow generates strong 20X and 30X base coverage against competitors, mapping to 12 different clinically relevant databases, including RefSeq. **B)** SureSelect Max assay robustness is demonstrated by achieving consistent coverage with minimal variability across tested samples

High confidence and reproducible precision and recall for NA12878 variants



	snps	indel
Max	1	0.98
Competitor T	0.99	0.96
Competitor K	0.99	0.98

	snps	indel
Max	1	0.98
Competitor T	0.99	0.96
Competitor K	0.99	0.98

Figure 6. Agilent SureSelect Max demonstrates high reproducibility in PPV and recall for NA12878 variants. A) Superior precision among competitors reflecting more accurate variant calling results. **B)** Superior sensitivity (measured by recall of NA12878 variants) suggests effective detection of genetic variations. With this dataset, SureSelect Max can detect more than 600 SNPs on average than competitor T and with higher precision.

Enhance productivity and ease of use with a complete solution

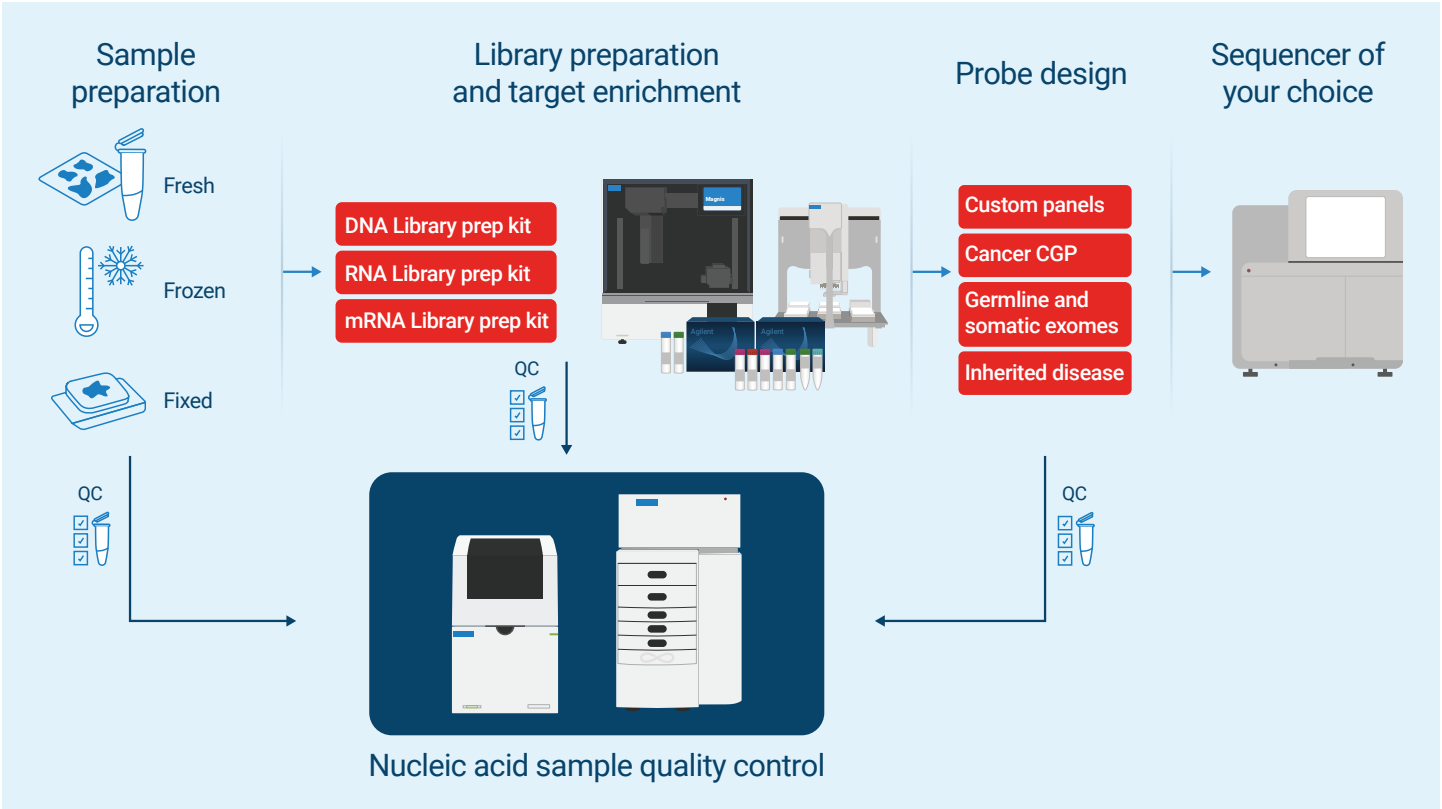


Figure 7. Complete NGS library preparation solution, integrating sample preparation with quality control and automation systems. Partnering with Agilent to deploy a comprehensive, end-to-end modular workflow solution enables seamless compatibility, enhancing productivity and reducing turnaround time. This approach minimizes troubleshooting complexity and downtime through single point of contact.

Ordering information

Library Prep Kits	Part Number
SureSelect Max Enzymatic Fragmentation Library Prep Kit, 16 Reactions	G9660A
SureSelect Max Enzymatic Fragmentation Library Prep Kit, 96 Reactions	G9660B
SureSelect Max Library Prep Kit, 16 Reactions	G9663A
SureSelect Max Library Prep Kit, 96 Reactions	G9663B
SureSelect Max RNA Library Prep Kit, 16 Reactions	G9664A
SureSelect Max RNA Library Prep Kit, 96 Reactions	G9664B
