



Epigenetics

Unravel the Code
Within the Code

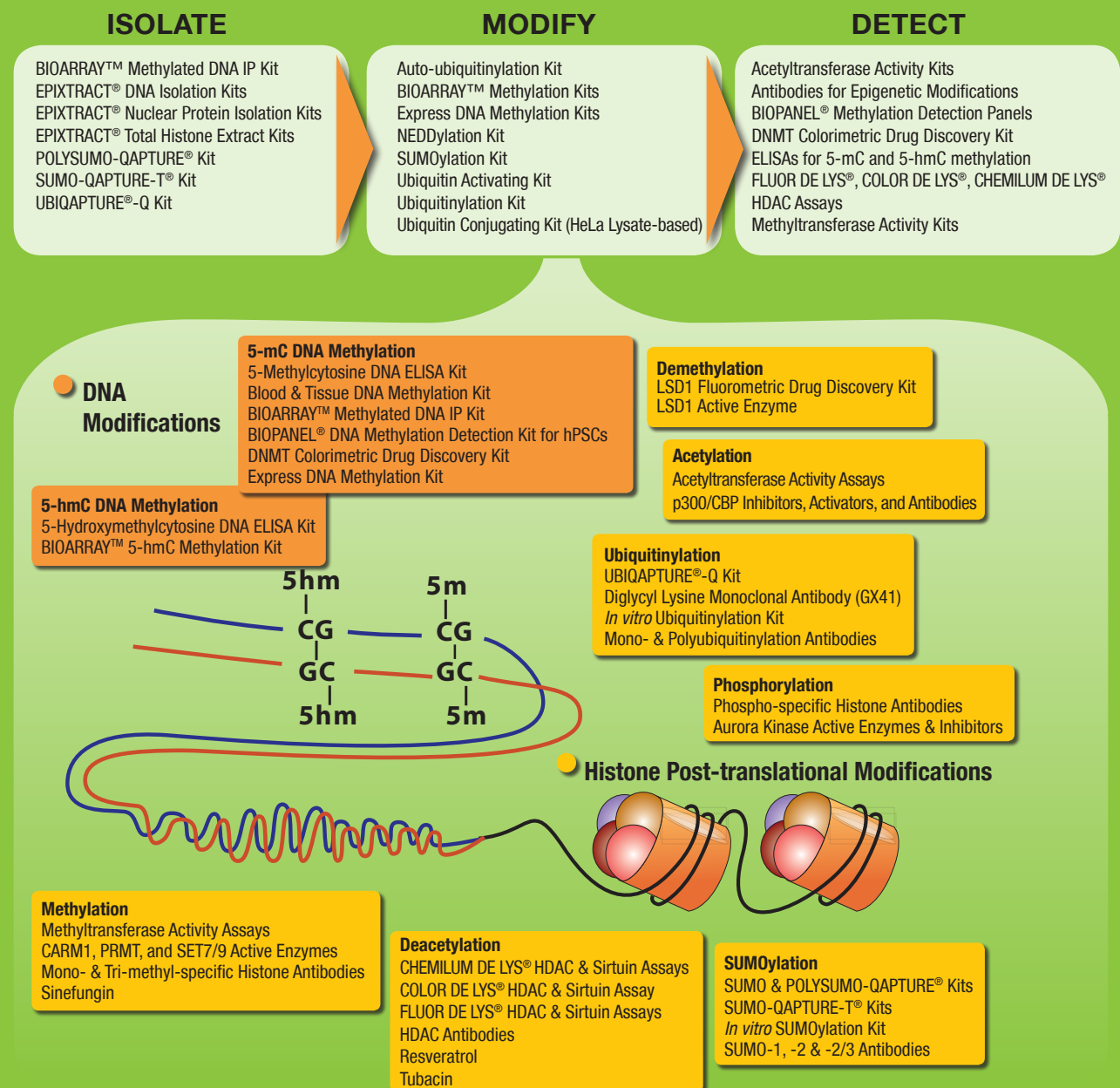


SOLUTIONS FOR SCREENING EPIGENETIC REGULATORS

Leading Innovation in Detection of Epigenetic Changes

Epigenetics is the structural adaptation of chromosomal regions to register, signal or perpetuate altered activity states. Alterations to chromatin via direct DNA modification (e.g., methylation) or post-translational modification (PTM) of histones (e.g., acetylation, methylation, and ubiquitination) affect gene transcription. To date, acetylation/deacetylation of histone lysine residues, and methylation of DNA have proven to be of greatest clinical significance amongst epigenetic modifications. Recent approval of anti-cancer drugs such as Vorinostat and Decitabine, which target Histone Deacetylases (HDACs) and DNA Methyltransferases (DNMTs), respectively, are evidence that reprogramming gene expression on an epigenetic level holds great clinical promise. Drugs targeting critical PTM-regulating enzymes continue to populate pharma development pipelines.

