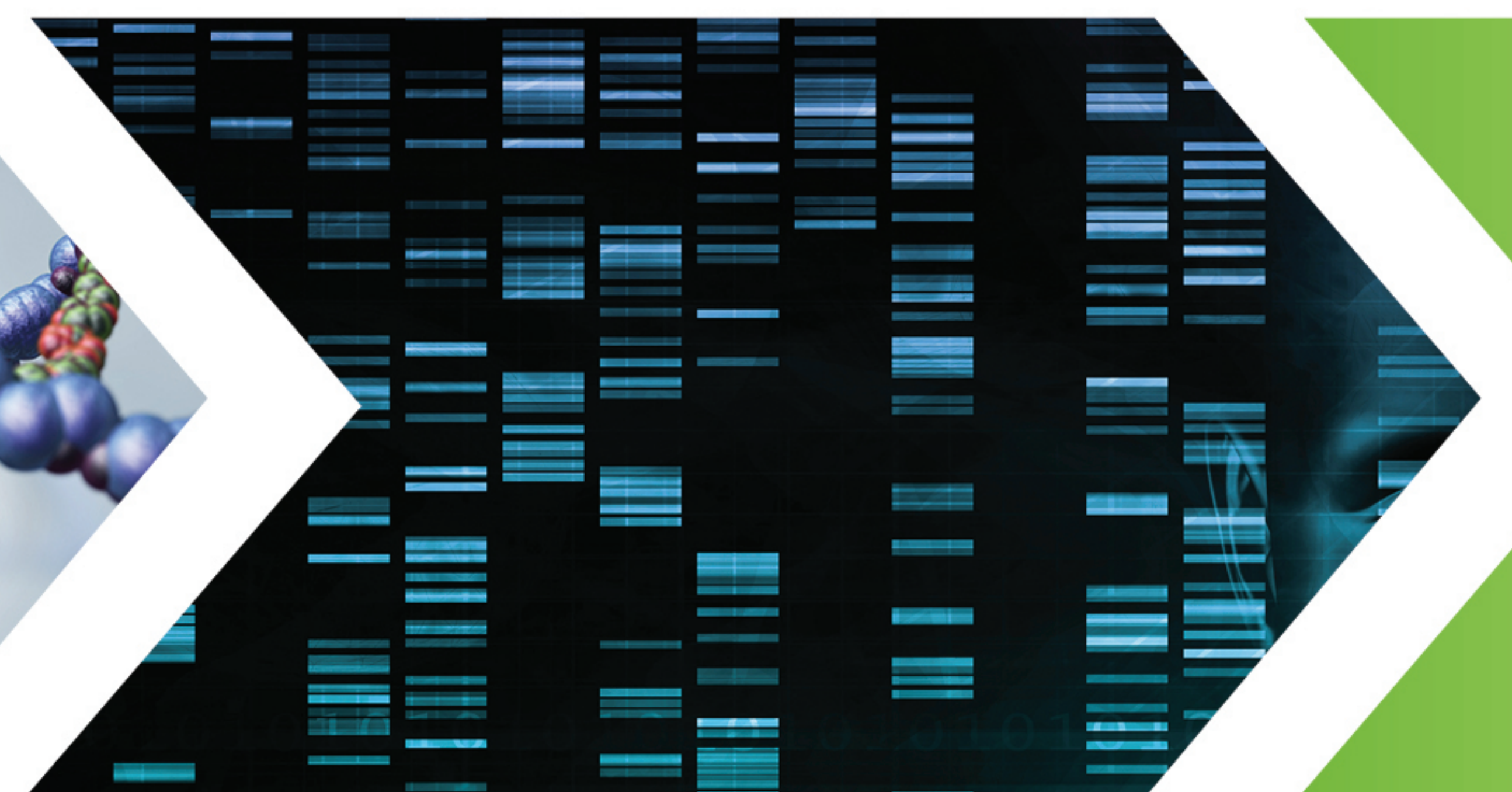
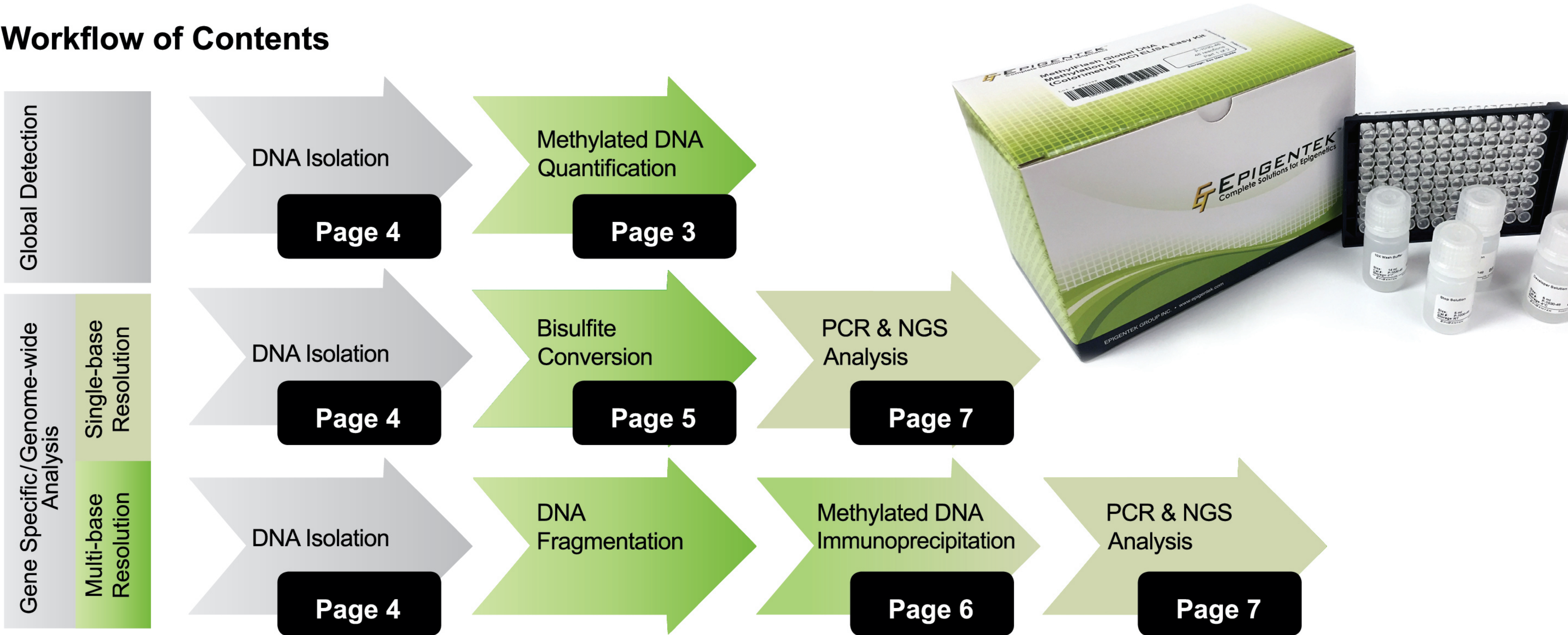


Complete Solutions for
DNA Methylation



DNA Isolation
Methylated DNA Quantification
Bisulfite Conversion
Methylated DNA Immunoprecipitation
PCR & NGS Analysis

Workflow of Contents



We offer the most comprehensive selection of epigenetic research products to cover every step of your experiment workflow, from upstream to downstream. **Learn more at: www.epigentek.com/dna-methylation**

Methylated DNA Quantification Kits

Product Name	MethylFlash Global DNA Methylation (5-mC) ELISA Easy Kit	MethylFlash Global DNA Hydroxymethylation (5-hmC) ELISA Easy Kit	MethylFlash Urine 5-Methylcytosine (5-mC) Quantification	MethylFlash 5-Formylcytosine (5-fC) DNA Quantification
Cat. #	P-1030	P-1032	P-1039	P-1041
Detects	5-methylcytosine	5-hydroxymethylcytosine	5-methylcytosine	5-formylcytosine
Format	strip-well microplate	strip-well microplate	strip-well microplate	strip-well microplate
Starting Material	DNA	DNA	Urine	DNA
Input Range (Optimal Input)	20-200 ng (100 ng)	50-200 ng (100 ng)	0.5-5.0 µl (2 µl)	100-300 ng (300 ng)
Detection Threshold	50 pg of meDNA	10 pg of hMeDNA	30 pg of meDNA	1 pg of fC DNA
Specificity	>1000:1 meDNA:unMeDNA	>1000:1 hMeDNA:unMeDNA	>1000:1 meDNA:unMeDNA	>1000:1 fC DNA:unMeDNA
Time	2 hours	2 hours	4 hours	4 hours

MethylFlash™
Global DNA 5-mC & 5-hmC ELISA Easy Kits
Cat. #P-1030 & Cat. #P-1032

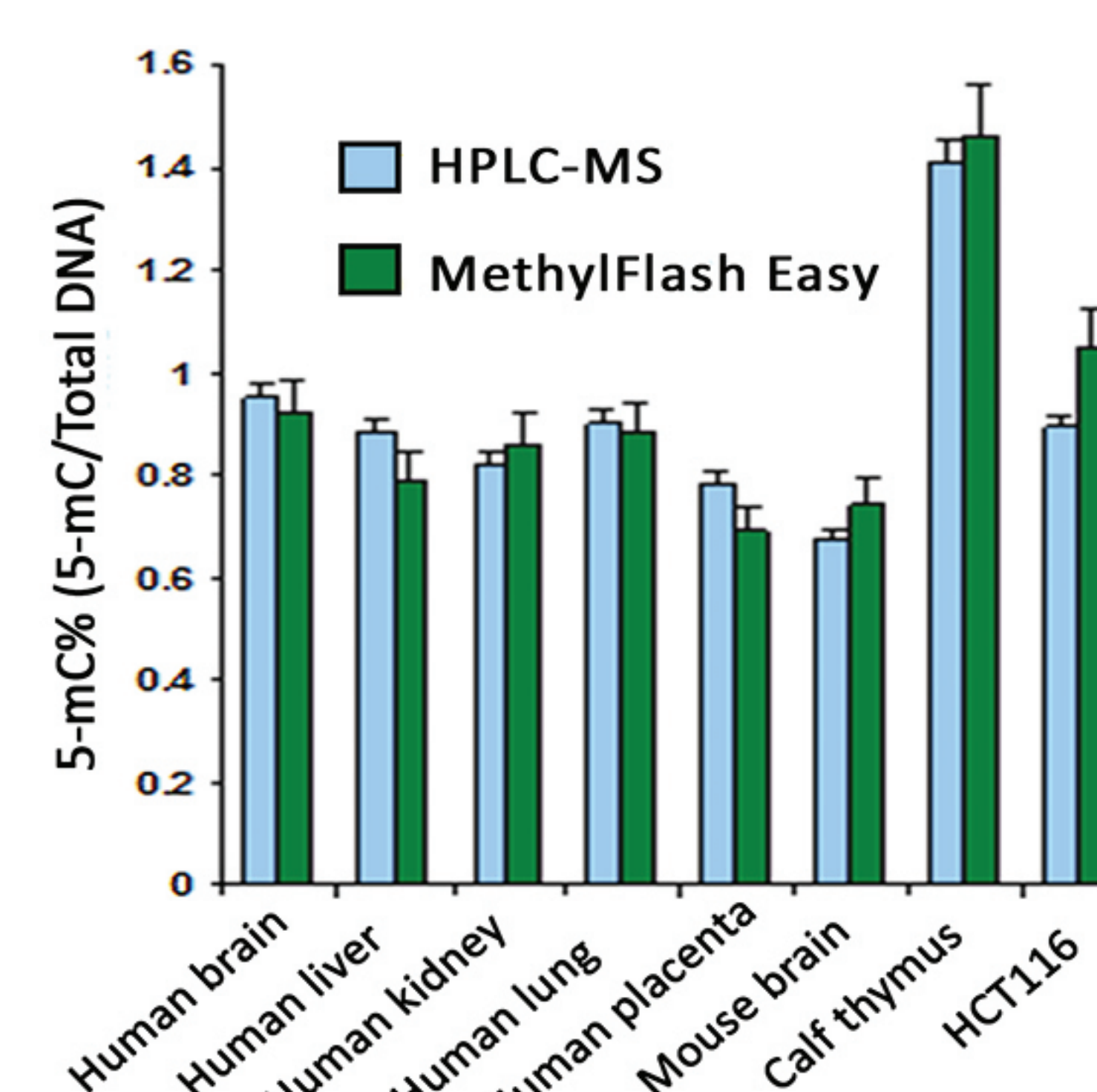
Yes! Results in 2 hours!

