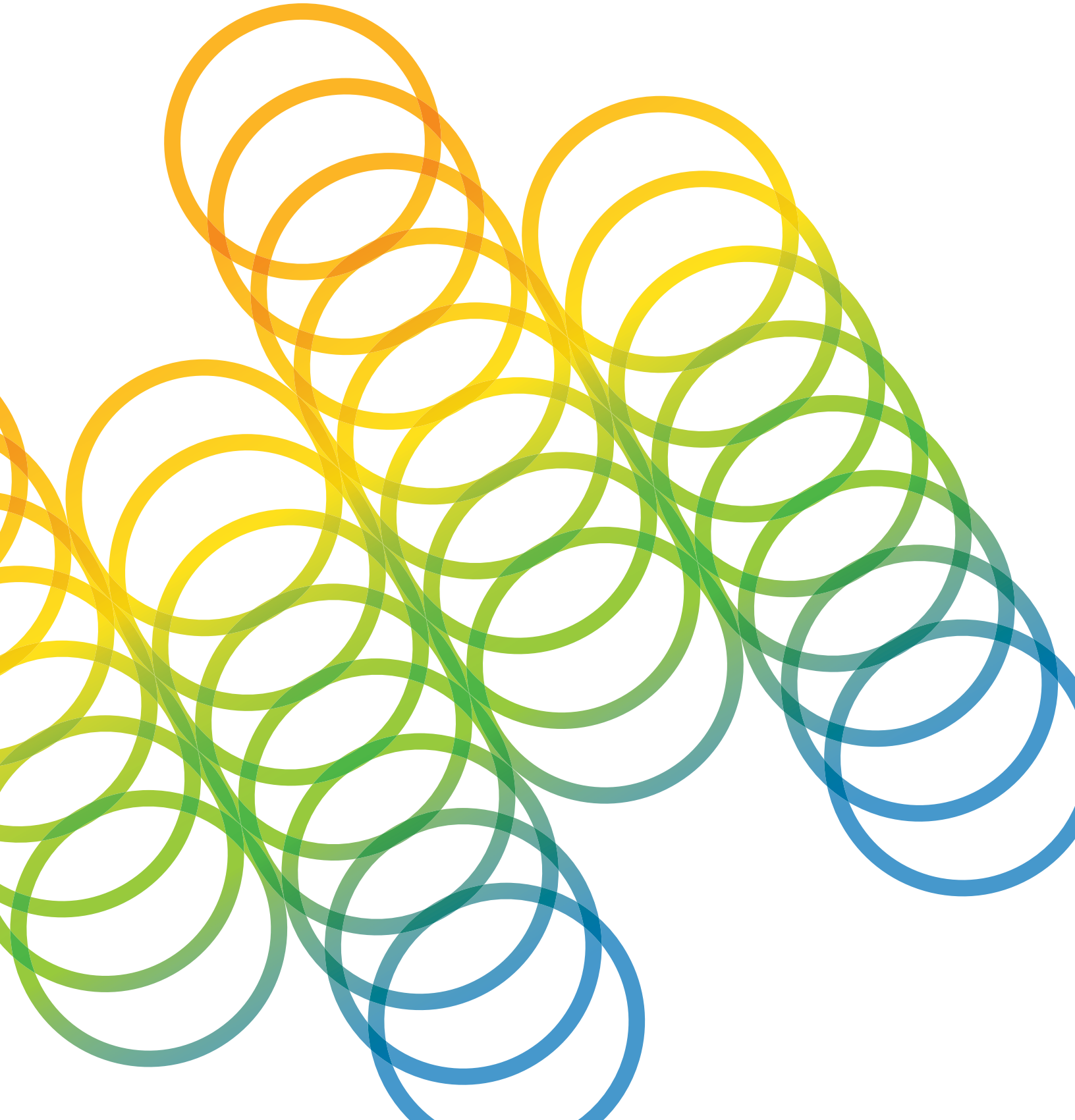
EpiCypher®
Bringing Epigenetics to Life

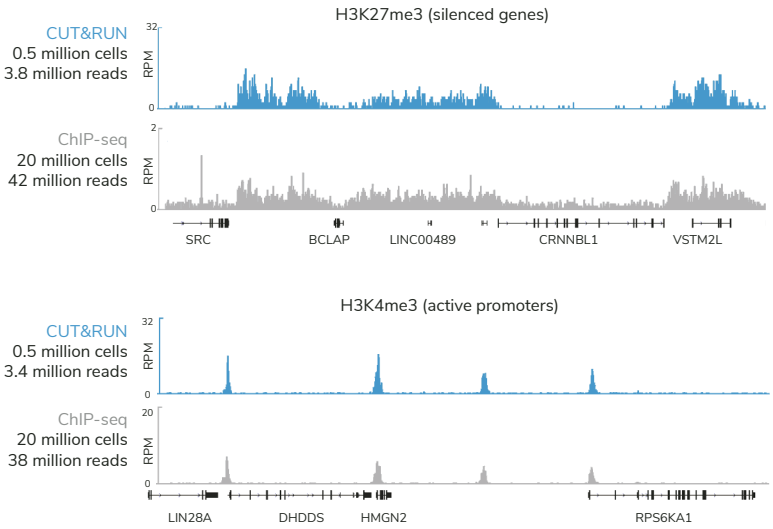
CUTANA™ CUT&RUN Assays for ultrasensitive genomic mapping



CUTANA™ CUT&RUN Assays

Cleavage Under Targets and Release Using Nuclease (CUT&RUN) is a breakthrough method for genomic mapping of protein-DNA interactions and histone post-translational modifications (PTMs). Compared to chromatin immunoprecipitation (ChIP), CUTANA™ CUT&RUN assays generate higher quality data with significant improvements in sensitivity and costs.

CUT&RUN assays offer distinct advantages over ChIP-seq



- Save 10x in sequencing costs
- Use fewer cells (down to 5k)
- Works with most targets, cell types, and processing conditions
- Rapid, user-friendly workflow with reliable results