Complete Toolbox for Epigenetics Research



EFFICIENT EXTRACTION UPSTREAM FOR EASIER DETECTION DOWNSTREAM

Enzo Life Sciences has been a leader in the epigenetics market, providing solutions for epigenetics analyses ranging from enzymes, modification activity and quantification assays, and epigenetics-related small molecules. Our EPIXTRACT® Kits enable rapid isolation from a wide variety of sample types.

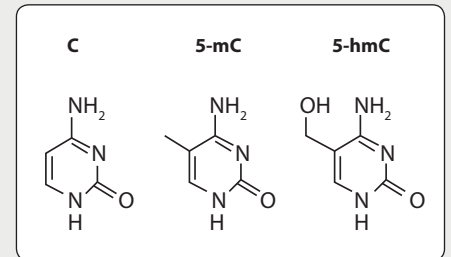
- Guarantee reproducible, high yield of histones, nuclear proteins and circulating DNA
- Rapid, reliable sample isolation for downstream epigenetics applications

	EPIXTRACT® Total Histone Extraction Kit		EPIXTRACT® Nuclear Protein Isolation Kit		EPIXTRACT® DNA Isolation Kit for Plasma/Serum
PRODUCT #	ENZ-45013 (High-Throughput)	ENZ-45014	ENZ-45015 (Nucleic Acid-Free)	ENZ-45016	ENZ-45018
Size	2 x 96 Reactions	100 Reactions	100 Reactions	50 or 100 Reactions	50 or 100 Reactions
Sample	Cells	Cells/Tissue	Cells/Tissue	Cells/Tissue	Plasma/Serum
Format	96 Wells	Tube	Tube	Tube	Spin Column
Processing Time	1 Hour	1 Hour	1 Hour	< 1 Hour	< 15 Minutes

ENSURE ACCURACY IN ANALYSIS OF DNA METHYLATION

Convenient Kits for Sample Conversion and Detection

DNA methylation can alter gene expression, cell differentiation and often results in unidirectional changes to genomic DNA. Because DNA methylation is involved in many processes, abnormalities in methylation patterns can lead to disease. Expanding our expertise in epigenetic modification analysis, Enzo Life Sciences now offers a portfolio of products that enable detection of DNA methylation.



High-efficiency Conversion of 5-mC and 5-hmC DNA for the Truest Downstream Analysis

- Conversion allows for resolution of single nucleotide information
- Kits provide high conversion rates without the introduction of DNA damage
- Converted output sample suitable for detection by bisulfite sequencing, methylation-specific PCR, high-resolution melting curve analysis, microarray-based approaches, and next-generation sequencing

	DNA Only		Blood, Tissue, FFPE, DNA		DNA Only
	Express DNA Methylation Kit (ENZ-45001, -45002, -45003)		Blood & Tissue DNA Methylation Kit (ENZ-45004)		BIOARRAY™ 5-hmC Methylation Kit (ENZ-45011)
Target & Modification	5-mC Bisulfite Modification		5-mC Bisulfite Modification		5-hmC β-Glucosyltransferase Protection
Format	Spin Column	96 Wells	Spin Column	96 Wells	Spin Column
Elution Volume	≥ 10 µl	≥ 15 µl	≥ 10 µl	≥ 15 µl	≥ 6 µl
Conversion Efficiency	> 99.5%		> 99.5%		*Enzymatic Efficiency ~100%
Processing Time	1.5 Hours		4 Hours		6-8 Hours
Input	100 pg – 2 µg of DNA		≥ 50 pg DNA, ≥ 10 Cells, Blood, Tissue, FFPE		100 ng - 500 ng DNA

CONVENIENT SCREENING FORMATS FROM...

