Alissa Reporter

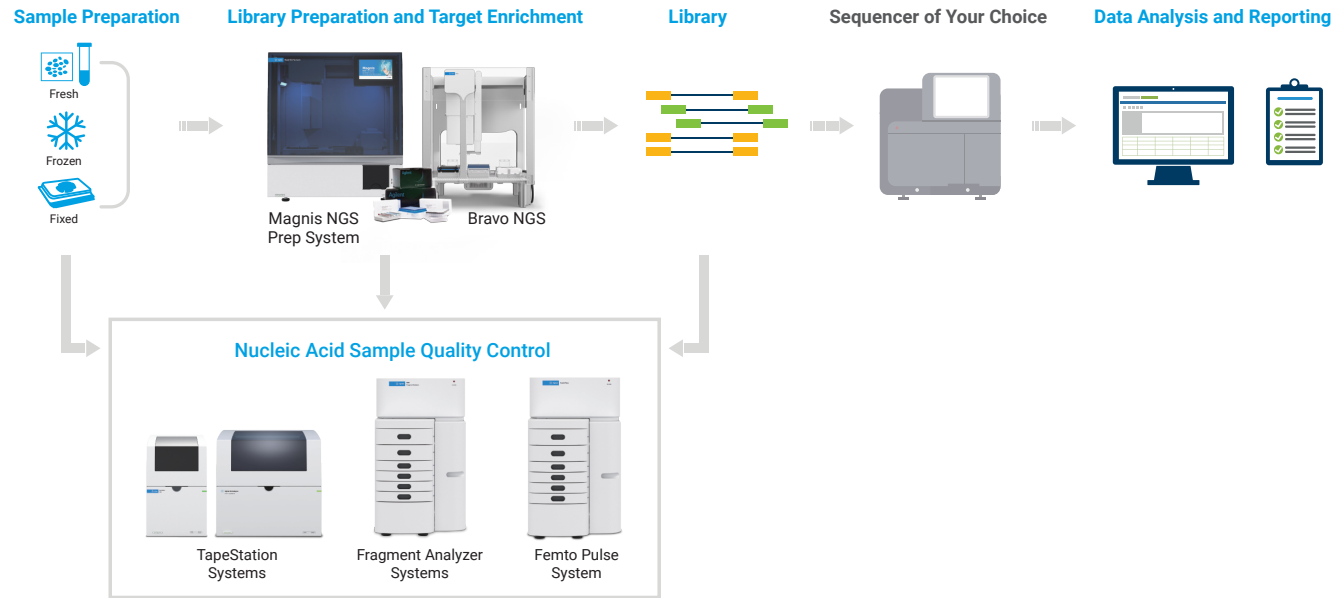
Improving secondary data analysis tools

Introduction

Next-generation sequencing (NGS) technology has created exponential growth in the quantity and complexity of genomic data requiring analysis. Efficient and accurate raw data analysis is critical to your lab's success in identifying relevant variants, correctly classifying variants of interest, uncovering connections to scientific literature, and delivering valuable research and insights into human disease.

The Agilent Alissa Clinical Informatics platform has been developed to help users analyze their data. Our informatics platform hosts Alissa Reporter for NGS secondary analysis and Alissa Interpret for tertiary analysis; both tools are designed to work seamlessly with Agilent SureSelect library prep and enrichment reagent kits. This software suite enables improved lab productivity and delivers streamlined NGS data interrogation, from panel design to clinical reporting.

NGS Workflow



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Streamlined NGS data analysis for the modern laboratory

Alissa Reporter is an intuitive and streamlined cloud-native NGS secondary analysis software-as-a-service solution that delivers high-performance variant detection with integrated genome browsing, a built-in-quality control (QC) dashboard, and smooth connectivity to Agilent Alissa Interpret. Alissa Reporter automates data upload, analysis, and data results export including integration with your existing Amazon Web Services (AWS) account.

Choose Alissa Reporter for improved analysis performance and additional benefits

High-performance variant detection

Alissa Reporter currently supports variant detection from DNA specimens, allowing researchers to find more valuable information from a single genomic sample. The secondary analysis capabilities of Alissa Reporter enable the detection of single nucleotide variants (SNVs), insertions and deletions (indels), and copy number variation (CNVs). Additional analysis features in Alissa Reporter are scheduled for the near future to meet the needs of the market. Agilent will steadily increase the number of available analysis features (Table 1) in Alissa Reporter to meet user needs.

Table 1. Features of Agilent's secondary analysis software.

	Attribute	Alissa Align and Call	Alissa Reporter v1.1	Alissa Reporter v1.2
Automation	Batch data processing		✓	✓
	Automatic VCF upload to Alissa Interpret		✓	✓
	Automatic data upload and analysis set up via AWS S3 buckets		✓	✓
Constitutional	SNV and Indels	✓	✓	✓
	Mitochondrial genome: SNV and heteroplasmy detection			✓
	Exon-level CNV calling		✓	✓
Somatic	CNV (gene-level)			✓
	SNVs and Indels	✓		✓
	Mitochondrial genome: SNV and heteroplasmy detection			✓
Other	Support for Agilent MBC/UMI		✓	✓
	Use of open-source analysis tools (e.g., GATK Best Practice)		✓	✓
User Friendly	Data security	✓	✓	✓
	Customer service (including multi-language support)		✓	✓
	Quality metrics	✓	✓	✓
	UI/UX Ease of use	✓	✓	✓
	Speed		✓	✓
	Parallel sample processing		✓	✓

Improved variant calling performance and scalable, accelerated data analysis

Through collaboration with AWS and NVIDIA Clara Parabricks, Alissa Reporter enables accelerated and scalable data analysis at lower costs, serving the high-throughput clinical research market. Alissa Reporter builds on the expertise gained from user feedback during the evolution of Alissa Align and Call development. Alissa Reporter enables users to process samples faster and in parallel, decreasing overall turnaround time by more than 50% (for example, germline analysis of SureSelect Human All Exon V8 in the upcoming Alissa Reporter v1.2 release).

