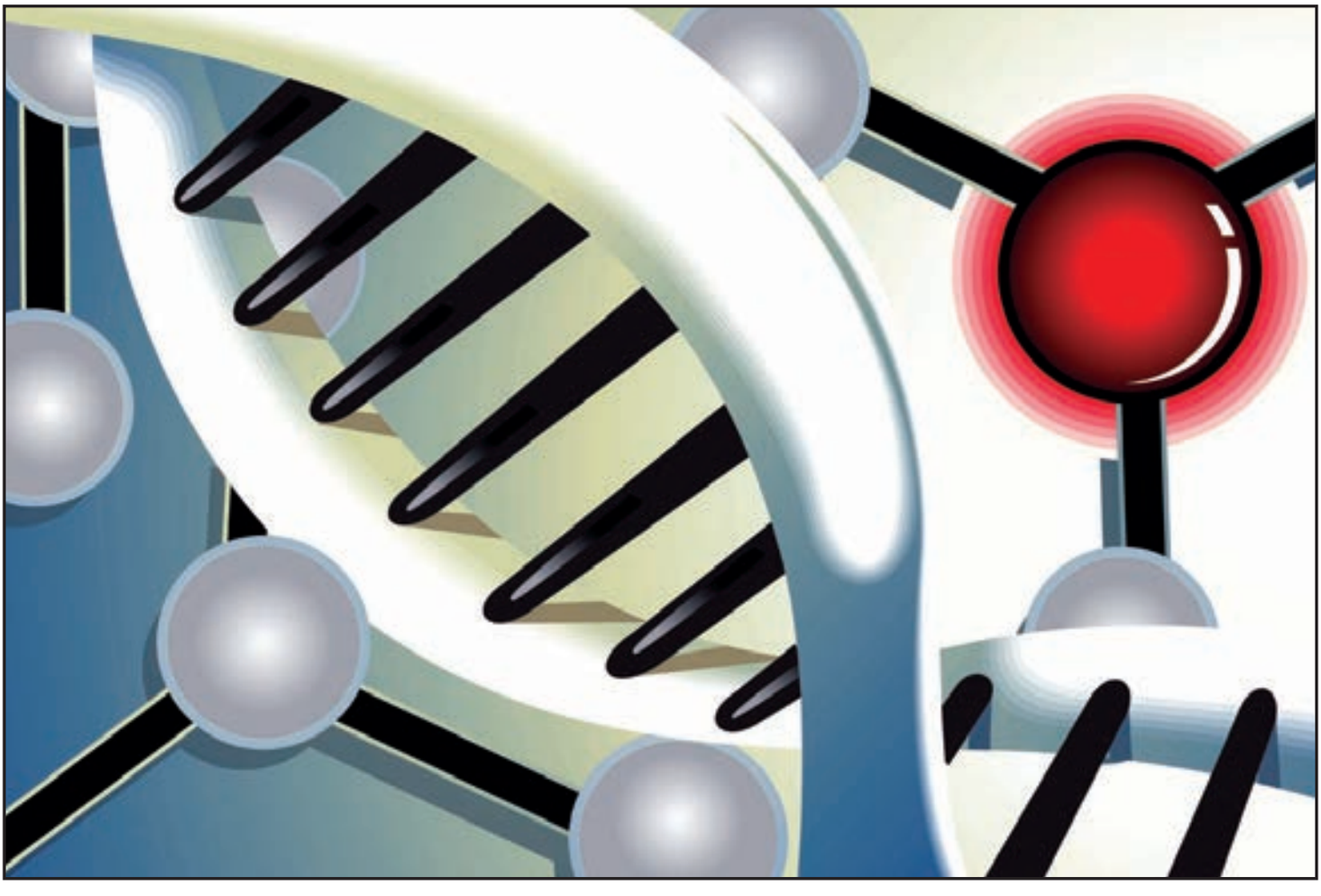
gene regulation

products & services

ACTIVE MOTIF®

Enabling Epigenetics Research



- Reporter Constructs & Assays
- Transcription Factor Binding
- miRNA-3´UTR Interactions
- ChIP & Co-IP
- Sample Preparation
- Antibodies, Extracts & Proteins

www.activemotif.com

LightSwitch™ Luciferase Assay System

comprehensive, optimized reporter system for the study of gene regulation

The LightSwitch™ Luciferase Assay System is a complete solution for studying transcriptional & post-transcriptional gene regulation in living mammalian cells by directly measuring the functional activity of promoters and 3´UTRs. With GoClone™ Collections of over 30,000 human promoters, 3´UTRs and enhancer elements available as transfection-ready LightSwitch luciferase reporter constructs, you can perform your reporter assay experiments immediately, without the need to clone or prepare DNA. The system utilizes an engineered luciferase gene (RenSP) and optimized assay & transfection reagents that are designed to provide superior results. In addition, easy-to-use protocols make the entire procedure faster and simpler than other methods.

Pre-cloned constructs & an optimized assay

The backbone of the **LightSwitch Luciferase Assay System** is the LightSwitch reporter vectors, which make it easy to study the activity of cloned promoter, 3´UTR and enhancer sequences (Figure 1). For your convenience, over 30,000 human regulatory elements have been cloned and are available as ready-to-transfect reporter constructs. If your sequence of interest is not available, you may clone your own sequence into an empty vector, mutagenize an existing construct, or utilize our Custom Services team for cloning and other services (page 6).

All LightSwitch vectors utilize an optimized *Renilla* luciferase gene (RenSP) that has been engineered for maximum brightness and minimal background when reacted with the proprietary substrate found in LightSwitch Luciferase Assay Kits (page 5). For complete details on the entire LightSwitch product line, please visit us at **www.activemotif.com/lightswitch**.

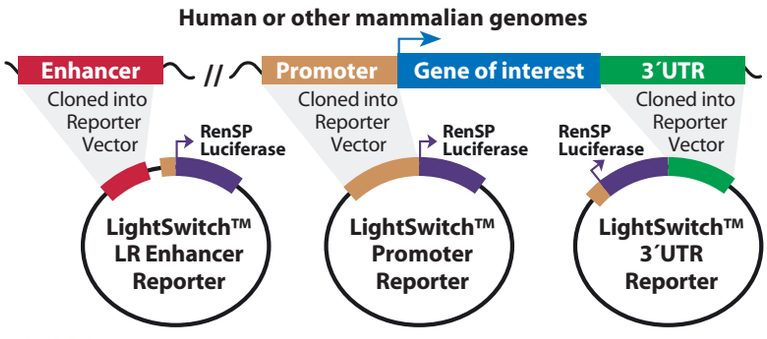


FIGURE 1:
Transfection-ready collections of human promoters, 3´UTRs and long-range enhancers. Choose from our collection of over 30,000 human promoters, 3´UTRs and enhancers, as well as optimized synthetic response elements and miRNA targets. Alternatively, you can clone your own regulatory elements into the appropriate empty LightSwitch Reporter vector or utilize our Custom Services team (page 6), which can quickly and economically clone any fragment from the human, mouse or rat genome into any LightSwitch vector for you.

Advantages of the LightSwitch System

- **Fast & convenient** – LightSwitch GoClones are sequence-verified, transfection-ready human promoter and 3´UTR reporter constructs. No cloning, DNA preparation or assay optimization is needed. To begin, simply search for your regulatory elements of interest using our easy-to-use, online search tool (Figure 2).
- **Enhanced sensitivity** – We also offer synthetic regulatory elements that can provide stronger responses than the endogenous, human promoter and 3´UTR sequences.
- **Quantitative** – All LightSwitch vectors contain RenSP luciferase, a gene our scientists engineered for increased brightness and responsiveness. LightSwitch Luciferase Assay Substrate was formulated specifically for use with RenSP to provide high sensitivity over a broad, linear dynamic range.
- **Cost-effective** – The LightSwitch Assay scales up easily, making it possible to efficiently screen large numbers of clones for activation and/or repression under a multitude of different conditions.

Search for Promoter & 3´UTR Reporter constructs at www.activemotif.com/goclones.

SEARCH BY GENE IDENTIFIER

In the box below, type or paste in a list of one or more gene identifiers on separate lines. Click on one of the buttons below to search.

DNMT3A
DNMT3B

Search for: Promoter | 3´UTR | Both

Prod ID	Gene Symbol	Type	Seq. of Cloned Elements	Format
S709833	DNMT3A	PROMOTER	Sequence and Clone Info	5 µg
S709808	DNMT3B	PROMOTER	Sequence and Clone Info	5 µg
S808608	DNMT3A	3´UTR	Sequence and Clone Info	5 µg
S809202	DNMT3B	3´UTR	Sequence and Clone Info	5 µg

FIGURE 2:
Online tool for finding pre-cloned LightSwitch Promoter and 3´UTR constructs. Use our convenient online tool to quickly find pre-cloned regulatory elements for your genes of interest. Simply enter your gene's name, accession number or other identifier, then click one of the buttons. In this example, a search was performed to find both promoter and 3´UTR constructs of DNMT3A and DNMT3B.

