

Specification Sheet

Element AVITI24™ System

One integrated platform for 5D multiomics and sequencing

Highlights

- One integrated platform for 5D multiomics and NGS
- Co-detection of RNA, protein, and cell morphology with no library prep needed
- High-quality, flexible sequencing with 3B reads

Introduction

AVITI24 is the first 5D multiomics system built to capture the complexity of biology without a complex workflow. AVITI24 seamlessly integrates two distinct workflows in a single platform: Teton™ CytoProfiling enables in situ spatial co-detection of RNA, proteins, and morphology, while Cloudbreak™ Sequencing kits deliver high-quality next-generation sequencing on a flow cell. Dual independent flow cells support concurrent sequencing and multiomics runs with flexible, asynchronous start times, maximizing lab efficiency and throughput.

Whether you're performing high-content cell phenotyping, shotgun metagenomics, or minimal residual disease research, AVITI24 delivers deeper biological insights from a single, integrated platform. Built for reliability and flexibility, AVITI24 offers exceptional instrument stability, scalable throughput, low run costs, and world-class support—empowering labs to take on complex projects with confidence.



NGS with up to **50% higher** output compared to AVITI™



Integrated, **library prep-free** single cell multiomics

Integrated Multiomic Profiling

Teton CytoProfiling panels integrate high-plex RNA and protein profiling with morphological analysis at subcellular spatial resolution. Using onboard barcoding chemistry, Teton automates multiomics workflows with <1 hr hands-on time.

With the Teton assay, profile 350 RNA targets, detect up to 128 proteins, including surface, intracellular, and phospho proteins, and visualize 6 key morphology features in parallel with no need for traditional library preparation. Teton fixed panels span biologically relevant markers across oncology, immunology, and neuroscience applications.

For targeted applications, researchers can quickly design custom protein panels without additional conjugation steps and assess up to 96 custom primary antibodies in a single, onboard screening workflow. The result is high-throughput, high dimensional cellular phenotyping with minimal hands-on time.

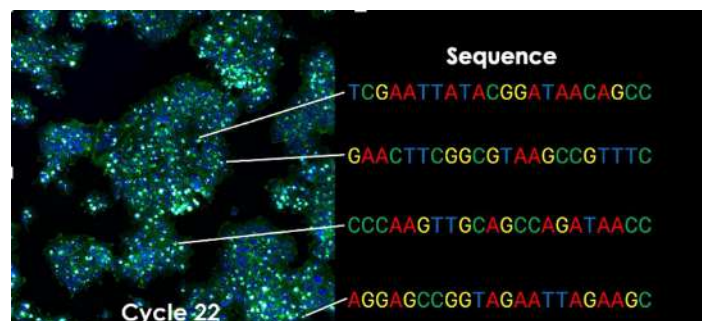
Direct In Sample Sequencing (DISS)

Teton Atlas™ with DISS further expands the capabilities of AVITI24 platform by enabling true in situ RNA sequencing of up to 100 bp directly inside cells. DISS preserves the subcellular spatial context of RNA molecules and integrates seamlessly with cell paint and protein profiling. Built for flexibility and rapid customization, Teton Atlas supports a wide range of experimental designs and applications with two formats.

Low output: Ideal for targeted applications, such as optical pooled CRISPR screens, barcode sequencing, and custom primer optimization. Low output kits support 100 cycles of DISS and are compatible with detection of up to 88 proteins and 3-plex cell paint in a modular, customizable workflow.

High output: Ideal for discovery applications. High output kits enable 3' transcriptome (poly-A based) sequencing and are compatible with detection of up to 88 proteins, and 3- or 6-plex cell paint.

Both in situ kits are library-prep free and compatible with Teton detection chemistries for cell paint and protein detection for multiomic readouts with no batch effects.



High quality, flexible NGS

On the same system, the AVITI24 delivers high-quality next generation sequencing (NGS) with uncompromising performance, flexibility, affordability, and access to assays from whole genome sequencing to targeted panels. Hardware and software upgrades on the AVITI24 deliver up to 50% higher sequencing output when compared to the AVITI with no change to the sequencing kit cost.

From direct loading of linear libraries with Cloudbreak Freestyle™ to Q50+ data quality with Cloudbreak UltraQ™ to onboard target capture with Trinity™, our sequencing solutions provide highly accurate sequencing with simplified workflows, low costs, rapid turnaround times, and multiple read lengths and output options to suit any application.

System specifications

Instrument Configuration	Dual flow cells AVITI Operating Software Ubuntu Core 20.04 LTS operating system
Operating Environment	Temperature: 18°C to 26°C Elevation: < 2000 m Sound level: ≤ 62 db at 3.3 ft
Instrument Dimensions	(H x W x D) 29.5 in x 37.6 in x 28.5 in Weight: 155.1 kg/342 lb
Power Requirements	100–240 VAC at 50/60 Hz 15 A, 550 W (average)

Sequencing specifications

Read Count^a	High output: 1.5 B reads per flow cell Medium output: 750 M reads per flow cell Low output: 375 M reads per flow cell
-------------------------------	---

Accuracy	> 90% Q30 with 2 x 150 and 2 x 75 cycles > 85% Q30 with 2 x 300 cycles > 70% Q50 with Cloudbreak UltraQ™ kits ^c
Inputs	Direct loading of linear libraries with Cloudbreak Freestyle™ kits
Run Time^b	~24 hours (2 x 75 cycles) ~38 hours (2 x 150 cycles) ≤ 60 hours (2 x 300 cycles)

^a Performance metrics are based on sequencing Element 2x150 libraries. Actual results might differ due to library type and preparation methods.

^b Individually addressable lanes and custom recipes can extend run times.

^c Based on Elevate™ libraries and specific run parameters.

Teton specifications

Analytes	RNA, protein, morphology
Plex	RNA: 350 targets Protein: Up to 138 targets Morphology: 6 markers
Content	Teton Panels: MAP Kinase Cell Cycle and Apoptosis, Immunology, Neuroscience Custom Protein Panels (user supplied rabbit primary antibodies) Teton Focus Panels: Mix and match 24-plex protein panels across immunology, oncology, neuroscience, and cell cycle
Imaging	< 250 nm subcellular spatial resolution with multi-feature cell segmentation
Inputs	Adherent cells, cell suspensions
Sensitivity^a	1 M mean counts detected per mm ²
Throughput	Up to 1 M adherent cells with 10 cm ² area per flow cell Up to 5 M suspension cells with 10 cm ² area per flow cell Two flow cells per run
Format	48 wells (0.12 cm ² /well) 12 wells (0.5 cm ² /well) 1 well (10 cm ² /well)
Run Time^b	24 hours
Sample Prep	45 minutes

^a Performance metrics, including sensitivity, were determined based on a Teton Human MAPK & Cell Cycle Panel Kit run in HeLa cells. Actual results may vary based on cell type and experimental conditions.

^b Run time is based on a single 12-well run.

Ordering information

Element AVITI24 System	880-00004
Element AVITI24 Upgrade	895-00060

To learn more, visit elementbiosciences.com

Information in this document is provided for research use only and is subject to change without notice.

© 2025 Element Biosciences, Inc. All rights reserved. Element Biosciences, AVITI24, Teton, Cloudbreak, Cloudbreak Freestyle, Cloudbreak UltraQ, and the Element Biosciences logo are trademarks of Element Biosciences, Inc. Other names mentioned herein may be trademarks of their respective companies.

Visit elementbiosciences.com for more information.