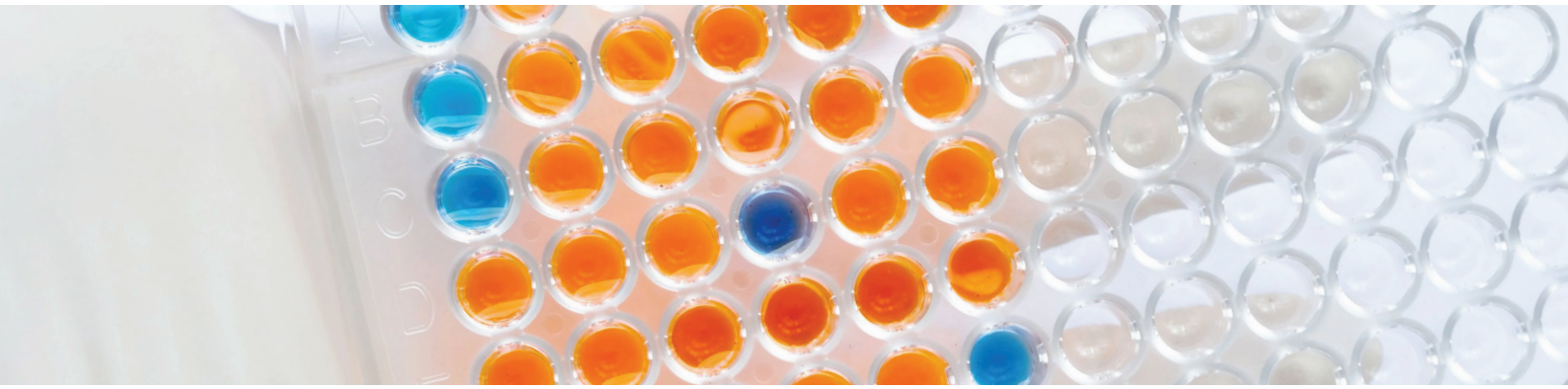
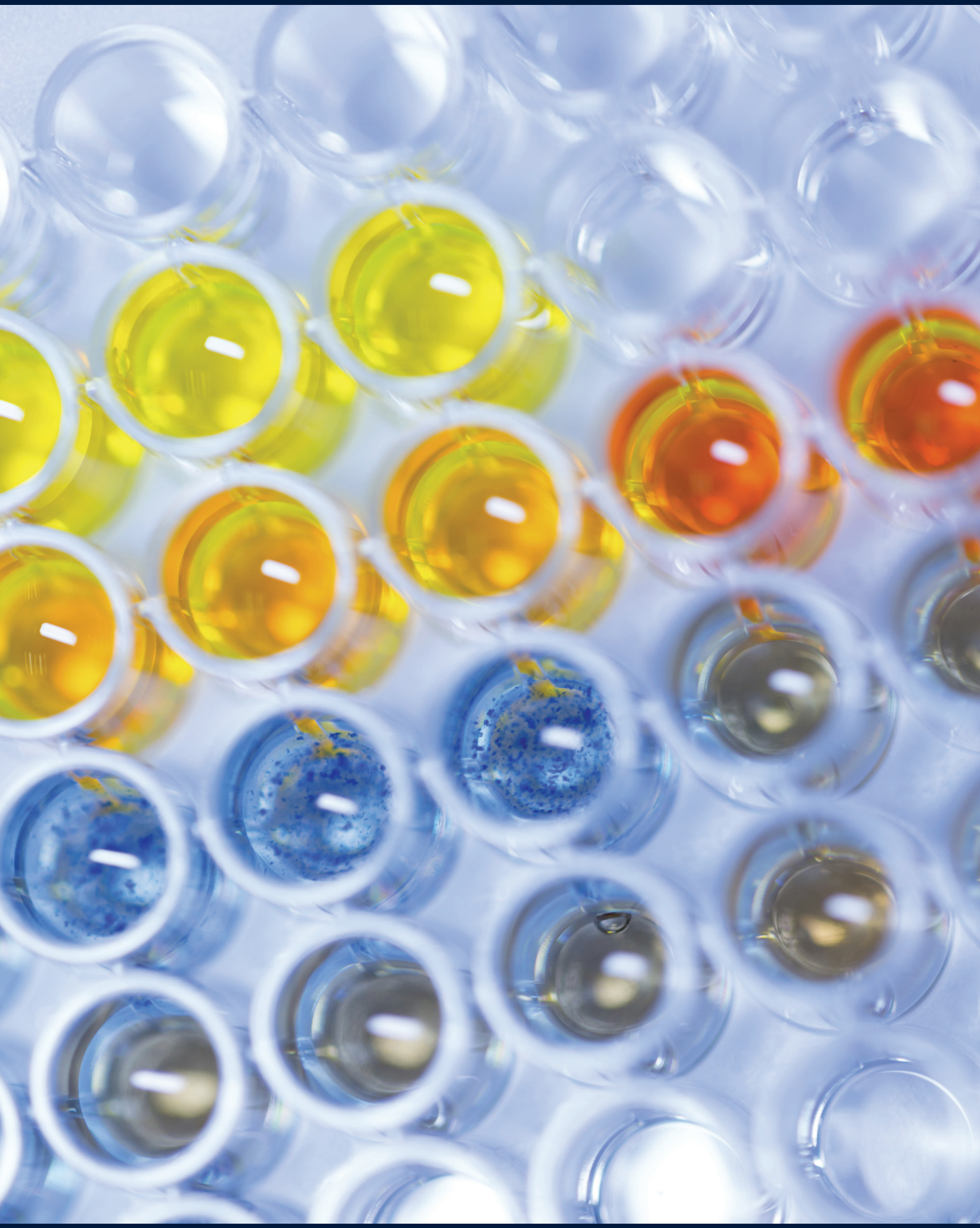
IMMUNOASSAY KITS



Bioprocess
Cancer
Cardiovascular
Cell Death
Cell Signaling
Cyclic Nucleotides
Cytokines
Eicosanoids
Endocrinology/Hormones
Epigenetics
Immunology
Immunity/Inflammation
Metabolism
Nephrology
Neuroscience
Oxidative Stress
Proteostasis/Chaperones



www.enzolifesciences.com/ELISA

CONTENTS

ENTRUST YOUR PRECIOUS SAMPLES TO US

Assay kits can be convenient time-saving tools to help accelerate your research, but not all assays are created equal. Some that promise convenience fail to deliver biologically relevant sensitivity, or the reproducibility needed for long-term studies. This can cost you more time and money in the end.

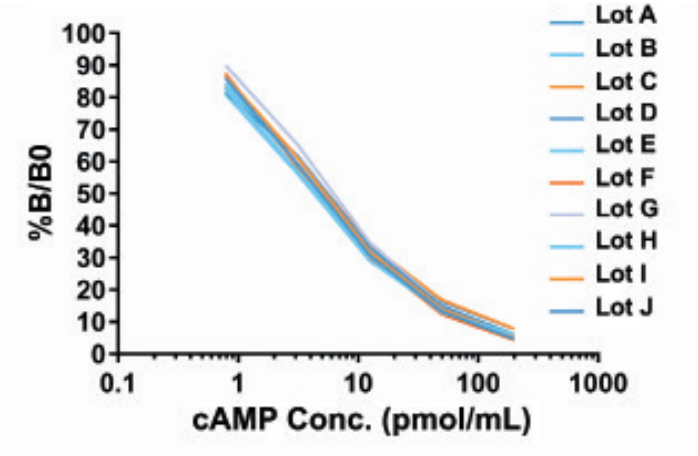
Whether you use ELISA kits for biomarker detection, assessing cellular function with fluorescent probes, or screening enzyme modulators with activity assays, every Enzo assay kit includes something a lot of other companies out there today cannot match — Experience.

Detect Small and Large Analytes Accurately and Efficiently

It takes more than just an antibody pair to make an ELISA. Building an immunoassay requires screening multiple antibodies, selection of appropriate standards and conjugates, establishing proper sample preparation protocols, and validation of the assay in relevant matrices. Our expertise in developing ELISAs is further backed by four decades of manufacturing excellence. Strict validation criteria and state-of-the-art manufacturing facilities deliver reproducible assays that continue to be cited in peer-reviewed publications by scientists around the world.

Enzo Life Sciences offers hundreds of ELISA kits in both immunometric and competitive assay formats. As scientists and manufacturers of kits, we understand the critical nature of your research. Each kit is put through rigorous testing to ensure high precision, accuracy, sensitivity, and specificity. You can be confident that you will obtain reproducible results, day-after day and lot-after-lot.

Reliable Data Lot-After-Lot



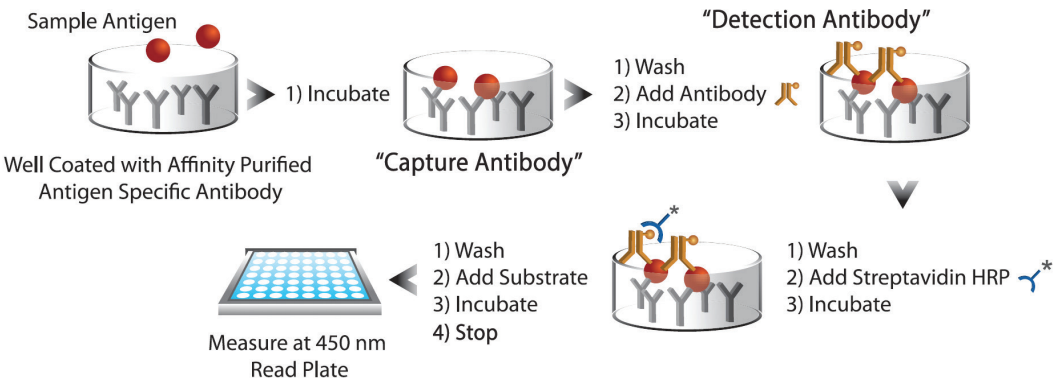
Graph demonstrates the robust and reproducible nature of the competitive cAMP ELISA kit (ADI-900-067A) showing standard curves from 10 lots manufactured over 10 years.

Strict QC Guidelines Ensure Consistent Results, Lot-After-Lot

THE BASICS OF IMMUNOASSAYS

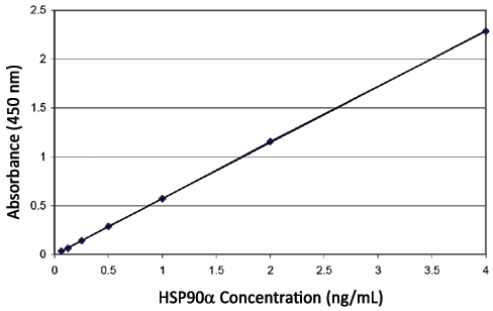
Understanding the basic principles of immunoassays is easy. The essential components of antibody-based immunoassay systems are threefold: 1) an antigen to detect and perhaps quantitate, 2) a specific antibody to this antigen, and 3) a system to measure the amount of antigen in a given sample. Although it appears to be a very simple system, in many cases a number of other assay materials are necessary to allow for quick and convenient measurement.

Immunometric/Sandwich ELISA



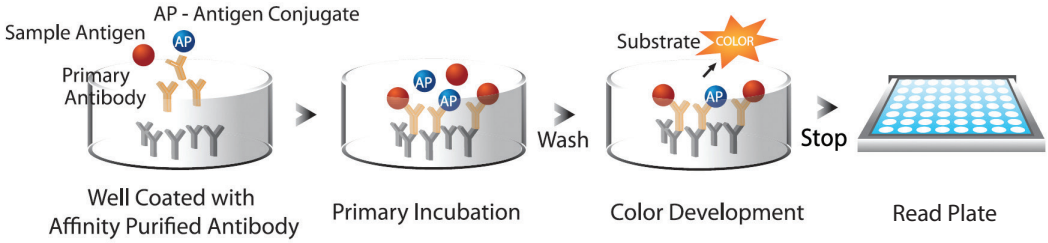
Immunometric assays, also known as sandwich ELISAs (enzyme-linked immunosorbent assays), use two antibodies specific to the antigen to capture or "sandwich" antigen in the well for detection. Immunometric assays exhibit a direct correlation between antigen concentration and substrate response. Immunometric assays typically employ a "capture" antibody coated on the plate to bind the antigen of interest. During a second incubation, the antigen is bound by a second "detection" antibody that is also specific to the antigen. The detection antibody can either be bound by a secondary antibody-enzyme conjugate, or the detection antibody itself is enzyme-conjugated. When chromogenic substrate is added to the assay to develop color, samples with high antigen concentration generate more signal than those with low antigen concentration, producing a signal directly proportional to the amount of antigen in the sample. This correlation can then be used to extrapolate the concentration of antigen in an unknown sample from a standard curve.