FIGURE 1

Representative genome browser tracks show H3K27me3 and H3K4me3 enrichment in K562 cells, generated using CUTANA CUT&RUN (blue; EpiCypher) and ChIP-seq (gray; ENCODE).

Overview of the CUTANA CUT&RUN approach

How is CUT&RUN different from ChIP?

- Streamlined: cells to data in <4 days
- Less optimization: no cell lysis or chromatin fragmentation
- Target is selectively enriched without IP
- Improved signal-to-noise and reduced background

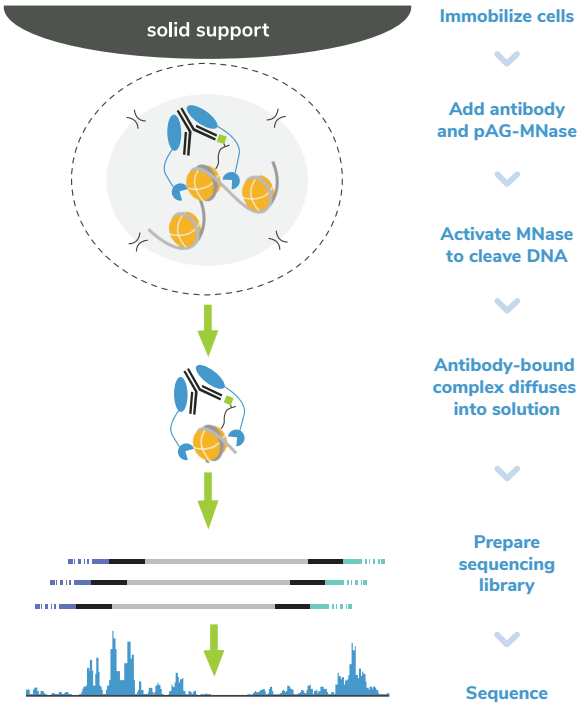
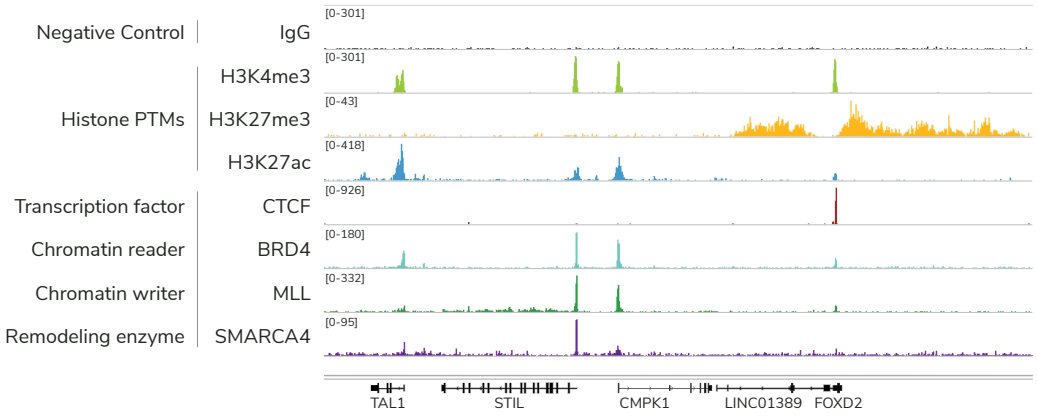


FIGURE 2

Immobilized cells are labeled with an antibody. A fusion of Proteins A and G with micrococcal nuclease (pAG-MNase) is added and activated, cleaving antibody-bound DNA. Clipped DNA is isolated from solution and used for sequencing.

