NR Sandwich

ERα ELISA

(version A)

Catalog Nos. 49296 & 49796

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Overview

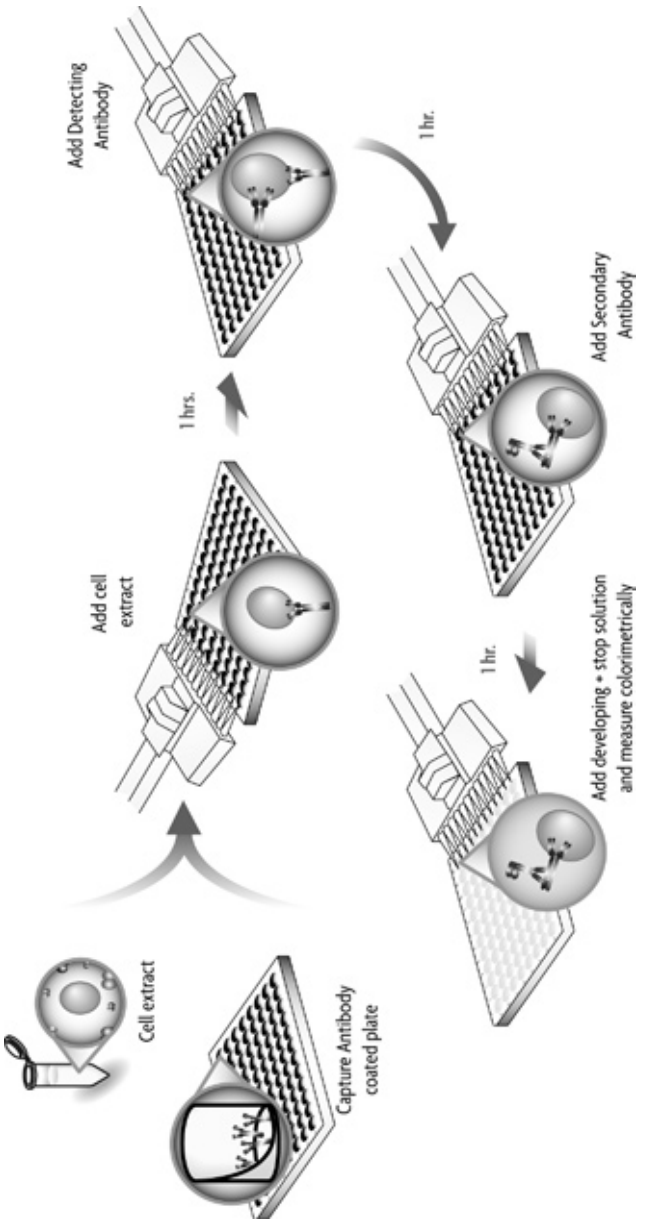
Estrogen receptor alpha (ERα) belongs to the nuclear receptor (NR) superfamily of structurally related ligand-inducible transcription factors[1]. NRs act in combination with other transcription factors to regulate the expression of gene networks involved in cell growth and development, apoptosis, homeostasis, inflammation, lipid metabolism, the reproductive cycle and other fundamental biological processes. ERα is also a well-established marker of breast cancer hormone sensitivity, and the quantification of estrogen receptors in breast tumors has been routinely performed in clinical laboratories to aid in the selection between hormonal and chemotherapy and also to predict prognosis[2, 3, 4]. Because of ERα's critical role in cell biology, it is important to measure the total amounts of ERα contained in different cell types and tissues. Traditional methods for monitoring ERα protein levels, such as Western blotting, EMSA, immunohistochemistry (IHC) and reporter gene assays, are time consuming and not suitable to high-throughput applications.