MethylFlash Global DNA 5-mC ELISA Easy Kit

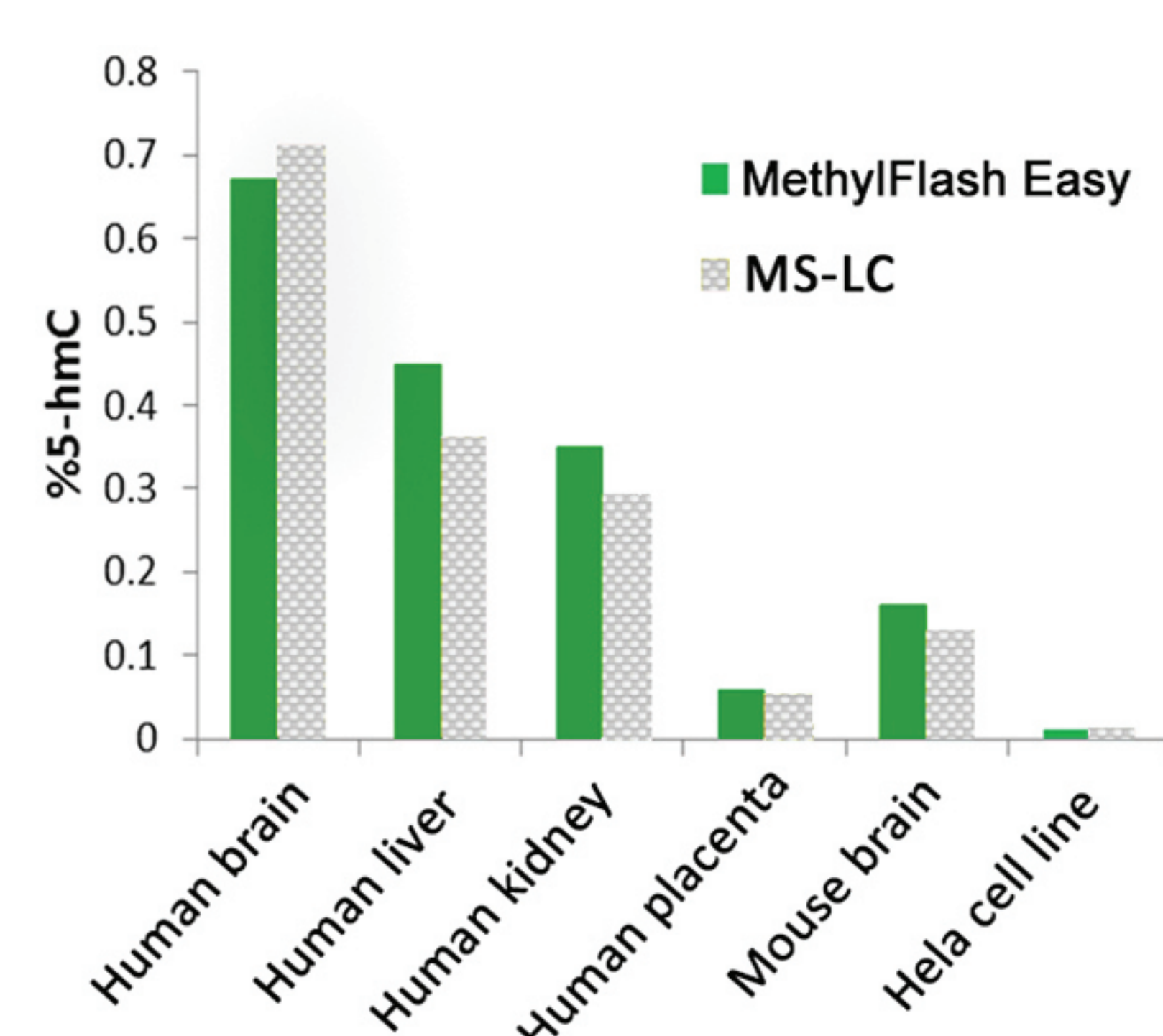
Cat. #P-1030

The **MethylFlash™ Global DNA Methylation (5-mC) ELISA Easy Kit (Colorimetric)** is a complete set of optimized buffers and reagents to colorimetrically quantify global DNA methylation status by specifically measuring levels of 5-methylcytosine (5-mC) in a simplified, “one-step” ELISA-like reaction, all in under 2 hours.

- Easy-to-follow steps - finish within 2 hours
- Extremely low background signals
- Recognizes as low as 0.05% methylated DNA from 100 ng of input DNA
- No cross-reactivity to unmethylated or hydroxymethylated cytosine
- Flexible strip microplate format for manual or high throughput analysis



▶ Accurate quantification of 5-mC content of various DNA samples from different species using the MethylFlash™ Global DNA Methylation (5-mC) ELISA Easy Kit (Cat. #P-1030). The results are closely correlated with those obtained by HPLC-MS.



▶ Accurate quantification of 5-hmC content of various DNA samples from different species with the MethylFlash™ Global DNA Hydroxymethylation (5-hmC) ELISA Easy Kit (Cat. #P-1032). The results are closely correlated with those obtained by MS-LC.

MethylFlash Global DNA 5-hmC ELISA Easy Kit

Cat. #P-1032

The **MethylFlash™ Global DNA Hydroxymethylation (5-hmC) ELISA Easy Kit (Colorimetric)** is a complete set of optimized buffers and reagents to colorimetrically quantify global DNA hydroxymethylation status by specifically measuring levels of 5-hydroxymethylcytosine (5-hmC) in a simplified, “one-step” ELISA-like format, all in under 2 hours.

- Easy-to-follow steps - finish within 2 hours*
- Extremely low background signals
- Recognizes as low as 0.01% hydroxymethylated DNA from 100 ng of input DNA
- No cross-reactivity to unmethylated or methylated cytosine
- Flexible strip microplate format for manual or high throughput analysis

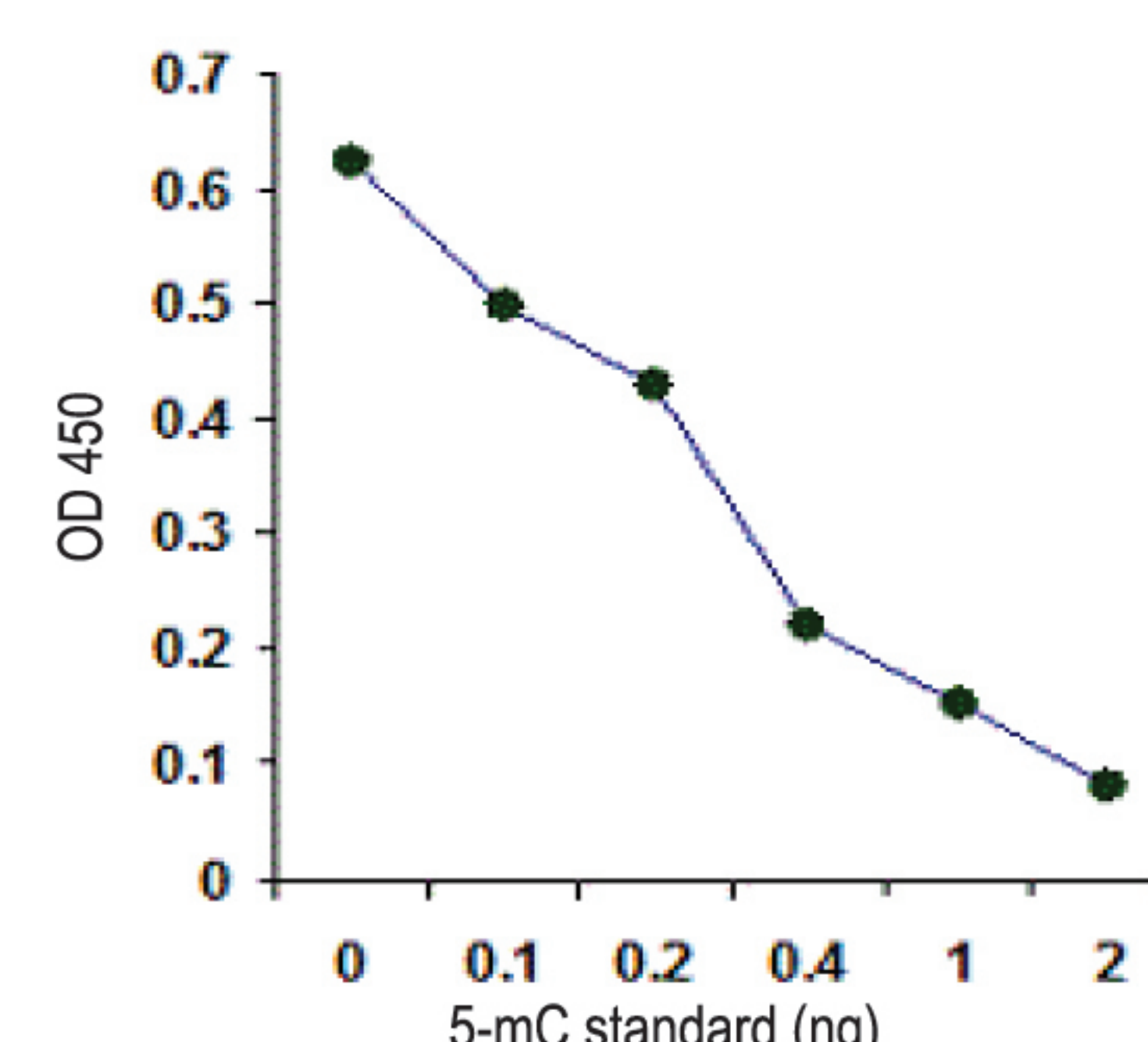
* Based on a single sample assay in duplicate