Luminex® Transcription Factor Multiplex Assays

study the DNA-binding of activated transcription factors in multiplex

Traditional methods to assay transcription factor activity, such as Western blots, EMSA, reporter assays and ELISA, have their limitations, primarily the inability to quantify DNA binding events or to simultaneously compare activity among members of the same transcription factor family. To overcome these limitations, Active Motif has partnered with Luminex®, the industry leader for multiplexing, to develop Transcription Factor Multiplex Assays for studies of the AP-1 and NFκB transcription factor families. The assays are designed for use with either the Luminex® 200™ or MAGPIX® instruments for multiplexing of analyte-specific DNA binding events. These highly sensitive assays require small sample input and can be adapted for high-throughput analysis, enabling researchers to collect more data at a faster rate using less sample than afforded by traditional methods.

How do Transcription Factor Multiplex assays work?

The assays work as pull-down reactions where lysate is combined with a biotinylated oligo that contains the consensus binding sequence for the transcription factor family of interest. Antibodies specific for each transcription factor analyte that are conjugated to fluorescent-labeled magnetic beads are used to capture the transcription factor-bound DNA. The fluorescent label of the bead is specific to each analyte, enabling multiple analytes to be analyzed simultaneously within the same sample for multiplexing. Streptavidin-phycoerythrin (SA-PE) is used to bind the biotinylated oligo and determine the magnitude of signal (Figure 1).

The Luminex® principle

Each bead has a distinct fluorescent code that is associated with a unique bead number. Inside the Luminex 200 instrument, the beads are individually passed through a small shaft where a laser excites the internal fluorescent dye used for bead identification. A second laser is used to measure the magnitude of the SA-PE signal for quantification (Figure 2). The Luminex xPONENT software program provides a real-time readout of signal as median fluorescent intensity (MFI). The SA-PE readout is proportional to the amount of transcription factor binding for each family member (Figure 3).

What's in the box?

Two different **Transcription Factor Multiplex Kits** are available for studying members of the AP-1 and NFκB transcription factor families. Each includes a 96-well assay plate, biotinylated oligonucleotide that contains the consensus DNA binding sequence, assay buffers, wild-type and mutant competitor oligos that can be used as controls to confirm the specificity of the reaction, streptavidin-phycoerythrin and a positive control cell lysate. The **Transcription Factor Antibody-conjugated bead(s)** are sold separately, giving you the flexibility to select only those you need for your research. Beads for c-Fos, FosB, JunB and JunD analytes are available for use with the AP-1 Kit, while p65, p50, RelB and p52 beads are offered for use with the NFκB Kit. For more information, visit **www.activemotif.com/tf-luminex**.

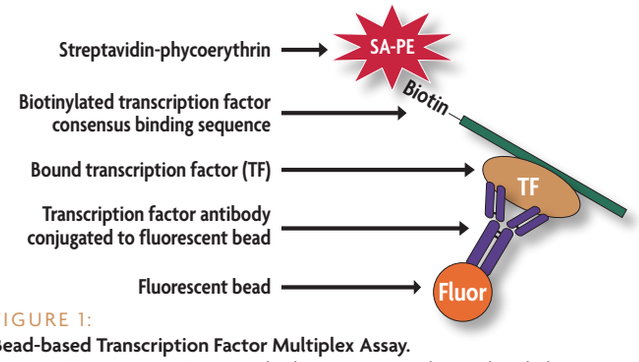


FIGURE 1:
Bead-based Transcription Factor Multiplex Assay.
Luminex Transcription Factor Multiplex Assays use a biotinylated oligo containing the transcription factor's consensus DNA binding sequence, a transcription factor antibody conjugated to a fluorescent bead, and streptavidin-phycoerythrin to quantify the levels of transcription factor-DNA binding activity in multiplex.

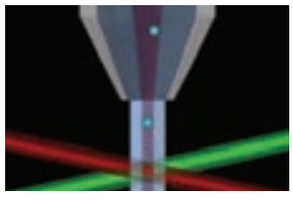


FIGURE 2:
Methodology of the Luminex 200™.
The Luminex 200 instrument uses two distinct wavelengths to analyze each individual bead as it passes through the machine. One determines the bead's identity, while the other measures the magnitude of the phycoerythrin signal.

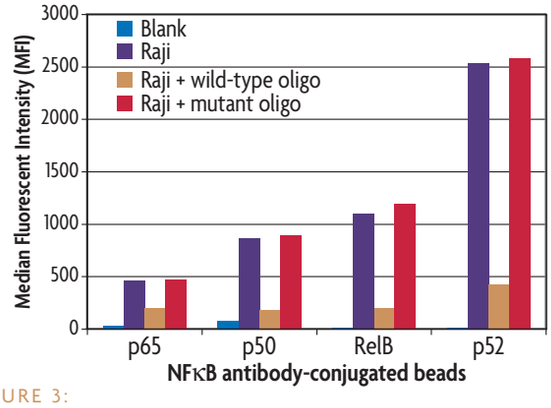


FIGURE 3:
Multiplex analysis of NFκB DNA binding activity.
The Transcription Factor Multiplex Kit – NFκB was used with multiple NFκB antibody-conjugated beads for simultaneous comparison of the DNA binding activity of NFκB p65, p50, RelB and p52 in the same sample. The positive control lysate, Raji nuclear extract, is tested in the absence or presence of the provided wild-type or mutant competitor oligos to confirm the assay's specificity.

TransAM®

sensitive, non-radioactive transcription factor DNA-binding ELISAs

TransAM Kits are highly sensitive ELISA-based assays* that facilitate the study of transcription factor activation in mammalian tissue and cell extracts. They combine a fast, user-friendly format with a sensitive, specific assay. The standard TransAM Kits are 10-fold more sensitive than conventional gelshift techniques (Figure 2), while TransAM Chemi Kits utilize chemiluminescent detection to improve assay sensitivity to only 40 ng of extract. The TransAM method eliminates the use of radioactivity and provides quantitative results in less than five hours, while its high-throughput format offers the flexibility to screen up to 96 samples simultaneously.

Until now, transcription factors have been studied using primarily three methods: gelshift assays, immunoblotting and reporter gene assays. These methods are time consuming and provide, at best, only semi-quantitative results. Moreover, they don't support high-throughput methods and lack sensitivity, specificity and reproducibility. The TransAM technology eliminates these shortcomings, making transcription factor research faster and more precise.

* TransAM is licensed from EAT under issued and pending worldwide patents. Purchase includes the right to use for basic research only. Other-use licenses are available; please contact Technical Services.

The TransAM advantage

TransAM Kits offer a novel method for rapid and sensitive quantitative measurement of transcription factor activation. TransAM Kits are available in the original format that contains a 96-well plate to which an immobilized oligonucleotide containing a consensus-binding site has been immobilized or in a Flexi format that enables you to bind any oligonucleotide to the plate. In both formats, cell extract is added to each well and the transcription factor of interest binds specifically to the oligonucleotide that is immobilized on the plate. Each well is then incubated with primary antibody specific for the active form of the bound transcription factor. Subsequent incubation with an HRP-conjugated secondary antibody and either the standard or chemiluminescent Developing Solution provides an easily quantified readout (Figure 1).

TransAM Kits are available for study of a variety of individual transcription factors and transcription factor families. TransAM eliminates the need for time consuming cloning, cell transfections, and gel exposures. The use of messy radioactive probes is also unnecessary. There is also no need for constructing stable reporter cell lines, or for dealing with the variability in expression of transfected reporter genes. For more information, please visit us at www.activemotif.com/transam.

WHY USE TRANSAM?

- Up to 100-fold greater sensitivity than gelshift assays
- Results in less than 5 hours
- Non-radioactive, colorimetric readout that is easily quantified by spectrophotometry
- No cloning or cell transfections required
- Ability to assay tissue samples
- 96-stripwell format is compatible with high-throughput automation

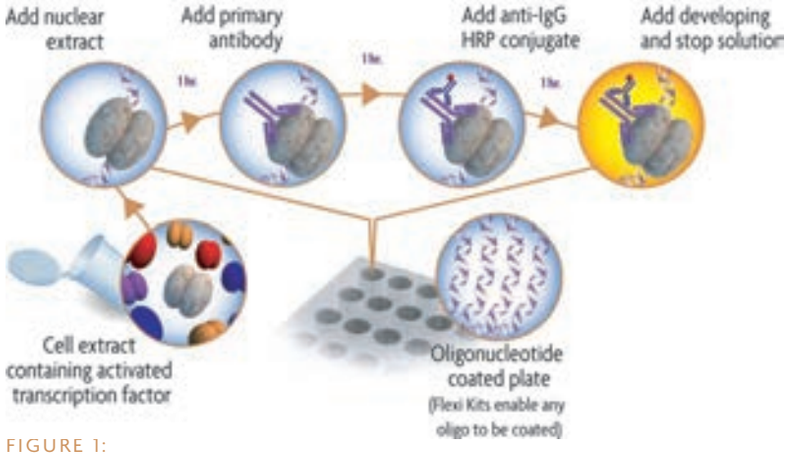


FIGURE 1:
Flow chart of the TransAM process.
Activated transcription factor in cell extract binds to oligonucleotides immobilized in the well. Incubation with primary and secondary antibodies quantifies the amount of activated transcription factor in a sample.

