

HISTONE ACETYLATION

Histone acetylation, including histones H3 and H4, is involved in the regulation of chromatin structure, the recruitment of transcription factors to gene promoters, cell cycle regulation, cell proliferation, and apoptosis. Thus quantitative detection of global acetyl histones H3 and H4 would provide useful information for a better understanding of epigenetic regulation of gene activation as well as to help in the development of HAT or HDAC-targeted drugs.

Global Site Specific Acetylation Quantification

Using the EpiQuik™ series of Global Histone Acetylation Quantification Kits allows a researcher to measure total H3 or H4 acetylation levels, in addition to acetylation levels of modified histones at various lysines, through an ELISA-like method.

- ✓ Quick and efficient procedure, which can be finished within 2 to 3 hours.
- ✓ Innovative colorimetric or fluorometric assays without the need for radioactivity, electrophoresis, or chromatography.
- ✓ Controls are conveniently included for the quantification of the amount of acetylated histones.
- ✓ Strip-well microplate format makes the assay flexible: manual or high throughput.

Gene Specific Acetylated Histone Recruitment

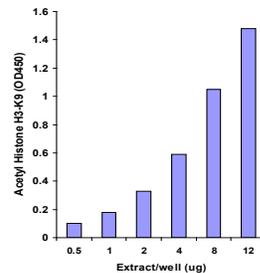
Epigentek provides a series of microplate-based ChIP kits, with included acetyl histone antibodies, that allow an experimenter to perform chromatin immunoprecipitation with extraordinarily rapid speed and consistency. The kits are ready-to-use and provide all the essential components needed to carry out a successful ChIP experiment. The kits are suitable for combining the specificity of immunoprecipitation with qualitative and quantitative PCR, DNA sequencing, and DNA microarray.

- ✓ Strip-well microplate format makes the assays flexible: manual or high throughput.
- ✓ The fastest procedure currently available, which can be finished within 5 hours.
- ✓ Columns for DNA purification are included: save time and reduce labor.
- ✓ Compatible with all DNA amplification-based approaches.

Histone Acetyltransferase Quantification

The EpiQuik™ HAT Activity/Inhibition Assay Kit is a ready-to-use set of essential components needed to measure histone acetyltransferase activity/inhibition safely and quickly. It is suitable for measuring histone acetyltransferase activity/inhibition from a broad range of species including mammalian cells/tissues, plants, and bacteria.

- ✓ Very quick procedure that can be completed within 3 hours.
- ✓ Innovative colorimetric assay that eliminates the need for radioactivity, extraction, and chromatography.
- ✓ Direct measurement of HAT activity and inhibition by quantifying the amount of acetylated histone substrate, thereby avoiding the false inhibitory effect on HATs.



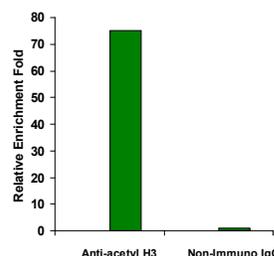
▲ Acetyl H3-K9 was quantified with the EpiQuik Global Acetyl Histone H3-K9 Quantification Kit (Colorimetric) (Cat. No. P-4010).

- 1 Tissue disaggregation or cell lysis
- 2 Histone extracts
- 3 AcH3 or AcH4 bound to assay wells
- 4 Add detection antibody after wash
- 5 Add color or fluorescence developing solution, then measure absorbance or fluorescence



▲ Schematic procedure of EpiQuik Histone Acetylation Quantification Kits.

Product Name	Cat. No.
EpiQuik Histone H3 Acetylation Quantification Kits	P-4010 to P-4021
EpiQuik Histone H4 Acetylation Quantification Kits	P-4022 to P-4029
EpiQuik Total Histone H3 Acetylation Detection Fast Kit (Colorimetric)	P-4030
EpiQuik Total Histone H4 Acetylation Detection Fast Kit (Colorimetric)	P-4032



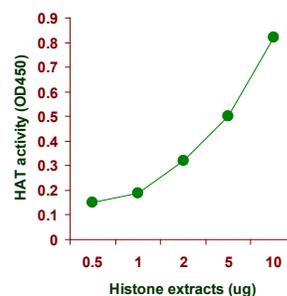
▲ Enrichment of acetyl histone H3 on GAPDH promoter processed with the EpiQuik Acetyl-Histone H3 ChIP Kit (Cat. No. P-2010).