Typical Standard Curve of a Sandwich ELISA



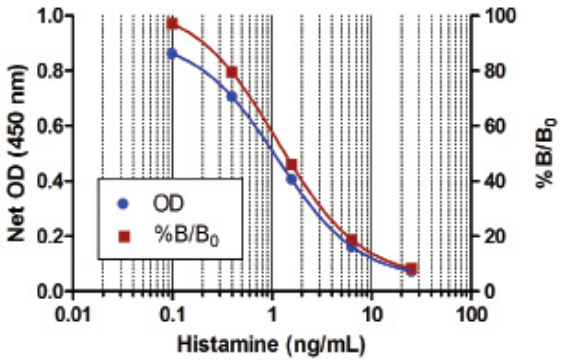
Standard curve experiment using the HSP90α (human), ELISA Kit (ADI-EKS-895).

Competitive ELISA



In competitive enzyme immunoassays, the antigen in a sample competes for limited antibody binding sites with antigen conjugated to a reporter enzyme. This produces an inverse relationship between antigen concentration and substrate turnover. Competitive ELISAs typically use a single antibody to a small molecular weight antigen, generally less than 10,000 Daltons. During incubation, samples with high antigen content result in unlabeled antigen being bound in greater amounts than conjugated antigen. When chromogenic substrate is added to the assay to develop color, samples with high antigen concentration generate a lower signal than those containing low antigen concentration, yielding the inverse correlation between antigen concentration in the sample and color development in the assay. This relationship can then be used to extrapolate antigen concentration in an unknown sample from a standard curve. This type of reaction is one of the few methods possible for small molecular weight antigens, such as steroids, drugs, lipids and peptides.

Typical Standard Curve of a Competitive ELISA



Standard curve experiment using Histamine ELISA Kit (ENZ-KIT140).

Target	Alternative Names	PAGE #	Bioprocess	Cancer	Cardiovascular	Cell Death	Cell Signaling	Cyclic Nucleotides	Cytokines	Eicosanoids	Endocrinology/ Hormones	Epigenetics	Immunology/ Inflammation	Metabolism	Nephrology	Neuroscience	Oxidative Stress	Proteostasis (HSP)
11-dehydro-TXB_2	11-dehydro-Thromboxane B2	32			•					•	•		•					
15-deoxy-$\Delta^{12,14}$-PGJ_2	15-deoxy-delta-12,14-Prostaglandin J2	32								•	•		•					
17β-Estradiol	Estrogen, Oestradiol	25									•						•	
24(S)-Hydroxycholesterol	24(S)-OHC	38														•		
25(OH) Vitamin D	25-Hydroxyvitamin D, Vitamin D	34		•	•						•			•				
5-Hydroxymethylcytosine	5-hmC	26		•								•				•		
5-Methylcytosine	5-mC	26		•								•						
6-keto-$PGF_{1\alpha}$	Prostaglandin $F_{1\alpha}$	32								•	•		•					
ACTH	Adrenocorticotropic hormone, Corticotropin	25									•					•		
Adiponectin	ACRP30, ADIPOQ, GBP28, Adipocyte C1q and collagen domain-containing protein, Gelatin-binding protein, ACDC, APM1	34							•		•			•				
ADMA		40																
Akt	PKB, Protein kinase B	20				•												
Aldosterone		25					•				•							
Angiotensin		19			•		•											
Annexin V		19			•	•								•			•	
Antileukoproteinase	SLPI	17	•													•		
ApoE	Apolipoprotein E	34												•				
APP	Amyloid precursor protein, APP neo, APP ΔC31	37				•											•	
Arg^8-Vasopressin	AVP	19			•		•				•							
BAFF	BLyS, TALL-1, THANK, zTNF4, TNFSF 13B/20, CD257	28					•						•					
Bax	BCL2L4, BCL2-associated X protein	20				•												
Bcl-2		20				•												
Big Endothelin-1		19			•													
BNP Fragment		19																
Bradykinin		19			•		•											
Cadherin		21					•									•		
CD14		28					•						•					
CD40	TNFSF5	28					•						•					
CD40L	CD154, TNFSF5	28					•						•					
CD44		28					•						•					
CHO HCP	CHO Host Cell Protein	15	•															
CINC-1/GRO	Groα, CXCL1, rat IL-8	28					•						•					
Complement C3a des Arg		28					•						•			•	•	•
Complement C4a des Arg		28					•						•			•		
Corticosterone		25									•					•		
Cortisol		25									•						•	
COX-2	Cyclooxygenase-2	28					•						•					
CRP	C-reactive protein	19/28			•								•					

Target	Alternative Names	PAGE #	Bioprocess	Cancer	Cardiovascular	Cell Death	Cell Signaling	Cyclic Nucleotides	Cytokines	Eicosanoids	Endocrinology/ Hormones	Epigenetics	Immunology/ Inflammation	Metabolism	Nephrology	Neuroscience	Oxidative Stress	Proteostasis (HSP)
Crystallin, αβ	HSP25	42																
cyclic AMP	cAMP	23		•	•	•	•	•					•	•				
cyclic GMP	cGMP	23		•	•		•	•										
Cystatin		35			•													
Cysteinyl leukotriene	LTC_4, LTD_4, LTE_4	32								•	•		•					
DHEA	Dehydroepiandrosterone	25									•							
DKK-1	Dickkopf-1	21		•			•											
Dopamine	3,4-dihydroxyphenethylamine	39					•				•					•		
E. coli HCP	*E. coli* Host Cell Protein	15	•															
Erk	Erk1, Erk2, MAPK	21				•	•											
Estriol	Oestriol	25									•							
ET-1	Endothelin-1, Big ET-1	19			•		•				•							
FasL	APO-1L, CD95L, CD178, TNFSF 6	28					•						•					
Fibrinogen		19			•		•											
Fibronectin		17		•														
FSH	Follicle stimulating hormone	25									•							•
Gastrin		25									•			•			•	•
GLP-1	Glucagon-like peptide	13												•				
Grp75	Glucose-regulated protein	42															•	•
Grp78	BiP, Glucose-regulated protein, binding immunoglobulin protein	42																
Grp94	Glucose-regulated protein	42															•	•
Haptoglobin	Hp	19			•								•	•				
HEK239T HCP	HEK239T Host Cell Protein	15	•															
Hepsin	TMPRSS1	16/17		•													•	
HETE	12(S)-hydroperoxy tetraenoic eicosatetraenoic acid	32					•			•	•		•	•				
Histamine		39											•				•	
HO-1	Heme Oxygenase-1	40																•
HODE	13-hydroxyoctadecadienoic acid	32					•			•	•		•	•				•
HSF1	Heat Shock Transcription Factor 1	42																•
HSP25	Heat Shock Protein 25	42																•
HSP27	Heat Shock Protein 27	42																•
HSP60	Heat Shock Protein 60	42																•
HSP70	Heat Shock Protein 70, HSP72	42		•														•
HSP70B'	Heat Shock Protein 70B'	42		•														
HSP90α	Heat Shock Protein 90	42		•												•		
IFN-γ	Interferon-γ	30			•				•		•		•					
IGF-1	Insulin-like growth factor 1	28			•		•						•	•				
IgG	Immunoglobulin G	28											•					

Target	Alternative Names	PAGE #	Bioprocess	Cancer	Cardiovascular	Cell Death	Cell Signaling	Cyclic Nucleotides	Cytokines	Eicosanoids	Endocrinology/ Hormones	Epigenetics	Immunology/ Inflammation	Metabolism	Nephrology	Neuroscience	Oxidative Stress	Proteostasis (HSP)
IgM	Immunoglobulin M	28											•					
IL-10	Interleukin-10	30			•				•		•		•					
IL-12p70	Interleukin-12p70	30			•				•		•		•					
IL-13	Interleukin-13	30			•				•		•		•					
IL-17A	Interleukin-17A, CTLA-8, Cytotoxic T-lymphocyte-associated antigen 8	30			•				•		•		•					
IL-1β	Interleukin-1β	30			•				•		•		•					
IL-2	Interleukin-2	30			•				•		•		•					
IL-33	Interleukin-33, NF-HEV	30			•				•		•		•					
IL-4	Interleukin-4	30			•				•		•		•					
IL-5	Interleukin-5	30			•				•									
IL-6	Interleukin-6	30			•				•		•		•					
IL-8	Interleukin-8	30			•				•		•		•					
Insulin		34												•				
Jnk	SAPK, JNK 1, JNK 2	21		•		•	•											
Kallikrein	KLK6, Neurosin, Protease M	17		•														
KIM-1	Kidney injury molecule-1, T-cell immunoglobulin and mucin domain-containing protein 1, TIMD-1, TIM-1, HAVCR1, Hepatitis A virus cellular receptor 1	34					•						•	•	•			
LBP	Lipopolysaccharide binding protein	28											•					
Leptin	OB gene product	34									•			•				
LH	Lutenizing hormone	25									•							
LTB_4	Leukotriene B_4	32							•		•		•					
LVV Hemorphin 7	LVVPWTQRF peptide	39					•							•				
Matriptase	TADG-15, ST14	17		•														
MBL	Mannan-binding lectin	28		•	•								•	•	•			
MCP-1	Monocyte chemoattractant protein 1	30					•						•					
MEK1	MAP2K1, MKK1, MAPKK1, PRKMK	21				•	•											
Melatonin		25									•							
Methotrexate		15/17	•	•														
Microcystin		17		•														
Myeloperoxidase	MPO	40			•													
Nampt	Visfatin, Nicotinamide Phosphoribosyltransferase, PBEF1	34																
NF-κB	NF-κB p65 ELISA Kit	27					•						•					
NGAL	Lipocalin 2, Neutrophil gelatinase-associated lipocalin	34		•	•		•							•	•			
NT-proCNP	C-type natriuretic peptide	19			•													
Osteopontin	OPN, SPP1, Secreted phosphoprotein 1, Bone sialoprotein 1	21		•			•											
Osteoprotegerin	OPG, TNFRSF 11B, Osteoclastogenesis Inhibitory Factor, OCIF	30					•		•		•		•					
Oxytocin	OT	24/39									•					•		
p27-Kip1		21					•											

Target	Alternative Names	PAGE #	Bioprocess	Cancer	Cardiovascular	Cell Death	Cell Signaling	Cyclic Nucleotides	Cytokines	Eicosanoids	Endocrinology/ Hormones	Epigenetics	Immunology/ Inflammation	Metabolism	Nephrology	Neuroscience	Oxidative Stress	Proteostasis (HSP)
p38	SAPK2, SAP kinase 2	21		•			•											
p53		17		•		•	•											
p53/MDM2	Mouse double minute 2 homolog, E3 ubiquitin-protein ligase Mdm2	17		•		•	•											
p62	Sequestosome 1	20		•		•											•	•
PDI	Protein disulfide-isomerase	40																
PEGylated protein	PEG, Polyethylene Glycol	15	•															
Peptide YY		34												•		•		
PGE_1	Prostaglandin E_1	32								•	•		•					
PGE_2	Prostaglandin E_2	32		•	•					•	•		•					
$PGF_{2\alpha}$	Prostaglandin $F_2\alpha$	32								•	•		•					
Pin1	Peptidyl-prolyl cis-trans isomerase, PPIase, Rotamase	17		•			•									•		
Plasminogen		19			•		•											
PMN-Elastase	Polymorphonuclear elastase	28											•					
proANP		19			•													
Prolactin	Luteotropic hormone, Luteotropin	25									•							
Progesterone		25									•							
Progranulin	Proepithelin, PEPI, PC Cell-derived Growth Factor	28					•						•					
Proinsulin		34												•				
Prostacyclin	PGI_2, Prostaglandin I_2	32							•		•		•					•
Proteasome		42																
Protein A		14	•															
Protein carbonyl		40	•															
PTX3	Pentraxin 3, TSG14, TNF stimulated Gene-14	28					•			•	•		•					
RANKL	ODF, OPGL, TRANCE, TNFSF 11, CD254	28					•						•					
Sclerostin		21												•				
SDMA	NG, N'G-Dimethyl-L-arginine	40															•	
Serotonin	5HT, 5-hydroxytryptamine	25					•				•					•		
sHLA-G	Soluble human leukocyte antigen-G	28											•				•	
SLPI	Secretory leukocyte proteinase inhibitor, ALP	17														•		
SMN	Survival Motor Neuron	39					•									•		
SOD	Superoxide dismutase	40																
Substance P		39					•				•							
Survivin	TIAP	17		•			•							•				
sVEGFR	soluble Vascular Endothelial Growth Factor Receptor 1	21		•	•		•											
Testosterone		25					•				•							
TGF-α		17		•														
TGF-β1	Transforming growth factor β1	30					•		•		•		•					
TIMP-1		17		•														