SureSelect Max mRNA Library Prep Kit, 16 Reactions	G9665A
SureSelect Max mRNA Library Prep Kit, 96 Reactions	G9665B
Adaptors and Primers Kits	**Part Number**
SureSelect Max MBC Adaptors and UDI Primers Kit for IIM, 1-16, 16 Reactions	G9667A
SureSelect Max MBC Adaptors and UDI Primers Kit for IIM, 17-32, 16 Reactions	G9667B
SureSelect Max MBC Adaptors and UDI Primers Kit for IIM, 1-96, 96 Reactions	G9668A
SureSelect Max MBC Adaptors and UDI Primers Kit for IIM, Set 97-192, 96 Reactions	G9668B
SureSelect Max MBC Adaptors and UDI Primers Kit for IIM, Set 193-288, 96 Reactions	G9668C
SureSelect Max MBC Adaptors and UDI Primers Kit for IIM, 289-384, 96 Reactions	G9668D
SureSelect Max MBC-free Adaptors and UDI Primers Kit for IIM, 1-16, 16 Reactions	G9669A
SureSelect Max MBC-free Adaptors and UDI Primers Kit for IIM, 17-32, 16 Reactions	G9669B
SureSelect Max MBC-free Adaptors and UDI Primers Kit for IIM, 1-96, 96 Reactions	G9673A
SureSelect Max MBC-free Adaptors and UDI Primers Kit for IIM, 97-192, 96 Reactions	G9673B
SureSelect Max MBC-free Adaptors and UDI Primers Kit for IIM, 193-288, 96 Reactions	G9673C
SureSelect Max MBC-free Adaptors and UDI Primers Kit for IIM, 289-384, 96 Reactions	G9673D
Target Enrichment Kits	**Part Number**
SureSelect Max Fast Hyb Kit, 16 Hybridizations	G9689A
SureSelect Max Fast Hyb Kit, 96 Hybridizations	G9689B
SureSelect Max Overnight Hyb Kit, 16 Hybridizations	G9690A
SureSelect Max Overnight Hyb Kit, 96 Hybridizations	G9690B
Blockers and Primers Kits	**Part Number**
SureSelect Max Blockers and Primers Kit for IIM, 16 Hybridizations	G9699A
SureSelect Max Blockers and Primers Kit for IIM, 96 Hybridizations	G9699B
Accessories Kits	**Part Number**
SureSelect Max Purification Beads, 5 ml	G9962A
SureSelect Max Purification Beads, 30 ml	G9962B

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