MethylFlash Urine 5-Methylcytosine Quantification Kit

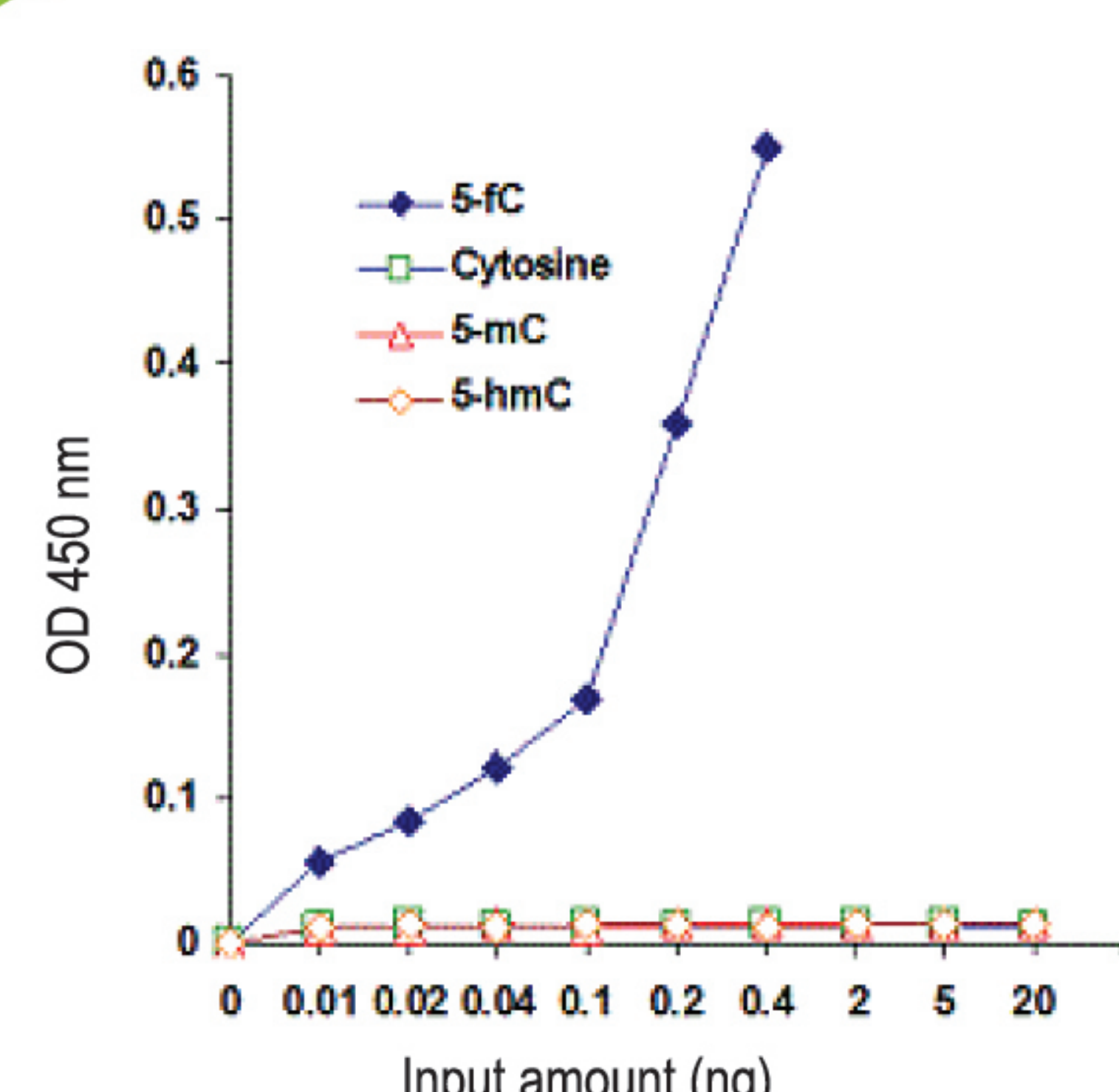
Cat. #P-1039

The **MethylFlash™ Urine 5-Methylcytosine (5-mC) Quantification Kit (Colorimetric)*** is a complete set of optimized buffers and reagents to quantify 5-mC in fresh or frozen urine samples using an inhibitory competitive immunoassay method. It is suitable for detecting total urinary 5-methylcytosine levels resulting from whole body turnover or degradation of methylated DNA/RNA in urine from humans and animals. The easy-to-follow steps take less than 4 hours to complete from start to finish.

*Also available in fluorometric format (Cat. #P-1040)



▶ 5-mC standard was added into the assay wells at different concentrations and then measured with the MethylFlash™ Urine 5-Methylcytosine Quantification Kit (Cat. #P-1039).



▶ Demonstration of high specificity of 5-fC detection achieved by the MethylFlash™ 5-Formylcytosine (5-fC) DNA Quantification Kit (Cat. #P-1041). Synthetic unmethylated DNA, methylated DNA, hydroxymethylated DNA and 5-formylcytosine DNA standard were added into the assay wells at different concentrations and then measured with the kit.

MethylFlash 5-Formylcytosine DNA Quantification Kit

Cat. #P-1041

The **MethylFlash™ 5-Formylcytosine (5-fC) DNA Quantification Kit** is a complete set of optimized buffers and reagents to colorimetrically quantify 5-formylcytosine (5-fC) in an ELISA-like format. It is suitable for use with DNA isolated from any species (mammals, plants, fungi, bacteria, viruses, etc.) in a variety of forms including, but not limited to, cultured cells, fresh and frozen tissues, paraffin-embedded tissues, and body fluid samples. Fast and easy, the procedure can be completed within 3 hours and 45 minutes.

DNA ISOLATION

FitAmp General Tissue Section DNA Isolation Kit

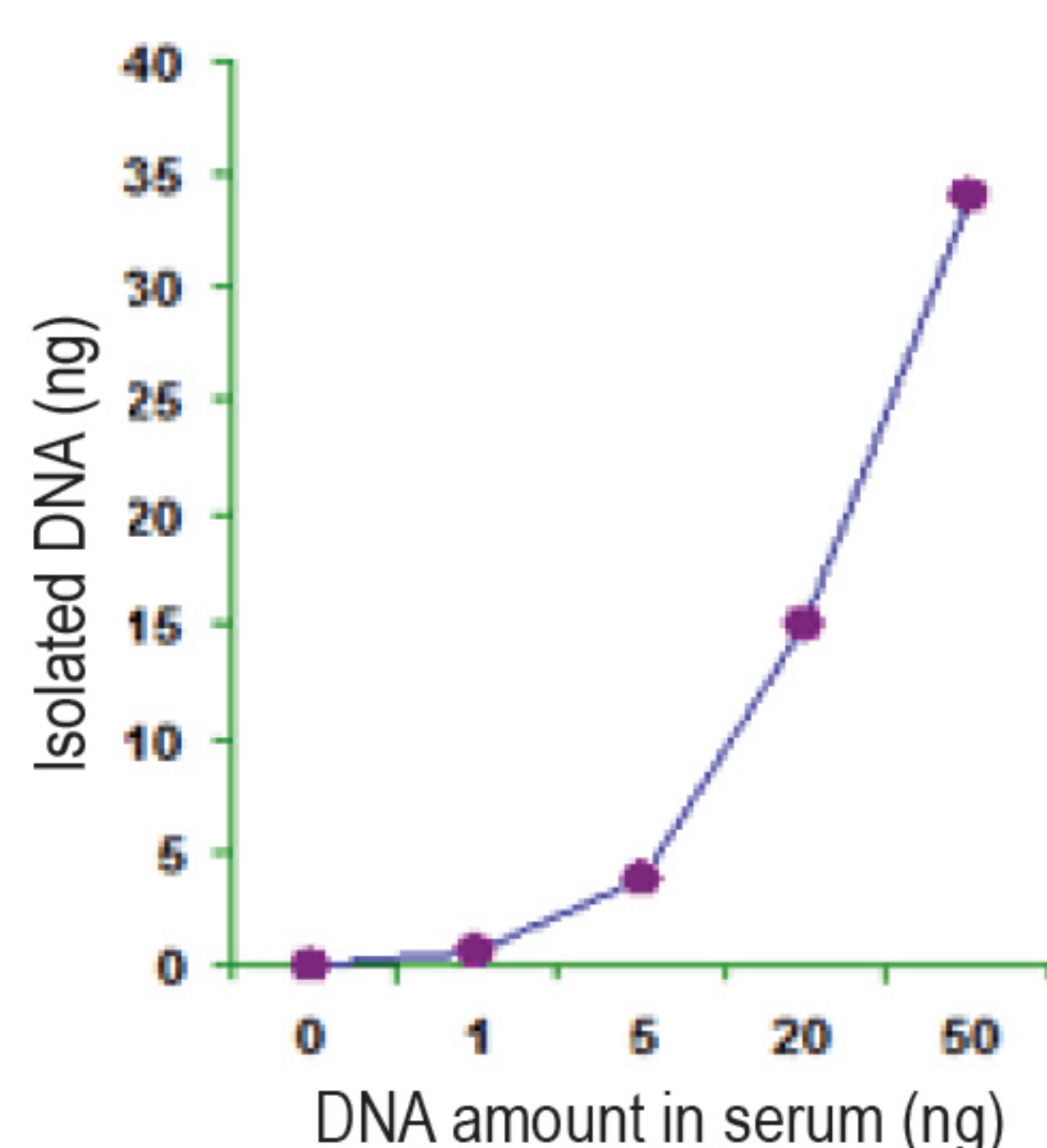
Cat. #P-1003

The **FitAmp™ General Tissue Section DNA Isolation Kit** is a complete set of essential components which enables the experimenter to efficiently isolate DNA in any targeted microscopic tissue area on a slide. The entire procedure can be completed within 2 hours, depending on sample types, with consistent isolation conditions and produces far superior results than any competitor kits.

FitAmp Plasma/Serum DNA Isolation Kit

Cat. #P-1004

The **FitAmp™ Plasma/Serum DNA Isolation Kit** is a complete set of essential components which enables the experimenter to efficiently isolate DNA from plasma, serum, and body fluids within 12 minutes with consistent results.

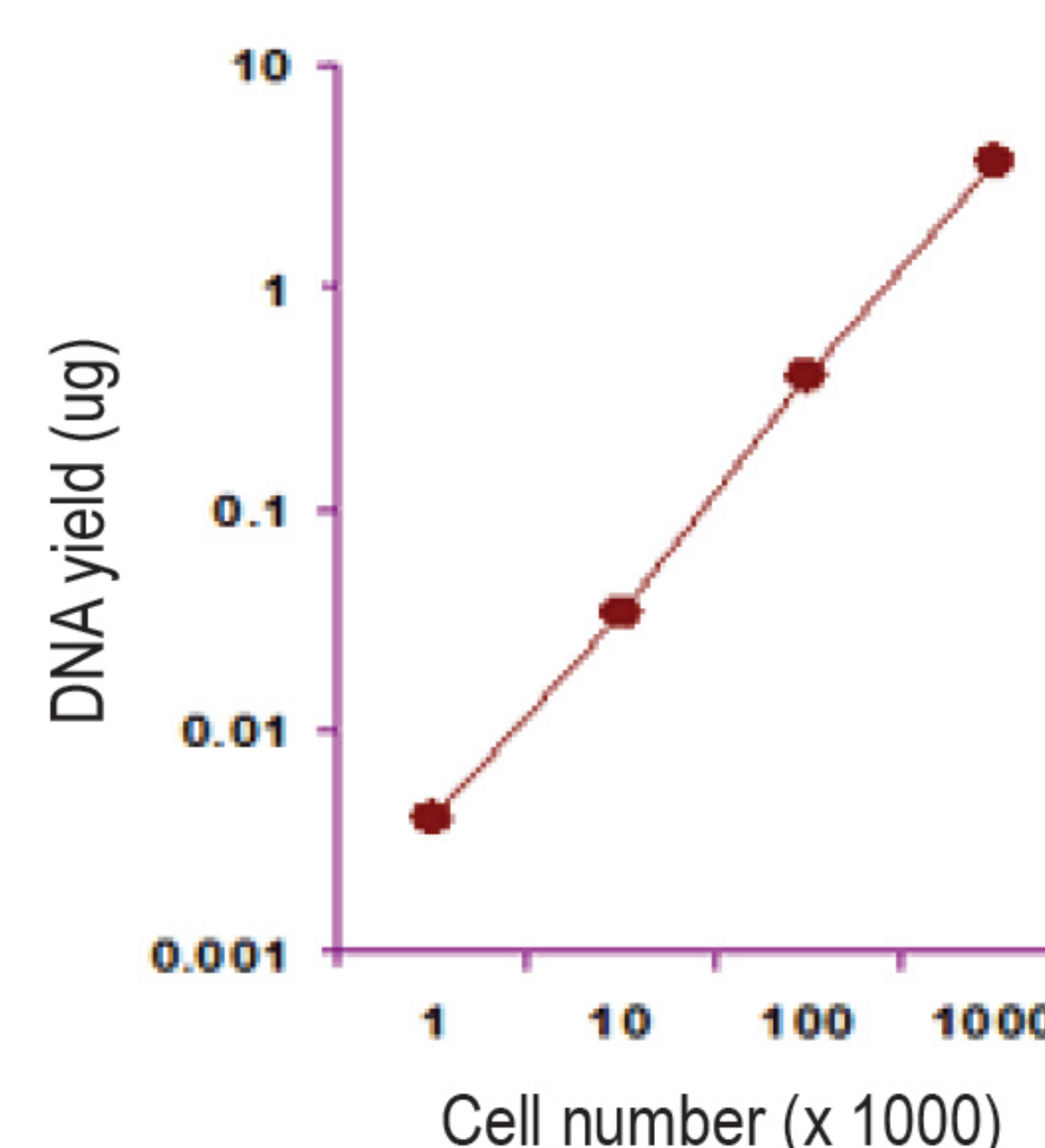


▶ The **FitAmp™ Plasma/Serum DNA Isolation Kit** (Cat. #P-1004) simply applies our proprietary DNA isolation buffer to plasma or serum. After treatment with DNA digestion buffer, the DNA is easily recovered in 8-20 µl by our specially designed F-Spin Column. DNA is ready for downstream application.

FitAmp Blood and Cultured Cell DNA Extraction Kit

Cat. #P-1018

The **FitAmp™ Blood and Cultured Cell DNA Extraction Kit** is a complete set of essential components which enables the experimenter to efficiently isolate DNA from blood leukocytes and cultured mammalian cells within 20 minutes with consistent isolation conditions.