Target	Alternative Names	PAGE #	Bioprocess	Cancer	Cardiovascular	Cell Death	Cell Signaling	Cyclic Nucleotides	Cytokines	Eicosanoids	Endocrinology/ Hormones	Epigenetics	Immunology/ Inflammation	Metabolism	Nephrology	Neuroscience	Oxidative Stress	Proteostasis (HSP)
TL1A	TNFSF 15, VEGI	30					•		•		•		•					
TNF-R1	Tumor necrosis factor Receptor 1, TNFRSF 1A	30					•						•					
TNF-α	Tumor necrosis factor-α, TNFSF 2	30			•		•		•		•		•					
Total PSA		17		•														
Transferrin		15	•		•													
Troponin I		19			•		•											
TSH	Thyroid stimulating hormone	25									•							
VEGF	Vascular endothelial growth factor	19		•	•		•											
XIAP	X-linked inhibitor of apoptosis	20				•								•				
β-Catenin	CTNNB, Cadherin-associated protein	21					•											

ELISA AMPLIFICATION TECHNOLOGY

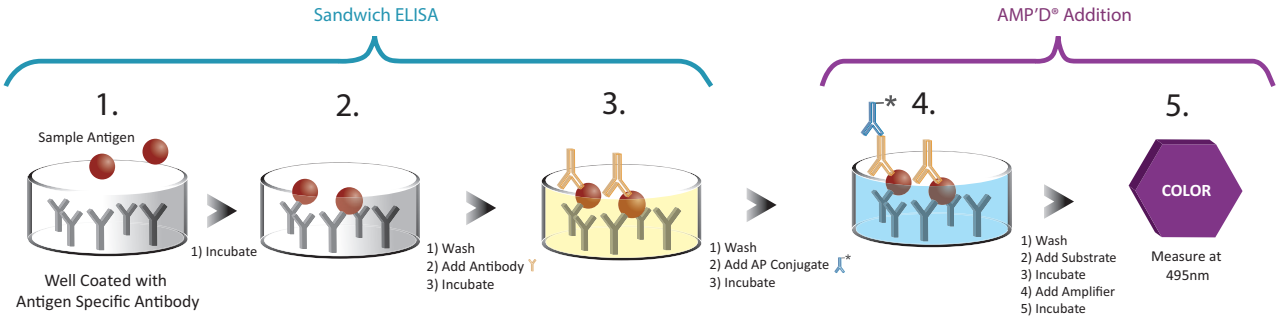
AMP'D® SIGNAL AMPLIFICATION TECHNOLOGY

Increase ELISA Sensitivity with the AMP'D® Signal Amplification Technology

The AMP'D® ELISA Signal Amplification system is designed to replace traditional alkaline phosphatase (AP) substrates, such as pNpp (p-Nitrophenyl phosphate), with a combination substrate and amplifier system that results in greater sensitivity when compared to a traditional substrate ELISA.

In a conventional detection system, enzyme bound to the microtiter plate interacts directly with the substrate producing a color change where the resulting absorbance is directly proportional to the amount of captured analyte. In the AMP'D® ELISA system, bound AP converts a substrate that is utilized in a second enzyme reaction system which is initiated by addition of the amplifier reagent. It is this amplification step that allows for greater (amplified) color production at lower analyte concentrations resulting in an increase in assay sensitivity.

In the AMP'D® ELISA system, the critical substrate component, NADPH, is added to wells containing AP and the AP reduces to NADH via release of a phosphate group. This reaction is allowed to proceed for an amount of time with the accumulated NADH being proportional to the amount of analyte/bound AP-conjugate. Upon the addition of the reconstituted amplifier reagent, this first reaction is quenched and the NADH feeds a second redox enzyme system. Here diaphorase utilizes NADH to reduce the iodonitrotetrazolium salt into formazan (purple color) producing NAD+. A counter enzymatic reaction then occurs where the NAD+ is reduced to NADH while ethanol is oxidized to acetaldehyde via alcohol dehydrogenase. This set of enzymatic reactions is also allowed to proceed for a period of time, recycling the NADH thus amplifying the original AP/substrate reaction. The resulting color intensity is ultimately proportional to the amount of bound analyte.



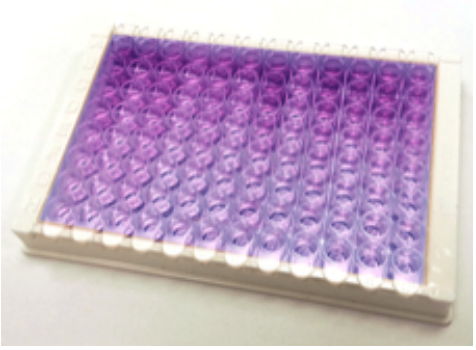
AMP'D® ELISA SIGNAL AMPLIFICATION KIT (ENZ-KIT-100)

Increase ELISA Sensitivity with the Signal Amplification AMP'D® Technology

The AMP'D® ELISA Signal Amplification kit provides up to 50-fold increase in sensitivity over traditional ELISAs while detecting lower concentrations of target in samples.

- Quantify difficult-to-detect analytes
- Easy-to-use, simple procedure for sandwich format ELISAs containing HRP/TMB detection systems
- Convenient one or five 96-well plate formats for high-throughput analysis

Detect up to 50-fold Increase in Sensitivity



A resulting purple color intensity is measured in the AMP'D® ELISA Signal Amplification kit (ENZ-KIT-100) that is proportional to the amount of bound analyte in your sample.

RELATED PRODUCTS

Product Name	Product #	Size
Goat anti-rabbit IgG, polyclonal antibody (AP conjugate)	ENZ-ABS257	5 mL
Streptavidin (AP Conjugate)	ENZ-PRT119	1 mL

ELISA AMPLIFICATION TECHNOLOGY

AMP'D® HSP70 HIGH SENSITIVITY ELISA KIT (ENZ-KIT-101)

HSP70 functions in folding of newly synthesized proteins, re-folding of misfolded or denatured proteins, trafficking of proteins across cellular membranes, inhibiting protein aggregation, and coordinating proteins for degradation via the proteasomal pathway. Enzo's AMP'D® HSP70 high sensitivity ELISA kit provides the ability to use less sample and detect both baseline and upregulated levels of human, mouse, and rat HSP70 (HSP72).

Exposure of cells to oxidative and environmental stresses frequently results in the breakdown or oxidation of genomic DNA. Assays to evaluate the integrity of genomic DNA, or to assess the presence of oxidized DNA are frequently used as a means of verifying the onset of apoptosis or DNA damage.

- Detect as little as 7 pg/mL of HSP70 (HSP72) in < 4.5 hours
- Quantify both baseline and upregulated levels of HSP70 in serum and plasma
- Negligible reactivity from similar HSP70 family members

Reliable Quantification, Even for Baseline Detection

Reliable Quantification, Even for Baseline Detection				
Product	Sensitivity (pg/mL)	Range (pg/mL)	Baseline	Upregulated
AMP'D® HSP70 Kit	7	39-500	✓	✓
Competitor A Kit	200	780-50,000		✓
Competitor R Kit	156	156-10,000		✓
Competitor S Kit	20	550-35,000		✓
Competitor U Kit	90	200-12,500		✓

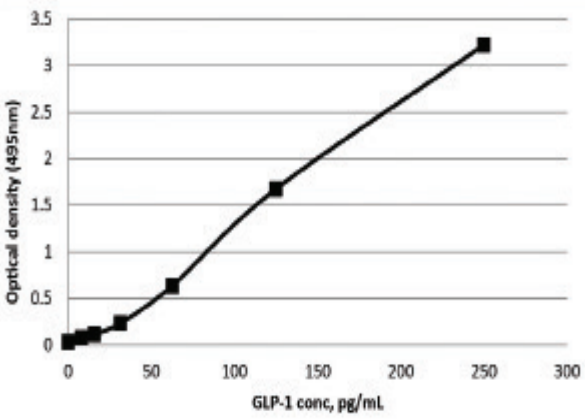
The sensitivity and range of HSP70 (HSP72) levels of the AMP'D® HSP70 high sensitivity ELISA kit (ENZ-KIT-101) was compared to 4 other similar ELISAs. Results indicate that only the AMP'D® HSP70 ELISA kit was able to detect baseline HSP70 (HSP72) levels.

AMP'D® GLP-1 ELISA KIT (ENZ-KIT104)

GLP-1 functions in the regulation of blood glucose through insulin, and plays a role in obesity and diabetes. It is the most potent promoter of insulin secretion and an important gastrointestinal peptide hormone, or incretin. In response to eating, increased levels of GLP-1 stimulate insulin secretion and inhibit glucagon release leading to lower blood glucose levels. These positive effects of GLP-1 on glucose regulation make it an important target for the management of type 2 diabetes and the study of obesity.

- Ultra-sensitive measurement of GLP-1, detecting as little as 5.5 pg/mL
- Negligible reactivity from similar GLP-1 forms
- Compatible with serum and plasma human samples
- High-throughput format with results in 3 hours for up to 40 samples in duplicate
- Fully quantitative results that surpass semi-quantitative Western blot analysis

Ultra-sensitive Detection of GLP-1



Standard curve of GLP-1 ELISA Kit (ENZ-KIT104).

PRODUCT LISTING

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
AMP'D® ELISA Signal Amplification Kit	ENZ-KIT-100	1x96 wells 5x96 wells	Improves ELISA sensitivity ~10 to 50-fold.	ELISA Kit dependent	ELISA Kit dependent	~30 Minutes (replacement time)
AMP'D® HSP70 High Sensitivity ELISA Kit	ENZ-KIT-101	1x96 wells	7 pg/mL (39-500 pg/mL)	H, M, R	P, S	4.5 Hours
AMP'D® GLP-1 ELISA Kit	ENZ-KIT104	1x96 wells	5.5 pg/mL (7.8-250 pg/mL)	H	P, S	3 Hours

LEGEND
Species: B= bovine, C = canine (dog), H = human, M = mouse, MK = monkey, P = porcine (pig), R= rat, RB = rabbit
Sample Types: AM = amniotic fluid, CL = cell lysates, CSF = cerebral spinal fluid, CS = culture supernatants, F = feces, M = milk, NL = nasal lavage, P = plasma, S = serum, SA = saliva, SS= sputum supernatant, T = tissue, TC = tissue culture, U = urine, WhB = white blood cells. Product tables includes both certified and cited species and sample types.

BIOPROCESS OPTIMIZATION

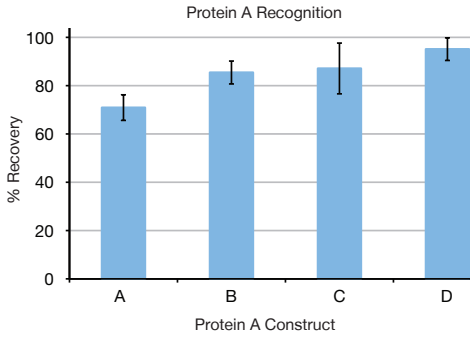
Development of a single drug, whether it is a new chemical entity, biotherapeutic, or genetic/cellular therapy, requires significant investment of resources. Each step of the process from early discovery through production and delivery must be fully explored, characterized, and understood to prevent issues resulting from cell stress, cell death, protein aggregation, and factors affecting reliable manufacturing of the drug. Whether you work in drug discovery, upstream, or downstream bioprocessing, Enzo offers a range of products to help you maintain cell line viability, optimize and monitor product integrity, and maximize yield. Our ELISAs for protein optimization and contamination monitoring are easy to run, quantitative assays, compatible for both manual and automated workflows.

PROTEIN A ELISA KIT (ADI-900-057)

The sensitive PEGylated Protein ELISA kit is ideal for drug development and pharmaceutical manufacturing applications including drug formulations, pharmacokinetics analysis, drug comparison, lead candidate identification, lot-release criteria and in-process QC studies.

