ACTIVE MOTIF®

Enabling Epigenetics Research

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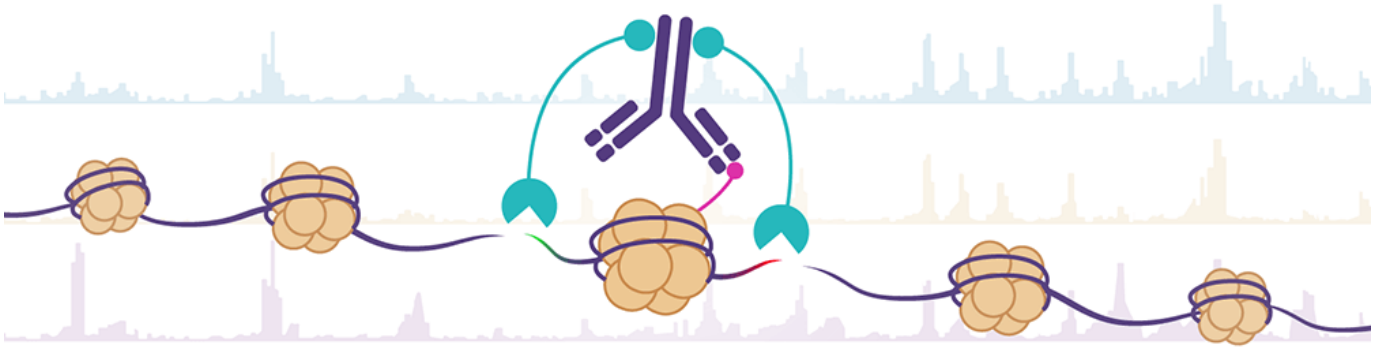
CUT&Tag-IT™ Assay Kit

Rapid and robust genome-wide analysis of histone marks at lower sequencing depths



Cleavage Under Targets and Tagmentation (CUT&Tag) is a method to investigate genomic localization of histone modifications and some transcription factors that reveals interactions between proteins and DNA or identifies DNA binding sites for proteins of interest.

Unlike MNase-Seq or ATAC-Seq methods that target open chromatin and are therefore dependent on chromatin accessibility, CUT&Tag utilizes an antibody-based enzyme tethering strategy to target specific histone modifications or proteins to reveal chromatin-binding information that is specific to those sites or proteins of interest.

CUT&Tag is based on the same principles as ChIP-Seq, but with several changes to the protocol that are advantageous in certain situations. Instead of the sonication of fixed chromatin and immunoprecipitation steps performed in ChIP-Seq protocols, in CUT&Tag, fresh (not frozen) unfixed cells are bound to concanavalin A beads and the antibody incubation is performed with cells in their native state. Directly following antibody binding, the chromatin is digested and NGS libraries are prepared in a single step by tagmentation using the protein A-Tn5 (pA-Tn5) transposome enzyme that has been pre-loaded with sequencing adapters.

CUT&Tag can rapidly produce high-quality results from less starting material than ChIP-Seq, and enables robust analysis from lower sequencing depths, saving both time and money.

CUT&Tag vs. CUT&RUN vs. ChIP-Seq

	CUT&Tag-IT™ Assay Kit	CUT&RUN	ChIP-Seq
Performed Under Native Conditions?	Yes	Yes	No
Chromatin Fragmentation Method	Tn5-based tagmentation	MNase digestion	Sonication
Cell Number Requirements	5,000-500,000 cells	500,000 cells	1-10 million cells
Sequencing Depth Required *	2 million reads	8 million reads	20-50 million reads
Integrated Library Preparation?	Yes, uses tagmentation	No, separate library prep required	No, separate library prep required
Compatible Targets	Primarily histone modifications, some transcription factors and co-factors	Wide range of histone modifications, transcription factors, and co-factors	Wide range of histone modifications, transcription factors, and co-factors
Workflow Length	1-2 days	1-2 days	2-3 days

* Kaya-Okur et al. *Nature Communications* (2019) 10:1930

CUT&Tag-IT™ Assay Kit Advantages:

- Compatible with as few as 5,000 cells
- Complete kit with optimized protocol
- Developed for histone marks and some transcription factors
- Sequencing-ready libraries without the laborious and costly steps of ChIP-Seq
- Low background signal enables lower sequencing depth
- No artifacts caused by formaldehyde crosslinking