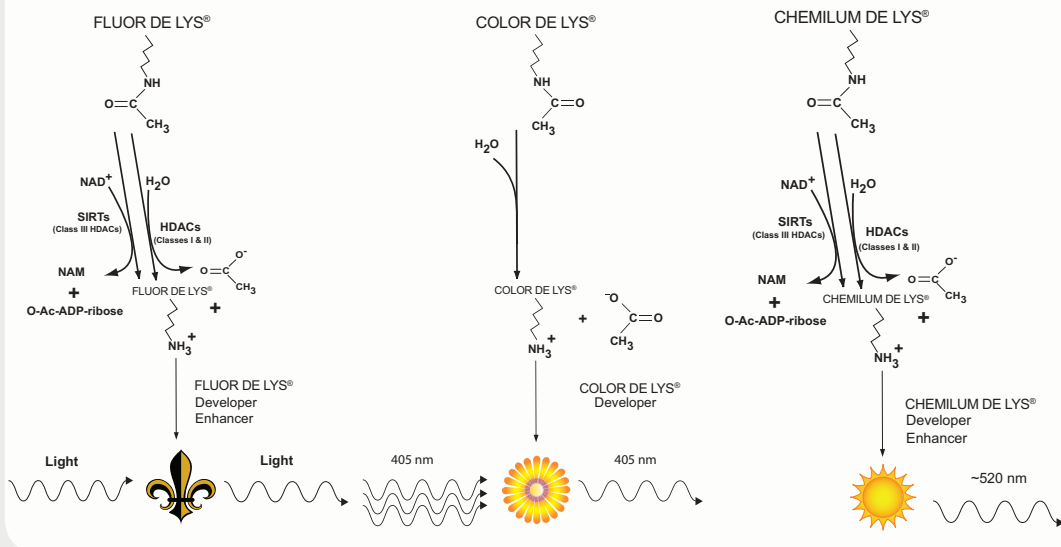
For over a decade, the FLUOR DE LYS[®] deacetylase assay platform has revolutionized assay of HDAC & Sirtuin enzyme activity, freeing researchers from cumbersome protocols required with radio-labeled or other modified histone-based methods. Our high-quality assays utilize patented substrate/developer chemistry in combination with high-activity, high-purity enzymes, to deliver more high quality hits. Broad class HDAC/Sirtuin screening assays are available in chemiluminescent, fluorescent, and colorimetric formats.

Choose A Format to Fit Your Needs

Fluorometric Robust fluorescent screening assays

Colorimetric Option for standard absorbance plate readers

Chemiluminescent Ideal for cross-validation of fluorescent assays



Flexible HDAC & Sirtuin Assays

- Non-radioactive, homogeneous, HTS compatible formats
- Green & chemiluminescent assays available to minimize interference
- Assay all HDAC classes from multiple sources
- High-activity, in-house manufactured control enzymes

CHEMILUM DE LYS[®] HDAC/SIRT Chemiluminescent Drug Discovery Kit (BML-AK532)

All the Benefits of Chemiluminescent Detection Without the Side Effects

- High-specificity assay eliminates false positives or negatives (see table)
- Superior signal-to-noise ratio with no interference from cell extract detergents
- Consistent results from validated systems

Eliminate False HDAC/SIRT Screening Hits with CHEMILUM DE LYS[®]

	CHEMILUM DE LYS [®]	Competitor HDAC Assays		
		Luciferase-Based Chemiluminescent Assay	Colorimetric Assay	Fluorometric Assay
No Artifactual Activation by Resveratrol	✓	✓		
Resistant to Protease Inhibitors	✓		✓	✓
Resistant to Kinase Inhibitors	✓		✓	✓

DEMETHYLATION		
PRODUCT NAME	PRODUCT #	SIZE
LSD1 Fluorometric/Colorimetric Drug Discovery Assay	BML-AK544	96 Reactions

ACETYLTRANSFERASE/METHYLTRANSFERASE ACTIVITY ASSAYS		
PRODUCT NAME	PRODUCT #	SIZE
Acetyltransferase Activity Kit	ADI-907-026	96 Wells
Methyltransferase Activity Kit	ADI-907-025	96 Wells
Methyltransferase HT Activity Kit	ADI-907-032	96 Wells

THE PIONEER IN NON-RADIOACTIVE HDAC & SIRTUIN ASSAYS

BIOPANEL® DNA Methylation Detection Kit for Human Pluripotent Stem Cells (ENZ-45007, -45008, -45009, -45010)

Real-Time PCR-Based Methylation Detection

- No need for bisulfite conversion
- Determine % methylation of specific regions in less than 5 hours
- Identifies region-specific DNA methylation in RAB25, NANOG, PTPN6, MGMT, GBP3, and LYST gene promoters