- Validated for a wide range of molecular weight linear and branched PEGs, both in free form and when conjugated to proteins
- Sensitive assay measures < 1 ng/mL of PEGylated molecules
- Quantifies PEGylated target molecules in complex matrices to allow monitoring of drug levels or its accumulation in tissue

Recognize All Commonly Used Protein A Constructs



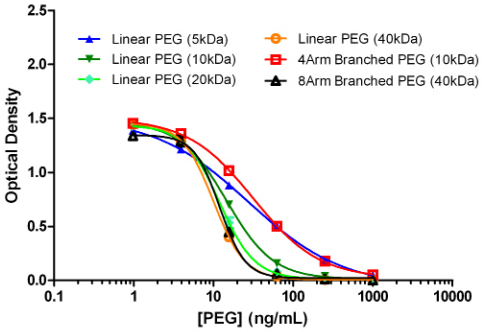
Assay recognition of different Protein A constructs using the Protein A ELISA kit (ADI-900-057). A: Natural Protein A from S. aureus (Millipore), B: Recombinant Protein A from *E. coli* (Repligen), C: Recombinant Cys-Protein A from *E. coli* (GE), and D: Recombinant alkaline-resistant Protein A variant from *E. coli* (MabSelet SuRe from GE).

PEGYLATED PROTEIN ELISA KIT (ADI-900-213)

The Protein A ELISA kit is a sensitive and reproducible sandwich assay to quantify Protein A residuals in monoclonal antibody preparations. This extensively validated ELISA kit enables efficient detection of natural and recombinant Protein A constructs with up to 100% recovery.

- Detects 1 ppm of Protein A residuals in human IgG
- Useful for contamination analysis and measurement of Protein A variants in monoclonal antibody preparations
- Produces results in < 3 hours with low cost per test

Quantify a Variety of PEGylated Molecule Constructs



Standard curves using the PEGylated Protein ELISA kit (ADI-900-213) were generated to detect a variety of linear and branched PEGs.

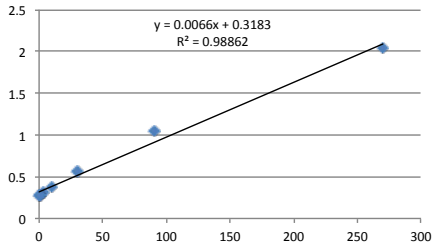
HOST CELL PROTEIN ELISA KITS

Quantify HCP contamination with sensitive ELISAs for CHO- and E. coli-*derived biologics*

The production and purification of biopharmaceuticals by cell culture expression systems can produce contaminants in the form of endogenous cell line proteins, typically referred to as host cell proteins (HCPs). HCP impurities can elicit immune responses, therefore, contamination must be minimized and monitored in biologics. Enzo provides sensitive ELISAs for the detection of HCPs in bulk products expressed in CHO and *E.coli* expression systems.

- Quantitatively measure host cell protein contamination in CHO- and *E. coli*-derived biologics
- Sensitive measurement of HCPs, detecting as little as 10 ng/mL (CHO) and 30 ng/mL *(E. coli)*
- High-throughput format with results in 2.5 hours

Sensitive Measurement of HCPs



Typical standard curve for CHO HCP ELISA Kit (ENZ-KIT128).

BIOPROCESS ELISA KITS

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
CHO Host Cell Protein ELISA Kit	ENZ-KIT128	1x96 wells	30 ng/mL (3-810 ng/mL)	CHO Host Cell Protein	CS	3 Hours
E. coli Host Cell Protein ELISA Kit	ENZ-KIT127	1x96 wells	10 ng/mL (3-810 ng/mL)	*E. coli* Host Cell Protein	CS	3 Hours
HEK293T host cell protein ELISA Kit	ENZ-KIT162	1x96 wells	37 ng/mL (37-27,000 ng/mL)	HEK293T Host Cell Protein	CS	6 Hours
Methotrexate ELISA Kit	ENZ-KIT142	1x96 wells	0.087 ng/mL (0.13-1,000 ng/mL)	H, M, R	P, S, U	1.5 Hours
PEGylated Protein ELISA Kit	ADI-900-213	1x96 wells	< 1 ng/mL (1.75-225 ng/mL)	Species Independent	P, S, T, other biological samples	2 Hours
Protein A ELISA Kit	ADI-900-057	1x96 wells	9.01 pg/mL (15.63-1,000 pg/mL)	Species Independent	Protein A purified IgG preparations	< 3 Hours
Transferrin ELISA Kit	ENZ-KIT143	1x96 wells	4.6 ng/mL (4.9-5,000 ng/mL)	H, C	P, S	2 Hours

LEGEND
Species: B= bovine, C = canine (dog), H = human, M = mouse, MK = monkey, P = porcine (pig), R= rat, RB = rabbit
Sample Types: AM = amniotic fluid, CL = cell lysates, CSF = cerebral spinal fluid, CS = culture supernatants, F = feces, M = milk, NL = nasal lavage, P = plasma, S = serum, SA = saliva, SS= sputum supernatant, T = tissue, TC = tissue culture, U = urine, WhB = white blood cells. Product tables includes both certified and cited species and sample types.

CANCER RESEARCH

Your aim may be to investigate cancer's genetic origins, establish the mechanism of action or clinical implications of tumor biomarkers, or develop a targeted pharmaceutical or cellular therapy. At Enzo, our aim is to support your research. As cancer hallmarks have evolved over the last decade, so has our portfolio of tools to support cancer research. Over this time, we have called upon our diverse scientific and technical expertise to create innovative assays and reagents in the fields of epigenetics, autophagy, and proteostasis research. These novel tools, and a broad portfolio of products established for decades in peer-reviewed literature, will help support cancer discovery into the next decade, and beyond. We are continually focused on enabling a future with more hope, more collaboration, more discovery, and less disease. Choose from our sensitive ELISA kits to detect a variety of relevant biomarkers.

Analyze Novel Serine Protease Cancer Biomarkers

	Serine Protease Expression in Cancer																
Serine Protease	Breast	Cervical	Colon	Endothelia	Endometrial	Gastric	Gastrointestinal	Leukemia	Lung	Renal	Oral	Ovarian	Nasopharyngeal	Pancreatic	Prostate	Salivary Gland	Skin
Hepsin	↑	✓			↑				✓	↑		↑			↑		
KLK6												✓			✓		
KLK7	↑↓	↑	↑								↑	↑		✓	↑		
KLK8	✓	↑			↑				↑↓		↑	↑				↑	
Matriptase	↑↓	↑	↑↓	↑	↑	↑	↓	↑	↓	↑		↑↓		↑	↑		↑
SLP1	✓	↓	✓			↑			↑			↑↓	↓		↓		
TMPR553	✓								✓			↑		↑	✓		

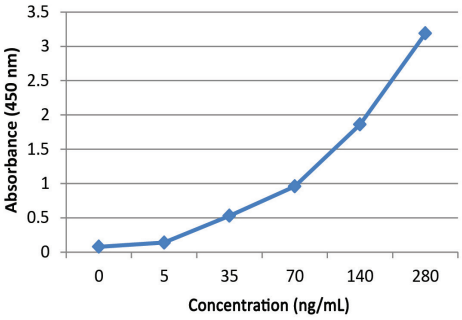
Serine Protease ELISAs for early stage cancer detection. Checks (✓) indicate expression, while arrows (↑↓) indicate increase or decrease in the level of expression in the different cancer types.

SERINE PROTEASE CANCER BIOMARKERS

Serine proteases are enzymes that mediate a variety of events relevant to fundamental processes of tumor invasion and metastasis. In ovarian cancer, they allow growth and spread of the cancer. Serine proteases are produced early in tumor formation and can be detected early, and when inhibited, they may possibly stop ovarian tumor formation. They do this by (1) breaking down extracellular components surrounding ovaries and (2) allowing tumor cells to rapidly divide. Then tumor cells can break off and travel to different locations, resulting in the spread of cancer. Enzo Life Sciences offers a complete portfolio of over 40 unique cancer biomarker products including ELISAs, monoclonal antibodies, and recombinant proteins. The serine protein ELISAs are rapid assays enabling the measurement of pivotal biomarkers of ovarian, breast, cervical, prostate and other cancers without the need for expensive equipment or non-quantitative procedures.

- Easy-to-use, rapid ELISA kits with results in ~3 hours
- Nanogram level detection of unique serine protease cancer biomarkers
- Fully quantitative results surpass semi-quantitative Western blot analysis

Rapid, Sensitive ELISA for Matriptase Detection



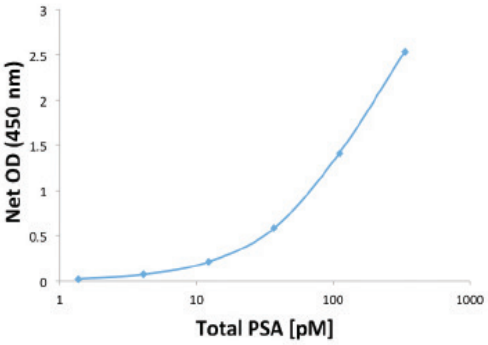
Standard curve using the Matriptase ELISA Kit (ADI-900-221).

TOTAL PSA ELISA KIT (ENZ-KIT146)

Prostate-specific antigen (PSA), also known as gamma-seminoprotein or kallikrein-3 (KLK3), is a kallikrein-like protease produced by the epithelial cells in the prostate gland, the lining of the urethra, and the bulbourethral gland. It is a single-chain glycoprotein with a molecular weight of about 30-33 kDa in human seminal plasma. PSA exists in serum in multiple forms and most PSA is bound to serum proteins. Increases in glandular size and tissue damage caused by benign prostatic hypertrophy, prostatitis, or prostate cancer may increase circulating total PSA levels. Monitoring the total PSA level in male blood has been used as an indicator for abnormal prostate function in the past decades. The Total PSA (human) ELISA kit is highly specific, with no cross reactivity with KLK2 and ACT.

- Highly-sensitive measurement of Total PSA, detecting as little as 0.287 pM (or 0.024 ng/mL) with negligible cross reactivity with similar proteins (KLK2, ACT)
- Compatible with various sample types (plasma, serum, urine, tissue culture media)
- High-throughput format with results in 2.5 hours for up to 40 samples in duplicate
- Fully quantitative results that surpass semi-quantitative Western blot analysis

Sensitive Detection of Total PSA



Standard curve experiment using Total PSA (human) ELISA Kit (ENZ-KIT146).

SELECT ELISA KITS FOR CANCER RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
Fibronectin ELISA Kit	ENZ-KIT135	1x96 wells	< 10 pg/mL (156-10,000 pg/mL)	H	CS, S, P (Heparin, EDTA, Citrate)	3.5 Hours
Hepsin (human) ELISA Kit	ADI-900-220	1x96 wells	0.2 U/mL (16-256 U/mL)	H	P, S	~3 Hours
IMMUNOSET® p53/MDM2 Complex ELISA Development Set	ADI-960-070	5x96 wells	0.35 ng/mL p53 (0.78-50 ng/mL p53)	H, M, R	CL	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
Kallikrein-6 (human) ELISA Kit	ADI-900-217	1x96 wells	1 ng/mL (5-280 ng/mL)	H	S	~3 Hours
Kallikrein-7 (human) ELISA Kit	ADI-900-218	1x96 wells	0.5 ng/mL (35-560 ng/mL)	H	S	~3 Hours
Kallikrein-8 (human) ELISA Kit	ADI-900-219	1x96 wells	0.1 ng/mL (35-560 ng/mL)	H	S	~3 Hours
Matriptase (human) ELISA Kit	ADI-900-221	1x96 wells	1 ng/mL (5-280 ng/mL)	H	P, S	~3 Hours
Methotrexate ELISA Kit	ENZ-KIT142	1x96 wells	0.087 ng/mL (0.13-1,000 ng/mL)	H, M, R	P, S, U	1.5 Hours
Microcystins (Adda specific) ELISA Kit	ALX-850-319	1x96 wells	0.1 ng/mL (0.15-5 ng/mL)	NA	Not applicable	2.5 Hours
p53 (human) ELISA Kit	ALX-850-057	1x96 wells	0.5 U/mL	H	CS, P, S	3 Hours
Pin1 ELISA Kit	ADI-900-146	1x96 wells	15.5 pg/mL (62.5-2,000 pg/mL)	H, M	CL	3 Hours
SLPI (human) ELISA Kit	ADI-900-222	1x96 wells	1 ng/mL (10-160 ng/mL)	H	S	2.5 Hours
Survivin (human) ELISA Kit	ADI-900-111	1x96 wells	4 pg/mL (31.25-1,000 pg/mL)	H	CL, CS, P, S, U	3 Hours
TGF-α ELISA Kit	ENZ-KIT132	1x96 wells	9.375 pg/mL	H	P, S, CS, T	3.5 Hours
TIMP-1 (human) ELISA Kit	ENZ-KIT147	1x96 wells	≤ 30 pg/mL (0.049-12 ng/mL)	H	P, S, SA, TC, U	2 Hours
Total PSA (human) ELISA Kit	ENZ-KIT146	1x96 wells	0.287 pM or 0.024 ng/mL (333-1.37 pM or 28-0.12 ng/mL)	H	P, S, TC, U	2.5 Hours

LEGEND
Species: B= bovine, C = canine (dog), H = human, M = mouse, MK = monkey, P = porcine (pig), R= rat, RB = rabbit
Sample Types: AM = amniotic fluid, CL = cell lysates, CSF = cerebral spinal fluid, CS = culture supernatants, F = feces, M = milk, NL = nasal lavage, P = plasma, S = serum, SA = saliva, SS= sputum supernatant, T = tissue, TC = tissue culture, U = urine, WhB = white blood cells. Product tables includes both certified and cited species and sample types.

