

New Chromatin Profiling Application Try CUT&RUN !

What is CUT&RUN?

CUT&RUN stands for **Cleavage Under Target & Release Using Nuclease**. It is an *in vivo* method that uses a target-specific primary antibody and a Protein A-Protein G-Micrococcal Nuclease (pAG-MNase) to isolate specific protein-DNA complexes^{1,2,3}.

References

1. Skene P.J. et al. (2018) *Nat. Protoc.* 13(5), 1006-1019.
2. Meers M.P. et al.. (2019) *BioRxiv* 1, 569129.
3. Skene P.J. and Henikoff S. (2017) *Elife* 6, e21865.

CUT&RUN Products

Cell Signaling Technology offers two flexible solutions. Try our new kit with your favorite target antibody. The kit contains the pAG-MNase, all the necessary buffers and reagents, and a detailed protocol. Or just order the pAG-MNase and Spike-In DNA if you prefer.

#86652 CUT&RUN Assay Kit

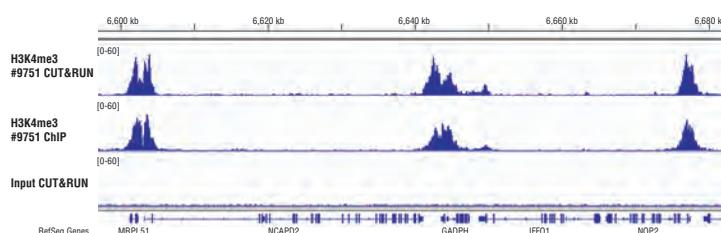
#40366 CUT&RUN pAG-MNase and Spike-In DNA

#14209 DNA Purification Buffers and Spin Columns (ChIP, CUT&RUN)

The Benefits of CUT&RUN

Low sample requirement	Only 100K cells needed
Fast time to results	1-2 days from cell to DNA
Sequencing cost savings	Only 3-5 million high-quality reads required
Target versatility	Generate sequencing and/or qPCR data for histones, histone modifications, transcription factors, and cofactors
Antibody versatility	Compatible with rabbit and mouse antibodies
Reproducible results	Spike-In control DNA to normalize signal between samples
Avoid "cross-linking" artifacts	An <i>in vivo</i> method performed using native chromatin

The CUT&RUN Assay Kit from CST only requires 100,000 cells and works as well as ChIP-seq



CUT&RUN and ChIP assays were performed with HCT 116 cells (1×10^6 for CUT&RUN, 4×10^6 cells for ChIP) and Tri-Methyl-Histone H3 (Lys4) (C42D8) Rabbit mAb #9751, using the CUT&RUN Assay Kit #86652 or the SimpleChIP® Plus Enzymatic Chromatin IP Kit (Magnetic Beads) #9005. DNA Libraries were prepared using SimpleChIP® ChIP-seq DNA Library Prep Kit for Illumina® #56795. Comparison of enrichment at the GAPDH gene, a known target of H3K4me3. The input track is from the CUT&RUN input sample.

How CUT&RUN Works

Method Overview

Ab & pAG-MNase binding:

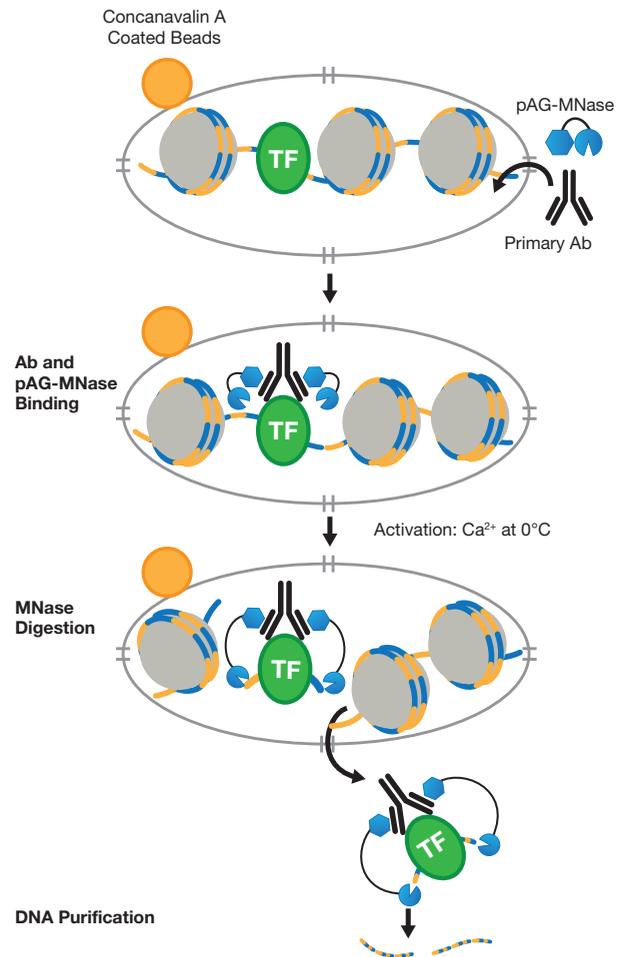
1. Cells are immobilized on Concanavalin A Magnetic Beads to allow for subsequent buffer and reagent exchanges.
2. Cell membranes are then permeabilized with digitonin to facilitate the entry of primary antibody and pAG-MNase fusion enzyme into the cell nuclei.
3. The target-specific primary antibody recruits the pAG-MNase to the chromatin through protein-protein interactions between the antibody and the pAG domain of the fusion enzyme.

MNase Digestion:

4. The addition of Ca^{2+} activates the pAG-MNase, which gently cleaves and liberates the desired chromatin fragments, allowing them to diffuse away from the genomic chromatin, out of the cell, and into the supernatant.

DNA Purification:

5. DNA is purified using DNA purification spin columns or phenol/chloroform extraction followed by ethanol precipitation. The purified, enriched DNA is then identified and quantified using qPCR or NG-seq.



*TERMS AND CONDITIONS: 25% off catalog price for qualifying purchases from eligible locations. Eligible locations: Canada, Mexico, US, Panama, Argentina, Brazil, Chile, Colombia, Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Greece, Germany, Hungary, Ireland, Iceland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, South Africa, Sweden, Switzerland, Turkey, United Kingdom, Bahrain, Egypt, Israel, Jordan, Qatar, Saudi Arabia, United Arab Emirates, Australia, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, and Vietnam. Expires June 30, 2020. No cash or cash equivalent. No substitutions. Offer valid on new catalog orders only, restrictions apply. Offer may not be applied to existing, pending or prior orders. Promotion code EUMCNR20 must be referenced when placing an order in European countries and South Africa. All other eligible countries should contact their local distributor or account manager for ordering details. Offer applies to all catalog purchases of 86652 and 40366. All other products/services including but not limited to PTMScan[®] Services, and Custom orders are excluded. Cannot be combined with any other promotions or discounts. Items that are not eligible, tax and shipping and handling charges will not be included in determining merchandise subtotal. Void if copied or transferred and where prohibited by law. Institutional discounts may still be applied to other items that are not eligible for this offer.

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