With its NR Sandwich ELISAs, Active Motif is introducing the first ELISA-based kits to detect total amounts of nuclear receptor proteins. The NR Sandwich ERα Kit simplifies the measurement of ERα contained in cell and tissue samples by using the "Sandwich ELISA" method for detecting a protein. This method uses two antibodies that each recognize a distinct epitope on the protein of interest. The kit provides an ELISA plate that is coated with the first antibody, called the Capture Antibody, which is used to capture the protein from the sample. The second antibody, called the Detecting Antibody, is used to detect the protein bound by the Capture Antibody. An HRP-conjugated Secondary Antibody is then used to quantitate the amount of bound Detecting Antibody. Subsequent incubation with developing solution provides an easily quantified colorimetric readout. NR Sandwich ERα is available in two sizes:

product	format	catalog no.
NR Sandwich ERα	1 x 96-well plate	49296
	5 x 96 well plates	49796

Active Motif also offers NR Peptide ERα Kits for the detection of ligand-activated ERα. See this and other Active Motif products related to ER in Appendix, Section B.

Flow Chart of Process



Estrogen Receptor

Estrogen plays an important role in reproductive physiology and in numerous human disease states, including breast and endometrial cancers, cardiovascular disease, osteoporosis and Alzheimer's disease. The biological functions of estrogens and estrogen-like molecules are mediated by the products of two genes within the nuclear receptor family, ERα and ERβ[5].

Human ERα is comprised of 595 amino acids and displays an approximate molecular weight of 66-70 kDa. Six functional regions have been identified[6]. The N-terminal A/B domain (aa 1-184) contains activation function 1 (AF1) and is involved in co-activator binding and transcriptional activation of target genes[7]. The DNA binding domain (DBD, aa 185-263) contains two zinc finger motifs and is highly conserved across the nuclear receptor superfamily. It is responsible for the binding of the receptor to estrogen response elements (EREs) and contributes to dimerization and activation. The hinge region (aa 264-302) separates the ligand binding domain (LBD) and the DBD. The LBD (aa 303-553) consists of 12α-helices, which form a hydrophobic pocket responsible for ligand binding. The function of the final domain (aa 554-595) is not clear but is thought to play a role in distinguishing between agonist and antagonist binding[8]. Genes that are regulated by the activity of ER include c-Myb, c-Myc, TGF-α (transforming growth factor – alpha)[9], cyclin D1, cathepsin D and PR (progesterone receptor)[10].

The cellular levels of ERα vary greatly depending on cell type. In breast cancer cells, the level of ERα is a well-established marker of breast cancer hormone sensitivity, and the quantification of estrogen receptors (often in conjunction with the measurement of progesterone receptors) in breast tumors has been routinely performed in clinical laboratories to aid in the selection between hormonal and chemotherapy[2, 3, 4]. Hormone cell treatment can also affect ERα levels. For example, *in vitro* studies have shown that MCF-7 cells up-regulate the synthesis of ERα in response to long-term estradiol deprivation[9]. This finding may help explain why hormone-dependent breast cancer initially responds to primary therapies that block estrogen production or action, but tumor re-growth often occurs 12-18 months later[9, 11, 12].

Traditional Nuclear Receptor Assays

To date, several methods are widely used to measure ERα expression, either directly or indirectly:

1. Cellular levels of ER protein can be determined by Western blot by using antibodies specific for ER protein. This method is time consuming (up to 2 days once the nuclear extracts are prepared), and is not suitable for processing large numbers of samples.

2. The DNA-binding capacity of ER can be assayed by gel retardation, also called electrophoretic mobility shift assay (EMSA). In this method, nuclear extracts are incubated with a radioactive double-stranded oligonucleotide probe containing the consensus sequence for ER binding. If ER is active in the nuclear extract, it will bind to the probe. Samples are then resolved by electrophoresis on a native polyacrylamide gel, followed by autoradiography.

This method is sensitive, but like the previous procedure, it is time consuming (multiple days of gel exposure may be required to achieve sufficient sensitivity) and it cannot be applied to high-throughput screening. Gelshift assays also require special precautions and equipment for handling radioactivity.