CARDIOVASCULAR RESEARCH

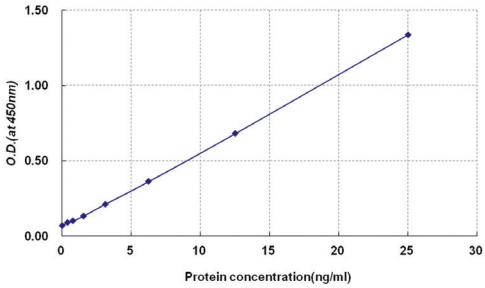
The cardiovascular or circulatory system provides the body with essential nutrients and oxygen. Besides its nourishing function, it also plays a crucial role in inflammation and fighting infections, maintaining homeostasis, transporting hormones, and stabilizing body temperature. It also assists the body in recovering from damage and trauma. Although the system is extremely resilient, repeated or continuous stress can cause long-term damage and lead to cardiovascular diseases such as heart failure and stroke. Cardiovascular disease is consistently ranked as the single largest cause of death in the world, and it may be caused by heart damage or vascular problems. Challenges in cardiovascular clinical development have caused researchers to take a closer look at cardiac function and metabolism. Enzo Life Sciences offers a comprehensive portfolio of products to enable discovery of cardiac risk factors as well as analysis of the cellular response to novel therapeutics for cardiovascular medicine.

TROPONIN I (HUMAN) ELISA KIT (ADI-900-228)

Troponin I is an inhibitory troponin subunit that acts in muscle relaxation and which, in its cardiac isoform, is a reliable marker of cardiac injury when identified in elevated levels in the bloodstream.

- Most sensitive ELISA, detecting as little as 0.38 ng/mL of human troponin
- Flexible sample types, including cell lysates, plasma, and serum
- Simple protocol with results in just 3.5 hours

Most Sensitive ELISA for Detection of Troponin I



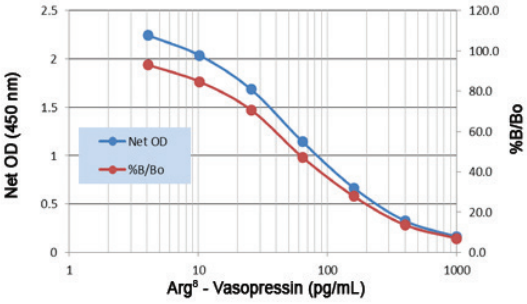
Standard curve experiment using the Troponin I ELISA Kit (ADI-900-228).

ARG^8-VASOPRESSIN ELISA KIT (ADI-900-017A)

Highly sensitive ELISA kit for the detection of Arg^8-Vasopressin in serum, plasma and tissue culture media.

- High sensitivity, detecting as little as 2.84 pg/mL
- Highly specific with negligible reactivity with oxytocin
- Simple and easy-to-use liquid color-coded reagents reduces error
- Fully quantitative results that surpass semi-quantitative Western blot analysis

Typical Standard Curves for Arg^8-Vasopressin



Standard curve experiment using Arg^8-Vasopressin ELISA Kit (ADI-900-017A).

SELECT ELISA KITS FOR CARDIOVASCULAR RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
Angiotensin A ELISA Kit	ADI-900-207	1x96 wells	8.3 pg/mL (9.8-10,000 pg/mL)	Species Independent	P, S	3 Hours
Angiotensin I ELISA Kit	ADI-900-203	1x96 wells	4.3 pg/mL (3.9-10,000 pg/mL)	Species Independent	P, S	3.5 Hours
Angiotensin II ELISA Kit	ADI-900-204	1x96 wells	4.6 pg/mL (3.9-10,000 pg/mL)	Species Independent	P, S	3.5 Hours
Annexin V (human) ELISA Kit	ALX-850-049	1x96 wells	0.33 ng/mL (0.8-50 ng/mL)	H	CS, S	3.5 Hours
Anti-Annexin V (human) ELISA Kit	ALX-850-040	1x96 wells	1.18 ng/mL (6.25-400 ng/mL)	H	CS, S	4 Hours
Arg^8-Vasopressin ELISA Kit	ADI-900-017A	1x96 wells	2.84 pg/mL (4.10-1,000 pg/mL)	H	P, S, TC	Overnight + 1 Hour
Big Endothelin-1 (human) ELISA Kit	ADI-900-022	1x96 wells	0.23 pg/mL (0.78-100 pg/mL)	H, RB	CS, Lung Lavage Fluid, S	Overnight + 1 Hour
Big Endothelin-1 (rat) ELISA Kit	ADI-900-073	1x96 wells	0.72 pg/mL (0.78-100 pg/mL)	R	CS, P, S	Overnight + 1 Hour
BNP Fragment ELISA Kit	ENZ-KIT152	1x96 wells	171 pmol/L (0-6400 pmol/L)	H	P, S	
Bradykinin ELISA Kit	ADI-900-206	1x96 wells	24.8 pg/mL (11.7-30,000 pg/mL)	Species Independent	P, S, U	3 Hours
CRP (human) ELISA Kit	ENZ-KIT102	1x96 wells	12.685 ng/mL (10-810 ng/mL)	H	P, S	< 2 Hours
Endothelin-1 ELISA Kit	ADI-900-020A	1x96 wells	0.40 pg/mL (0.78-100 pg/mL)	H, M, R, B, C, P, RB	CL, CS, P, S, T	2 Hours
Fibrinogen (human) ELISA Kit	ADI-900-230	1x96 wells	< 7.63 ng/mL (15.6-1,000 ng/mL)	H	CL, P, S	~3.5 Hours
Haptoglobin (human) ELISA Kit	ADI-900-229	1x96 wells	< 0.78 ng/mL (0.78-50 ng/mL)	H	CL, P, S	~3.5 Hours
NT-proCNP ELISA Kit	ENZ-KIT154	1x96 wells	0.2 pmol/L (0-40 pmol/L)	H	P, S	4.5 Hours
Plasminogen (human) ELISA Kit	ADI-900-231	1x96 wells	< 2.01 ng/mL (1-64 ng/mL)	H	CL, P, S	~3.5 Hours
proANP ELISA Kit	ENZ-KIT153	1x96 wells	0.05 nmol/L (0-10 nmol/L)	H	CL, P, S, U	3.5 Hours
Transferrin ELISA kit	ENZ-KIT143	1x96 wells	4.6 ng/mL (4.9-5,000 ng/mL)	H, C	P, S	2 Hours
Troponin I (human) ELISA Kit	ADI-900-228	1x96 wells	< 0.38 ng/mL (0.38-25 ng/mL)	H	CL, P, S	~3.5 Hours
VEGF (human) ELISA Kit	ENZ-KIT156	1x96 wells	4 pg/mL (8-2,000 pg/mL)	H	CS, P, S	2.5 Hours
VEGF-C (human) ELISA Kit	ALX-850-306	1x96 wells	0.057 ng/mL (0.23-15 ng/mL)	H	CS, S	4.5 Hours

LEGEND
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CELL DEATH RESEARCH

Different types of cell death are often defined by morphological criteria, without a clear reference to precise biochemical mechanisms. Apoptosis (or programmed cell death) is the most well-characterized type of cell death, being recognized as a critical regulator of development and immunity, as well as organ and tissue homeostasis. Apoptotic cells die in a controlled fashion in response to a variety of extrinsic or intrinsic signals (e.g., activation of TNF receptors, DNA damage, mitochondrial pathways).

Cells can also die due to necrosis, which does not follow the apoptotic signal transduction pathway. Rather, various receptors are activated that result in the loss of cell membrane integrity and an uncontrolled release of products of cell death into the intracellular space.

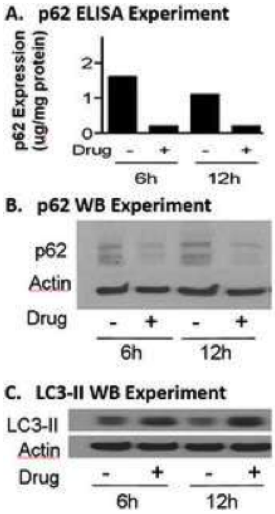
Autophagy (or autophagocytosis) is another common cell death pathway which involves cell degradation of unnecessary or dysfunctional cellular components through the actions of lysosomes. Autophagic activity is critical to the maintenance of cellular homeostasis and energy balance. Although typically low under basal conditions, autophagy can be markedly upregulated by a variety of physiological stimuli such as nutrient starvation, hypoxia, endoplasmic reticulum stress, as well as immune and hormonal stimulation. With our innovative assays and reagents, Enzo enables scientists to gain a deeper understanding of the benefits, and potential consequences, of altering autophagic activity.

p62 ELISA KITS (ADI-900-212)

Enzo's sensitive p62 ELISA kit allows for quantitative, immunometric detection of the autophagy biomarker p62 (Sequestosome 1) in human, rat and mouse cell lysates. p62 functions as a scaffold protein, aiding in autophagy protein trafficking and degradation. This ELISA kit enables quantitative measurement of autophagy without the need for expensive equipment or long procedures.

- Sensitive assay measures as little as 100 pg/mL of p62
- High-throughput format allows analysis of up to 40 samples in duplicate in < 3 hours
- Easy-to-follow protocols and liquid color-coded reagents save time and reduce errors

p62 ELISA Measures Induction of Macroautophagy



Human breast cancer cells were treated with either autophagy-inducing drug or vehicle. Cells were harvested 6 and 12 hours post-treatment, lysed, and analyzed with the p62 ELISA Kit (ADI-900-212), and for p62 and LC3-II by Western blot. Drug treatment correlated with the induction of autophagy as indicated by the decrease in p62 levels (A and B) and by elevation of LC3-II levels (C).

SELECT ELISA KITS FOR CELL DEATH RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
[pSer$^{473/474}$]Akt1/2 ELISA Kit	ADI-900-162	1x96 wells	5.5 pg/mL (17.5-560 pg/mL)	H, M, R	CL	3 Hours
APOSTRAND™ ELISA Apoptosis Detection Kit	BML-AK120	1x96 wells	Not applicable	N/A	N/A	< 4 Hours
Bax (human) ELISA Kit	ADI-900-138	1x96 wells	25.6 pg/mL (62.5 - 2,000 pg/mL)	H	CL	3 Hours
Bcl-2 (human) ELISA Kit	ADI-900-133	1x96 wells	3.8 pg/mL (18.8-1,200 pg/mL)	H	CL	3 Hours
p62 ELISA Kit	ADI-900-212	1x96 wells	100 pg/mL (625-40,000 pg/mL)	H, M, R	CL, PBMC lysates	3 Hours
XIAP (human) ELISA Kit	ADI-900-124	1x96 wells	90.6 pg/mL (312.5-10,000 pg/mL)	H	CL	3 Hours

LEGEND
Species: B= bovine, C = canine (dog), H = human, M = mouse, MK = monkey, P = porcine (pig), R= rat, RB = rabbit
Sample Types: AM = amniotic fluid, CL = cell lysates, CSF = cerebral spinal fluid, CS = culture supernatants, F = feces, M = milk, NL = nasal lavage, P = plasma, S = serum, SA = saliva, SS= sputum supernatant, T = tissue, TC = tissue culture, U = urine, WhB = white blood cells. Product tables includes both certified and cited species and sample types.