Why use CUT&RUN?

Compatible with diverse and challenging targets

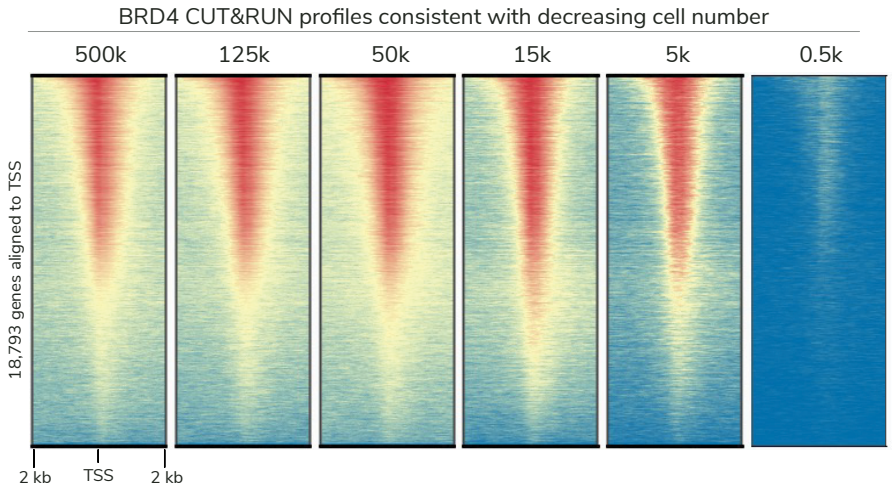


Access targets that are historically difficult to study, including chromatin remodeling enzymes.

FIGURE 3

Representative genome browser tracks show CUTANA™ CUT&RUN results using K562 cells and 3-8 million sequencing reads per reaction. Peaks show expected distribution profiles for a variety of epigenetic targets.

Use low cell numbers without sacrificing data quality

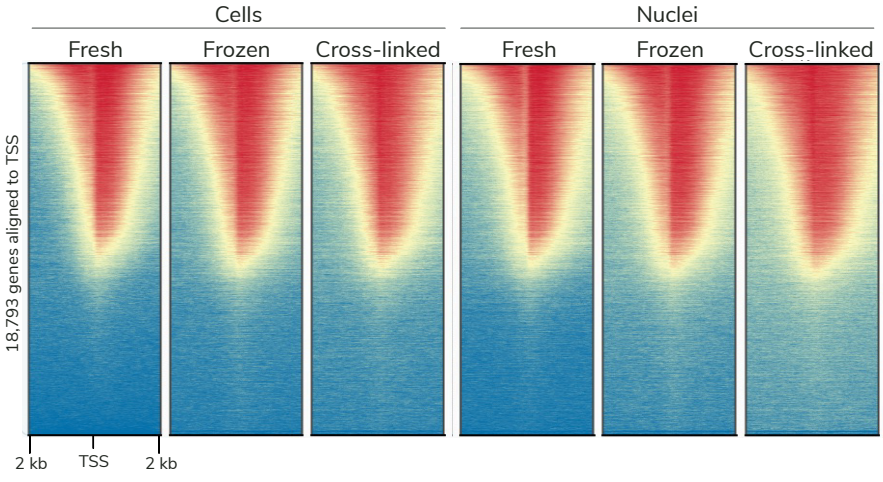


Generate data with high signal-to-noise using as few as 5,000 cells.

FIGURE 4

BRD4 profiles from K562 cells aligned to the transcription start site (TSS). Gene rows in each heatmap are aligned relative to 500k cell input. Signal is indicated by a color gradient from red (high) to blue (low).

Fresh, frozen, or fixed – CUT&RUN can handle it all



Use preferred sample processing conditions with confidence.

FIGURE 5

Indistinguishable H3K4me3 profiles from K562 cells/nuclei aligned to the TSS. Gene rows in each heatmap are aligned relative to fresh cells. Signal is indicated by a color gradient from red (high) to blue (low).

Quantitative chromatin profiling with SNAP-CUTANA™ Spike-in Controls

SNAP-CUTANA™ Spike-ins are panels of DNA-barcoded nucleosomes carrying defined histone PTMs. These panels provide unparalleled support for quantitative and reliable CUT&RUN.

