Element Biosciences

Specification Sheet

Element VITARI™ System

High-throughput benchtop sequencing system built for the $100 genome

Highlights

- **High throughput in a benchtop format, built to deliver the $100 genome**
- **Two fully independent sides and six-lane flow cells for flexible, right-sized runs**
- **Exceptional data quality built on proven ABC™ sequencing chemistry**

Introduction

High-throughput sequencing has long meant factory-scale infrastructure: large instruments, large flow cells, and extensive sample pooling to reach a competitive cost per sample. Waiting to batch enough samples to fill a flow cell can slow project turnaround, and labs without factory-scale volume are often forced to trade cost against flexibility.

The Element VITARI System is a high-throughput benchtop sequencing platform built to deliver the $100 genome at scale without the complexity of large-scale pooling. VITARI combines two fully independent sides, six-lane flow cells, and Avidite Base Chemistry™ (ABC) data quality in a benchtop format, so labs can scale throughput to match their projects rather than the other way around.

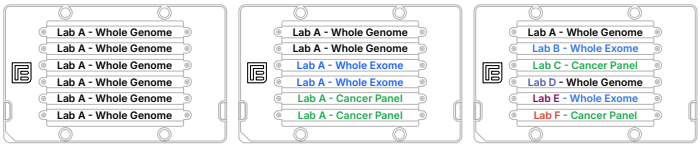


Operational flexibility

Each side of VITARI runs fully independently, so a run can start when samples are ready rather than when a batch is full. Staggered run starts keep utilization high and turnaround times predictable. Consumables support that efficiency: the sequencing reagent cartridge ships ambient, with a 42% reduction in cartridge footprint and a 74% reduction in frozen shipping volume compared to the AVITI™ cartridge, streamlining waste disposal and frozen storage.

Experimental flexibility

Every flow cell has six fluidically independent lanes, sized to deliver right-sized capacity per lane. Libraries from different projects, applications, or labs can run side-by-side on the same flow cell when they share read length parameters. This reduces the need to batch and improves project turnaround time for applications ranging from whole genome and whole exome to bulk and single-cell RNA-seq and targeted panels.



Configuration A
Single Lab Multiple Samples

Configuration B
Single Lab Multiple Applications

Configuration C
Multiple Labs Multiple Applications

Applications for every scale

VITARI supports the applications that drive high-throughput sequencing demand today, including, but not limited to:

Whole genome sequencing, including population-scale and rare disease studies, benefits from lower cost per genome without extensive pooling.

Whole exome and targeted oncology panels, including tumor profiling and liquid biopsy research, rely on high base accuracy to support confident detection of low-frequency variants.

Bulk and single-cell RNA-seq scale economically across both high-volume, lower-depth projects and lower-volume, higher-depth ones.

Sequencing specifications

Kit Configuration	Read Length	Output	Read Count[a]	Run Time (hours)[b]	Q30
5B	2×150	1.5Tb	5 billion	~46 hours	≥90%
	2×75	750 Gb	5 billion	≤32 hours	≥90%

[a] Performance metrics, including read counts, are based on sequencing Element libraries. Actual results might differ based on factors, such as library type and preparation.
[b] Run Time estimates include 16 bp dual index reads. Actual times are dependent on run parameters.

Table 1. VITARI performance metrics

Proven sequencing quality

Built on ABC, the chemistry behind the AVITI family of systems, VITARI delivers greater than 90% of bases at Q30. High base accuracy minimizes resequencing, supports confident somatic variant calling, and enables low variant allele frequency detection for oncology research, while holding a consistent quality standard from run to run.

Integrated software ecosystem

VITARI slots into the Element software ecosystem. ElemBio™ Cloud provides run monitoring, while ElemBio Catalyst™ supports FASTQ generation, storage, and analysis workflows. FASTQ output integrates with existing analysis pipelines, so labs can adopt VITARI without rebuilding their downstream workflows.

Summary

VITARI brings high-throughput sequencing to the benchtop without the batching, footprint, and infrastructure demands of factory-scale systems. Fully independent sides, six-lane flexibility, and proven ABC data quality let labs match throughput to the needs of each project without compromising on performance.

To learn more, visit elementbiosciences.com

System specifications

Instrument Configuration	Dual flow cells VITARI Element Operating Software Ubuntu Core 24.04 LTS operating system
Operating Environment	Temperature: 18°C to 26°C Elevation: < 2000 m
Instrument dimensions	(H x W x D) 33.8 in x 39 in x 34.4 in Weight: ~181 kg/~400 lb
Power requirements	200–240 VAC at 50/60 Hz, 15 A. 1800 W (average)

Table 2. VITARI system specifications

Ordering information

Element VITARI System	880-00007
VITARI 2×150 Sequencing Kit CB Freestyle™ – 5B	860-00050
VITARI 2×75 Sequencing Kit CB Freestyle – 5B	860-00051

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