CELL SIGNALING RESEARCH

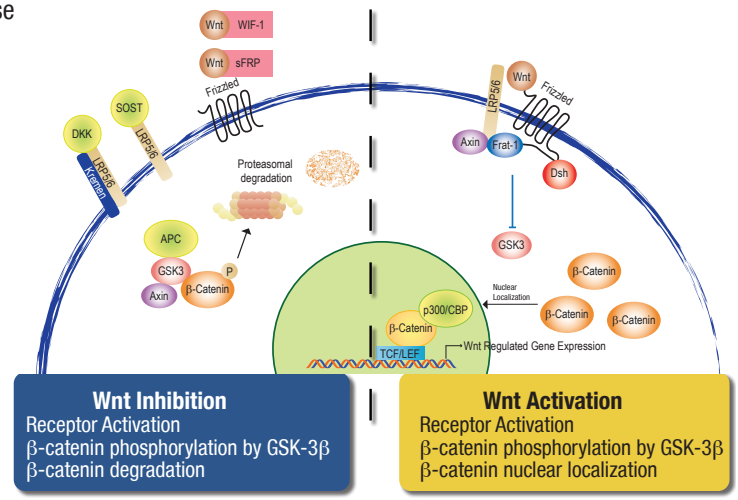
Cell signaling encompasses a complex network of highly coordinated communication pathways from ligands down to the effector molecule. From receptor- or ion channel-mediated transmission of signals across the cell membrane, to amplification through second messenger systems, kinase or proteolytic cascades or other post-translational modifications, Enzo Life Sciences offers an unrivaled catalog of cutting-edge tools for signal transduction research. From receptor to effector, a portfolio of assays, recombinant enzymes and substrates, small molecule reagents, and antibodies is available to facilitate thorough characterization of your pathway of interest.

SENSITIVE WNT PATHWAY ELISA KITS

Obtain fully quantitative data with immunometric detection of β-Catenin, total and phosphorylated GSK-3β, and Dkk-1 in human, mouse and rat samples.

- Sensitive assays measure picogram levels compared to microgram levels in Western blot
- Suitable for cell lysates, culture supernatants, plasma, or serum sample types
- High-throughput format allows analysis of 40 samples in duplicate in < 3 hours

Quantify Critical Wnt Pathway Proteins



SELECT ELISA KITS FOR CELL SIGNALING RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
VE-cadherin, Soluble ELISA Kit	ALX-850-059	1x96 wells	0.15 ng/mL (0.16-10 ng/mL)	H	CS, S	3.25 Hours
β-Catenin ELISA Kit	ADI-900-135	1x96 wells	26.8 pg/mL (125-8,000 pg/mL)	H, M, R	CL	3 Hours
Dkk-1 (human) ELISA Kit	ADI-900-151	1x96 wells	0.98 pg/mL (7.81-500 pg/mL)	H	CS, P, S	3 Hours
Dkk-1 (mouse) ELISA Kit	ADI-900-172	1x96 wells	116.7 pg/mL (125-4,000 pg/mL)	M	CS, P, S	3 Hours
Dkk-1 (rat), ELISA Kit	ADI-900-171	1x96 wells	26.1 pg/mL (39.1-1,250 pg/mL)	R	CS, P, S	3 Hours
[pThr^{202}/Tyr^{204}]Erk1/2 ELISA Kit	ADI-900-098A	1x96 wells	2.67 pg/mL (62.5-2,000 pg/mL)	H, M, R	CL	3 Hours
[pSer^{9}]GSK-3β ELISA Kit	ADI-900-123A	1x96 wells	9.0 pg/mL (62.5-2,000 pg/mL)	H, M, R	CL	3 Hours
IGF-1 (human) ELISA Kit	ADI-900-150	1x96 wells	48.5 pg/mL (187-6,000 pg/mL)	H	P, S	4 Hours
[pThr^{183}/Tyr^{185}]Jnk1/2 ELISA Kit	ADI-900-106	1x96 wells	75.8 pg/mL (125-4,000 pg/mL)	H, M, R	CL	3 Hours
MEK1 ELISA Kit	ADI-900-122A	1x96 wells	139.0 pg/mL (312.5-10,000 pg/mL)	H, R	CL	3 Hours
[pSer^{218}/Ser^{222}]MEK1 ELISA Kit	ADI-900-119	1x96 wells	85.2 pg/mL (187.5-6,000 pg/mL)	H, M, R	CL	3 Hours
Osteopontin (human) ELISA Kit	ADI-900-142	1x96 wells	0.110 ng/mL (2-32 ng/mL)	H	CS, M, P, S, U	3 Hours
Osteopontin (rodent) ELISA Kit	ADI-900-090A	1x96 wells	3.03 ng/mL (3.13-100 ng/mL)	M, R	CS, P, U	3 Hours
IMMUNOSET® Osteopontin (human) ELISA Development Set	ADI-960-142	1x96 wells	0.016 ng/mL (0.03-1 ng/mL)	H	CS, M, P	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
p27-Kip1 (human) ELISA Kit	ADI-900-139	1x96 wells	10.1 pg/mL (25-1,600 pg/mL)	H	CL	3 Hours
[pThr^{180}/Tyr^{182}]p38 ELISA Kit	ADI-900-101	1x96 wells	52.1 pg/mL (156-5,000 pg/mL)	H, M	CL	3 Hours
Sclerostin ELISA Kit	ENZ-KIT155	1x96 wells	3.2 pmol/L (0-240 pmol/L)	H	P, S, U	Overnight + 1.5 Hours
sVEGFR-1 (human) ELISA Kit	ALX-850-264	1x96 wells	0.06 ng/mL (0.16-10 ng/mL)	H	CS, S	3.5 Hours
VE-cadherin, Soluble ELISA Kit	ALX-850-059	1x96 wells	0.15 ng/mL (0.16-10 ng/mL)	H	CS, S	3.25 Hours

CYCLIC NUCLEOTIDE ELISA KITS

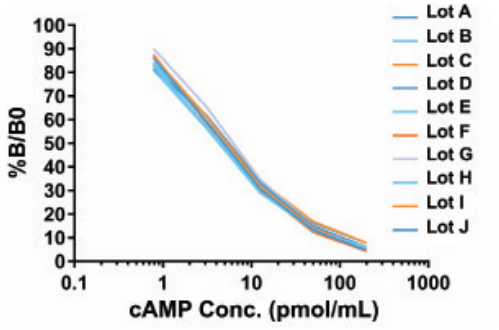
MOST SENSITIVE cAMP/cGMP ELISA KITS

The second messengers adenosine 3', 5'-cyclic monophosphate (cyclic AMP; cAMP) and guanosine 3', 5'-cyclic monophosphate (cyclic GMP; cGMP) are important intracellular regulators downstream from GPCRs.

cAMP is also involved in regulating neuronal, glandular, cardiovascular, and immune functions amongst others. A number of hormones are known to activate cAMP through the action of the enzyme adenylate cyclase which converts ATP to cAMP. The diversity of receptors known to impact cAMP-mediated signaling includes those known to affect cardiovascular and nervous systems, immune mechanisms, cell growth, differentiation, and general metabolism. Thus, there remains considerable interest in the measurement of intracellular cAMP concentrations in tissues and cell culture.

cGMP is typically present at levels 10- to 100-fold lower than cAMP in most tissues and is formed by the action of the enzyme guanylate cyclase on GTP. It is most well recognized as a key signaling trigger in the relaxation of smooth muscle cells (resulting in vasodilation) in response to nitric oxide, and as a sodium ion channel regulator (via its degradation by phosphodiesterases) critical to phototransduction. Vasodilators and hormones, such as acetylcholine, insulin and oxytocin, as well as serotonin and histamine, cause an increase in cGMP levels.

Reliable Results with Consistent Lot-to-Lot Performance



Lot-to-lot consistency: Graph demonstrates the robust and reproducible nature of the competitive cAMP ELISA Kit (ADI-900-067A) showing standard curves from 10 lots manufactured over 10 years.

In addition to measuring cAMP and cGMP, detection of downstream GPCR signaling events such as activation of Erk1/2, Akt, Src and Stat3 are routinely assayed using phospho-specific antibodies to distinguish phosphorylation of signaling proteins at specific activating or inactivating serine, threonine, and tyrosine residues. We offer the most sensitive and complete colorimetric ELISA kits for quantification of intracellular or extracellular cAMP or cGMP in a variety of sample types.

- Enhance sensitivity by 10-fold with optional acetylation protocol
- Cited in peer-reviewed publications
- Simple, efficient and well-established sample handling protocols

		VALIDATED SAMPLE TYPES						
		Intracellular		Extracellular				
		Cell Lysates	Tissue Extract	Culture Supernatant	Serum	Saliva	Urine	Plasma
cAMP	Complete	✓	✓	✓	✓	✓		
	Direct	✓	✓					
	Standard			✓	✓	✓		
cGMP	Complete	✓	✓	✓	✓	✓		
	Direct	✓	✓					
	Standard			✓	✓	✓	✓	✓

CYCLIC NUCLEOTIDE ELISA KITS

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
cAMP Complete ELISA Kit	ADI-900-163A ADI-901-163A	1x96 wells 5x96 wells	Non-acetylated: 0.49 pmol/ml (assay buffer) / 1.18 pmol/ml (HCl) (range (non-acetylated) 0.78 - 200 pmol/ml) Acetlylated: 0.027 pmol/ml (assay buffer) / 0.006 pmol/ml (HCl) (range (acetylated) 0.078 - 20 pmol/ml)	Species Independent	CL, CS, S, SA, T	3 Hours
Direct cAMP ELISA Kit	ADI-900-066A ADI-901-066A	1x96 wells 5x96 wells	Non-acetylated: 1.18 pmol/ml (range 0.78 - 200 pmol/ml) Acetylated: 0.006 pmol/ml (range 0.078 - 20 pmol/ml)	Species Independent	CL, CS, T, TC	3 Hours
cAMP ELISA Kit	ADI-900-067A ADI-901-067A	1x96 wells 5x96 wells	Non-acetylated: 0.49 pmol/ml (range 0.78 - 200 pmol/ml) Acetylated: 0.027 pmol/ml (range 0.078 - 20 pmol/ml)	Species Independent	CL, CS, S, SA, T, U	3 Hours
cGMP Complete ELISA Kit	ADI-900-164 ADI-901-164	1x96 wells 5x96 wells	Assay Buffer: 0.42 pmol/mL (non-acetylated) 0.043 pmol/mL (acetylated) HCl: 0.604 pmol/mL (non-acetylated) 0.059 pmol/mL (acetylated) (0.8-500 pmol/mL (non-acetylated); 0.08-50 pmol/mL (acetylated)	Species Independent	CL, CS, P, S, SA, T, U	3 Hours
Direct cGMP ELISA Kit	ADI-900-014 ADI-901-014	1x96 wells 5x96 wells	Non-acetylated: 0.604 pmol/mL; (2 hour acetylated) 0.059 pmol/mL; (overnight acetylated) 0.025 pmol/mL (non-acetylated) 0.8-500 pmol/mL; (acetylated) 0.08-50 pmol/mL)	Species Independent	CL, CSF, Micro-dialysate, T	2 Hours
cGMP ELISA Kit	ADI-900-013 ADI-901-013	1x96 wells 5x96 wells	Non-acetylated: 0.37 pmol/mL; (acetylated) 0.088 pmol/mL (non-acetylated) 0.16-500 pmol/mL; (acetylated) 0.16-100 pmol/mL)	Species Independent	CS, P, S, SA, U	3 Hours

LEGEND
Species: B= bovine, C = canine (dog), H = human, M = mouse, MK = monkey, P = porcine (pig), R= rat, RB = rabbit
Sample Types: AM = amniotic fluid, CL = cell lysates, CSF = cerebral spinal fluid, CS = culture supernatants, F = feces, M = milk, NL = nasal lavage, P = plasma, S = serum, SA = saliva, SS= sputum supernatant, T = tissue, TC = tissue culture, U = urine, WhB = white blood cells. Product tables includes both certified and cited species and sample types.

ENDOCRINOLOGY/HORMONE RESEARCH

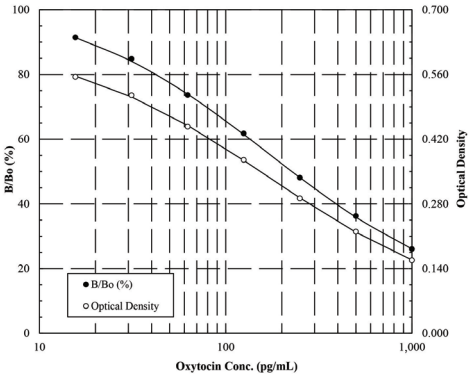
All multicellular organisms produce hormones, which are regulatory biochemicals part of the endocrine system and serve as a major form of communication between different organs and tissues. Hormones regulate a variety of physiological and behavioral activities, including digestion, metabolism, respiration, tissue function, sensory perception, sleep, excretion, lactation, stress, growth and development, movement, reproduction, and mood. Animal hormones are classified by their chemical types (e.g. peptide- or lipid-based). The peptide hormone family includes vasopressin, insulin, luteinizing hormone, follicle-stimulating hormones, and several others, while the lipid hormones family includes phospholipid-derived hormones from the arachidonic pathway (e.g. eicosanoids) and steroid hormones like testosterone and cortisol. Enzo Life Sciences provides a variety of high sensitivity ELISA kits for researchers looking at hormone-related research.