Increased sensitivity & accuracy

Small changes in transcription factor levels can have a significant impact on cellular function. Therefore, it is important to use a sensitive assay when studying transcription factor activation. TransAM Kits are 10-fold more sensitive than gelshift assays and also yield more quantitative results. To illustrate, NFκB p50 activity was assayed using the TransAM NFκB p50 Kit and EMSA (Figure 2). These data clearly demonstrate that the DNA binding ELISA format of the TransAM Kits yields more sensitive and quantitative results than traditional assays such as EMSA.

In addition, TransAM Kits provide more accurate measurements than traditional assays because of their broad linear range of detection. This eliminates the need to run multiple assays to obtain accurate results. Both the increased sensitivity and accuracy of the TransAM Kits will drastically improve your transcription factor analysis. The combination of a fast, user-friendly format with high sensitivity and specificity is validated by over 900 journal citations (Figure 4).

Proven specificity

To accurately study transcription factor activation, it is vital to be able to determine which isoform of the transcription factor of interest is involved in pathway regulation. All TransAM Kits are tested for specificity by performing the assays in the presence of an excess of oligonucleotide containing a wild-type or mutated consensus-binding site (Figure 3). This competitive assay proves that the transcription factor detected is binding specifically to the probe that has been immobilized to the TransAM plate. All TransAM antibodies are also assayed for cross-reactivity with other closely related family members to ensure that only the isoform of interest is detected.

Applications of TransAM Kits

TransAM Kits have unsurpassed flexibility, which is why they have been used successfully with both primary and transformed cell lines as well as tissue samples. Common applications include:

- Drug screening and/or potency studies
- Monitoring of transcriptional regulation activity
- Protein structure/function studies

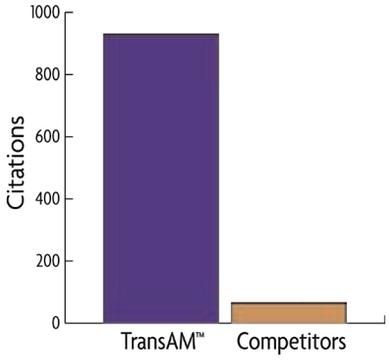
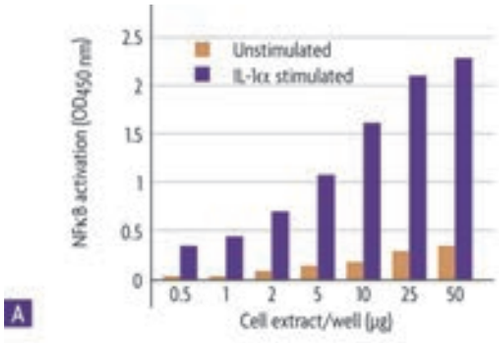


FIGURE 4:
TransAM citations.
Using HighWire Press, http://highwire.stanford.edu, a comparison was made by searching for citations of TransAM from Active Motif versus the tradenames of all competitor kits combined. TransAM is clearly the leader.



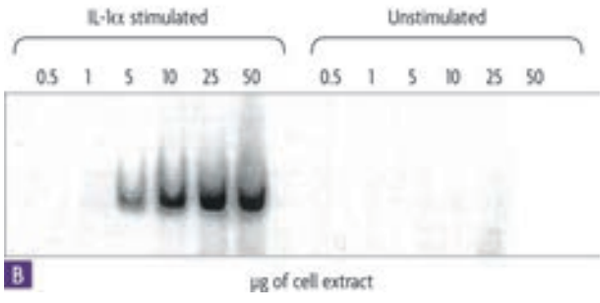
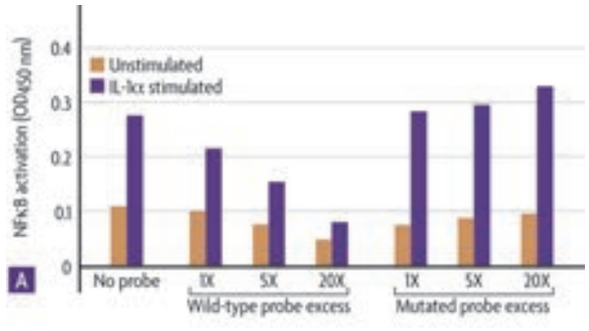


FIGURE 2
TransAM Kits are more sensitive than gelshift.
Human fibroblast WI-38 cells are stimulated with IL-1α for 30 minutes. Increasing amounts of whole-cell extract are assayed using the TransAM NFκB p50 Kit (A) or gel retardation (B). The TransAM method is 10-fold more sensitive and provides more quantitative data.



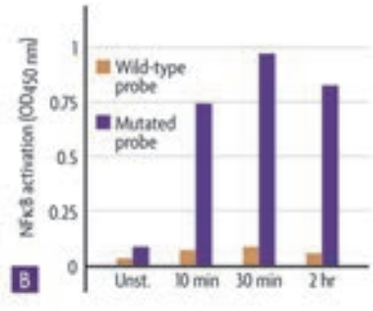


FIGURE 3:
Specificity of TransAM Kits.
TransAM NFκB p50 Kit assays are performed in the presence of wild-type and mutated competitor oligonucleotides using 10 µg/well whole-cell extract from human fibroblast WI-38 cells stimulated with IL-1α for 30 minutes (A) and 5 µg/well whole-cell extract from HeLa cells stimulated with TNF-α for 10 minutes, 30 minutes and 2 hours (B).

TransAM® Ordering Information

FACTOR	PRODUCT	FORMAT	Cat. No.
AML/Runx	TransAM® AML-1/Runx1	1 x 96-well plate 5 x 96-well plates	47396 47896
	TransAM® AML-3/Runx2	1 x 96-well plate 5 x 96-well plates	44496 44996
AP-1	TransAM® AP-1 Family (c-Fos, FosB, Fra-1, c-Jun, JunB & JunD)	2 x 96-well plates	44296
	TransAM® AP-1 c-Fos	1 x 96-well plate 5 x 96-well plates	44096 44596
	Recombinant c-Fos protein	5 µg	31115
	TransAM® AP-1 c-Jun	1 x 96-well plate 5 x 96-well plates	46096 46596
	Recombinant c-Jun protein	5 µg	31116
	TransAM® AP-1 FosB	1 x 96-well plate 5 x 96-well plates	45096 45596
	TransAM® AP-1 JunD	1 x 96-well plate 5 x 96-well plates	43496 43996
ATF-2	TransAM® ATF-2	1 x 96-well plate 5 x 96-well plates	42396 42896
c-Myc	TransAM® c-Myc	1 x 96-well plate 5 x 96-well plates	43396 43896
	Recombinant c-Myc protein	5 µg	31117
C/EBP	TransAM® C/EBP α/β	1 x 96-well plate 5 x 96-well plates	44196 44696
CREB	TransAM® CREB	1 x 96-well plate 5 x 96-well plates	42096 42596
	TransAM® pCREB	1 x 96-well plate 5 x 96-well plates	43096 43596
Elk-1	TransAM® Elk-1	1 x 96-well plate 5 x 96-well plates	44396 44896
ER	TransAM® ER	1 x 96-well plate 5 x 96-well plates	41396 41996
FKHR	TransAM® FKHR (FOXO1)	1 x 96-well plate 5 x 96-well plates	46396 46896
GATA	TransAM® GATA Family (GATA-1, GATA-2 & GATA-3)	2 x 96-well plates	48296
	TransAM® GATA-4	1 x 96-well plate 5 x 96-well plates	46496 46996
GR	TransAM® GR	1 x 96-well plate 5 x 96-well plates	45496 45996
HIF	TransAM® HIF-1	1 x 96-well plate 5 x 96-well plates	47096 47596
HNF	TransAM® HNF Family (HNF-1, HNF-3α, HNF-3β & HNF-4α)	2 x 96-well plates	46296
	TransAM® HNF-1	1 x 96-well plate 5 x 96-well plates	46196 46696
IRF-3	TransAM® IRF-3 (Human)	1 x 96-well plate 5 x 96-well plates	48396 48896
IRF-7	TransAM® IRF-7	1 x 96-well plate 5 x 96-well plates	50196 50696
MAPK	TransAM® MAPK Family (ATF-2, c-Jun, c-Myc, MEF2 & STAT1α)	2 x 96-well plates	47296
MEF2	TransAM® MEF2	1 x 96-well plate 5 x 96-well plates	43196 43696