▶ Genomic DNA was isolated from MCF-7 cell line using the **FitAmp™ Blood and Cultured Cell DNA Extraction Kit** (Cat. #P-1018). The isolated DNA yield was quantified by real time PCR.

FitAmp Urine DNA Isolation Kit

Cat. #P-1017

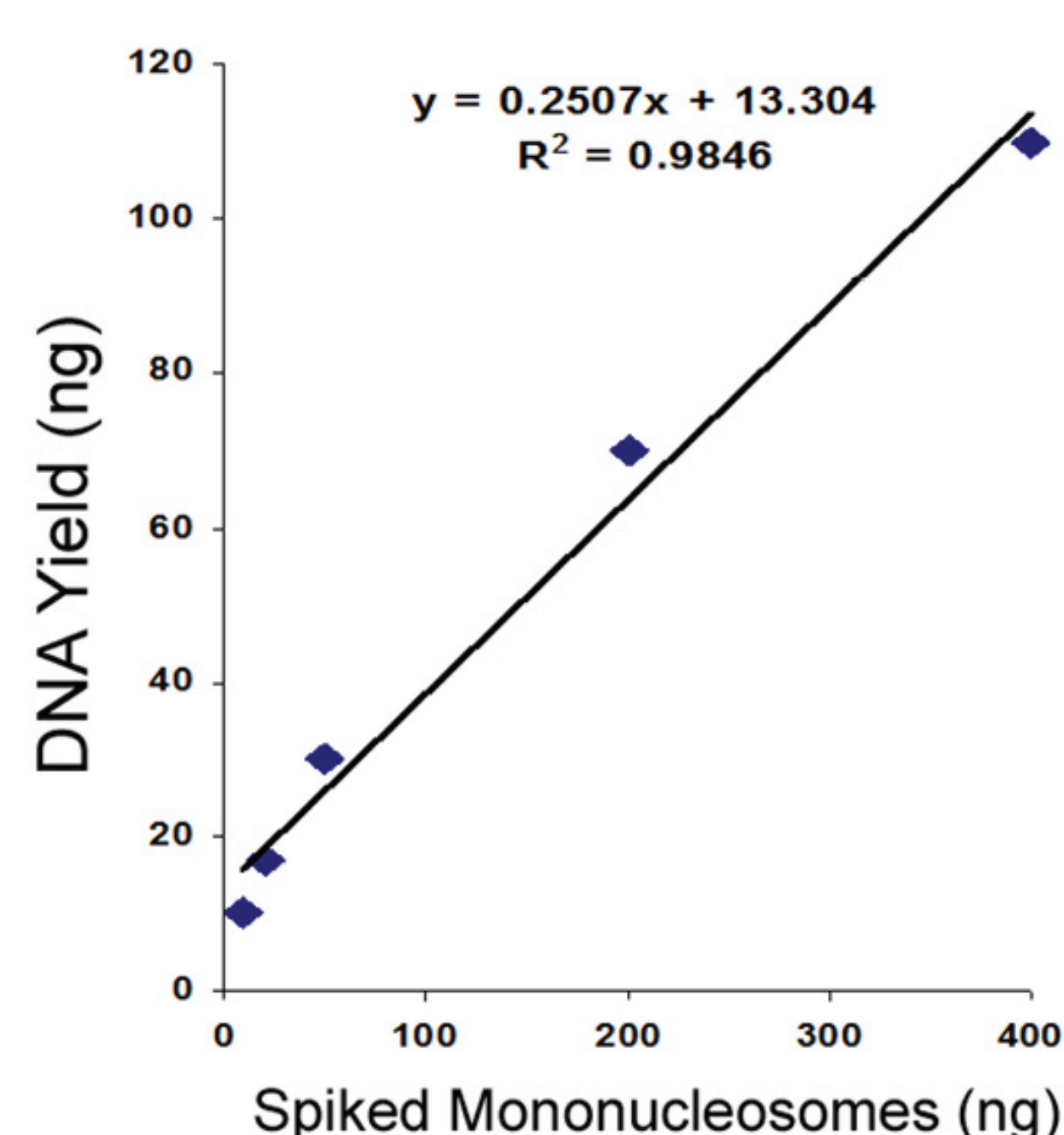
The **FitAmp™ Urine DNA Isolation Kit** is a complete set of essential components which enables the experimenter to efficiently isolate DNA from urine within 20 minutes with consistent isolation conditions.

EpiQuik Circulating Cell-Free DNA Isolation Easy Kit

Cat. #P-1065

Our **EpiQuik Circulating Cell-Free DNA (cfDNA) Isolation Easy Kit** utilizes magnetic beads based size-fractionation technology to isolate circulating cell-free DNA (cfDNA) from plasma or serum samples in a simple and fast manner. The isolated cfDNA can be directly used for real time-PCR and DNA library preparation suitable for next generation sequencing.

- Fast, straightforward 1-hour procedure
- DNA is ready for both qPCR and NGS DNA library preparation
- Efficient removal of proteins, salts, nucleases, PCR inhibiting substances, and other impurities like polysaccharides, polyphenols and lipids
- High recovery of >80% of input mononucleosomal DNA, even with starting material as low as 0.2 ml



▶ High recovery of cfDNA: Different amounts of HeLa mononucleosomes were spiked into 0.5 ml of plasma then isolated using the **EpiQuik™ Circulating Cell-Free DNA (cfDNA) Isolation Easy Kit** (Cat. #P-1065). The isolated DNA was fluorescently quantified.

Magnetic Bead-Based Purification of Small Fragment Circulating cfDNA from Plasma or Serum



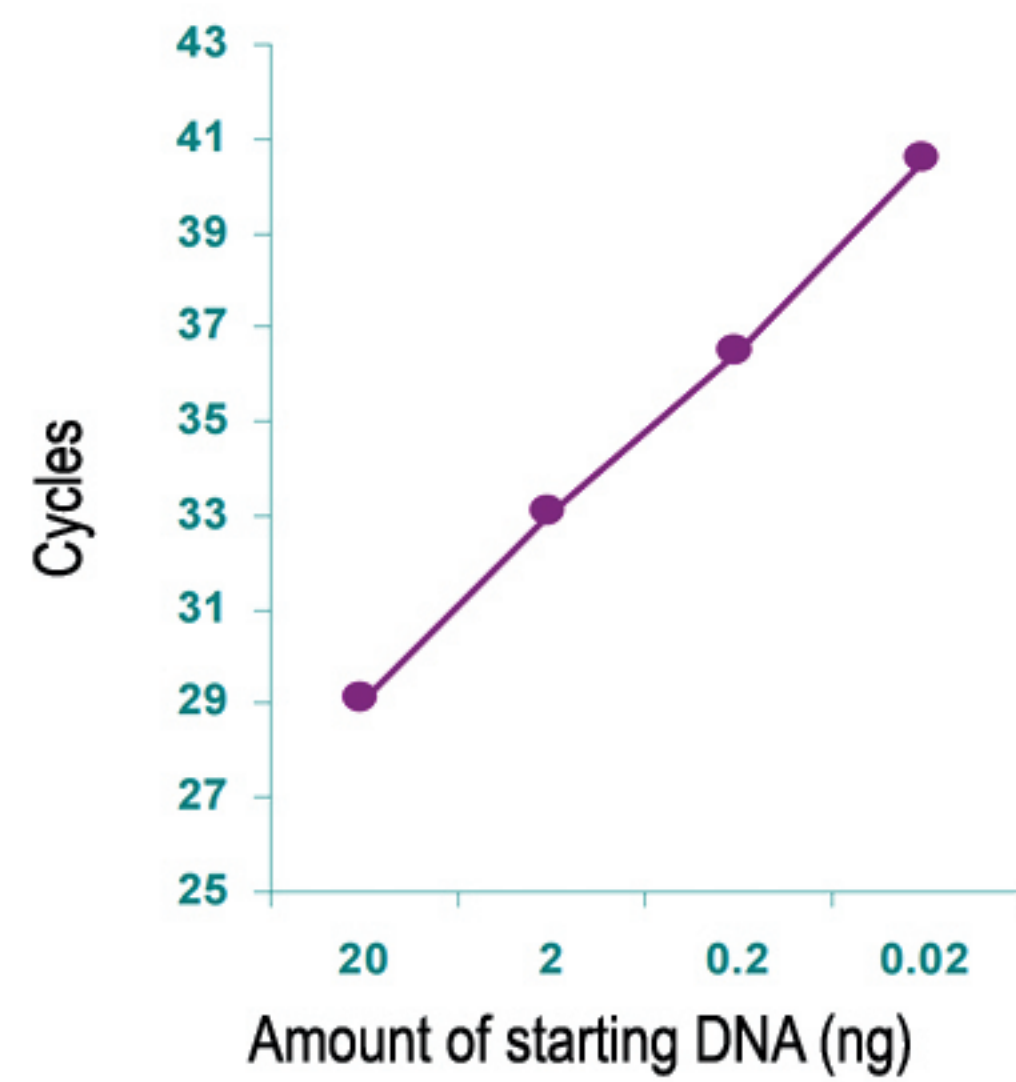
BISULFITE CONVERSION

Product Name	Methylamp DNA Modification Kit	BisulFlash DNA Bisulfite Conversion Easy Kit	BisulFlash DNA Modification Kit	Methylamp Whole Cell Bisulfite Modification Kit	BisulFlash DNA Bisulfite Conversion Mag-96 Kit
Cat. #	P-1001	P-1054	P-1026	P-1016	P-1050
Codename	"Classic"	"Easy"	"Fast"	"Direct"	"High Throughput"
Purpose	Chemical-based DNA bisulfite conversion	Simplified heat-based DNA bisulfite conversion	Fast heat-based DNA bisulfite conversion	Directly convert from cells, tissues, saliva, urine, or blood	Magnetic bead-based 96-well format bisulfite conversion
Key Points	• Illumina workflow compatible • Most robust and reliable • Ideal for bisulfite sequencing, NGS, and various MSP	• Illumina workflow compatible • Denaturation by thermalcycler • Liquid bisulfite conversion reagent	• Extremely fast • Ideal for real-time MSP • Optional sequencing protocol	• Eliminates separate DNA isolation step • Ideal for samples containing low quantities of DNA	• Illumina workflow compatible • Streamlined high throughput process • Designed for large scale or automated conversions
Format	Spin Column	Spin Column	Spin Column	Spin Column	96-Well Plate
Starting Material	DNA	DNA	DNA	cells, tissue, blood	DNA
Lowest Input Amount	50 pg	100 pg	200 pg	100 cells, 1 µl blood	< 10 ng
Conversion Efficiency	99.9%	99.9%	99.9%	99.9%	99.9%
Recovery	>75%	>75%	>75%	>85%	>85%
Time	< 2 hours	1 hour	30 minutes	< 3 hours	< 1 hour 20 minutes