Alissa Reporter delivers improved SNV and indel calling performance, increasing SNV (Figure 1) and indel (Figure 2) calling precision and sensitivity by 17% and 28%, respectively, compared to Alissa Align and Call.

Alissa Clinical Informatics platform: an accelerated, automated NGS software workflow

Alissa Reporter turns raw NGS FASTQ files into variant call format (VCF) files, key analysis result files for Agilent SureSelect Human All Exon V7 and V8 and for custom applications. Alissa Reporter will soon launch its somatic applications in addition to its current germline applications providing high performance analysis and insights across multiple disease areas. As part of the Agilent Alissa Clinical Informatics platform, Alissa Reporter seamlessly transfers data to the Alissa Interpret tertiary analysis solution for a fully integrated FASTQ-to-report NGS software workflow.

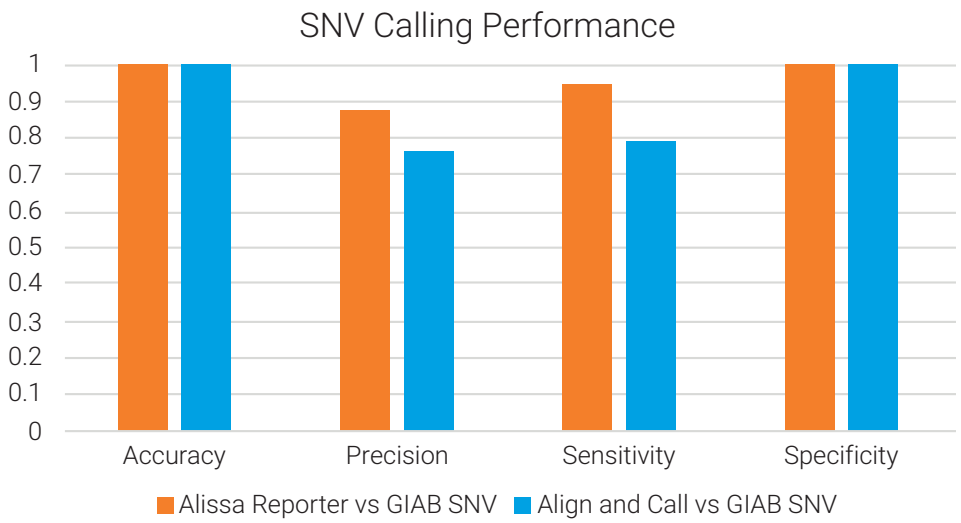

Figure 1. Comparison of Alissa Reporter and Alissa Align and Call SNV calling performance against Genome in a Bottle (GIAB) sample (i.e. NA12878) on SureSelect Exome V8 with SureSelectXT HS chemistry and positional deduplication.

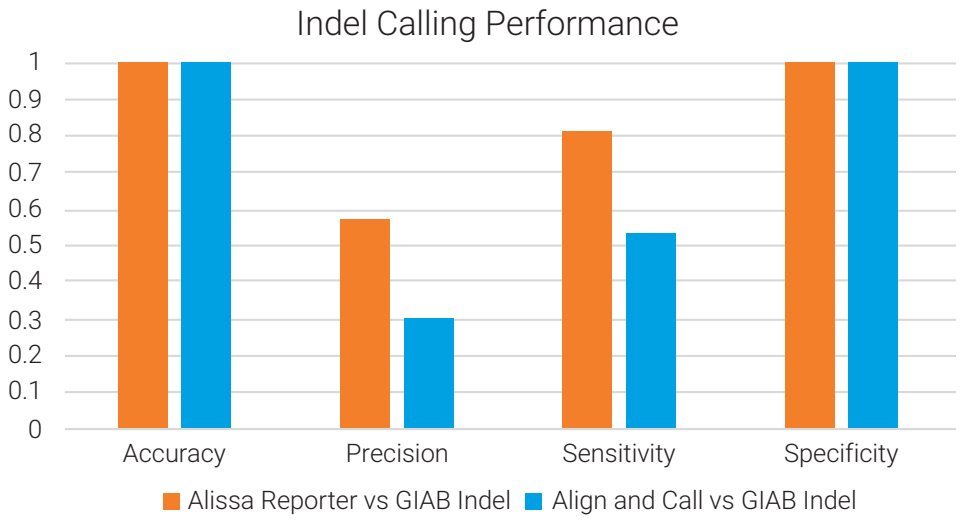

Figure 2. Comparison of Alissa Reporter and Alissa Align and Call indel calling performance against Genome in a Bottle (GIAB) sample (i.e. NA12878) on SureSelect Exome V8 with SureSelectXT HS chemistry and positional deduplication.

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