

Product Sheet

Cloudbreak™ Sequencing Kits

Advancing ABC technology with efficiency and compatibility

Highlights

- Highest accuracy specification at low cost
- Flexible range of output and read lengths
- Simplified workflows eliminate library conversion

Introduction

Cloudbreak sequencing kits provide the reagents and flow cells for sequencing on the Element AVITI™ System. Multiple read lengths and output options scale with experiments to suit any application. Leveraging avidite base chemistry (ABC), Cloudbreak kits deliver high-quality data with low costs and rapid turnaround times.¹⁻³

Cloudbreak Freestyle™ sequencing kits make operating the AVITI System even easier. Directly compatible with most linear third-party libraries, Cloudbreak Freestyle kits eliminate the library conversion step and save valuable preparation time.

Cloudbreak UltraQ™ sequencing kits set a new standard with the highest sequencing accuracy specification on the market today, delivering >70% reads at Q50.

Ultimate efficiency and accuracy

Using Cloudbreak and Cloudbreak Freestyle sequencing kits with individual addressable lanes enables separate sequencing of two different library pools per flow cell. 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, maximizing potential sequencing output during a regular workday.

Cloudbreak Freestyle kits fully integrate on-board circularization into runs for either Elevate™ or third-party linear libraries. This innovation eliminates library conversion steps on the bench, saving time and minimizing touchpoints that can introduce errors. Additionally, the Cloudbreak Freestyle sequencing cartridge uses universal sequencing primers, eliminating the need to swap primers before thawing reagents.

Cloudbreak and Cloudbreak Freestyle sequencing kits offer exceptional flexibility with read lengths spanning from 2 x 75 to 2 x 300 bases, delivering outputs from 15 Gb to 300 Gb across high-, medium-, and low-output options. Combined, the sequencing kit include eight distinct configurations with run times ranging from 17 to 60 hours with each flow cell offering individually addressable lanes (Table 1).

Kit Configuration	Read Length	Output (Gb) (AVITI AVITI24)	Read Count ^a (AVITI AVITI24)	Run Time (hours) ^b	Q30
High output	2 x 300	180	300 million	60	> 85%
	2 x 150	300 450	1 billion 1.5 billion	38	> 90%
	2 x 75	150 225	1 billion 1.5 billion	24	> 90%
Medium output	2 x 300	60	100 million	51	> 85%
	2 x 150	150 225	500 million 750 million	31	> 90%
	2 x 75	75 112.5	500 million 750 million	20	> 90%
Low output	2 x 150	75 112.5	250 million 375 million	27	> 90%
	2 x 75 ^c	15 22.5	100 million 150 million	17	> 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 Individually addressable lanes and other custom recipes can extend run times. Run times may increase by up to 5% on AVITI24.

^c 2 x 75 low output kits are only available in the Cloudbreak Freestyle kit configuration.

Table 1. AVITI performance metrics for Cloudbreak and Cloudbreak Freestyle kit configurations

Kit Configuration	Read Length	Output (Gb)	Read Count ^a	Run Time (hours)	Q50
Cloudbreak UltraQ	2 x 150	240	800 million	44	> 70 %

^a Performance metrics, including read counts, are based on sequencing Elevate libraries. Actual results might differ based on factors, such as reference quality, sample type, library type, and preparation details.

Table 2. AVITI performance metrics for Cloudbreak UltraQ kit configuration

Both Cloudbreak and Cloudbreak Freestyle kits are designed for minimal waste and easy disposal. Reagent overage supports the extra cycles that index sequences and unique molecular identifiers (UMIs) need to identify samples with high confidence.

Cloudbreak UltraQ kits deliver >70 % of reads at or above Q50 and >90 % of reads at or above Q40 (Table 2). It uses multiple strategies to reduce the most common error types arising from both library prep and sequencing for the development of highly sensitive assays.

Summary

The AVITI System with Cloudbreak sequencing provides flexibility in configuring an end-to-end NGS workflow, integrating library prep, sequencing, and analysis for the application of your choice. Combining an open ecosystem of library prep and analysis options, AVITI sequencing provides the flexibility to meet the needs of any lab.

Ordering information

Cloudbreak	US Part #	CA Part #
AVITI 2x75 Sequencing Kit Cloudbreak Medium	78093-040	CA78093-040
AVITI 2x75 Sequencing Kit Cloudbreak High	78093-034	CA78093-034
AVITI 2 x75 Sequencing Kit Cloudbreak Low	78093-066	CA78093-066
AVITI 2x150 Sequencing Kit Cloudbreak Low	78093-036	CA78093-036
AVITI 2x150 Sequencing Kit Cloudbreak Medium	78093-038	CA78093-038
AVITI 2x150 Sequencing Kit Cloudbreak High	78093-032	CA78093-032
AVITI 2x300 Sequencing Kit Cloudbreak Medium	78093-044	CA78093-044
AVITI 2x300 Sequencing Kit Cloudbreak High	78093-042	CA78093-042
Adept Custom Primer Set Cloudbreak	78093-004	CA78093-004

Cloudbreak Freestyle	US Part #	CA Part #
AVITI 2x75 Sequencing Kit Cloudbreak FS Low	78093-066	CA78093-066
AVITI 2x75 Sequencing Kit Cloudbreak FS Medium	78093-052	CA78093-052
AVITI 2x75 Sequencing Kit Cloudbreak FS High	78093-054	CA78093-054
AVITI 2x150 Sequencing Kit Cloudbreak FS Low	78093-046	CA78093-046
AVITI 2x150 Sequencing Kit Cloudbreak FS Medium	78093-048	CA78093-048
AVITI 2x150 Sequencing Kit Cloudbreak FS High	78093-050	CA78093-050
AVITI 2x300 Sequencing Kit Cloudbreak FS Medium	78093-056	CA78093-056
AVITI 2x300 Sequencing Kit Cloudbreak FS High	78093-058	CA78093-058
Custom Primer Set Cloudbreak Freestyle	78093-006	CA78093-006
Cloudbreak UltraQ	US Part #	CA Part #
AVITI 2x150 Sequencing Kit Cloudbreak UltraQ	78093-060	CA78093-060
Accessory Kits	US Part #	CA Part #
PhiX Control Library, Adept	78093-008	CA78093-008
Cloudbreak PhiX Control, Elevate	78093-018	CA78093-018
Cloudbreak FS PhiX Control, 3rd Party	78093-022	CA78093-022

References

1. Arslan, Sinan, Francisco J. Garcia, Minghao Guo, et al., "Sequencing by avidity enables high accuracy with low reagent consumption," *Nature Biotechnology* (May 2023): <https://doi.org/10.1038/s41587-023-01750-7>.
2. Carroll, Andrew, Alexy Kolesnikov, Daniel E. Cook, et al., "Accurate human genome analysis with Element Avidity sequencing," *bioRxiv* (August 2023): <https://doi.org/10.1101/2023.08.11.553043>.
3. Arslan, Sinan, Francisco J. Garcia, Minghao Guo, et al., "Sequencing by avidity enables high accuracy with low reagent consumption," *Nature Biotechnology* (May 2023): <https://doi.org/10.1038/s41587-023-01750-7>.



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