OXYTOCIN ELISA KIT (ADI-900-153A)

Commonly known as the "love" hormone, Oxytocin is a key neuromodulator in the brain, with defined roles in social behavior including parental nurturing, social pair-bonding, trust, and management of stress experiences. It's also a key hormone during mammalian birthing and lactation. Join the many scientists worldwide who entrust their research to Enzo's Oxytocin ELISA kit.

- Detect as low as 15 pg/mL of oxytocin in a variety of sample types
- Negligible detection of vasopressin, providing confidence in assay results
- Faster and less costly than LC/MS methods
- Widely published in peer-reviewed literature

Most Sensitive Oxytocin ELISA Kit



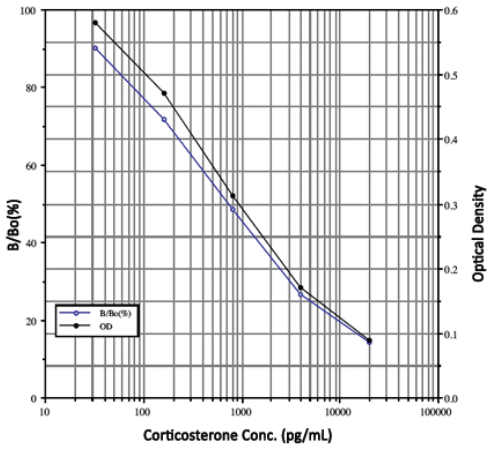
Standard curve experiment using the Oxytocin ELISA Kit (ADI-900-153A).

CORTICOSTERONE ELISA KIT (ADI-900-097)

Highly sensitive and species-independent Corticosterone ELISA kit used for animal stress research. The ELISA kit has low cross-reactivity with related steroids. The broad dynamic range makes this kit ideal for a wide variety of sample matrices from any species.

- Sensitive measurement of corticosterone, detecting as little as 27 pg/mL
- High-throughput format with results in < 3 hours for up to 39 samples in duplicate
- Broad dynamic range
- Species-independent
- Routinely used to monitor stress levels in zoo animals

Sensitive Measurement of Corticosterone



Standard curve experiment using the Corticosterone ELISA Kit (ADI-900-097).

SELECT ELISA KITS FOR ENDOCRINOLOGY RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
17β-Estradiol ELISA Kit	ADI-900-008 ADI-901-008	1x96 wells 5x96 wells	28.5 pg/mL (29.3-30,000 pg/mL)	Species Independent	CS, SA	< 3 Hours
17β-Estradiol High Sensitivity ELISA Kit	ADI-900-174 ADI-901-174	1x96 wells 5x96 wells	14.0 pg/mL (15.6-1,000 pg/mL)	Species Independent	P, S	3 Hours
Arg^8-Vasopressin ELISA Kit	ADI-900-017 ADI-901-017	1x96 wells 5x96 wells	3.39 pg/mL (4.10-1,000 pg/mL)	Species Independent	CS, P, S, U	Overnight + 1 hour
ACTH ELISA Kit	ENZ-KIT138	1x96 wells	0.46 pg/mL (0.5-165 pg/mL)	H	P	4.5 Hours
Aldosterone ELISA Kit	ADI-900-173 ADI-901-173	1x96 wells 5x96 wells	4.7 pg/mL (3.9-250 pg/mL)	Species Independent	P, S, U	Overnight + 1 hour
Corticosterone ELISA Kit	ADI-900-097 ADI-901-097	1x96 wells 5x96 wells	27.0 pg/mL (32-20,000 pg/mL)	Species Independent	CL, CS, F, P, S, SA, U, WhB	3 Hours
Cortisol ELISA Kit	ADI-900-071 ADI-901-071	1x96 wells 5x96 wells	56.72 pg/mL (156-10,000 pg/mL)	Species Independent	CS, F, P, S, SA, U	3 Hours
DHEA ELISA Kit	ADI-900-093 ADI-901-093	1x96 wells 5x96 wells	2.9 pg/mL (12.21-50,000 pg/mL)	Species Independent	CS, P, S, SA, U	5 Hours
Estriol ELISA Kit	ADI-900-100	1x96 wells	59.6 pg/mL (122-500,000 pg/mL)	Species Independent	CS, P, S, SA, U	3 Hours
FSH ELISA Kit	ENZ-KIT108	1x96 wells	0.5 mIU/mL (0.78-100 mIU/mL)	H	P, S, TC	2 Hours
Histamine ELISA Kit	ENZ-KIT140	1x96 wells	0.03 ng/mL (0.098-25 ng/mL)	H, M, R, C	P, TC, U	2 Hours
LH ELISA Kit	ENZ-KIT107	1x96 wells	5.2 mIU/mL (1.2-280 mIU/mL)	H, R	P, S, TC	2 Hours
Melatonin ELISA Kit	ENZ-KIT150	1x96 wells	0.162 ng/mL	Species Independent	S, SA, P, Fruit	2 Hours
Oxytocin ELISA Kit	ADI-900-153A ADI-901-153A	1x96 wells 5x96 wells	15 pg/mL (15.6-1,000 pg/mL)	Species Independent	CS, CSF, M, P, S, SA, T, U	Overnight + 1 hour
Progesterone ELISA Kit	ADI-900-011 ADI-901-011	1x96 wells 5x96 wells	8.57 pg/mL (15.62-500 pg/mL)	Species Independent	CS, P, S, SA	< 3 Hours
Prolactin ELISA Kit	ENZ-KIT161	1x96 wells	19.2 pg/mL (31.3-2000 pg/mL)	H	P, S	3 Hours
Serotonin ELISA Kit	ADI-900-175	1x96 wells	0.293 ng/mL (0.49-500 ng/mL)	Species Independent	CS, Platelets, P, S, U	3 Hours
Testosterone ELISA Kit	ADI-900-065 ADI-901-065	1x96 wells 5x96 wells	5.67 pg/mL (7.81-2,000 pg/mL)	Species Independent	CS, F, P, S, SA, T	3 Hours
Testosterone High Sensitivity ELISA Kit	ADI-900-176	1x96 wells	2.6 pg/mL (3.9-1,000 pg/mL)	H	P, S, U	3 Hours
TSH ELISA Kit	ENZ-KIT131	1x96 wells	0.5 µIU/mL (0.5-40 µIU/mL)	H	S	1.25 Hours

LEGEND
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EPIGENETICS RESEARCH

Epigenetics can be defined as the structural adaptation of chromosomal regions so as to register, signal or perpetuate altered activity states. A variety of chromatin-altering post-translational modifications (PTMs) to histone proteins including acetylation, methylation, and ubiquitinylation, as well as direct modifications to DNA, are known to turn gene transcription off or on. To date, acetylation/deacetylation of histone lysine residues, and methylation of DNA have proven to be of greatest clinical significance amongst epigenetic changes. Enzo's epigenetics kits highlighted below focus on DNA methylation.

Convenient Kits for Sample Conversion and Detection

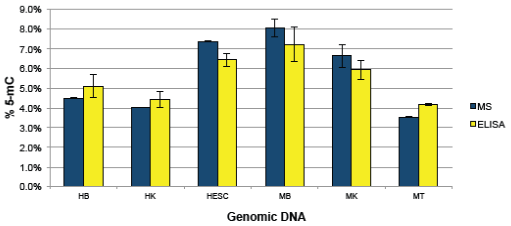
DNA methylation can alter gene expression, cell differentiation and often results in unidirectional changes to genomic DNA. Its involvement in so many cellular processes may lead to errors resulting in abnormal DNA methylation patterns which can lead to disease. Expanding our expertise in epigenetic modification analysis, Enzo Life Sciences now offers a portfolio of products that enable detection of DNA methylation which includes 5-Methylcytosine and 5-Hydroxymethylcytosine DNA ELISA kits.

5-METHYLCYTOSINE DNA ELISA KIT (ADI-900-224)

5-methylcytosine is a key component in the regulation of gene transcription, formed by the action of DNA methyltransferases. In epigenetics, the expression of methylated genes is altered due to the presence of 5-methylcytosine in methylated DNA. Quantification of 5-methylcytosine is critically important for the determination of epigenetic effects. The 5-Methylcytosine DNA ELISA kit is a complete, colorimetric, indirect immunoassay kit for the quantitative determination of 5-methylcytosine in DNA with results in less than 3 hours.

- Accurately quantitate 5-mC in any DNA sample in < 3 hours
- Ideal for high-throughput analysis
- High specificity comparable to LC-MS/MS-MRM analysis

ELISA Results Closely Correlate to Mass Spectrometry Analysis



Genomic DNA Mass Spectrometry versus ELISA analysis: The 5-methylcytosine DNA ELISA kit (ADI-900-224) quantifies 5-mC in numerous DNA samples with close correlation to LC-MS/MS-MRM analysis. Genomic DNA samples include: human brain (HB), human kidney (HK), human embryonic stem cell (HESC), mouse brain (MB), mouse kidney (MK), and mouse testes (MT).

SELECT ELISA KITS FOR EPIGENETIC RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
5-Methylcytosine DNA ELISA Kit	ADI-900-224A	1x96 wells	~0.5% 5-methylcytosine per 100 ng single-stranded DNA (5-100% (100 ng/µL)	Species Independent	DNA	< 3 Hours
5-Hydroxymethylcytosine DNA ELISA Kit	ADI-900-225	1x96 wells	< 0.02% 5-hydroxymethylcytosine DNA per 100 ng input DNA (0.03-0.55% (100 ng/µL)	Species Independent	DNA	~3 Hours

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Sample Types: AM = amniotic fluid, CL = cell lysates, CSF = cerebral spinal fluid, CS = culture supernatants, F = feces, M = milk, NL = nasal lavage, P = plasma, S = serum, SA = saliva, SS= sputum supernatant, T = tissue, TC = tissue culture, U = urine, WhB = white blood cells. Product tables includes both certified and cited species and sample types.

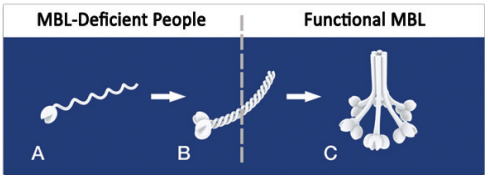
IMMUNITY/INFLAMMATION SIGNALING RESEARCH

Inflammation is one of the first responses of the immune system to infection or harmful stimuli, such as pathogens, damaged cells or irritants. It is a beneficial host response that protects tissues and involves a complex biological cascade of molecular and cellular signals that alter physiological responses, ultimately resulting in the familiar clinical symptoms. In the end, the body uses its vascular and immune system to try and remove the injurious stimuli and initiate the healing process. When inflammation is left unchecked, chronic inflammation can lead to various diseases, such as Alzheimer's disease, atherosclerosis, autoimmune disorders, cancer and others. There are many intracellular regulators of inflammation, one of which is the transcription factor NF-κB which upregulates the expression of cytokines, eicosanoids and adhesion molecules. Other inflammation regulators include the complement system of proteins which are part of the innate immunity system, blood pressure regulators (e.g. vasoconstrictors like ET-1, vasodilators like nitric oxide), coagulation regulators (e.g. haptoglobin, fibrinogen), and general inflammation regulators (e.g. cytokines like IL-6, IL-8, and TNF-α; eicosanoids like prostaglandins). Overall, Enzo provides a plethora of products for the area of immunity and inflammation signaling research.

MBL OLIGOMER ELISA KIT (BPD-KIT-029)

MBL (Mannose-Binding Lectin) is a carbohydrate-binding protein produced in the liver and secreted into the blood. The protein plays a key role in innate immunity, functioning as a player in the complement activation cascade and defending the body against invading microorganisms (bacteria, viruses, protozoa and fungi). MBL deficiency is common and associated with increased susceptibility to infections. Due to the high genetic variation in the MBL gene, at least 12% of the average Caucasian population has insufficient levels of functional MBL. Diagnosing MBL-deficiency is possible, but unfortunately no direct treatment exists, and it is difficult to manage. MBL evaluations are relevant for many patient groups, including children with recurrent infections and adults with recurrent and severe infections. Other relevant patient groups include women who have experience recurrent spontaneous abortions; or immunocompromised patients undergoing cancer chemotherapy or immunosuppression (transplant), or those with an autoimmune disease. The main supportive therapeutics for these patients include regular antibiotics, antivirals and antifungals. For patients with combined immunodeficiencies or recurrent spontaneous abortions, some doctors prefer IV immunoglobulin treatment. To determine low levels of MBL in MBL-deficient people, Enzo Life Sciences offers a sensitive MBL oligomer ELISA Kit to quantify the oligomerized MBL in human serum and plasma.