TransAM® Ordering Information, continued

FACTOR	PRODUCT	FORMAT	Cat. No.
MyoD	TransAM® MyoD	1 x 96-well plate 5 x 96-well plates	47196 47696
NF-YA	TransAM® NF-YA	1 x 96-well plate 5 x 96-well plates	40396 40896
NFAT	TransAM® NFATc1	1 x 96-well plate 5 x 96-well plates	40296 40796
NFκB	TransAM® NFκB Family (p50, p52, p65, c-Rel & RelB)	2 x 96-well plates	43296
	TransAM® Flexi NFκB Family (p50, p52, p65, c-Rel & RelB)	2 x 96-well plates	43298
	TransAM® NFκB p50	1 x 96-well plate 5 x 96-well plates	41096 41596
	TransAM® NFκB p50 Chemi	1 x 96-well plate 5 x 96-well plates	41097 41597
	TransAM® Flexi NFκB p50	1 x 96-well plate	41098
	Recombinant NFκB p50 protein	5 µg	31101
	TransAM® NFκB p52	1 x 96-well plate 5 x 96-well plates	48196 48696
	TransAM® NFκB p52 Chemi	1 x 96-well plate 5 x 96-well plates	48197 48697
	TransAM® NFκB p65	1 x 96-well plate 5 x 96-well plates	40096 40596
	TransAM® NFκB p65 Chemi	1 x 96-well plate 5 x 96-well plates	40097 40597
	TransAM® Flexi NFκB p65	1 x 96-well plate	40098
	Recombinant NFκB p65 protein	5 µg	31102
Nrf2	TransAM® Nrf2	1 x 96-well plate 5 x 96-well plates	50296 50796
Oct-4	TransAM® Oct-4	1 x 96-well plate 5 x 96-well plates	42496 42996
p53	TransAM® p53	1 x 96-well plate 5 x 96-well plates	41196 41696
	Recombinant p53 protein	5 µg	31103
PPAR	TransAM® PPARγ	1 x 96-well plate 5 x 96-well plates	40196 40696
Sp1 and Sp3	TransAM® Sp1	1 x 96-well plate 5 x 96-well plates	41296 41796
	TransAM® Sp1/Sp3	1 x 96-well plate 5 x 96-well plates	40496 40996
	Recombinant Sp1 protein	5 µg	31136
STAT	TransAM® STAT Family (STAT1α, STAT3, STAT5A & STAT5B)	2 x 96-well plates	42296
	TransAM® STAT3	1 x 96-well plate 5 x 96-well plates	45196 45696
T-bet	TransAM® T-bet	1 x 96-well plate 5 x 96-well plates	51396 51896
	Nuclear Extract Kit (see page 15 for details)	100 rxns 400 rxns	40010 40410
	ProStain™ Protein Quantification Kit (visit www.activemotif.com/prostain for details)	1000 rxns	15001

To study the DNA binding activity of multiple transcription factor family members simultaneously, see our Luminex® Transcription Factor Multiplex Assays.

Nuclear Extract Kit

for high-quality nuclear, cytoplasmic or whole-cell extract preparation

The Nuclear Extract Kit offers a simple method for the preparation of highly pure nuclear, cytoplasmic and whole-cell extracts from mammalian cells and tissues. Use of the Nuclear Extract Kit eliminates the need to optimize reagents and ensures consistent sample preparation. The resultant extracts are of high yield, concentration and purity to provide you with the most optimal purified protein fractions for analysis by various methods including electrophoretic mobility shift assays (EMSA) and Western blot protocols, or downstream activity and binding assays, such as Active Motif's TransAM® Kits (see page 10).

WHY USE THE NUCLEAR EXTRACT KIT?

- **Fast and easy** – Streamlined 2-hour protocol that requires only standard laboratory equipment
- **Scalable** – 100 and 400 reaction kit formats available
- **Versatile** – Prepare nuclear, cytoplasmic or whole-cell extracts starting from cells or tissues
- **Reliable** – Quality-controlled reagents to ensure reproducibility
- **Robust** – Achieve nuclear protein yields of 150-200 µg at 3-5 µg/µl from just 8.8 x 10^6 cells

The Nuclear Extract Kit advantage

The **Nuclear Extract Kit** procedure is a simple, fast and effective method to obtain non-denatured, active proteins contained in the cytoplasmic and nuclear compartments of the cell. The centrifugation-based method requires only standard laboratory equipment and enables isolation of soluble nuclear, cytoplasmic or whole-cell protein fractions in less than two hours. Unlike traditional methods that require extensive mechanical manipulation of extracts, multiple freeze/thaw cycles or lengthy incubations, our gentle and rapid procedure is optimized to preserve the integrity and activity of proteins.

The Nuclear Extract Kit procedure routinely generates nuclear extract yields of 150-250 µg at concentrations of 3-5 µg/µl from 8.8 x 10^6 cells. 0.5-1 mg and 1.2-2.4 mg of proteins are achievable for cytoplasmic and whole-cell extracts, respectively. Prepared extracts are compatible with various downstream applications including EMSA, Western blot, DNA footprinting, protein purification, and protein binding and activity assays.

What's in the box?

The Nuclear Extract Kit contains all the necessary buffers, including Lysis Buffer, Hypotonic Buffer and Detergent, and reagents to perform nuclear, cytoplasmic or whole-cell extraction from cultured cells or tissue samples. The kit is available in two formats to perform either 100 or 400 reactions from 8.8 x 10^6 cells. For more information, please go to www.activemotif.com/nuc-extr.

How does the Nuclear Extract Kit work?

Cells are collected in ice-cold PBS in the presence of phosphatase inhibitors to limit protein modifications. Next, the cells are resuspended in hypotonic buffer to swell the cell membrane. Addition of detergent causes leakage of the cytoplasmic proteins into the supernatant. After collection of the cytoplasmic fraction, the nuclei are lysed and the nuclear proteins are solubilized in lysis buffer in the presence of protease inhibitors. Whole-cell extracts can also be prepared by collecting the cells in the PBS/phosphatase inhibitors solution and lysing in lysis buffer. For difficult-to-lyse cells, we recommend the use of our Dounce Homogenizer (Cat. No. 40401) to aid in disruption and lysis of cells. Solubilized proteins are separated from the cell debris by centrifugation. The concentration of protein in the cell extract is then measured by Active Motif's ProStain™ Protein Quantification Kit (Cat. No. 15001) or with a Bradford-based assay.

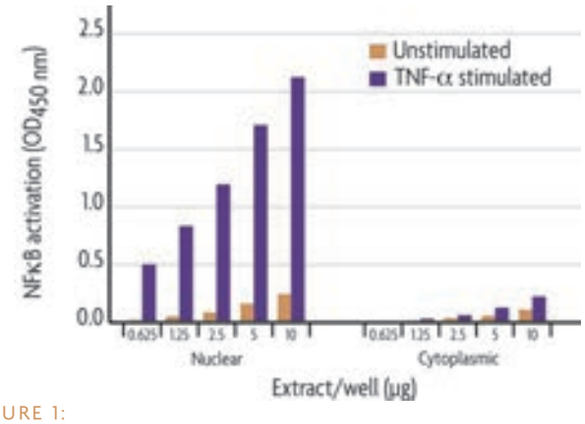


FIGURE 1:
Specific extraction of nuclear and cytoplasmic extracts.
The Nuclear Extract Kit was used to prepare nuclear and cytoplasmic extracts from unstimulated or TNF-α stimulated HeLa cells for the TransAM® NFκB p50 assay (Cat. No. 41096, see page 10). Because activated NFκB translocates to the nucleus, only the nuclear extract from stimulated cells contains activated NFκB.

Product	Format	Cat. No.
Nuclear Extract Kit	100 rxns	40010
	400 rxns	40410
Dounce Homogenizer	1 ml	40401
	5 ml	40415
ProStain™	1000 rxns	15001

Find the Right ChIP Products to Suit Your Specific Needs

Because Chromatin Immunoprecipitation (ChIP) is widely used to study gene regulation and link specific states of chromatin to individual loci in a cell, Active Motif offers a complete selection of validated reagents, instruments and kits to help streamline each step of the ChIP workflow (see opposite page). Whether you are performing ChIP for the first time or are an expert in need of a specialized ChIP protocol and reagents, Active Motif has the right products to meet your needs. Provided below are brief descriptions for some our ChIP-IT® Kits and ChIP products to help guide you in determining which ones are best suited for your specific application. Please visit www.activemotif.com/chip for complete information on our extensive ChIP product line.

Need ChIP results in a hurry?