CUT&RUN workflow

- Add spike-ins to prepped cells
- Perform CUT&RUN
- Sequence and analyze data

How to use spike-in data

- Validate PTM antibody specificity
- Direct readout of assay success
- Troubleshoot experiments
- Monitor assay performance

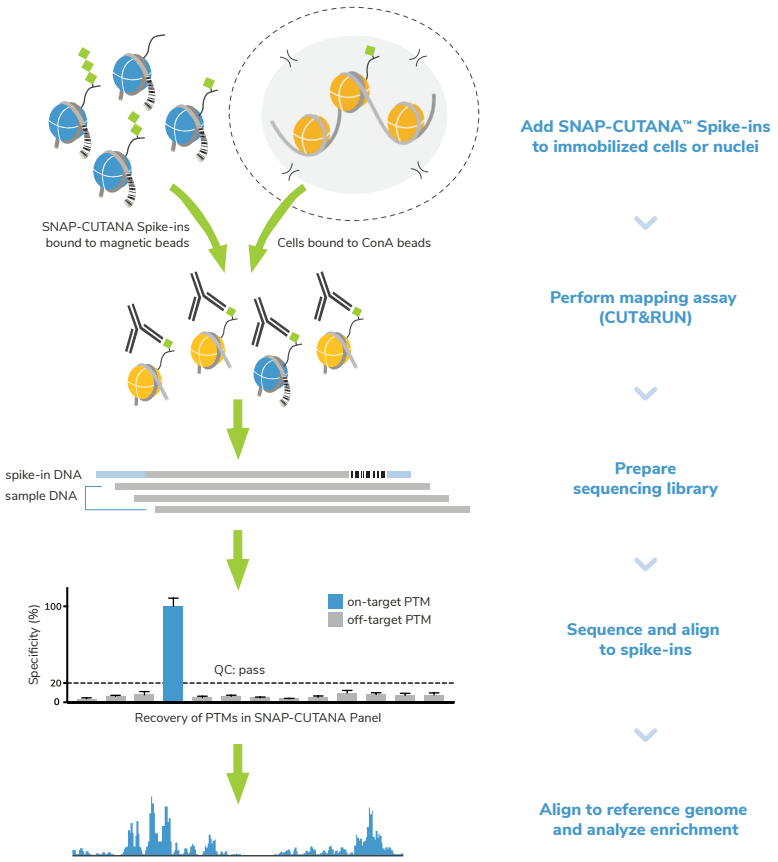


FIGURE 6

SNAP-CUTANA™ Spike-ins are added to CUT&RUN reactions just prior to addition of primary antibody. DNA barcodes enable analysis of on- and off-target spike-in recovery from sequencing data.

The best histone PTM antibodies for CUT&RUN assays

More than 70% of histone PTM antibodies - including highly cited antibodies - don't work in chromatin mapping assays. Stop relying on outdated testing methods! EpiCypher PTM antibodies are directly validated in CUT&RUN using SNAP-CUTANA Spike-ins, ensuring:

- High specificity: low cross-reactivity to related histone PTMs
- Robust efficiency: reproducible profiles in cell titrations
- Reliable: lot-tested in CUT&RUN

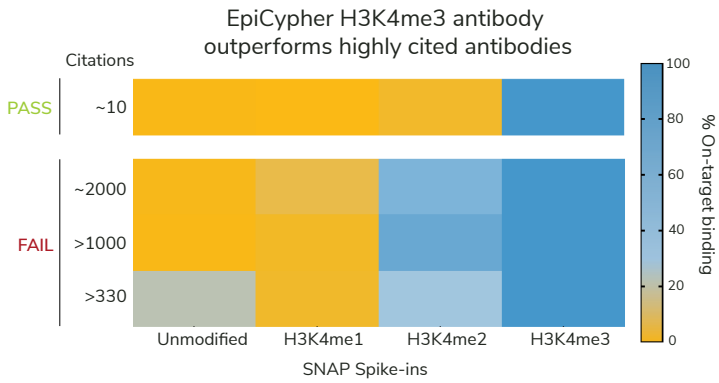


FIGURE 7

Citations do not predict antibody performance. H3K4me3 antibodies from EpiCypher (PASS; Cat. No. 13-0041) and other vendors were tested in CUT&RUN using SNAP-CUTANA Spike-ins.