3. Immunohistochemistry is also commonly performed to analyze the ER content of tissue samples. Although this method is highly sensitive and can reveal the subcellular distribution of ER protein, it is technically demanding, requires specialized equipment, and is not suitable for the analysis of a large number of samples
4. Another method used to assay ER activation is based on reporter genes, typically luciferase or β-galactosidase, placed under the control of a promoter containing an ER consensus binding site. The promoter can be artificial, made of a GC box and a TATA box, or natural, like promoter sequences from viral regulator elements, such as the HIV-1 LTR promoter. However, the procedure is limited by the following issues: (i) reporter gene assays have to be repeated several times to obtain statistically reliable data; and (ii) reporter gene assays are sensitive to confounding factors that may influence the expression level of the reporter gene; therefore, assays have to be carefully standardized.

NR Sandwich ERα ELISAs

ER-regulated genes are involved in a variety of cellular pathways that are currently being deciphered by academic and pharmaceutical laboratories for new target discovery. However, there is a lack of standardized assays that measure cellular levels of ER.

To overcome this, Active Motif has introduced the NR Sandwich ERα to monitor the expression levels of ERα in cell and tissue samples. The NR Sandwich ERα ELISA Kit uses the "Sandwich ELISA" method for detecting a protein. This method uses two antibodies that each recognize a distinct epitope on the protein of interest. The kit provides an ELISA plate that is coated with the first antibody, called the Capture Antibody, which is used to capture the protein from the sample. The second antibody, called the Detecting Antibody, is used to detect the protein bound by the Capture Antibody. An HRP-conjugated Secondary Antibody is then used to quantitate the amount of bound Detecting Antibody. Subsequent incubation with developing solution provides an easily quantified colorimetric readout. Once the samples are prepared, this assay is completed in less than 4 hours. As this assay is performed in 96-well plates, a large number of samples can be handled simultaneously, enabling high-throughput automation. This assay is specific for ERα and can be used to detect ERα in as little as 0.6 µg of nuclear extract from MCF-7 cells.

The NR Sandwich ERα has many applications including the study of ER transcriptional activity regulation and protein structure/function studies of ER and its mutated variants in areas such as osteoporosis, arteriosclerosis and breast cancer.

Kit Performance and Benefits

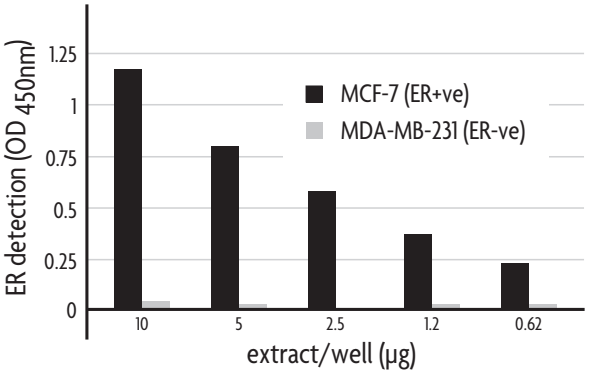
The NR Sandwich ERα Kit is for research use only. Not for use in diagnostic procedures.

Detection limit: > 0.6 µg nuclear extract/well.

Range of detection: NR Sandwich ERα provides quantitative results from 0.6 to 10 µg of nuclear extract/well (see graph below).

Cross-reactivity: NR Sandwich ER detects ERα from human, mouse and hamster origin. This assay is not recommended for use with samples from rat origin. Cross-reactivity with other species has not been determined.

Assay time: < 4 hours.



Measuring cellular ERα levels. Different amounts of nuclear extracts from MCF-7 and MDA-MB-231 cells were analyzed for cellular levels of ERα using the NR Sandwich ERα Kit. This data is provided for demonstration purposes only.

Kit Components and Storage

Except for the nuclear extract that must be kept at -80°C, kit components can be stored at -20°C prior to first use. Then, we recommend storing each component at the temperature indicated in the table below.