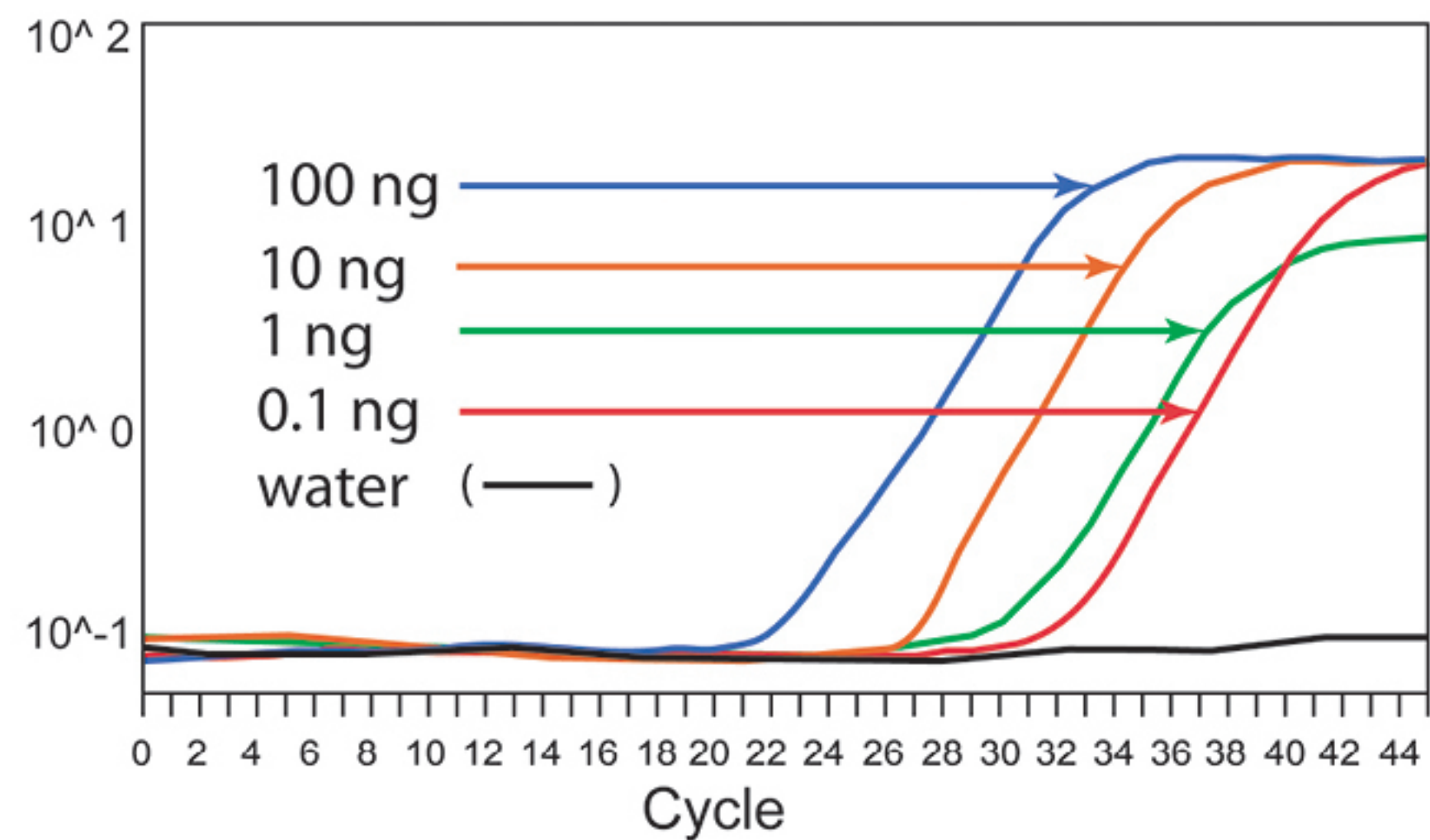
Methylamp DNA Modification Kit

Cat. #P-1001

The **Methylamp™ DNA Modification Kit** is a complete set of optimized reagents designed to convert DNA so that methylated cytosines can be detected at base resolution in downstream applications, including MSP and bisulfite sequencing. The kit, which requires as little as 50 pg of input DNA, can be finished in under 2 hours and is highly compatible with Illumina sequencing workflows.



◀ Different amounts of DNA isolated from a serum sample were chemically modified using the Methylamp™ DNA Modification Kit (Cat. #P-1001). Real time PCR was then performed using a pair of primers (β-actin) and a probe designed to amplify converted DNA.



◀ Different amounts of human genomic DNA were converted using the BisulFlash DNA Bisulfite Conversion Mag-96 Kit (Cat. #P-1050).

BisulFlash DNA Bisulfite Conversion Mag-96 Kit & Easy Kit

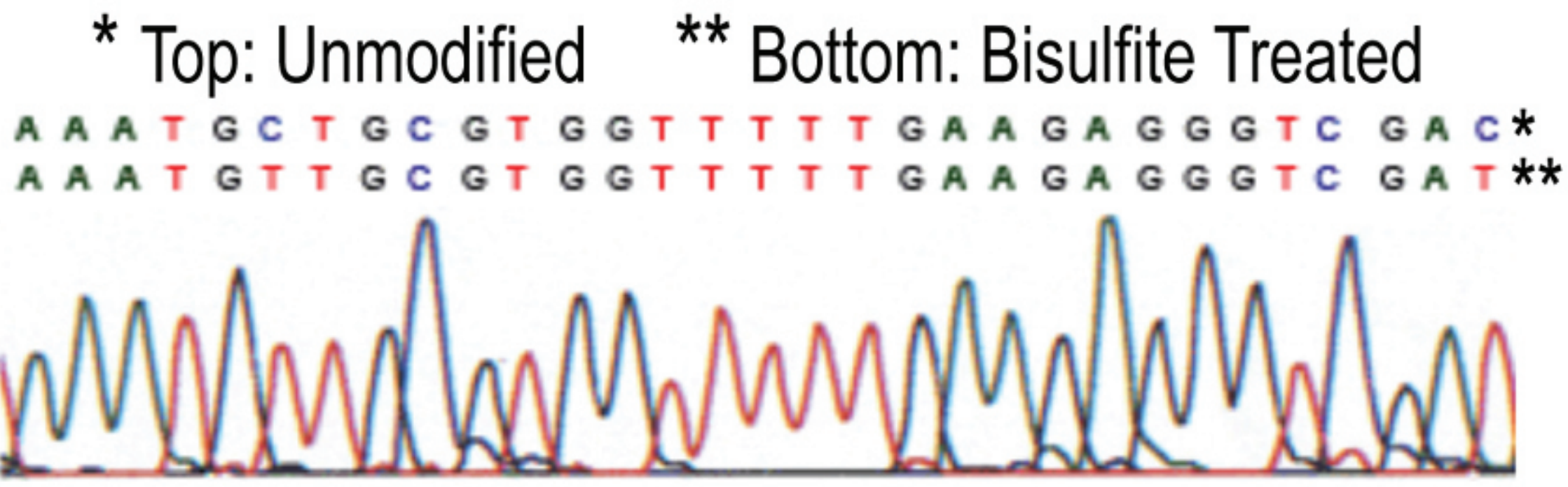
Cat. #P-1050 & Cat. #P-1054

Get fast bisulfite treatment of DNA via magnetic beads and microplates using our **BisulFlash™ DNA Bisulfite Conversion Mag-96 Kit** (Cat. #P-1050). Or, use our spin column format **BisulFlash™ DNA Bisulfite Conversion Easy Kit** (Cat. #P-1054) which comes with a unique ready-to-use liquid conversion reagent to generate bisulfite-converted DNA. Both BisulFlash™ kits can be finished in less than 1 hour and 20 minutes and completely convert unmethylated cytosine into uracil (>99.9%).

BisulFlash DNA Modification Kit

Cat. #P-1026

The **BisulFlash™ DNA Modification Kit** is a complete set of optimized buffers and reagents for ultra-fast DNA bisulfite conversion. DNA denaturation and bisulfite conversion are processed simultaneously, reducing the entire procedure to only 30 minutes. Each reaction with the BisulFlash™ kit can use 0.2 ng – 1 µg of DNA. Furthermore, it prevents more than 90% of DNA loss, completely converting unmethylated cytosine into uracil (>99.9%).



▲ 50 ng of genomic DNA methylated in all CpG sites by DNA methylases was treated with the BisulFlash™ DNA Modification Kit (Cat. #P-1026). Converted DNA was amplified by real time qPCR using primers for multiple promoters containing numerous CpG sites and then directly sequenced.