ChIP-IT Express was the first ChIP kit to use magnetic beads, which yield lower background and streamline the ChIP protocol by eliminating many steps required in conventional agarose bead-based protocols. Washing and elution steps are also faster because centrifugation is replaced by magnetic pull-down. The result is higher sensitivity, a reduction in the input sample amount to 100,000 cells per assay, and a condensed protocol that can be completed in 1 day. ChIP-IT Express has a proven track record of success with over 500 publications and counting.

Transcription factor ChIP

Performing ChIP of transcription factors is a challenge because of their low abundance in cells and low or transient affinity to chromatin. **ChIP-IT High Sensitivity** was specifically designed to perform ChIP of transcription factors or similar low-abundance targets. Although the protocol is lengthier than magnetic bead methods, as little as 1,000 cell equivalents for highly abundant target proteins, or 50,000 cell equivalents for low abundance proteins, can be used for each ChIP reaction.

High-resolution ChIP for mapping TF binding sites

The **ChIP-exo Kit** provides a high-resolution method to map transcription factor binding sites genome-wide. This modified ChIP-Seq approach utilizes exonuclease-mediated digestion of DNA to remove non-cross-linked DNA. This enables identification of protein-DNA binding sites at a resolution of 20-95 base pairs, making it ideal for precise mapping of transcription factor binding sites and studying the effects of SNPs or mutations.

Ready-to-use ChIP columns

Got your own ChIP protocol? For researchers who routinely perform ChIP with their own optimized protocols, Active Motif offers pre-packed, ready-to-use, low background **Protein G Agarose Columns**. These columns contain the same high-affinity protein G agarose beads included in the ChIP-IT High Sensitivity Kit (above). The columns offer a faster solution to centrifugation and magnetic separation methods, and result in better yield and reproducibility between samples because no material is lost.

No sonicator? No problem!

ChIP-IT Express Enzymatic was the first kit to offer the option of shearing chromatin by enzymatic digestion instead of by sonication. This user-friendly kit is identical to ChIP-IT Express with the exception of its chromatin preparation reagents. Preparation of chromatin by enzymatic shearing simplifies optimization of fragment size, and the mild enzymatic treatment preserves chromatin and epitope integrity. Enzymatic shearing is a great choice for users who do not routinely perform ChIP and either do not own a sonicator or are not proficient in its use.

Sonication products for more consistent shearing

For those who want to use sonication to achieve more consistent results from chromatin preparation, Active Motif offers both the **EpiShear™ Probe Sonicator** for direct sonication of samples and the **Q800R® Sonicator** for multi-sample preparation of chromatin. These are the same sonicators that our own ChIP Assay Experts™ routinely use to prepare chromatin for ChIP.

Headed straight into Next Generation Sequencing?

ChIP-IT ChIP-Seq is designed for performing ChIP-Seq analysis on the Illumina® sequencing platforms. It combines the ChIP-IT High Sensitivity Kit (left), the ChIP-IT qPCR Analysis Kit for validation of ChIP DNA, and a set of library construction reagents suitable for the preparation of 10 Next Generation sequencing libraries.

Study two binding events on the same DNA locus

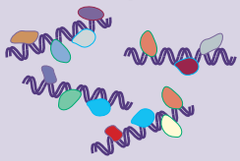
Re-ChIP-IT takes advantage of the same magnetic bead-based ChIP method developed for ChIP-IT Express. However, Re-ChIP-IT was designed for sequential ChIP, in which two ChIP reactions using different antibodies are performed in series on the same sample. This makes it possible to simultaneously assay for two unique binding events at the same genomic region of interest.

ChIP to study non-coding RNA interactions

Non-coding RNAs play important roles in chromatin structure and transcriptional silencing. **RNA ChIP-IT** uses our magnetic-bead based ChIP method to enable the study of RNA-protein interactions in chromatin. All components are optimized to recover RNA from ChIP for downstream analysis.

Products to Streamline the ChIP Assay Workflow

Chromatin Preparation

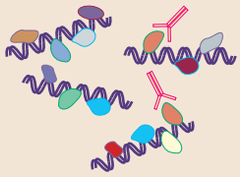


Chromatin Shearing
- EpiShear™ Sonicators
- ChIP-IT® Sonication & Enzymatic Shearing Kits
- Dounce Homogenizers

Pre-Made Chromatin
- Ready-to-ChIP Chromatin

ChIP Kits
- ChIP-IT® Express
- ChIP-IT® High Sensitivity
- ChIP-IT® ChIP-Seq
- ChIP-exo
- ChIP-IT® FFPE
- ChIP-IT® PBMC
- Re-ChIP-IT®
- RNA ChIP-IT®

Chromatin Immunoprecipitation

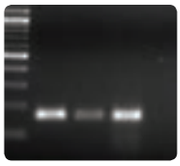


ChIP Antibodies
- ChIP & ChIP-Seq validated antibodies
- ChIP Antibody Validation Services
- MODified™ Histone Peptide Array

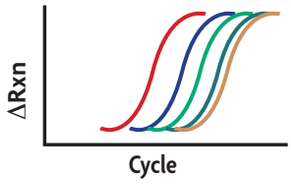
Protein G Beads
- Protein G Agarose Columns
- Protein G Magnetic Beads

ChIP DNA Clean-up
- Chromatin IP DNA Purification Kit

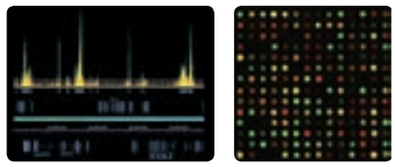
Downstream Analysis



PCR Analysis
- ChIP-IT® Control Kits

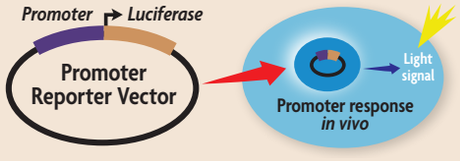


qPCR Analysis
- ChIP-IT® qPCR Analysis Kit
- ChIP Control qPCR Primer Sets



Epigenetic Services
- FactorPath™, TranscriptionPath™ and HistonePath™ ChIP-Seq Services

Functional Validation



Luciferase Reporter Assays
- LightSwitch™ Promoter Reporter GoClone™ Collections
- LightSwitch™ Stable Cell Lines
- LightSwitch™ Luciferase Assays

Gene Regulation Services
- Custom Cloning & Mutagenesis
- Pathway Screening
- Sequence Variant Assays

Nuclear Complex Co-IP Kit

Co-IP of highly pure, intact nuclear protein complexes

For researchers interested in how protein interactions with transcription factors, signaling proteins or DNA affect nuclear function and gene expression, Active Motif's Nuclear Complex Co-IP Kit was specifically designed to optimize co-immunoprecipitation of nuclear complexes. The kit's efficient method for extraction and Co-IP preserves nuclear complex proteins and modifications. Interactions of varying strengths can be detected simply by adjusting the stringency of the IP buffer.

The Nuclear Complex Co-IP advantage

Co-immunoprecipitation (Co-IP) is often used to study the relationships between nuclear protein complexes and nuclear processes such as intracellular signaling and transcriptional regulation. However, because these interactions are often labile and the proteins & their modifications can be fragile, traditional methods to isolate and study DNA-binding proteins often lead to disruption of nuclear complexes and a loss of protein integrity. Active Motif's **Nuclear Complex Co-IP Kit** improves Co-IP by providing a gentle extraction procedure and optimized immunoprecipitation reagents that enhance the recovery of intact nuclear protein complexes.

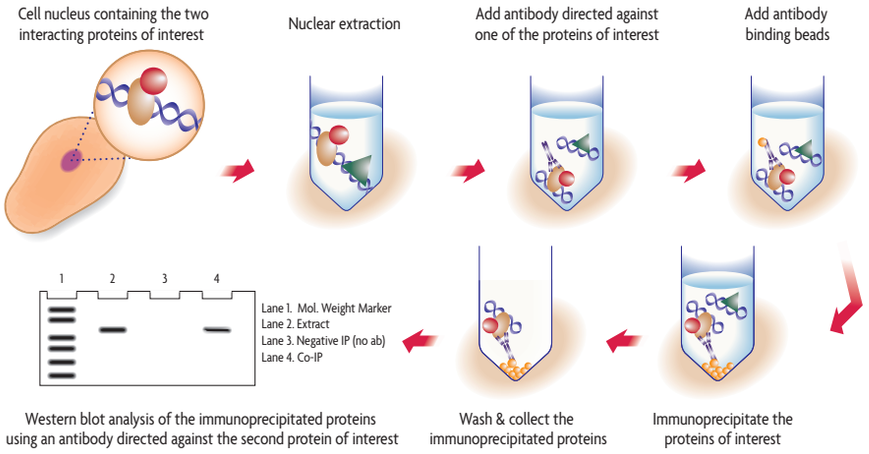


FIGURE 1:
Schematic of the Nuclear Complex Co-IP procedure.