Reagents	Quantity (1 plate / 5 plates)	Storage / Stability
ERα detecting antibody	13 µl / 65 µl	4°C for 6 months
HRP-conjugated antibody	6 µl / 30 µl (0.2 µg/µl)	4°C for 6 months
MCF-7 nuclear extract	40 µl / 200 µl (2.5 µg/µl)	-80°C for 6 months
Diluent Buffer	22 ml / 110 ml	-20°C for 6 months
10X Wash Buffer AM1	22 ml / 110 ml	4°C for 6 months
Developing Solution	11 ml / 55 ml	4°C for 6 months
Stop Solution	11 ml / 55 ml	4°C for 6 months
96-well assay plate	1 / 5	4°C for 6 months
Plate sealer	1 / 5	

Additional Materials Required

- Multi-channel pipettor
- Multi-channel pipettor reservoirs
- Rocking platform
- Microplate spectrophotometer capable of reading at 450 nm (655 nm as optional reference wavelength).

For Nuclear Extract preparation

- Hypotonic Buffer
- Phosphatase Inhibitor Buffer
- 10X PBS
- Detergent (NP-40)
- Lysis Buffer

Buffer Preparation and Recommendations

Preparation of 1X Wash Buffer

Prepare the amount of 1X Wash Buffer required for the assay as follows: For every 10 ml of 1X Wash Buffer required, dilute 1 ml 10X Wash Buffer AM1 with 9 ml distilled water (see the Quick Chart for Preparing Buffers and Controls in this section). Mix gently to avoid foaming. The 1X Wash Buffer may be stored at 4°C for one week. The Tween 20 contained in the 10X Wash Buffer AM1 may form clumps, therefore homogenize the buffer by vortexing for 2 minutes prior to use.

Preparation of the Antibody Binding Buffers

Dilute the ERα detecting antibody to 1:400 and HRP-conjugated secondary antibody to 1:1000 with the Diluent Buffer (see the Quick Chart in this section). Use 50 µl of diluted antibody per well. Depending on the particular assay, the signal:noise ratio may be optimized by using higher dilutions of both antibodies. This may decrease the sensitivity of the assay.

Developing Solution

The Developing Solution must be warmed to room temperature before use. This solution is light sensitive, therefore, we recommend avoiding direct exposure to intense light during storage. The Developing Solution may develop a yellow hue over time. This does not affect product performance. A blue color present in the solution indicates that it has been contaminated and must be discarded. Prior to use, transfer the amount of Developing Solution required for the assay into a secondary container (see the Quick Chart for Preparing Buffers in this section), avoid direct exposure to intense light and leave at room temperature for at least 1 hour. After use, discard any remaining solution that was transferred into the secondary container.

Stop Solution

Prior to use, transfer the amount of Stop Solution required for the assay into a secondary container (see the Quick Chart for Preparing Buffers and Controls in this section). After use, discard remaining Stop Solution.

WARNING: The Stop Solution is corrosive. Wear personal protective equipment when handling, *i.e.* safety glasses, gloves and labcoat.

Nuclear Extract

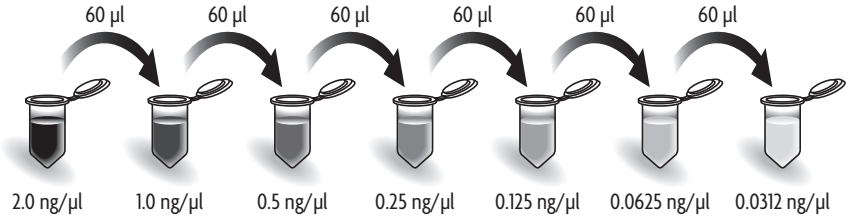
The MCF-7 nuclear extract is provided as a positive control to ensure that the kit reagents are functional. Sufficient extract is provided for 20 reactions. This extract is optimized to give a strong signal when used at 5 µg/well. We recommend aliquoting the extract in 5 µl fractions and storing at -80°C. Avoid multiple freeze/thaw cycles of the extract. Various cell extracts are available from Active Motif (see Appendix, Section B. Related Products).