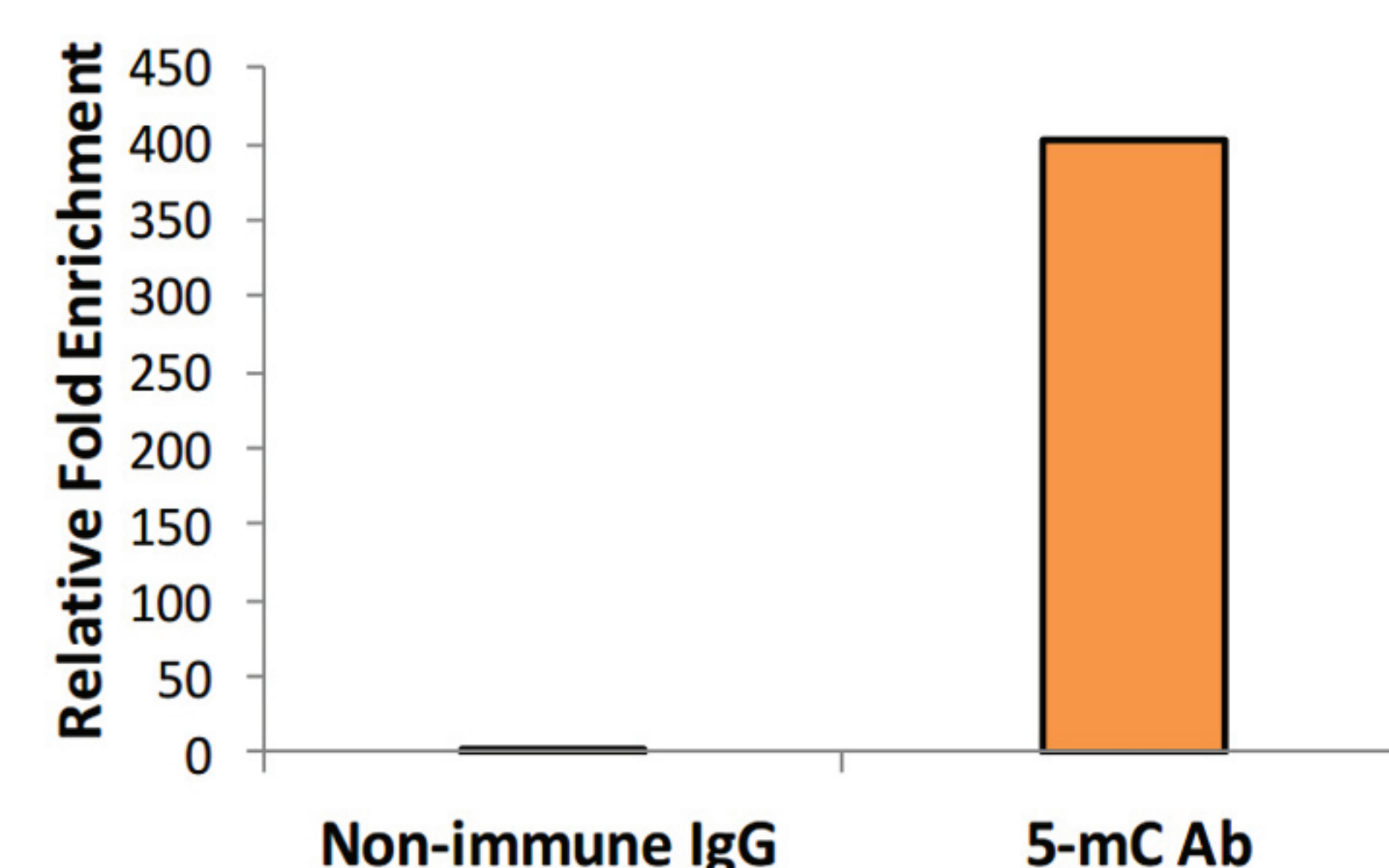
METHYLATED DNA IMMUNOPRECIPITATION

EpiQuik MeDIP Ultra Kit

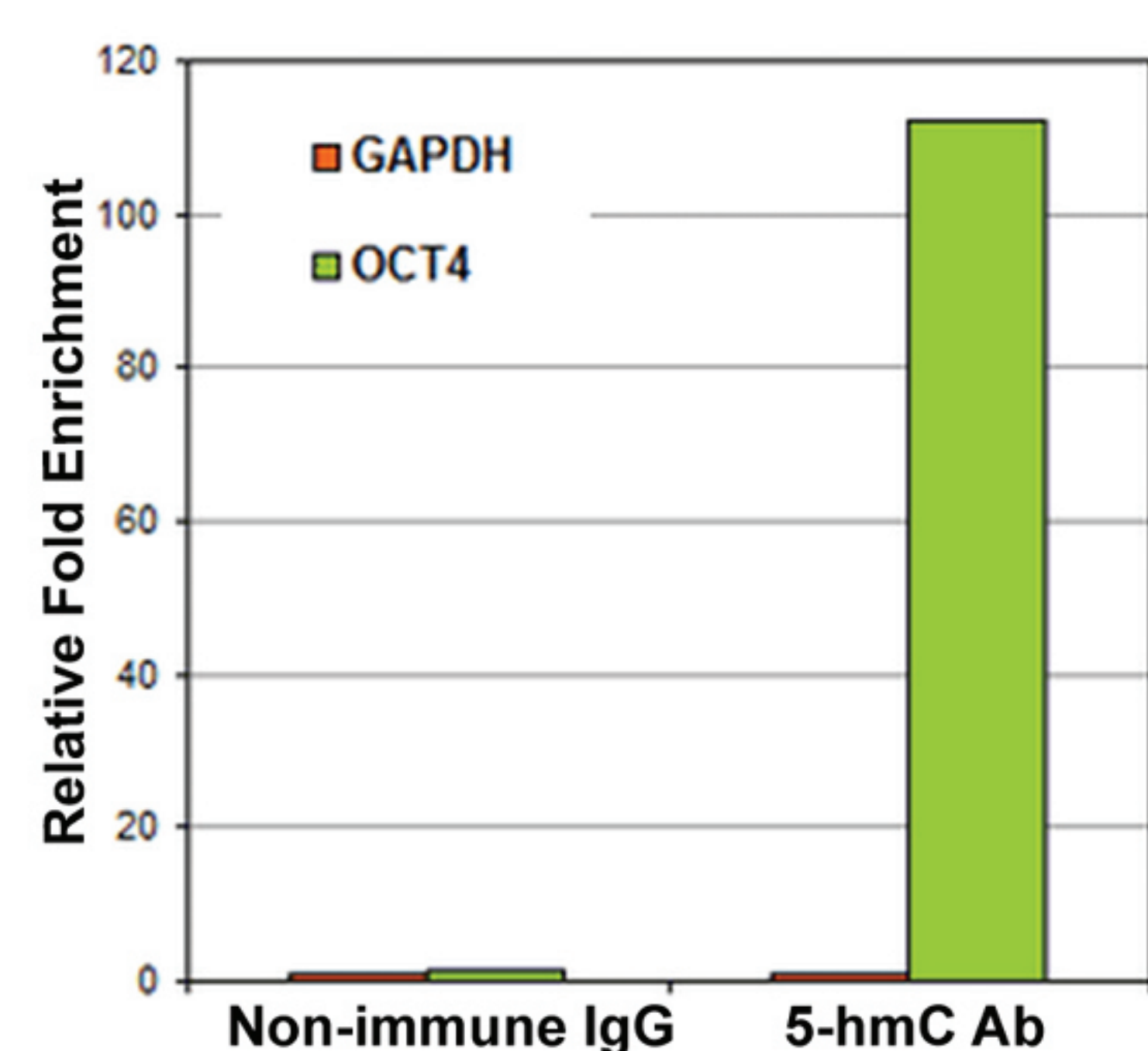
Cat. #P-1052

The **EpiQuik™ MeDIP Ultra Kit** is a complete set of optimized reagents to enrich and capture methylated DNA fragments in a convenient microplate-based format. A further refinement of the predecessor Methylamp™ MeDIP Kit, it significantly improves sensitivity and specificity while reducing background signals, making it extremely suitable for MeDIP-Seq.

- Extremely fast and convenient 3-hour procedure
- Optimized buffers to minimize background
- Highly specific 5-mC Ab included for >99% specificity
- Flexible strip-well microplate format for manual or high throughput analysis
- DNA input requirement as low as 50 ng
- High reproducibility using pre-optimized MeDIP conditions
- Compatible with various downstream analysis workflows



▲ Sensitive detection of gene-specific methylation by MeDIP-qPCR: Fully methylated HeLa DNA (500 ng) was fragmented to 100-500 bps using an EpiSonic™ 1100. The fragmented DNA was used for methylated DNA enrichment with the EpiQuik™ MeDIP Kit (Cat. #P-1052). Eluted DNA was analyzed by real time PCR with primers specific for MLH1 sequences in the promoter regions. Results show the specificity of the 5-mC antibody and low background for non-immune IgG. Fold-enrichment represents the amount of recovered DNA and was calculated based on the real time PCR Ct value.



▲ Sensitive detection of gene-specific hydroxymethylation by hMeDIP-PCR: Human brain DNA (500 ng) was fragmented to 200-600 bps with an EpiSonic™ sonicator. The fragmented DNA was used for hydroxymethylated DNA enrichment with the EpiQuik™ hMeDIP Kit (Cat. #P-1038). Eluted DNA was analyzed by real time

PCR with primers specifically for OCT4 or GAPDH sequences in the promoter regions. Results show that the promoter region is hydroxymethylated in OCT4 but not in GAPDH. Fold-enrichment represents the amount of recovered DNA and was calculated based on the Ct value.

EpiQuik hMeDIP Kit

Cat. #P-1038

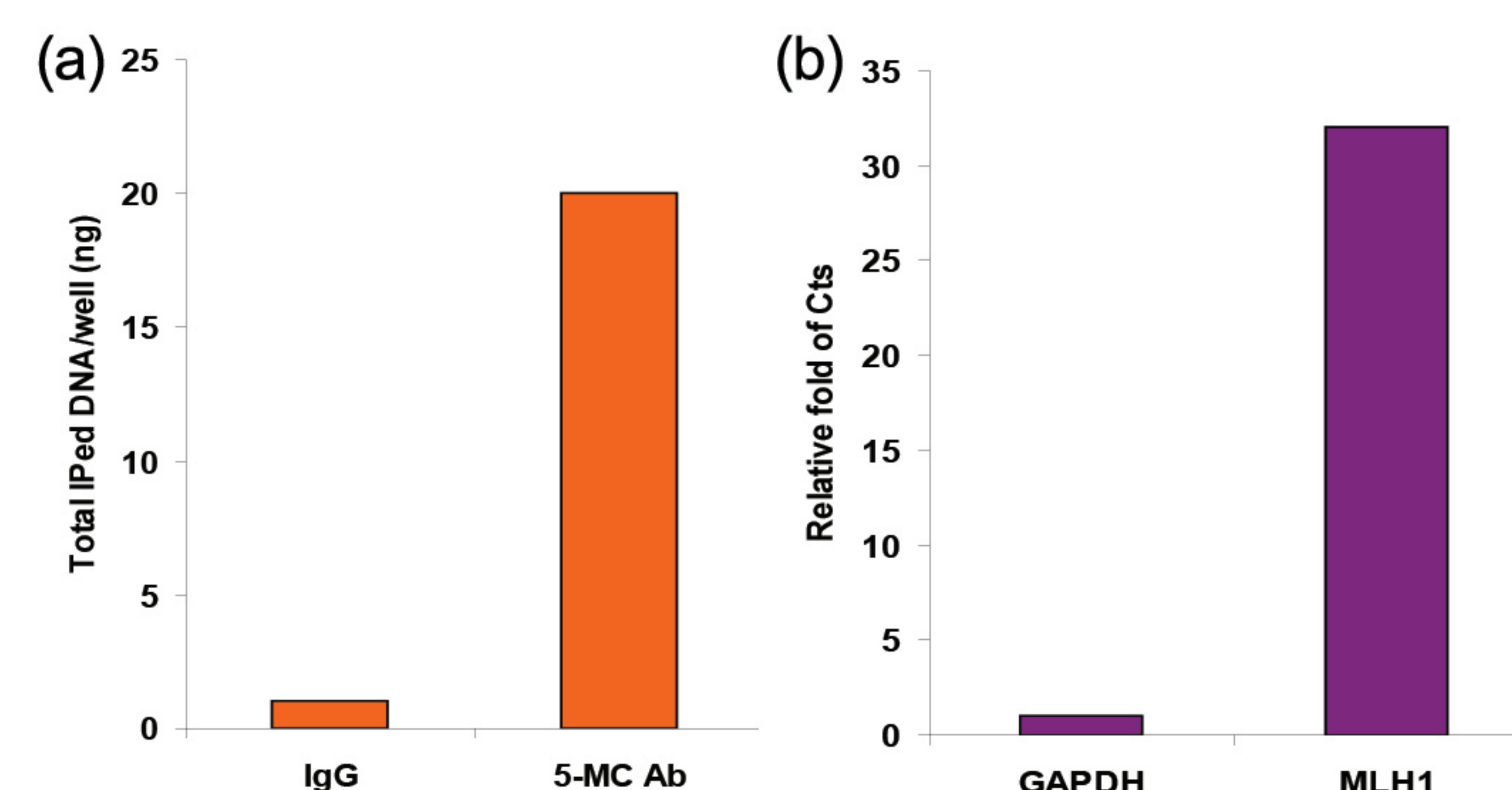
The **EpiQuik™ Hydroxymethylated DNA Immunoprecipitation (hMeDIP) Kit** is a complete set of optimized buffers and reagents to carry out a successful hMeDIP procedure for the selective enrichment of DNA fragments containing 5-hydroxymethylcytosine (5-hmC) in a high throughput format using DNA isolated from any species. The hydroxymethylated DNA that is enriched with this kit can be used in various downstream applications including PCR (hMeDIP-PCR) and microarrays (hMeDIP-chip) for investigating gene-specific hydroxymethylation in cells or tissues. With an extremely fast and convenient protocol, the total procedure time (from input sample to ready-to-use hydroxymethylated DNA) takes less than 3 hours.

Methylamp and EpiQuik MeDIP Kits

Cat. #P-1015, Cat. #P-2019 & Cat. #P-2020

The **Methylamp™ Methylated DNA Capture (MeDIP) Kit** (Cat. #P-1015) starting from DNA, **EpiQuik™ Methylated DNA Immunoprecipitation Kit** (Cat. #P-2019) starting from cells, and **EpiQuik™ Tissue Methylated DNA Immunoprecipitation Kit** (Cat. #P-2020) starting from tissue, each come as a complete set of optimized buffers and reagents that allows the experimenter to enrich and capture methylated DNA in a convenient 96-well plate format. The entire procedure can be finished in 3 to 4 hours, producing enriched methylated DNA suitable for standardized DNA detection methods including PCR, microarrays, and sequencing.

- Highly efficient enrichment of methylated DNA
- Extremely fast procedure, which can be finished in 3 to 4 hours
- Flexible strip microplate format for manual or high throughput analysis
- Columns for DNA purification are included, saving time and reducing labor
- Compatible with all DNA amplification-based approaches
- Simple, reliable, and consistent assay conditions

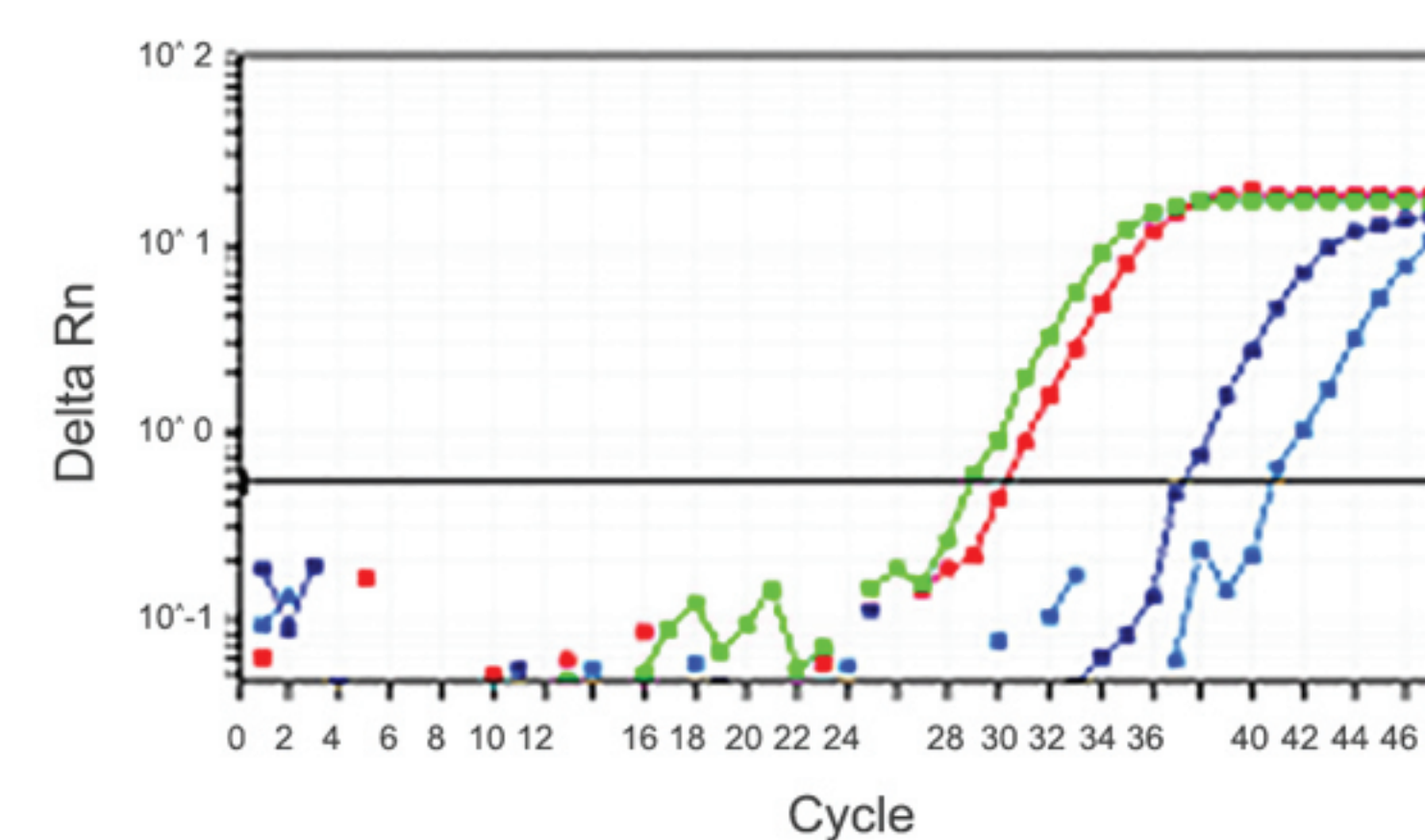


▲ Enrichment of methylated DNA using the Methylamp™ Methylated DNA Capture Kit (Cat. #P-1015). 0.5 µg of DNA isolated from MCF-7 cells was added into the wells, followed by: (a) methylated DNA captured by a 5-mC antibody; (b) captured methylated DNA used for analyzing methylation levels of GAPDH and MLH1 promoters with the use of primers and probes specific to GAPDH and MLH1 promoters, respectively.