How does it work?

The Nuclear Complex Co-IP Kit simplifies the study of binding interactions within nuclear protein complexes by providing high-quality optimized reagents for both nuclear extract preparation and immunoprecipitation (Figure 1).

The extraction process is optimized to obtain highly preserved nuclear protein complexes, in particular those bound to DNA. Phosphatase inhibitors are used throughout the procedure to limit further protein modifications. First, cells are resuspended in Hypotonic Buffer to swell and destabilize the cell membrane. Detergent is added, causing release of the cytoplasmic proteins into the supernatant. After removal of the cytoplasmic fraction, the nuclei are lysed and proteins are recovered in a low-salt buffer that keeps nuclear protein complexes intact. A proprietary Enzymatic Shearing Cocktail is then used to digest the DNA, gently releasing undissociated protein complexes from the DNA.

After collection of protein complexes, an IP reaction is carried out to precipitate the bound proteins. Immunoprecipitation buffers with both high and low stringency starting compositions are provided to accommodate for detection of tightly bound or weakly associated protein complexes (Figure 2). In addition, detergent and salt are provided separately, enabling the user to reduce background when working with stable protein/protein interactions by increasing the salt and detergent concentrations. For more information, go to **www.activemotif.com/nuc-ip**.

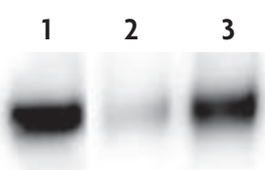


FIGURE 2:
Western blot detection of immunoprecipitated p33/RNA pol II complex.
Detection of the p33/RNA pol II complex by the RNA pol II antibody (lane 3) demonstrates that the Nuclear Complex Co-IP method was successful in maintaining the protein complex.

Lane 1: Western blot Control
Lane 2: Negative Control (no antibody)
Lane 3: Co-IP: IP using p33/WB using RNA pol II

What's in the box?

The Nuclear Complex Co-IP Kit provides sufficient reagents for 50 Co-IP experiments. It includes optimized nuclear protein complex extraction reagents, IP buffers and a comprehensive protocol for extraction and IP of protein complexes.

Antibody binding beads are not included and must be purchased separately. Active Motif recommends our **Protein G Agarose Columns** that are specifically designed to increase the speed and efficiency of antibody binding, wash and elution steps.

Product	Format	Cat. No.
Nuclear Complex Co-IP Kit	50 rxns	54001
Protein G Agarose Columns	30 rxns	53037
	5 rxns	53039

Nuclear Receptor ELISAs

quantitative measurement of nuclear receptors

Nuclear receptors (NR) belong to a superfamily of structurally related ligand-inducible transcription factors whose members include receptors for estrogen, glucocorticoid, androgen, thyroid hormone, progesterone and vitamin D. Inappropriate receptor signaling is associated with numerous disease states, such as cancer, asthma, infertility, osteoporosis and arthritis, making these receptors popular targets for drug discovery.

Active Motif's NR Sandwich ELISA kits provide a quick and easy method to measure the total amount of a nuclear receptor in a given sample. Assays are available to study Androgen Receptor (AR), Estrogen Receptor (ERα) and Progesterone Receptor (PR) using a highly sensitive ELISA-based format. For more information, please visit us at www.activemotif.com/nrelisa.

WHY USE NR SANDWICH ELISAS?

- Quantitative results in just hours
- ELISA format eliminates the need to run, blot and develop gels
- Analyze multiple samples in low volume, high throughput
- Ability to assay both cellular extracts and recombinant proteins

NR Sandwich ELISA method

To measure total levels of a given nuclear receptor within a sample, Active Motif's NR Sandwich ELISA Kits provide a simple, rapid and quantitative alternative to traditional Western blots, EMSA and reporter assays. The kits use two antibodies that recognize different epitopes on the protein of interest. A Capture Antibody, which is supplied already bound to the wells of a 96-well plate, binds the nuclear receptor protein when the sample is added. A Detecting Antibody then binds to the captured nuclear receptor protein. Subsequent incubation with a HRP-conjugated secondary antibody provides an easily quantified readout of total nuclear receptor protein levels (Figure 1).

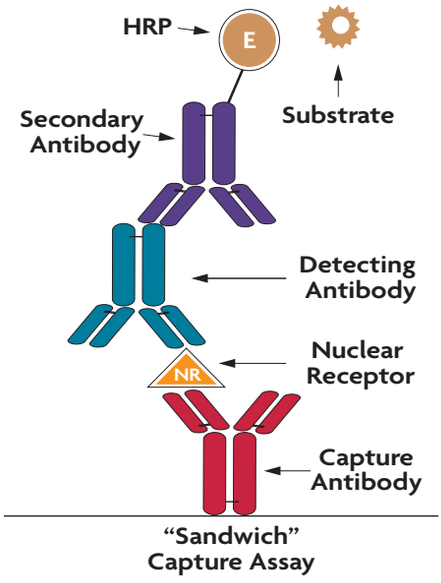


FIGURE 1:
Schematic of the NR Sandwich ELISA procedure.

Sensitive, reproducible measurement

Because the response of nuclear receptors to a ligand can vary between cell types, nuclear receptor assays need to be highly reproducible. Therefore, our NR Sandwich ELISAs are rigorously tested to ensure the highest level of reproducibility (Figure 2).

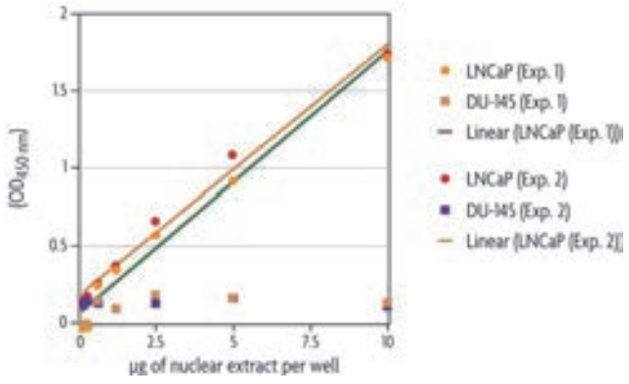


FIGURE 2:
Reproducibility of NR Sandwich ELISAs.
Increasing amounts of nuclear extract from two different prostate cancer cell lines, LNCaP and DU-145, were assayed for levels of androgen receptor using the NR Sandwich AR Kit. Each dilution was assayed in duplicate and the experiment was repeated two times. The results confirm that LNCaP cells are positive for AR, while DU-145 cells are AR negative; it also exhibits very low inter- and intra-plate variation, demonstrating the high reproducibility of the NR Sandwich AR Kit.

Product	Format	Cat. No.
NR Sandwich AR	1 x 96-well plate	49196
	5 x 96-well plates	49696
NR Sandwich ERα	1 x 96-well plate	49296
	5 x 96-well plates	49796
Recombinant ER protein	4,000 units	31119
NR Sandwich PR	1 x 96-well plate	49396
	5 x 96-well plates	49896

Antibodies

highly characterized to meet your needs

Active Motif offers over 700 antibodies directed against a variety of transcription factors and other proteins involved in gene regulation. They have been validated for a variety of applications including ChIP, Western blots and immunofluorescence. A small subset are shown below. For a complete product listing and more detailed information, go to www.activemotif.com/abs.

Description	Application	Cat. No.
ANTIBODIES		
6-Methyladenosine (6-meA) pAb	DB	61495
Ago1/2/3 mAb	ChIP, IF, IHC, IP, WB	39937
Ago2 mAb	IF, IP, WB	39853
Ago3 mAb	IF, IP	39787
AIB1 / SRC-3 pAb	ChIP, WB	39797
AID mAb	WB	39885
Aiolos mAb	ChIP, WB	39657
AML-1/Runx1 pAb	WB	39000
AML-2/Runx3 pAb	EMSA	39301
AML-3/Runx2 pAb	EMSA	39302
Androgen Receptor pAb	ChIP, ChIP-Seq, WB	39781
ATAD2 pAb	WB	61369
ATF-6 mAb	FACS, IHC, WB	40962
ATRX pAb	WB	61049
Atxn7l3 mAb	IP, WB	61339
BCL11A mAb	IF, IHC, WB	61231
BMI-1 mAb	ChIP	39993
Boris / CTCFL pAb	WB	39851
BRD4 pAb	ChIP, WB	39909
BRD8 / SMAP2 pAb	WB	61007
CAF-1 p150 mAb	IF, IP, WB	39997
CBX8 pAb	WB	61237
CHD3 mAb	IF, IP, WB	61469
CTBP2 pAb	WB	61261
CTCF pAb	ChIP, ChIP-Seq, WB	61311
CtIP mAb	IF, IP, WB	61141
CUL4B pAb	WB	61445
DAX-1 / NR0B1 mAb	IF, IHC, WB	39983
DP1 pAb	WB	61145
DR4 mAb	WB	40934
DR6 pAb	WB	40927
EDF1 pAb	WB	61257
EED mAb	ChIP, ChIP-Seq, IHC	61203
EKLF mAb	ChIP, IP, WB	61233
Elk-1 pAb	WB	61301
Estrogen Receptor α mAb	IP, WB	61035
Estrogen Receptor β mAb	IHC, IP, WB	39767
ERR-α pAb	WB	61047
EuHMT1 pAb	WB	39777