- 1 Cell lysis and DNA shearing
- 2 Protein/Antibody immunoprecipitation
- 3 Clean protein/DNA complex and reverse cross-link
- 4 Capture/cleaning of DNA
- 5 Elution of mDNA
- 6 PCR/sequencing/microarray



▲ Schematic procedure of EpiQuik Acetyl-Histone ChIP Kits.

Product Name	Size	Cat. No.
EpiQuik Acetyl-Histone H3 ChIP Kit	48 reactions	P-2010-48
EpiQuik Acetyl-Histone H4 ChIP Kit	48 reactions	P-2011-48



▲ Nuclear extracts were prepared from HeLa cells and HAT activity was measured with EpiQuik HAT Activity/Inhibition Assay Kit (Cat. No. P-4003).

- 1 Nuclear extract/enzymes
- 2 Incubate with substrate and assay buffer for 60min
- 3 Add capture antibody
- 4 Add detection antibody
- 5 Add color or fluorescence developing solution, then measure absorbance or fluorescence



▲ Schematic procedure of EpiQuik HAT Activity/Inhibition Assay Kit.

Product Name	Size	Cat. No.
EpiQuik HAT Activity/Inhibition Assay Kit	48 assays	P-4003-48
EpiQuik HAT Activity/Inhibition Assay Kit	96 assays	P-4003-96

HISTONE DEACETYLATION

HDACs are tightly involved in cell cycle regulation, cell proliferation, and the development of human diseases such as cancer, cardiovascular and pulmonary diseases, and neurological diseases. For example, in various tumor cells, HDAC enzymes are found to be overexpressed. Detection of the activity/inhibition of HDACs would be important in elucidating mechanisms of epigenetic regulation of gene activation and silencing and would benefit cancer diagnostics and therapeutics.

Total HDAC Activity/Inhibition Quantification

The Epigenase™ HDAC Activity/Inhibition Assay Kit is a microplate based kit which measures HDAC activity/inhibition from mammalian cells/tissues, plants, or bacteria within just 3 hours. It is available in both colorimetric and fluorometric versions.

- ✓ Innovative assay measures HDAC activity/inhibition by directly detecting HDAC-converted deacetylated products, rather than trypsin-based peptide cleavage.
- ✓ Both cell/tissue extracts and purified HDAC enzymes can be used, which allows for the detection of inhibitory effects of HDAC inhibitor *in vivo* and *in vitro*.
- ✓ HDAC activity can be detected from as low as 0.5 ng of purified HDAC enzyme, which is about 10 fold higher than that obtained by trypsin-based peptide cleavage assays.
- ✓ Trichostatin A (TSA,) a potent inhibitor of class I and class II HDAC activity, is included as the positive control for HDAC inhibition.

HDACs 1-11 Specific Quantification

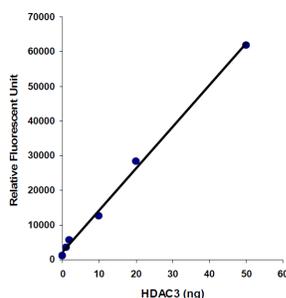
Epigentek offers a complete line of kits for individual measurement of HDACs 1-11. Each of these kits contain an optimized set of buffers and reagents to colorimetrically measure the total amount of HDAC proteins quantitatively, through an ELISA-like method.

- ✓ Very fast procedure, which can be finished within 4 hours.
- ✓ Innovative colorimetric assay to quantitatively measure HDAC protein amounts without the need for electrophoresis.
- ✓ High sensitivity and specificity -- HDAC-specific detection with a detection limit as low as 0.2 ng of HDAC protein.

