

Key Advantages

- Agilent SureSelect workflows can be leveraged on the Element AVITI System without the need to redesign or optimize protocols
- The throughput of the Element AVITI benchtop instrument enables sequencing of 48 whole exome sequencing (WES) samples per flow cell
- Samples prepared with SureSelect library prep and enrichment reagents can be analyzed on the Element AVITI System generating high-quality data for key metrics

Somatic and Germline sequencing of SureSelect Libraries on the Element AVITI System



Figure 1. Agilent SureSelect library prep and target enrichment reagent kits.

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Figure 2. Element AVITI system.

Next Generation Sequencing (NGS) has advanced our understanding of human disease, in part by significantly improving the ability to investigate genetic variation in high-resolution. Through new and innovative applications, NGS continues to be integrated into routine workflows across thousands of research and translational laboratories, and more recently, in clinical research environments.

With an increasing need to support new use-cases, the sequencing community continues to search for platforms delivering improved performance, sensitivity, speed, and enabling a progressively more widespread adoption of NGS technology across genomic analysis sectors. Now, Agilent SureSelect library prep and target enrichment reagents (Figure 1) and the Element AVITI System (Element Biosciences, San Diego, CA. Figure 2) enable highly-sensitive detection of single-nucleotide, structural, and copy number variants, fusions, insertions, and deletions for essential NGS applications.

The Element AVITI System provides new and current NGS users with an unmatched combination of performance, cost, and flexibility features in a benchtop NGS platform. With one simple step using Element's Adept Library Compatibility workflow, the trusted and proven Agilent SureSelect XT HS2 library prep and target enrichment solution can be leveraged for germline exome panels (such as the SureSelect All Human Exon panel v8) and comprehensive somatic profiling using a SureSelect custom tumor panel (Table 1). Sequencing data illustrate performance results achieved across key metrics, demonstrating the ability to leverage current Agilent SureSelect catalog and custom workflows without the need to develop new library prep solutions or protocols (Tables 2 and 3, and Figure 3).

Table 1. Sequencing attributes of Agilent SureSelect XT HS2 libraries on the Element AVITI System.

	Samples per flow cell	Run configuration	Passing Filter (PF)%	Q30
SureSelect All Human Exon Panel v8	Up to 48*	2x150	97%	87.0%
SureSelect custom tumor panel	Up to 48*	2x150	97%	86.7%

*5Gb requirement for SureSelect All Human Exon Panel v8 for 120x coverage. 5Gb requirements for SureSelect custom tumor panel for 1500x coverage

Table 2. Germline variant calling performance.

	SNP Recall	SNP Precision	Indel Recall	Indel Precision	Ts/Tv
NA12878	99.2%	99.4%	93.2%	97.7%	2.94
NA24385	99.2%	99.1%	92.7%	97.1%	2.91

Performance is shown for the high confidence variants in two Genome in a Bottle reference samples. Recall (percent of known variants correctly called) and precision (percent of calls that are known variants) are shown separately for SNPs and indels. Ts/Tv is the transition to transversion ratio for all called variants in each sample.

Table 3. Somatic variant calling results.

Gene	Variant (AA)	CDS mutation	Expected allele frequency	Detected frequency
BRAF	V600E	c.1799T>A	7.7%	8.12%
EGFR	G719S	c.2155G>A	16.7%	15.3%
EGFR	T790M	c.2369C>T	4.7%	3.9%
FLT3	ΔI836	c.2508_2510del	5.0%	4.5%

Low-frequency variants are detected at the expected allele frequency following capture with the SureSelect custom tumor panel. A subset of variants present in the Horizon HD728 reference sample is shown.