Description	Application	Cat. No.
EZH1 pAb	WB	61583
EZH2 pAb	ChIP, ChIP-Seq, IP, WB	39901
EZH2 phospho Thr345 pAb	WB	61241
FosB mAb	WB	40960
FOXO3 pAb	WB	61593
FOXO4 pAb	WB	61573
FTO pAb	WB	61431
GATA-1 pAb	ChIP	61535
GCN5 mAb	IF, WB	39975
Geminin pAb	IP, WB	61135
HDAC1 mAb	ChIP, IF, IHC, IP, WB	39531
HDAC1 pAb	ChIP, ChIP-Seq, WB	40967
HDAC2 mAb	IF, WB	39533
HDAC3 pAb	WB	40968
HDAC4 pAb	ChIP, WB	40969
HDAC5 pAb	ChIP, WB	40970
HDAC6 pAb	ChIP, WB	40971
HDAC9 pAb	WB	39793
HIF-1 α pAb	ChIP, ChIP-Seq, WB	39665
HIPK2 mAb	IF, IHC, IP, WB	39677
HIRA mAb	IF, IP, WB	39557
HMGA2 / HMGI-C pAb	WB	61041
HNF-3α / FOXA1 mAb	IHC, WB	39837
HNF4A pAb	WB	61189
HP1α mAb	ChIP, IF	39977
HP1β mAb	IF, IP, WB	39979
HP1γ mAb	IF, WB	39981
Ikaros pAb	WB	39291
IκBα mAb	WB	40903
IκBα phospho Ser32,36 mAb	WB	40904
IKKβ mAb	IP, WB	40907
IKKi/IKKε mAb	WB	40950
IRF-2 pAb	WB	61281
IRF-3 pAb	ChIP, IF, WB	39033
IRF-5 pAb	ChIP, ChIP-Seq, WB	61269
JARID1C / KDM5C pAb	ChIP, WB	39229
Jhd2 pAb	WB	39263
JMJD2B / KDM4B pAb	WB	61221
JMJD2D pAb	WB	39247
c-Jun pAb	EMSA	39309

Description	Application	Cat. No.
JunD pAb	WB	61403
Kat6a mAb	ChIP, IP	61327
KLF4 pAb	WB	39745
L3MBTL1 pAb	WB	39182
L3MBTL2 pAb	WB	39569
Lamin A/C mAb	IF, WB	39287
LSD1 / KDM1A pAb	ChIP, ChIP-Seq, WB	39186
LXR-α pAb	ChIP, ChIP-Seq, WB	61175
LXR-β pAb	ChIP, ChIP-Seq, WB	61177
Maz mAb	ChIP, EMSA	39935
MBD2 pAb	WB	39547
MBD3 mAb	WB	39216
MeCP2 mAb	ChIP, IF, IHC, IP, WB	61285
MeCP2 phospho Ser80 pAb	WB	39733
MED1 pAb	WB	61065
MEIS 1/2/3 mAb	ChIP, EMSA, IHC, WB	39795
Menin pAb	ChIP, ChIP-Seq, WB	61005
Mi-2 beta pAb	IF, IHC, WB	39289
MITF mAb	ChIP, ChIP-Seq, EMSA, IF, IP, WB	39789
MLL / HRX mAb	ChIP, IP, WB	39829
MMSET / WHSC1 mAb	ChIP, ChIP-Seq, WB	39879
MOZ pAb	WB	39867
MRG15 pAb	WB	39361
c-Myc pAb (65 kDa form)	WB	39012
MyoD mAb	IF, WB	39991
NAK1/Nur77 pAb	WB	40982
NF-1A pAb	WB	39397
NF-1B2 pAb	WB	39091
NFE2L2 pAb	WB	61599
NFκB p50 pAb	WB	39037
NFκB p65 mAb	WB	40916
NR2F2 / COUP2 pAb	ChIP, ChIP-Seq, WB	61213
Nucleolin mAb	IF, WB	39541
O-GlcNAc mAb	IP, WB	61453
Oct-4 pAb	ICC, IF, WB	39811
OGT/O-GlcNAc transferase pAb	ChIP, ChIP-Seq, WB	61355
p53 mAb	IP, WB	39553
p63 pAb	ChIP, IF, WB	39739
PAX7 mAb	IF, WB	39803
PAX9 mAb	IHC, WB	61077
PBX, long form mAb	WB	61151
Phc1 mAb	IF, IP	39723
Phc2 mAb	IF, IP	39661
PHF20 pAb	WB	61123
PITX2 pAb	WB	61303
PKM2 pAb	WB	61423
PLZF mAb	ChIP, IF, WB	39987
PPM1D pAb	WB	61591

Description	Application	Cat. No.
Progesterone Receptor mAb	ChIP, IF, IHC, WB	61023
PRDM1 / BLIMP1 mAb	IHC, WB	61167
PRMT5 pAb	WB	61001
PRMT6 pAb	WB	61003
Prox1 mAb	IF, IHC	61093
PXR pAb	WB	39589
RAR-α mAb	EMSA, IHC, WB	39971
RAR-β mAb	EMSA, IHC, WB	61027
RbAp46/48 pAb	ChIP, WB	39198
RBPJ mAb	ChIP, EMSA	61505
Ring1B mAb	ChIP, ChIP-Seq, IF, IP, WB	39663
RNA pol II mAb	ChIP, ChIP-Seq, IF, WB	39097
RNA pol II mAb	WB	61081
RNA Pol II CTD phospho Tyr1 mAb	ChIP, IP, WB	61383
RNA pol II CTD phospho Ser2 mAb	ChIP, ChIP-Seq, IF, IP, WB	61083
RNA Pol II CTD phospho Thr4 mAb	ChIP, IF, WB	61361
RNA pol II CTD phospho Ser5 mAb	ChIP, ChIP-Seq, IF, IP, WB	61085
RNA pol II CTD phospho Ser7 mAb	ChIP, ChIP-Seq, IF, IP, WB	61087
SET8 / PR-SET7 pAb	WB	61009
SIN3A pAb	ChIP, WB	39865
SIP1 mAb	IF, IHC, WB	61095
SIRT1 mAb	IF, IP, WB	39353
SIRT2 phospho Ser331 mAb	WB	61363
SMARCA2 / BRM mAb	ChIP, IF, WB	39805
SMARCA4 / BRG1 mAb	IF, WB	39807
SNF2h mAb	ChIP, IP, WB	39543
Sox2 pAb	IF, IHC, WB	39823
Sp1 pAb	ChIP, WB	39058
Sp1 phospho Ser101 pAb	WB	39757
SREBP-1 mAb	EMSA, IP, WB	39939
SREBP-2 mAb	ChIP, WB	39941
SRF mAb	IHC, WB	61385
STAT1α pAb	WB	39059
STAT4 pAb	WB	61507
STAT5A pAb	WB	61133
STAT5B pAb	WB	61137
STAT6 pAb	WB	61547
SUV39H1 mAb	ChIP, IP, WB	39785
Suz12 mAb	ChIP, IHC, IP	39877
Tbp mAb	IF, IHC, IP, WB	61329
Thymine-DNA glycosylase pAb	WB	61437
Tet1 pAb	ChIP, ChIP-Seq, WB	61443
Tet2 mAb	IP, WB	61389
Tet3 pAb	WB	61395
TRIM28 mAb	ChIP, IF, WB	61173
TWIST mAb	IF, IHC, WB	61097
Uhrf1 mAb	IF, IHC, IP, WB	61341
YY1 pAb	ChIP, WB	39071