RELATED PRODUCT

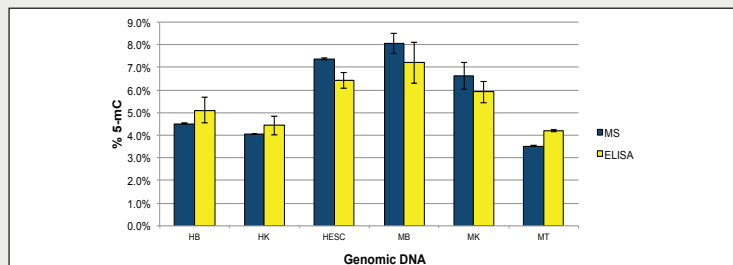
PRODUCT NAME	PRODUCT #
BIOARRAY™ Methylated DNA IP Kit	ENZ-45012
Universal DNA Methylated Standard (human)	ENZ-45005
Universal DNA Methylated Standard (mouse)	ENZ-45006

5-Methylcytosine DNA ELISA Kit (ADI-900-224)

ELISA-Based Methylation Detection

- Accurately quantitate 5-mC in any DNA sample in less than 3 hours
- Ideal for high-throughput analysis

ELISA Kit Performance is Comparable to Mass Spectrometry Analysis



The 5-hmC DNA ELISA Kit (ADI-900-225) quantifies 5-hmC in numerous DNA samples with close correlation to LC-MS/MS-MRM analysis. DNA samples include: brain, kidney, liver, thymus, human embryonic stem cells and two carcinoma samples.

RELATED PRODUCT

PRODUCT NAME	PRODUCT #
5-Hydroxymethylcytosine DNA ELISA Kit	ADI-900-225

BENCHMARK AGAINST KNOWN EPIGENETIC MODULATORS

Epigenetics Compound Library (BML-2836)

The SCREEN-WELL® Epigenetics Library is a curated set of compounds with defined activity against epigenetic modulating enzymes. It is a convenient tool for use with HDAC & Sirtuin drug discovery kits:

- Contains 43 compounds with defined activity against lysine-modifying enzymes and DNA methylation inhibitors
- Available in 100 µL and 500 µL formats, dissolved in DMSO
- Includes a variety of structurally and mechanistically different compound classes targeting HDACs, SIRTs, HATs, HMTs, DNMTs, and Lysine demethylases

SELECT HDAC/SIRT REGULATING COMPOUNDS

PRODUCT NAME	ACTIVITY	PRODUCT #
BML-281	HDAC6 Inhibitor	BML-GR361
Butein	SIRT1 Activator	ALX-350-246
Niltubacin	Negative Control for Tubacin	BML-GR363
Parthenolide	HDAC1 Inhibitor	BML-T113
Phenylbutyrate sodium	Weak HDAC Inhibitor	BML-EI320
Piceatannol	SIRT1 Activator	ALX-270-202
Resveratrol	SIRT1 Activator	BML-FR104
Trichostatin A	HDAC Inhibitor	BML-GR309
Tubacin	HDAC6 Inhibitor	BML-GR362

DETECT EPIGENETIC MODIFICATIONS

Enzo offers a variety of high-quality antibodies specific for epigenetic modifications, including histone- and lysine-directed acetylation, phosphorylation, ubiquitination and DNA methylation. We also offer antibodies for detection and isolation of specific HATs, HDACs, and Sirtuins.

Acetylation

Acetylated Lysine, pAb
Acetylated Lysine, pAb (affinity purified)
Histone H3 [K9-Acetyl], pAb

Phosphorylation

Histone H2AX [pSer139], mAb (9F3)
Histone H3 [pSer10], pAb
Histone H3 [pSer28], pAb

Methylation

Methylated Lysine, pAb
Dimethyl-Lysine, pAb
Dimethyl-Lysine, pAb (affinity purified)
Histone H3 [K9-dimethyl], pAb
Histone H3 [K9-trimethyl], mAb (6F12-H4)

DNA Methylation

Dnmt1, mAb
Dnmt3a, mAb
Dnmt3b, mAb
5-Methylcytosine, mAb (10G4)
5-Hydroxymethylcytosine, pAb

Ubiquitinylation

Mono- and circulating DNA, mAb (FK2)

The gold standard antibody for detection of ubiquitinated proteins is also available as HRP, Biotin, Fluorescein conjugates.
Diglycyl Lysine, mAb (GX41)

SUMOylation

SUMO-1, -2 or -3, pAb
SENp6, pAb
Sp100, pAb

You may also be interested in:



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www.enzolifesciences.com

Put our experience to work for you!

Our broad range of scientific expertise and manufacturing capabilities enables us to provide a comprehensive set of solutions for studying epigenetic regulation.