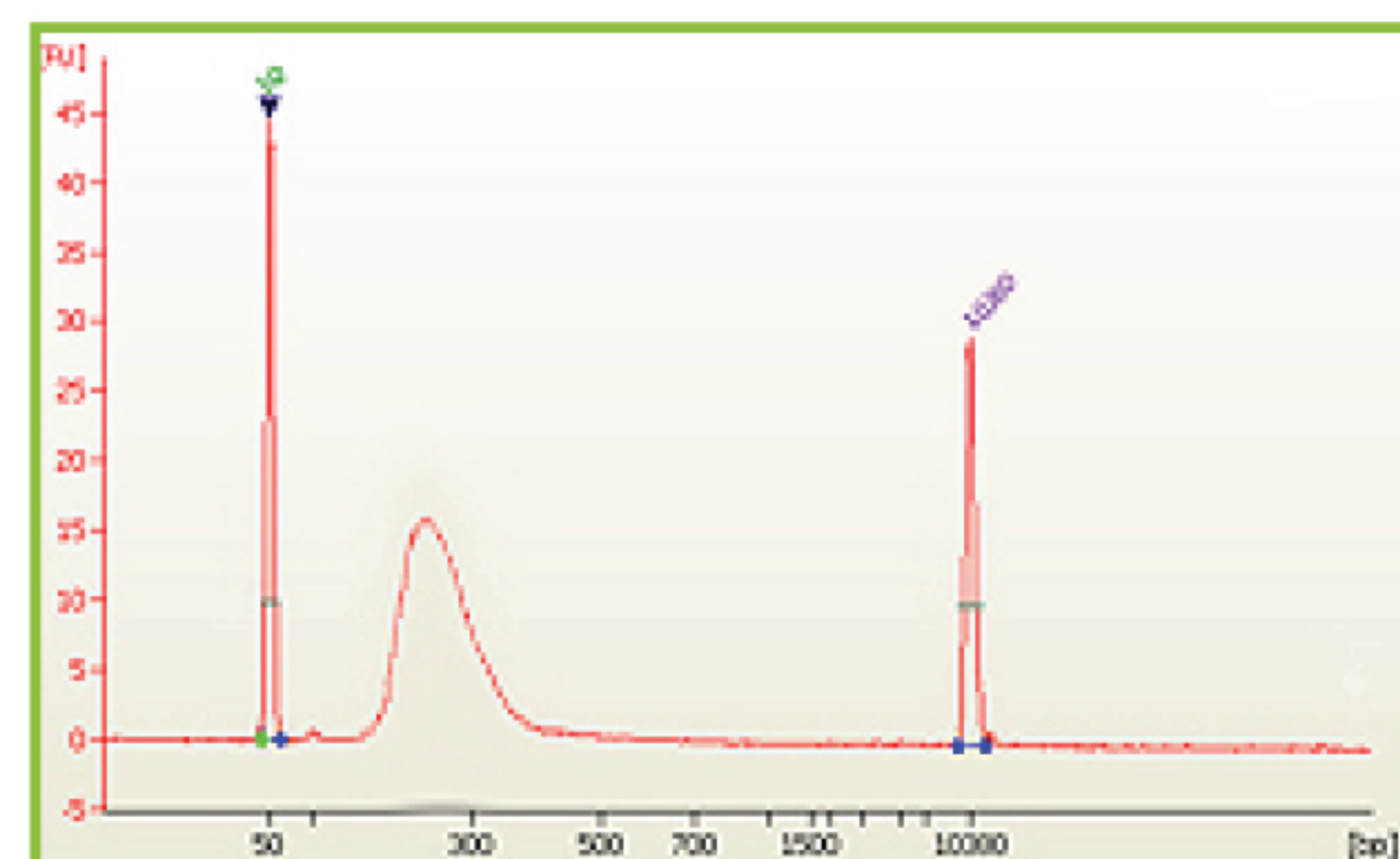
Methylamp MS-qPCR Fast Kit

Cat. #P-1028

The **Methylamp™ MS-qPCR Fast Kit** is a complete set of essential components, which enables the experimenter to perform fast, specific, sensitive, and reproducible methylation-specific quantitative PCR. This kit is suitable for MS-qPCR in a fast format using very minute amounts of DNA. The novel hot start DNA polymerase contained in this kit can reduce the overall time required for MS-qPCR from approximately 2.5 hours to less than 70 minutes.



MS-PCR amplification of a gene region in euchromatin with internal control primers. Successful GpC methylation and bisulfite conversion were carried out using the EpiQuik™ Chromatin Accessibility & Methylome Sequencing (CAME-Seq) Kit (Cat. #P-1048) and PCR was performed using Methylamp™ MS-qPCR Fast Kit (Cat. #P-1028).



Size distribution of library fragments as demonstrated by a post-bisulfite DNA library constructed using the EpiNext™ Post-Bisulfite DNA Library Preparation Kit (Cat. #P-1055) from 10 ng of input DNA.

EpiNext Post-Bisulfite DNA Library Preparation Kit

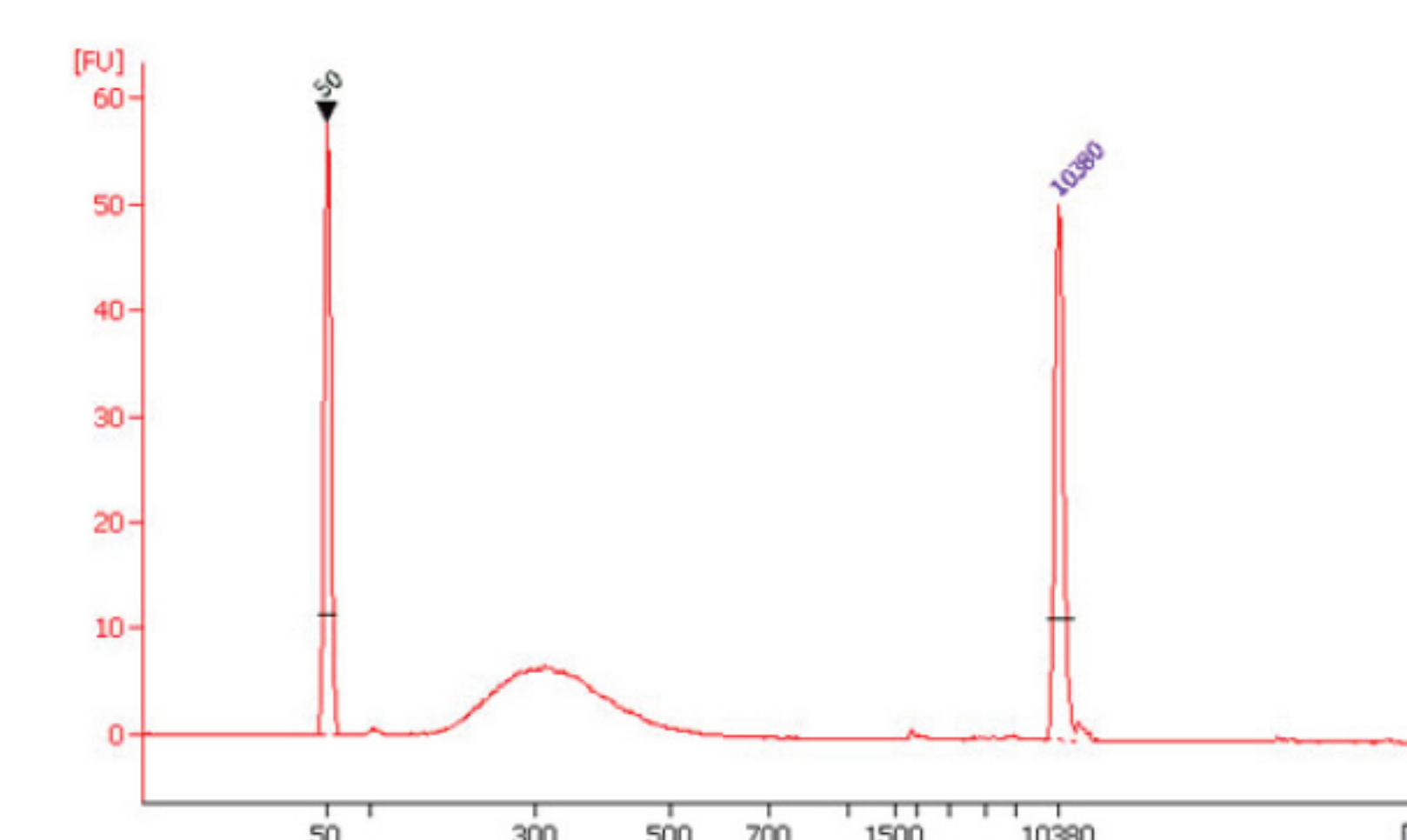
Cat. #P-1055

The **EpiNext™ Post-Bisulfite DNA Library Preparation Kit (Illumina)** is a complete set of optimized reagents to prepare a DNA library -- *after* a successful bisulfite conversion -- for various Illumina platform-based bisulfite sequencing assays. This allows for reduced fragment loss and minimized selection bias from just 1 ng of pre-bisulfite treated input DNA. The entire procedure, from input starting material to library amplification, takes only 5 hours.