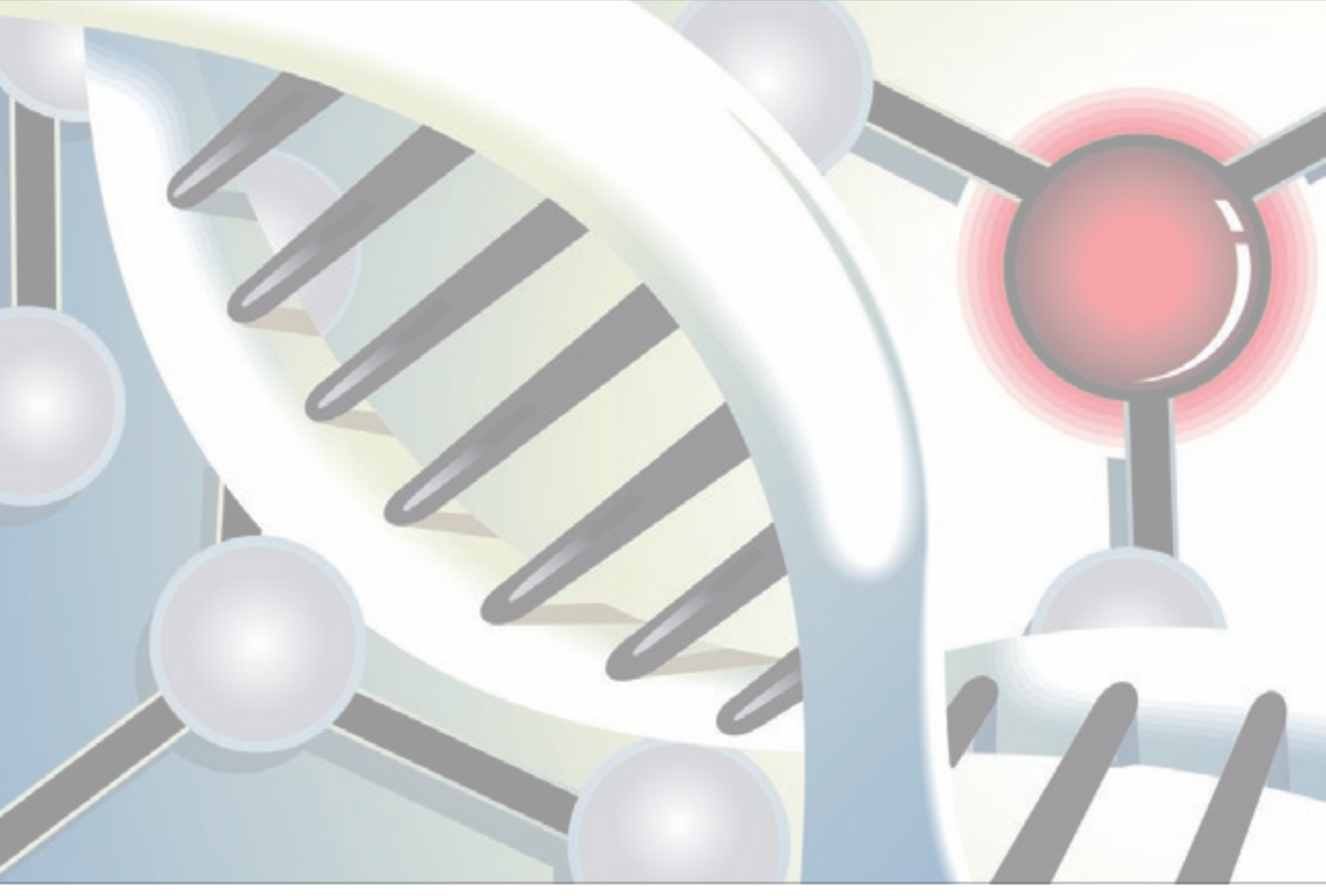
APPLICATIONS KEY: **ChIP** = Chromatin IP; **ChIP-Seq** = ChIP Sequencing; **DB** = Dot Blot; **EMSA** = Electrophoretic Mobility Shift Assay; **FACS** = Flow Cytometry; **ICC** = Immunocytochemistry; **IF** = Immunofluorescence; **IP** = Immunoprecipitation; **WB** = Western Blot

Recombinant Proteins

recombinant proteins for use in a variety of applications

Active Motif provides a comprehensive portfolio of high-quality recombinant proteins, enzymes, domains and small molecules. We offer over 300 purified assay-ready proteins, including transcription factors, modified histones, DNA and histone modifying enzymes and bromodomains. These recombinant proteins are ideal for all your research needs and can be used in a variety of applications. The c-Fos, c-Jun, c-Myc, CREB, NFκB p50 & p65, p53 and Sp1 proteins have been validated for use in making standard curves in our TransAM® Transcription Factor ELISAs (see page 10). Visit www.activemotif.com/proteins for a complete list.

Description	Expressed In	Format	Cat. No.
RECOMBINANT PROTEINS			
AP-2α protein	*E. coli*	10 µg	31331
APEX protein, active	*E. coli*	10 µg	31245
CTF1 (NF-1) protein	Baculovirus	5 µg	31118
DNA Topoisomerase I protein, active	Baculovirus	10 µg	31239
ER protein	Baculovirus	4 µg	31119
c-Fos protein	Baculovirus	5 µg	31115
FXR protein	*E. coli*	10 µg	31120
GR protein	Baculovirus	5 µg	31121
Histone H3 biotinylated	*E. coli*	25 µg	31271
Histone H3K27me3 (MLA)	*E. coli*	50 µg	31216
HMGB1 protein	*E. coli*	10 µg	31247
IKKβ protein, active	Baculovirus	10 µg	31176
IKKε protein, active	Baculovirus	10 µg	31177
c-Jun protein	Baculovirus	5 µg	31116
LXRα protein	*E. coli*	10 µg	31122
LXRβ protein	*E. coli*	10 µg	31123
MAD1 protein	*E. coli*	10 µg	31329
MAD4 protein, active	*E. coli*	10 µg	31248
MAX protein, active	*E. coli*	10 µg	31244
c-Myc protein	*E. coli*	5 µg	31117
NFκB p50 protein	*E. coli*	5 µg	31101
NFκB p65 protein	*E. coli*	5 µg	31102
p53 protein	Baculovirus	5 µg	31103
p53 protein, active	*E. coli*	10 µg	31465
p300 protein	Baculovirus	4 µg	31124
PARP-1 protein, active	Baculovirus	10 µg	31238
PC4 protein	*E. coli*	10 µg	31317
PPARα protein	*E. coli*	10 µg	31125
PPARα-LBD protein	*E. coli*	10 µg	31141
PPARβ(δ) protein	*E. coli*	10 µg	31126
PPARβ(δ)-LBD protein	*E. coli*	10 µg	31142
PPARγ protein	*E. coli*	10 µg	31127
PPARγ-LBD protein	*E. coli*	10 µg	31143
PRC2 Complex	Baculovirus	20 µg	31387
PRC2 EZH2(Y641F) Complex	Baculovirus	20 µg	31388
PRC2 EZH2(Y641C) Complex	Baculovirus	20 µg	31389
PRC2 EZH2(Y641N) Complex	Baculovirus	20 µg	31390
PRC2 EZH2(A677G) Complex	Baculovirus	20 µg	31391
PRDM10 protein	Baculovirus	20 µg	31396
PRDM14 protein	Baculovirus	20 µg	31397
PRMT2 protein	Baculovirus	20 µg	31392
PRMT5 protein	Baculovirus	20 µg	31393
PRMT6 protein	Baculovirus	20 µg	31394
PXR protein	Baculovirus	5 µg	31144
RAP30 protein	*E. coli*	10 µg	31316
RAP74 protein	*E. coli*	10 µg	31315
RAR-α protein	Baculovirus	5 µg	31130
RAR-β protein	Baculovirus	5 µg	31131
RAR-γ protein	Baculovirus	5 µg	31132
pRb protein	Baculovirus	5 µg	31128
RXR-α protein	*E. coli*	10 µg	31133
RXR-β protein	*E. coli*	5 µg	31134
RXR-LBD protein	*E. coli*	10 µg	31135
Set2 protein, active	Baculovirus	50 µg	31358
SETD2 (1392-2564) protein	Baculovirus	20 µg	31399
SETDB1 protein	Baculovirus	20 µg	31452
Smyd1 protein	Baculovirus	20 µg	31405
Purified Sp1 protein	HeLa cells	2 µg	31137
Sp1 protein	Baculovirus	5 µg	31136
Spt16 / FACT p140 protein	Baculovirus	10 µg	31344
SSRP1 / FACT p80 protein	Baculovirus	10 µg	31345
STAT3 protein	*E. coli*	10 µg	31140
TBP protein, active	*E. coli*	10 µg	31246
TCEA1 protein, active	*E. coli*	10 µg	31242
Tet1 protein, active	*E. coli*	25 µg	31363
TFIIA2 protein, active	*E. coli*	10 µg	31249
TFIIA α/β protein	*E. coli*	10 µg	31330
TFIIB protein, active	*E. coli*	10 µg	31240
TFIIE α protein, active	*E. coli*	10 µg	31241
TFIIE β protein	*E. coli*	10 µg	31341
TFCP2 protein, active	*E. coli*	10 µg	31250
TRα1 protein	Baculovirus	5 µg	31138
TRα1 protein	*E. coli*	10 µg	31139
USF1 protein	*E. coli*	10 µg	31333
YY1 protein	*E. coli*	10 µg	31332



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