Optional - Preparation of standard curve

For those who wish to quantify the amount of ERα in their samples, Active Motif offers recombinant ERα for use as a protein standard (see Appendix, Section B. Related Products).

1. Begin with a 100 ng/µl working stock of recombinant protein (use the Diluent Buffer to dilute the protein). Set up a standard curve in duplicate using the following concentrations: 2.0, 1.0, 0.5, 0.25, 0.125, 0.0625, 0.0312 and 0 ng/µl. Note: The preceding range is provided as guidance, a broader range of values may be used.

   Make up a 2.0 ng/µl solution by adding 2.4 µl of the 100 ng/µl working stock to 117.6 µl of Diluent Buffer. Next, pipette 60 µl of the Diluent Buffer into the 7 remaining tubes. Use the 2.0 ng/µl solution to prepare a dilution series as indicated below. Be sure to mix each tube thoroughly before each transfer. The 2.0 ng/µl standard serves as the high standard, while Diluent Buffer alone serves as the 0.0 ng/µl.



2. 50 µl from each tube will be aliquoted to the wells in Step 1, No. 2 of the protocol and will correspond to the following quantities of ERα: 100, 50, 25, 12.5, 6.25, 3.125, 1.5625 and 0.0 ng/well.

Quick Chart for Preparing Buffers and Controls

Reagents to Prepare	Components	For 1 well	For 1 strip (8 wells)	For 6 strips (48 wells)	For 12 strips (96 wells)
1X Wash Buffer	Distilled water	2.025 ml	16.2 ml	97.2 ml	187.2 ml
	10X Wash Buffer AM1	225.0 µl	1.8 ml	10.8 ml	20.8 ml
	TOTAL REQUIRED	**2.25 ml**	**18.0 ml**	**108.0 ml**	**208.0 ml**
Detecting Antibody	ERα antibody	0.14 µl	1.1 µl	6.5 µl	13 µl
	Diluent Buffer	55.0 µl	450.0 µl	2.59 ml	5.19 ml
	TOTAL REQUIRED	**55.14 µl**	**451.1 µl**	**2.6 ml**	**5.20 ml**
Secondary Antibody	HRP-conjugated antibody	0.05 µl	0.45 µl	2.6 µl	5.2 µl
	Diluent Buffer	55.0 µl	450 µl	2.6 ml	5.2 ml
	TOTAL REQUIRED	**55.05 µl**	**450.45 µl**	**2.6 ml**	**5.2 ml**
Developing Solution	**TOTAL REQUIRED**	**110 µl**	**900 µl**	**5.2 ml**	**10.4 ml**
Stop Solution	**TOTAL REQUIRED**	**110 µl**	**900 µl**	**5.2 ml**	**10.4 ml**

* The above volumes include an excess of components

NR Sandwich ERα Assay

Determine the appropriate number of microwell strips required for testing samples, controls and blanks in duplicate. If less than 8 wells in a strip are to be used, cover the unused wells with a portion of the plate sealer while the assay is performed. The content of these wells is stable at room temperature if kept dry. Store the unused strips in the aluminum pouch at 4°C. Use the strip holder for the assay.

Multi-channel pipettor reservoirs may be used for dispensing the 1X Wash Buffer, Antibody Binding Buffers and Developing and Stop Solution into the wells being used.

Step 1: Binding of ERα to the capture antibody

1. Please refer to the Buffer Preparation and Recommendation section before starting the protocol.

   Sample wells: Add 50 µl of sample diluted in Diluent Buffer to each well to be used. We recommend using 2.5 to 50 µg of nuclear extract diluted in Diluent Buffer per well. A protocol for preparing nuclear extracts can be found on page 11.

   Control wells: Add 5 µg of the provided MCF-7 nuclear extract diluted in 50 µl of Diluent Buffer to each well to be used (2 µl of extract in 48 µl of Diluent Buffer per well) .

   Blank wells: Add 50 µl Diluent Buffer only per well.