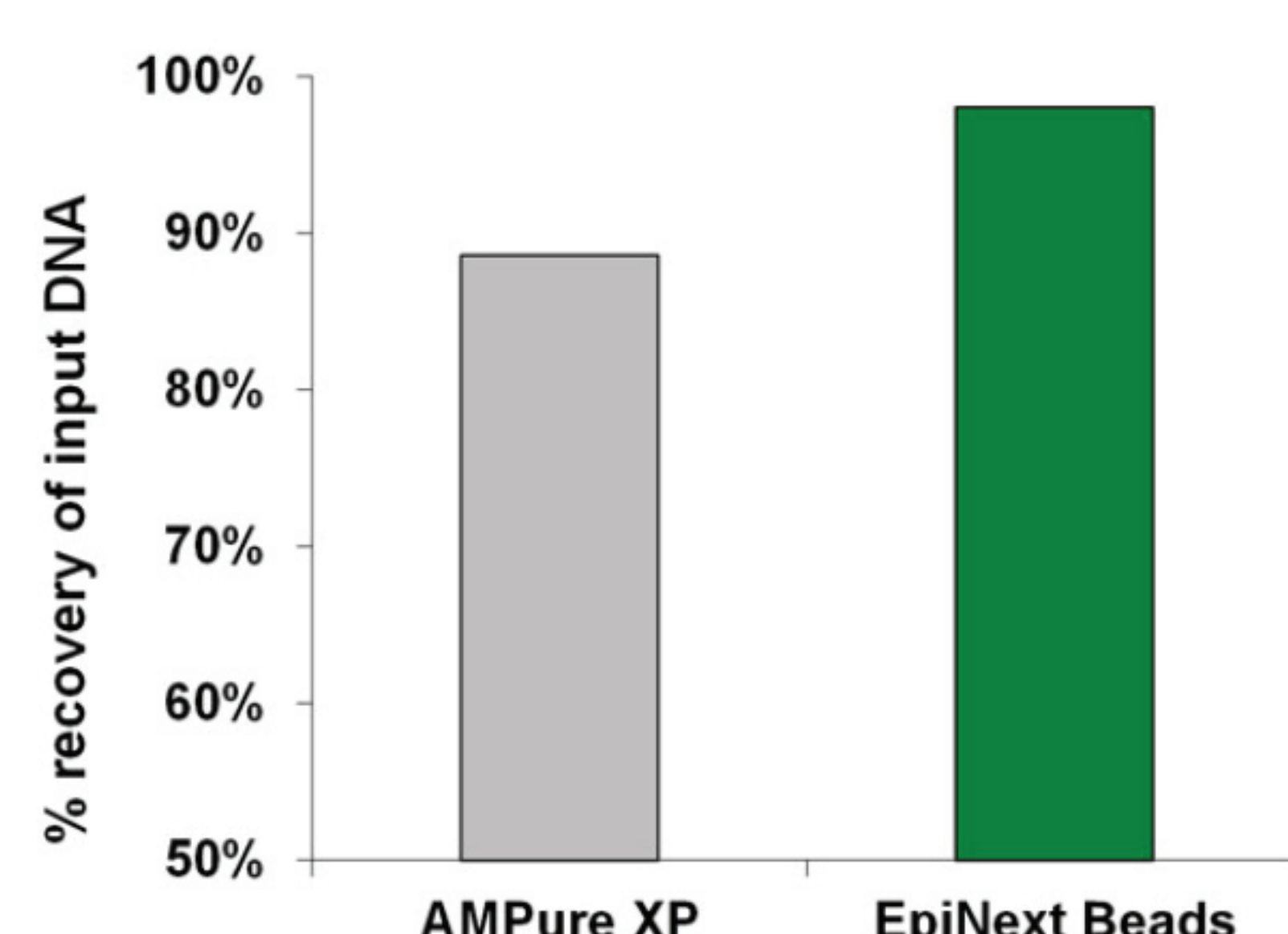
EpiNext High-Sensitivity DNA Library Preparation Kit

Cat. #P-1053

The **EpiNext™ High-Sensitivity DNA Library Preparation Kit (Illumina)** is a complete set of optimized reagents required at each step of the workflow to carry out a successful DNA library preparation. This kit is suitable for preparing a DNA library from just 0.2 ng of DNA input for Illumina-based next generation sequencing applications, including bisulfite-seq, ChIP-seq, and MeDIP-seq. This allows limited or difficult samples such as tissue biopsy or embryonic samples to be viable for sequencing. The procedure, from fragmented DNA to size selection, is less than 1 hour and 30 minutes.



Size distribution of library fragments. Human placenta DNA was sheared to around 300 bps in peak size and 0.2 ng of DNA was used for DNA library preparation using the EpiNext™ High-Sensitivity DNA Library Preparation Kit (Cat. #P-1053).



Percent recovery of input DNA fragments by AMPure XP* beads vs. EpiNext beads (Cat. #P-1063).

*Agencourt® AMPure® is a registered trademark of Beckman Coulter, Inc.

EpiNext DNA Purification HT System

Cat. #P-1063

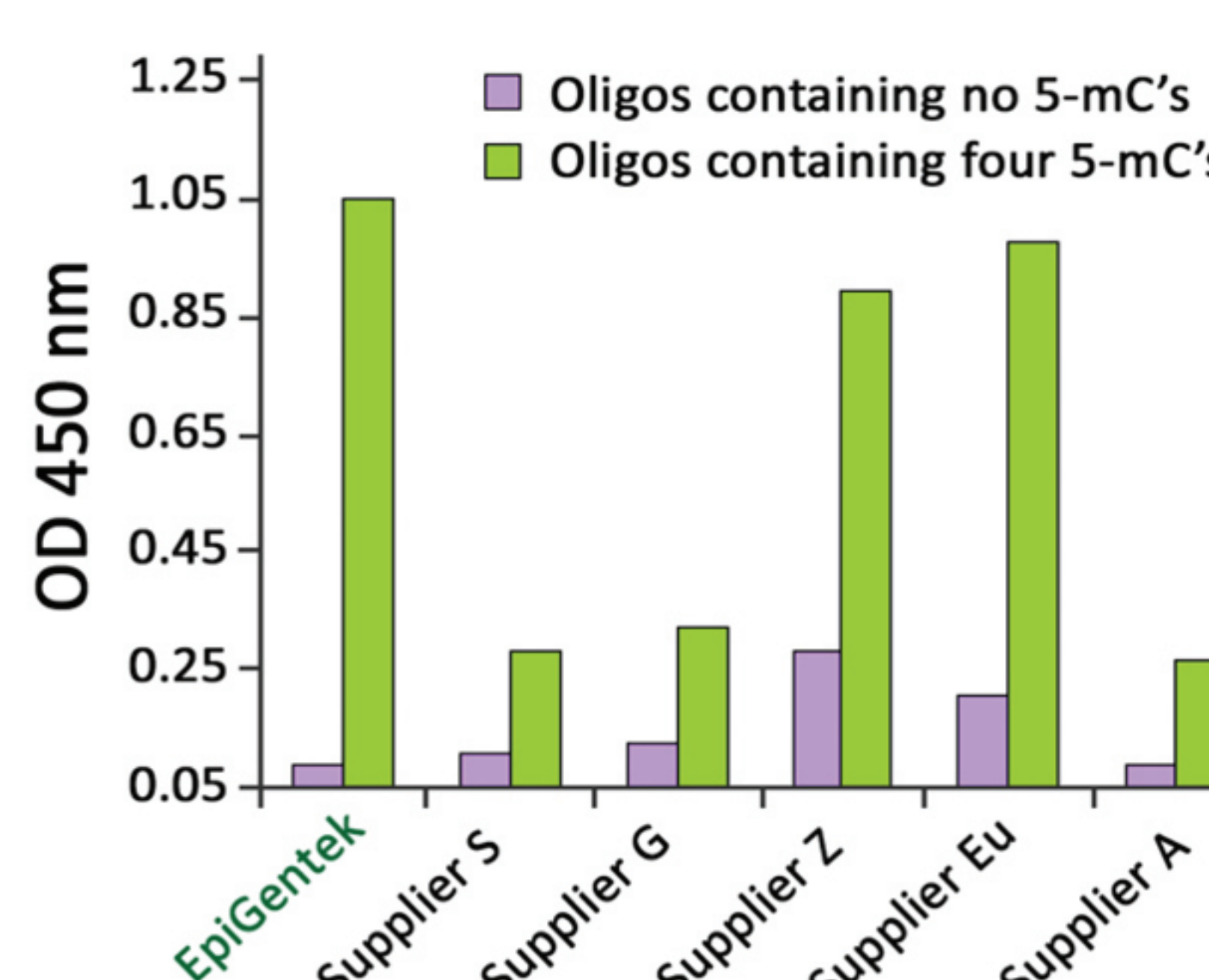
The **EpiNext™ DNA Purification HT System** (also known as "EpiNext beads") utilizes magnetic bead technology for high throughput DNA or PCR amplicon purification and DNA size selection. The system can also be used for concentrating DNA and is suitable for selectively and consistently capturing DNA fragments or PCR amplicons that are 100 bps or larger in size.

5-mC & 5-hmC Monoclonal Antibodies

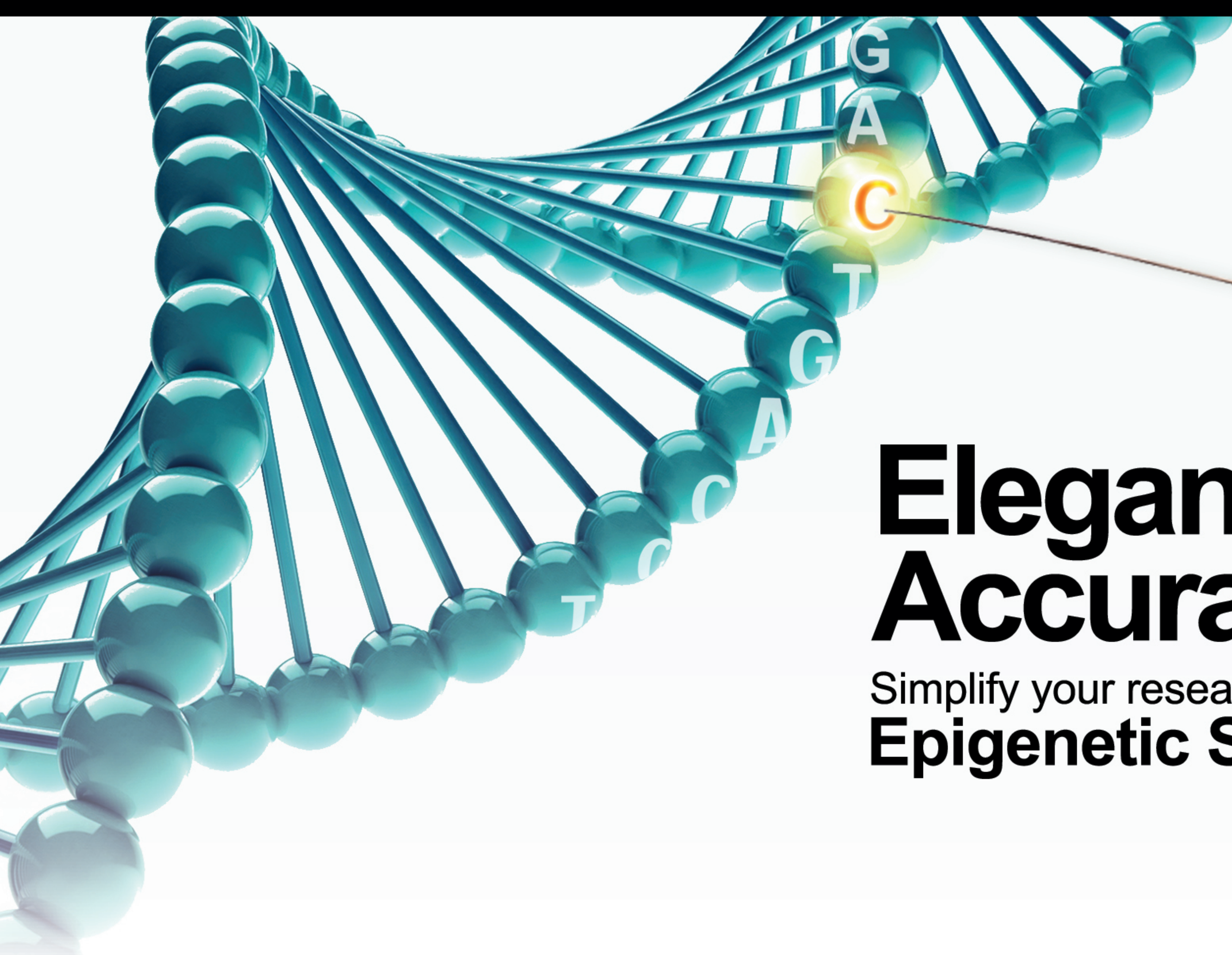
Cat. #A-1014 & Cat. #A-1018

More Specific. More Sensitive.

5-methylcytosine (5-mC) and 5-hydroxymethylcytosine (5-hmC) play important roles in the regulation of DNA methylation, chromatin remodeling, and gene expression. Our 5-mC and 5-hmC monoclonal antibodies are proven to have high sensitivity and specificity and are validated for use in MeDIP, Dot Blot, ELISA, Immunofluorescence, and Immunohistochemistry.



Synthesized oligos containing different numbers of 5-methylcytosines were captured with anti-5-mC antibodies from various companies and then colorimetrically detected for comparison. Results show EpiGentek's 5-mC antibody (Cat. #A-1014) has the highest sensitivity and specificity in capturing methylated DNA fragments.



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