CUT&Tag-IT™ Assay Kit, Anti-Rabbit 16 rxns 53160

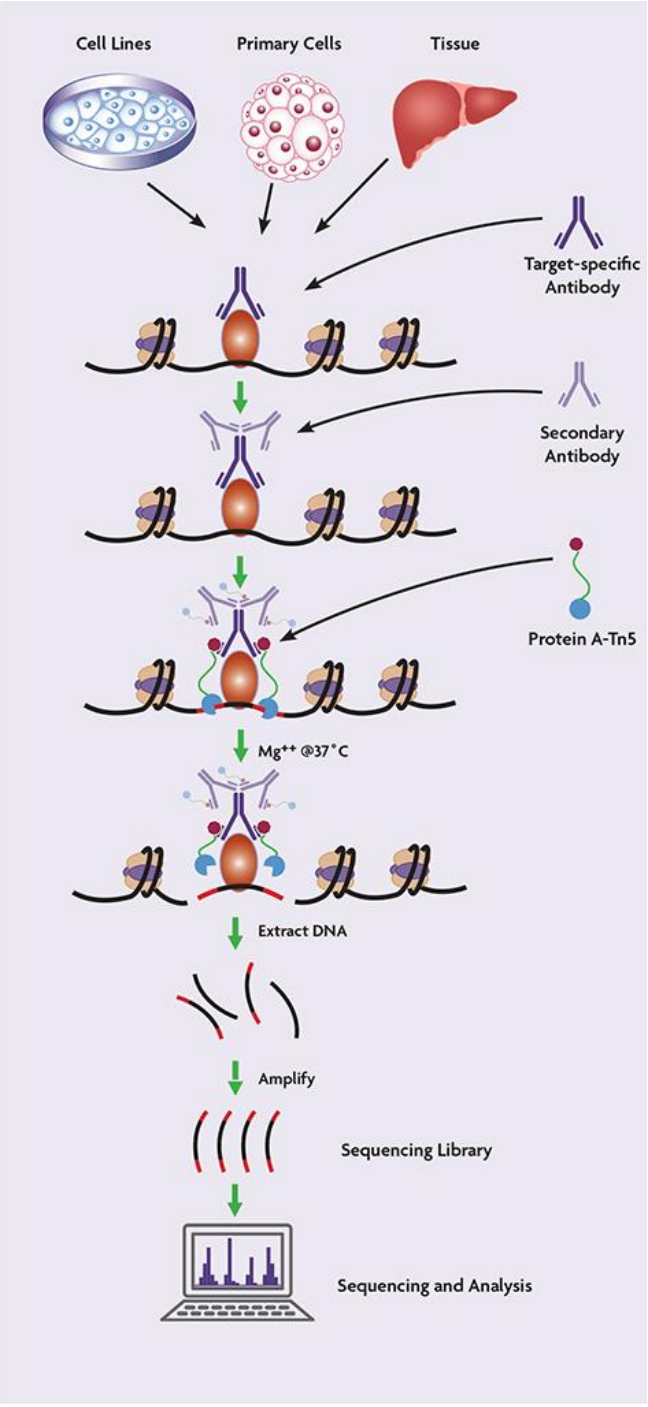
CUT&Tag-IT™ Assay Kit, Anti-Mouse 16 rxns 53165

Don't forget to use an antibody validated for CUT&Tag!

Active Motif specializes in manufacturing high-quality antibodies to histones, histone modifications, chromatin proteins, and other factors, including a growing list of antibodies that we have experimentally validated in-house to work well in CUT&Tag assays. Check out our GROWING list of CUT&Tag-validated antibodies:

- AbFlex® CTCF antibody (rAb)
- CTCF antibody (pAb)
- Histone H3K4me1 antibody (pAb)
- Histone H3K4me2 antibody (pAb)
- Histone H3K4me3 antibody (pAb)
- Histone H3K9ac antibody (pAb)
- Histone H3K9me3 antibody (pAb)
- Histone H3K9me3 antibody (pAb)
- AbFlex® Histone H3K27ac antibody (rAb)
- Histone H3K27ac antibody (pAb)
- Histone H3K27ac antibody (pAb)
- Histone H3K27me3 antibody (pAb)
- Histone H3K36me3 antibody (pAb)
- AbFlex® RNA Pol II antibody (rAb)

How the CUT&Tag-IT™ Assay Works



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