   OPTIONAL – Protein standard wells: Add 50 µl of the appropriate protein standard diluted in Diluent Buffer to each well being used (see page 8, Preparation of standard curve).
2. Use the provided adhesive cover to seal the plate. Incubate for 1 hour at room temperature with mild agitation (100 rpm on a rocking platform).
3. Wash each well 3 times with 200 µl 1X Wash Buffer. For each wash, flip the plate over a sink to empty the wells, then tap the inverted plate 3 times on absorbent paper towels.

Step 2: Binding of primary antibody

1. Add 50 µl diluted ERα antibody (1:400 dilution in Diluent Buffer) to all wells being used.
2. Cover the plate and incubate for 1 hour at room temperature with gentle rocking.
3. Wash the wells 3 times with 200 µl 1X Wash Buffer (as described in Step 1, No. 3).

Step 3: Binding of secondary antibody

1. Add 50 µl of diluted HRP-conjugated antibody (1:1000 dilution in Diluent Buffer) to all wells being used.
2. Cover the plate and incubate for 1 hour at room temperature with gentle rocking.
3. During this incubation, place the Developing Solution at room temperature.
4. Wash the wells 4 times with 200 µl 1X Washing Buffer (as described in Step 1, No. 3).

Step 4: Colorimetric detection

1. Transfer the amount of Developing Solution required for the assay into a secondary container. Add 100 µl Developing Solution to all wells being used.
2. Incubate 2-10 minutes at room temperature protected from direct light. Please read the Certificate of Analysis supplied with this kit for the optimal development time for this specific kit lot, which varies from lot to lot. Monitor the blue color development in the sample and positive control wells until it turns medium to dark blue. Do not overdevelop.
3. Add 100 µl Stop Solution. In presence of the acid, the blue color turns yellow.
4. Read absorbance on a spectrophotometer within 5 minutes at 450 nm with a reference wavelength of 655 nm. Blank the plate reader according to the manufacturer's instructions using the blank wells.

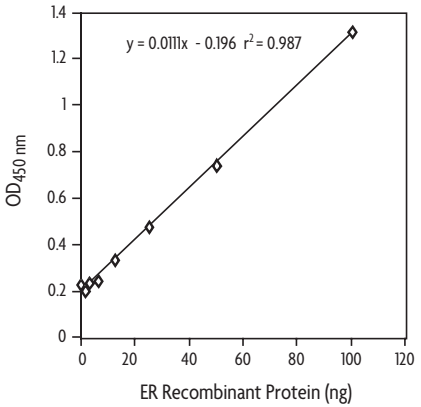
OPTIONAL – Calculation of results using the standard curve

If you have generated a standard curve using Active Motif's recombinant ER protein, average the duplicate readings for each standard, control, and sample and subtract the optical density (OD) obtained from the zero standard.

Plot the OD for the standards against the quantity (ng/well) of the standards and draw the best fit curve. The data can be linearized using log/log paper and regression analysis may also be applied.

To quantify the amount of ER in the samples, find the absorbance value for the samples on the y-axis and extend a horizontal line to the standard curve. At the intersection point extend a vertical line to the x-axis and read the corresponding standard value. Note: If the samples have been diluted, the value read from the standard curve must be multiplied by the dilution factor.

Example curve:
The following standard curve is provided for demonstration only. A standard curve should be made every time an experiment is performed.



Preparation of Nuclear Extract

For your convenience, Active Motif offers a Nuclear Extract Kit (Cat. Nos. 40010 & 40410) which can be used for preparing nuclear, cytoplasmic and whole-cell extract. If you prefer to make your own buffers, please refer to the following protocol.

This procedure can be used for a confluent cell layer of 75 cm^2 (100 mm dish). The yield is approximately 0.5 mg of nuclear proteins for 10^7 cells.