Reliable CUT&RUN antibodies for chromatin-associated proteins

Finding a good antibody for CUT&RUN is challenging. EpiCypher's unique testing strategy emphasizes CUT&RUN performance, taking the stress out of antibody selection. Features include:

- High signal-to-noise
- Expected peak structures and motif enrichment
- Available for transcription factors, chromatin remodelers, and more

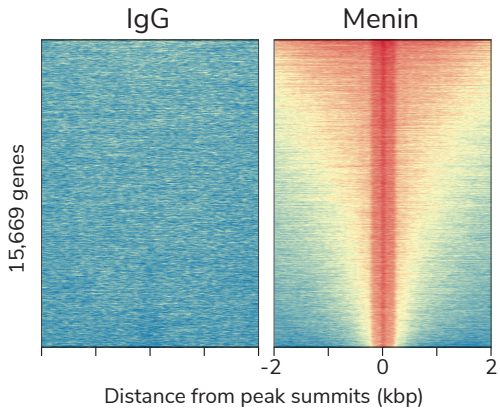


FIGURE 8

EpiCypher antibody to Menin (Cat. No. 13-2021) shows strong enrichment with low background in CUT&RUN assays using K562 cells.

CUTANA Kits: An end-to-end solution for easy CUT&RUN experiments

Together, the CUTANA™ CUT&RUN Kit and CUT&RUN Library Prep Kit get your experiment started faster.

Why use our kits?

- All the essentials you need to go from cells to sequence-ready libraries
- Includes spike-ins and control antibodies
- Library prep specifically optimized for CUT&RUN
- Detailed FAQs and troubleshooting tips

Complete your CUT&RUN assay with validated reagents and protocols

For customized workflows, EpiCypher offers the CUTANA™ CUT&RUN Protocol (epicypher.com/protocols) and reagents.

Resources to get you started:

- Do-it-yourself protocol and video
- pAG-MNase – key CUT&RUN enzyme
- ConA beads, magnetic stands
- Antibodies validated in CUT&RUN
- Spike-in controls – data normalization

EpiCypher®

CUTANA™

Products and Services

KITS

Follow these links to EpiCypher's optimized CUTANA™ CUT&RUN and Library Prep Kits, which include reagents and detailed protocols to go from cells to sequence-ready DNA libraries.

CUT&RUN Kit

CUT&RUN Library Prep Kit

ORDERING INFO

CUT&RUN Kit
48 reactions
Cat. No. 14-1048

CUT&RUN Library Prep Kit
48 reactions
Cat. No. 14-1001- Primer Set 1
Cat. No. 14-1002 - Primer Set 2

SERVICES

Our CUT&RUN Services deliver rapid, high-resolution chromatin mapping at scale. Exclusive access to EpiCypher's genomics experts guarantees strong support from experimental design to data analysis.

CUT&RUN Services

Visit our CUT&RUN Services web page for more details on our end-to-end capabilities.

Inquire at services@epicypher.com to get started today!

>10,000 REACTIONS TO DATE

Automated 96-well assay, standardized controls, high reproducibility

>100 SAMPLE TYPES

Primary and FACS-isolated, drug-treated and stimulated, tissues including biopsies

>1,000 ANTIBODIES TESTED

Transcription factors, chromatin modifiers, histone PTMs

PRODUCTS

REAGENTS & TOOLS

pAG-MNase
Cat. No. 15-1016 (50 rxn)
Cat. No. 15-1116 (250 rxn)

Nuclei Extraction Buffer
Cat. No. 21-1026

ConA Conjugated Paramagnetic Beads
Cat. No. 21-1401 (50 rxn)
Cat. No. 21-1411 (250 rxn)

Magnetic Separation Rack
Cat. No. 10-0008 (0.2 mL)
Cat. No. 10-0012 (1.5 mL)

Quick Cleanup DNA Purification Kit
Cat. No. 14-0052

CONTROLS

Rabbit IgG Negative Control Antibody
Cat. No. 13-0042

***E. coli* Spike-in DNA**
Cat. No. 18-1401

SNAP-CUTANA™ Spike-in Controls
Cat. No. 19-1002 (K-MetStat Panel)
Cat. No. 19-5001 (DYKDDDDK Tag Panel)
Cat. No. 19-5002 (HA Tag Panel)

CUT&RUN ANTIBODIES*

H3K4me3
Cat. No. 13-0060

H3K27me3
Cat. No. 13-0055

DYKDDDDK Tag
Cat. No. 13-2031

HA Tag
Cat. No. 13-2010

CTCF
Cat. No. 13-2014

BRD4
Cat. No. 13-2003

BRG1/SMARCA4
Cat. No. 13-2002

* for a complete list, visit epicypher.com/cut-and-run-antibodies

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