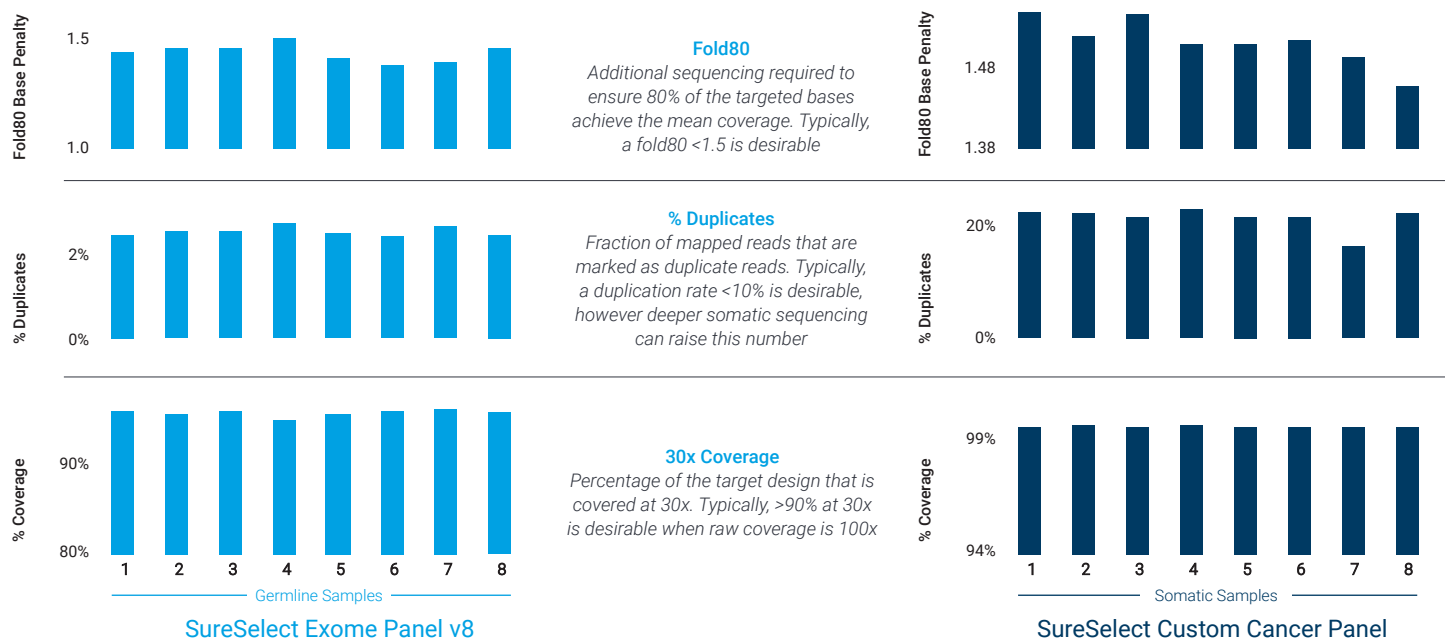


Figure 3. Agilent SureSelect Exome panel v8 data and SureSelect custom cancer panel run on the Element AVITI System (2x150 bp sequencing runs). Key sequencing metrics across 8 germline and 8 somatic samples demonstrate the robustness of SureSelect chemistry run on the Element AVITI System.

Agilent SureSelect Ordering Information

Product Description	16 Rxns	96 Rxns	96 Rxns Auto
SureSelect XT HS Human All Exon V8	5191-6873	5191-6874	5191-6875
SureSelect XT Human All Exon V8	5191-6879	5191-6891	5191-6892
SureSelect XT HS2 DNA reagent kit with index primer pairs	G9982A (primer pairs 1-16)	G9983A* (primer pairs 1-96) G9983B* (primer pairs 97-192) G9983C* (primer pairs 193-288) G9983D* (primer pairs 289-384)	
	2 Hybs	12 Hybs	12 Hybs Auto
SureSelect XT HS PreCap Human All Exon V8	5191-6876	5191-6877	5191-6878
	32 Rxns	96 Rxns	
Magnis SSEL XT HS Human All Exon v8	G9772C	G9772D	

*96 reaction library prep kit does not include reagents for fragmentation. Fragmentation reagents can be ordered using part number (5191-4079 – 16 reactions, 5191-4080 – 96 reactions)

Element AVITI System Ordering Information

Product Description	Catalog No.
Element AVITI System	880-00001
AVITI Sequencing Kit	860-00001
Adept Library Compatibility Kit ¹	830-00003
PhiX Control Library, Adept ²	830-00004

1. 24 reactions with qPCR controls for quantitation
2. Spike-in for Adept Library Compatibility Workflow

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