1. Wash cells with 10 ml of ice-cold PBS/PIB.
2. Add 10 ml of ice-cold PBS/PIB and scrape the cells off the dish with a cell lifter. Transfer the cells into a pre-chilled 15 ml tube and spin at 300 x *g* for 5 minutes at 4°C.
3. Resuspend the pellet in 1 ml of ice-cold HB buffer by gentle pipetting and transfer the cells into a pre-chilled 1.5 ml tube.
4. Allow the cells to swell on ice for 15 minutes.
5. Add 50 µl 10% Nonidet P-40 (0.5% final) and mix by gentle pipetting.
6. Centrifuge the homogenate for 30 seconds at 4°C in a microcentrifuge.
7. Discard the supernatant (which contains the cytoplasm and RNA) carefully without disturbing the pellet. Resuspend the nuclear pellet in 50 µl Complete Lysis Buffer and rock the tube gently on ice for 30 minutes on a shaking platform.
8. Centrifuge for 10 minutes at 14,000 x *g* at 4°C and save the supernatant (nuclear extract). Aliquot and store at -80°C. Avoid freeze/thaw cycles.
9. Determine the protein concentration of the extract by using a Bradford-based assay.

10X PBS	**For 250 ml, mix:**
0.1 M phosphate buffer, pH 7.5	3.55 g Na_2HPO_4 + 0.61 g KH_2PO_4
1.5 M NaCl	21.9 g
27 mM KCl	0.5 g

Adjust to 250 ml with distilled water. Prepare a 1X PBS solution by adding 10 ml 10X PBS to 90 ml distilled water. Sterilize the 1X PBS by filtering through a 0.2 µm filter. The 1X PBS is at pH 7.5. Store the filter-sterilized 1X PBS solution at 4°C.

PIB (Phosphatase Inhibitor Buffer)	**For 10 ml, mix**
125 mM NaF	52 mg
250 mM beta-glycerophosphate	0.55 g
250 mM para-nitrophenyl phosphate (PNPP)	1.15 g
25 mM $NaVO_3$	31 mg

Adjust to 10 ml with distilled water. Mix the chemicals by vortexing. Incubate the solution at 50°C for 5 minutes. Mix again. Store at -20°C.

PBS/PIB
Prior to use, add 0.5 ml PIB to 10 ml 1X PBS.

HB (Hypotonic Buffer)	**For 50 ml, mix:**
20 mM Hepes, pH 7.5	0.24 g
5 mM NaF	12 mg
10 µM Na_2MoO_4	5 µl of a 0.1 M solution
0.1 mM EDTA	10 µl of a 0.5 M solution

Adjust pH to 7.5 with 1 N NaOH. Adjust volume to 50 ml with distilled water. Sterilize by filtering through a 0.2 µm filter. Store the filter-sterilized solution at 4°C.

Lysis Buffer	**For 50 ml, mix:**
20 mM Hepes, pH 7.5	0.24 g
400 mM NaCl	1.17 g
0.1 mM EDTA	1.5 mg
10 mM NaF	21 mg
10 µM Na_2MoO_4	0.12 mg
1 mM $NaVO_3$	6.1 mg
20% glycerol	10 ml
10 mM PNPP	0.23 g
10 mM beta-glycerophosphate	0.11 g

Adjust pH to 7.5 with 1 N NaOH. Adjust volume to 50 ml with distilled water. Store at 4°C. Just before use, make up Complete Lysis Buffer by adding 1 µl of 1 M DTT and 10 µl of Protease Inhibitor Cocktail (Sigma, Cat. No. P8340) per ml of Lysis Buffer.