SIRT Activity/Inhibition

The Epigenase™ Universal SIRT Activity/Inhibition Assay Kit is a complete set of optimized buffers and reagents for measuring the activity/inhibition of total SIRT enzymes using nuclear extracts or purified SIRT isoforms (SIRTs 1-7) from a broad range of species such as mammals, plants, fungi, and bacteria, in a variety of forms including, but not limited to cultured cells and fresh and frozen tissues.

- ✓ Innovative assay measures SIRT activity/inhibition by directly detecting SIRT-converted deacetylated products, rather than trypsin-based peptide cleavage.
- ✓ Activity can be detected from as low as 1 ng of purified SIRT enzyme, which is about 10 fold higher than that obtained by trypsin-based peptide cleavage assays.



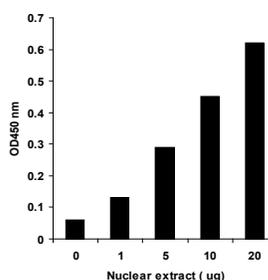
▲ High sensitivity: HDAC activity assay achieved by using recombinant HDAC3 with the Epigenase HDAC Activity/Inhibition Direct Assay Kit (Fluorometric).

- 1 Nuclear extract/ purified HDAC enzyme
- 2 Incubate with substrate and assay buffer for 90 minutes
- 3 Wash wells, then add capture antibody
- 4 Wash wells, then add detection antibody
- 5 Add color or fluorescence developing solution, then measure absorbance or fluorescence



▲ Schematic procedure of the Epigenase HDAC Activity/Inhibition Direct Assay Kit.

Product Name	Size	Cat. No.
Epigenase HDAC Activity/Inhibition Direct Assay Kit (Colorimetric)	96 assays	P-4035-96
Epigenase HDAC Activity/Inhibition Direct Assay Kit (Fluorometric)	96 assays	P-4036-96



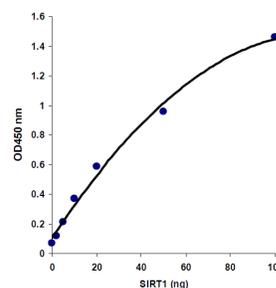
▲ Nuclear extracts were prepared from HeLa cells and the ODs generated from HDAC3 are measured.

- 1 Nuclear extract/ purified HDAC enzyme
- 2 Incubate with substrate and assay buffer for 90 minutes
- 3 Wash wells, then add affinity antibody
- 4 Wash wells, then add detection antibody and enhancer solution
- 5 Add color developing solution, then measure absorbance



▲ Schematic procedure of the EpiQuik HDAC3 Assay Kit.

Product Name	Cat. No.
EpiQuik HDAC1, HDAC2, HDAC3, HDAC4, HDAC5, HDAC6, HDAC7, HDAC8, HDAC9, HDAC10, and HDAC11 Assay Kits	P-4005, P-4006, P-4040, P-4042, P-4044, P-4046, P-4048, P-4007, P-4050, P-4052, and P-4054



▲ High sensitivity: SIRT activity assay achieved by using recombinant SIRT1 with the Epigenase Universal SIRT Activity/Inhibition Assay Kit (Colorimetric).

- 1 Nuclear extract/ purified SIRT enzyme
- 2 Incubate with substrate and assay buffer for 90 minutes
- 3 Wash wells, then add capture antibody
- 4 Wash wells, then add detection antibody
- 5 Add color or fluorescence developing solution, then measure absorbance or fluorescence



▲ Schematic procedure of the Epigenase Universal SIRT Activity/Inhibition Assay Kit.

Product Name	Size	Cat. No.
Epigenase Universal SIRT Activity/Inhibition Assay Kit (Colorimetric)	96 assays	P-4036-96
Epigenase Universal SIRT Activity/Inhibition Assay Kit (Fluorometric)	96 assays	P-4037-96