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Appendix

Section A. Troubleshooting Guide

PROBLEM	POSSIBLE CAUSE	RECOMMENDATION
No signal or weak signal in all wells	Omission of key reagent	Check that all reagents have been added in the correct order
	Substrate or conjugate is no longer active	Test conjugate and substrate for activity
	Enzyme inhibitor present	Sodium azide will inhibit the peroxidase reaction, follow our recommendations to prepare buffers
	Plate reader settings not optimal	Verify the wavelength and filter settings in the plate reader
	Incorrect assay temperature	Bring substrate to room temperature
	Inadequate volume of Developing Solution	Make sure that correct volume is delivered by pipette
	Developing time too short	Increase the development time up to 30 minutes
High background in all wells	Developing time too long	Stop enzymatic reaction as soon as the positive wells turn medium-dark blue.
	Concentration of antibodies too high	Increase antibody dilutions
	Inadequate washing	Ensure all wells are filled with Wash Buffer and follow washing recommendations
Uneven color development	Incomplete washing of wells	Ensure all wells are filled with Wash Buffer and follow washing recommendations
	Well cross-contamination	Follow washing recommendations
High background in sample wells	Too much sample per well	Decrease amount of sample
	Concentration of antibodies too high	Perform antibody titration to determine optimal working concentration. Start using 1:800 for primary antibody. The sensitivity of the assay will be decreased
No signal or weak signal in sample wells	Not enough ERα in the sample added per well	Increase amount of sample
	ERα is poorly expressed or inactivated in samples	Check ERα expression in the studied sample
	Samples are not from correct origin	Refer to cross-reactivity information on page 5

Section B. Related Products

Nuclear Receptor ELISAs	Unit	Catalog No.
NR Peptide ERα	1 x 96 rxns	49096
	5 x 96 rxns	49596
NR Peptide ERα Chemi	1 x 96 rxns	49097
	5 x 96 rxns	49597
NR Sandwich AR	1 x 96 rxns	49196
	5 x 96 rxns	49696
NR Sandwich Total PR	1 x 96 rxns	49396
	5 x 96 rxns	49896
NR Sandwich PR B	1 x 96 rxns	49496
	5 x 96 rxns	49996
TransAM Kits		
TransAM™ AP-1 Family	2 x 96 rxns	44296
TransAM™ AP-1 c-Fos	1 x 96 rxns	44096
	5 x 96 rxns	44596
TransAM™ AP-1 c-Jun	1 x 96 rxns	46096
	5 x 96 rxns	46596
TransAM™ AP-1 FosB	1 x 96 rxns	45096
	5 x 96 rxns	45596
TransAM™ AP-1 JunD	1 x 96 rxns	43496
	5 x 96 rxns	43996
TransAM™ ATF-2	1 x 96 rxns	42396
	5 x 96 rxns	42896
TransAM™ c-Myc	1 x 96 rxns	43396
	5 x 96 rxns	43896
TransAM™ C/EBP α/β	1 x 96 rxns	44196
	5 x 96 rxns	44696
TransAM™ CREB	1 x 96 rxns	42096
	5 x 96 rxns	42596
TransAM™ pCREB	1 x 96 rxns	43096
	5 x 96 rxns	43596
TransAM™ Elk-1	1 x 96 rxns	44396
	5 x 96 rxns	44896
TransAM™ ER	1 x 96 rxns	41396
	5 x 96 rxns	41996
TransAM™ GR	1 x 96 rxns	45496
	5 x 96 rxns	45996
TransAM™ PPARβ	1 x 96 rxns	47496
	5 x 96 rxns	47996
TransAM™ PPARγ	1 x 96 rxns	40196
	5 x 96 rxns	40696
TransAM™ Sp1	1 x 96 rxns	41296
	5 x 96 rxns	41796
TransAM™ Sp1/Sp3	1 x 96 rxns	40496
	5 x 96 rxns	40996
Extracts & Proteins		
Nuclear Extract Kit	100 rxns	40010
	400 rxns	40410
Mitochondrial Fractionation Kit	100 rxns	40015
MCF-7 nuclear extract	200 µg	36017
MCF-7 nuclear extract (H_2O_2 post-treated)	200 µg	40810
MCF-7 nuclear extract (H_2O_2 treated)	200 µg	40800
MCF-7 nuclear extract (Spermine)	200 µg	36068
Recombinant ERα protein	4,000 units	31119

Technical Services

If you need assistance at any time, please call Active Motif Technical Service at one of the numbers listed below.

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