Detect Low Levels of MBL Functional Form in MBL-deficient People



MBL exists at different levels of polymerization — Non-functional and functional forms. A: a single chain monomer; B: 3 monomers joined in a collagen helix forming a subunit "flower"; or C: up to 6 "flowers" joined together to form a hexameric structure comprising a total of 18 MBL monomers. The MBL oligomer ELISA Kit (BPD-KIT-029) allows you to measures the functional, oligomeric form of MBL.

- Detect low levels of oligomerized MBL in deficient persons
- Ready-to-use, pre-coated plate and individual calibrators save time and reduce errors
- Analyze 40 samples in duplicate in just 4 hours

Research Areas

- Cancer
- Cardiovascular
- Dengue
- Diabetes
- Hepatitis B
- HIV
- Immunology
- Pulmonary Fibrosis
- Renal Disease
- Rheumatoid Arthritis

SELECT ELISA KITS FOR IMMUNITY/INFLAMMATION RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
BAFF Soluble (mouse) Detection Set	APO-54N-013	4x96 wells	0.3 ng/mL (0-20 ng/mL)	M	CS, S	2 Hours
CD14, Soluble (human) ELISA Kit	ALX-850-302	1x96 wells	5-50 ng/mL	H	P, S	< 2.5 Hours
CD14, Soluble (mouse) ELISA Kit	ALX-850-303	1x96 wells	5-50 ng/mL	M	P, S	< 2 Hours
CD40, Soluble (human) ELISA Kit	ALX-850-262	1x96 wells	6.92 pg/mL (7.8-500 pg/mL)	H	CS, S	< 3.25 Hours
CD40L, Soluble (human) ELISA Kit (High Sensitivity)	ALX-850-311	1x96 wells	0.005 ng/mL (0.08-5 ng/mL)	H	CS, S	< 3.5 Hours
sCD44std, Soluble (human) ELISA Kit	ALX-850-053	1x96 wells	0.015 ng/mL (0.12-4 ng/mL)	H	CS, S	< 3.5 Hours
Complement C3a des Arg (human) ELISA Kit	ADI-900-058	1x96 wells	0.120 ng/mL (0.313-20 ng/mL)	H	P	3 Hours
Complement C4a des Arg (human) ELISA Kit	ADI-900-059	1x96 wells	0.76 ng/mL (0.78-200 ng/mL)	H	P	3 Hours
COX-2 (human) ELISA Kit	ADI-900-094	1x96 wells	0.25 ng/mL (1.09-70 ng/mL)	H	CL	2 Hours
CRP (human) ELISA Kit	ENZ-KIT102	1x96 wells	12.685 ng/mL (10-810 ng/mL)	H	P, S	< 2 Hours
FasL, Soluble (human) ELISA Kit	ALX-850-246	1x96 wells	0.07 ng/mL (0.16-10 ng/mL)	H	CS, S	< 3.5 Hours
GROα/CINC-1 (rat) ELISA Kit	ADI-900-074	1x96 wells	1.99 pg/mL (4.7-300 pg/mL)	R	CS, P, S	2 Hours
Histamine ELISA Kit	ENZ-KIT140	1x96 wells	0.03 ng/mL (0.098-25 ng/mL)	H, M, R, C	P, S, TC, U	2 Hours
sHLA-G ELISA Kit	ALX-850-309	1x96 wells	1.0 U/mL (1.95-125 U/mL)	H	CS, P, S	~20 Hours
IgG1 (mouse) ELISA Kit	ADI-900-109	1x96 wells	0.064 ng/mL (7.81-250 ng/mL)	M	CS, S	1.5 Hours
IgG2a (mouse) ELISA Kit	ADI-900-113	1x96 wells	318.8 pg/mL (7.81-250 ng/mL)	M	CS, S	1.5 Hours
IgG2b (mouse) ELISA Kit	ADI-900-110	1x96 wells	1.05 ng/mL (7.81-250 ng/mL)	M	CS, S	1.5 Hours
IgM (mouse) ELISA Kit	ADI-900-120	1x96 wells	0.60 ng/mL (3.91-250 ng/mL)	M	AS, CS, S	1.5 Hours
LBP, Soluble (mouse) ELISA Kit	ALX-850-305	1x96 wells	5-50 ng/mL	M, R	P, S	< 2.5 Hours
LBP, Soluble ELISA Kit	ALX-850-304	1x96 wells	5-50 ng/mL	H, B, C, RB, P, HR	P, S	< 2.5 Hours
MBL Oligomer ELISA Kit	BPD-KIT-029	1x96 wells	2 ng/mL (0.50-40 ng/mL)	H	P, S	< 4 Hours
NFκB p65 ELISA Kit (chemiluminescent)	ADI-EKS-446	2x96 wells	Not available	H, M, R	CL	3 Hours
PMN-Elastase (human) ELISA Kit	ALX-850-265	1x96 wells	1.98 ng/mL (0.16-10 ng/mL)	H	CS, P	< 2.5 Hours
Progranulin (human) ELISA Kit	ALX-850-376	1x96 wells	18 pg/mL (75-2,500 pg/mL)	H	P, S	2.5 Hours
PTX3 (human) Detection Set	ALX-850-299	1 Set	75 pg/mL	H, B	P, S	~5 Hours
RANKL (total) Soluble (human) ELISA Kit	ALX-850-019	1x96 wells	~1.56 pg/mL (2.2-60 pmol/L)	H	CS, P, S	Overnight + 3 Hours

LEGEND
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CYTOKINE RESEARCH

Cytokines, including interleukins, interferons, and chemokines, are secreted signaling molecules that mediate and regulate immunity, inflammation and some developmental processes during embryogenesis. They also play an important role in angiogenesis and cancer. Cytokines can have pleiotropic, overlapping, and sometimes contradictory functions. This is dependent upon their concentration, the cell type they are acting on, and the presence of other cytokines and mediators. Enzo Life Sciences offers a wide selection of cytokine antibodies, proteins, and kits for innate and adaptive immune research including our wide selection of high-specificity human and mouse cytokine and interleukin ELISA kits.

CYTOKINE/INTERLEUKIN ELISA KITS				
Human			Mouse	
Adiponectin	IL-4	Leptin	IFN-γ	Leptin
CD40	IL-6	Lipocalin 2 (NGAL)	IL-1β	Lipocalin 2 (NGAL)
CD40L	IL-8	Nampt	IL-2	Nampt
FasL	IL-10	Osteoprotegerin	IL-4	TGF-β1
IFN-γ	IL-12p70	RANKL	IL-6	TNF-α
IGF-1	IL-13	TNF-α		
IL-1β	IL-17A	TNF-R1		
IL-2	IL-33			

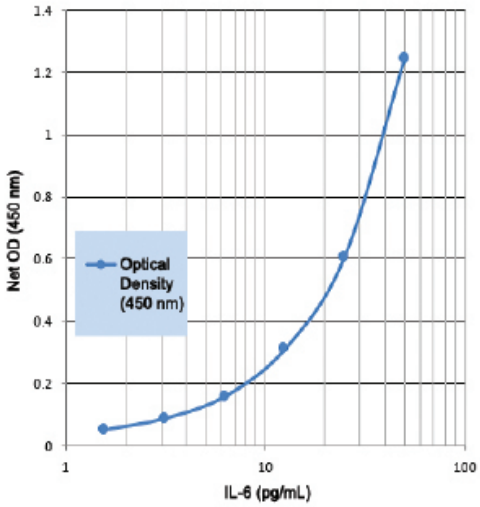
IL-6 (HUMAN) HIGH SENSITIVITY ELISA KIT (ENZ-KIT178)

Interleukin-6 (IL-6) is a cytokine critical to the regulation of the immune and hematopoietic systems. Human IL-6 is expressed by T-cells, mast cells, monocytes, macrophages, fibroblasts, endothelial cells, keratinocytes, and many tumor cell lines. It plays a role in acute phase reactions and response to injury and inflammation. Human IL-6 also stimulates the differentiation of B-cells for antibody production, promotes expansion of activated T-cells, expands hematopoietic cell production, and induces the expression of acute phase proteins.

We are proud to provide a comprehensive portfolio of products to detect and modulate the complex processes of immunological disease. Our IL-6 High Sensitivity ELISA Kit can detect concentrations as low as 0.057 pg/mL of IL-6 in culture supernatants, plasma, serum, and urine.

- High-sensitivity ELISA enables quantification of low amounts of IL-6
- Low cross-reactivity with other interleukins and similar proteins
- Easy-to-use liquid color-coded reagents and pre-coated plates reduce errors and save time
- Rapid quantitative results in 3 hours
- High-throughput immunoassay measures up to 40 samples in duplicate per 96-well kit

Highly Sensitive Measurement of IL-6



Standard curve for IL-6 High-Sensitivity ELISA Kit (ENZ-KIT178).

SELECT CYTOKINE ELISA KITS

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
IFN-γ (human) ELISA Kit	ADI-900-136	1x96 wells	< 2 pg/mL (25.6-1,000 pg/mL)	H	CS, P, S, U	3 Hours
IFN-γ (mouse) ELISA Kit	ADI-900-137	1x96 wells	< 10 pg/mL (37-3,000 pg/mL)	M	CS, P, S, U	4 Hours
IL-10 (human) ELISA Kit	ADI-900-036 ADI-901-036	1x96 wells 5x96 wells	3.75 pg/mL (7.81-500 pg/mL)	H	CS, P, S	< 3 Hours
IL-10 (mouse) ELISA Kit	ADI-900-148	1x96 wells	< 12 pg/mL (37-3,000 pg/mL)	M	CS, P, S	5 Hours
IL-12p70 (human) ELISA Kit	ADI-900-202	1x96 wells	0.9 pg/mL (7.81-500 pg/mL)	H	CS, P, S	3 Hours
IL-13 (human) ELISA Kit	ADI-900-208	1x96 wells	1.71 pg/mL (1.56-100 pg/mL)	H	CS, P, S	2 Hours
IL-17A (human) ELISA Kit	ADI-900-177	1x96 wells	0.201 pg/mL (2.34-75 pg/mL)	H	CS, P, S	3 Hours
IL-1β (human) ELISA Kit	ADI-900-130	1x96 wells	< 1 pg/mL (10.24-400 pg/mL)	H	CS, P, S, U	4 Hours
IL-1β (mouse) ELISA Kit	ADI-900-132A	1x96 wells	< 3 pg/mL (31.25-1,000 pg/mL)	M	CS, P, S	4 Hours
IL-1β (rat) ELISA Kit	ADI-900-131	1x96 wells	< 12 pg/mL (25.6-2,500 pg/mL)	R	CS, P, S, T	< 4 Hours
IL-2 (human) ELISA Kit	ADI-900-118A	1x96 wells	6.6 pg/mL (7.81-500 pg/mL)	H	CS, P, S	3 Hours
IL-2 (mouse) ELISA Kit	ADI-900-042	1x96 wells	3.12 pg/mL (7.81-1,000 pg/mL)	M	CS, S	< 4 Hours
IL-33 (human) ELISA Kit	ADI-900-201	1x96 wells	0.60 ng/mL (3.91-250 ng/mL)	M	AS, CS, S	90 Minutes
IL-33 soluble (human) Detection Set	APO-54N-025	5x96 wells	0.60 ng/mL (3.91-250 ng/mL)	H, M	CS, S	2.5 Hours
IL-4 (human) ELISA Kit	ADI-900-145A	1x96 wells	< 2 pg/mL (10.24-400 pg/mL)	H	CS, P, S	3.5 Hours
IL-4 (mouse) ELISA Kit	ADI-900-043	1x96 wells	4.34 pg/mL (7.81-1,000 pg/mL)	M	CS, P, S	3 Hours
IL-5 (human) ELISA Kit	ENZ-KIT139	1x96 wells	< 2 pg/mL (7.8-500 pg/mL)	H	CS, P, S, U	3 Hours
IL-6 (human) ELISA Kit	ADI-900-033 ADI-901-033	1x96 wells 5x96 wells	6.01 pg/mL (7.81-500 pg/mL)	H	CS, P, S, U	< 3 Hours
IL-6 (human) High Sensitivity ELISA Kit	ENZ-KIT178	1x96 wells	0.057 pg/mL	H	CS, P, S, U	3 Hours
IL-6 (mouse) ELISA Kit	ADI-900-045	1x96 wells	1.01 pg/mL (7.81-1,000 pg/mL)	M	CS, S, T	< 3 Hours
IL-8 (human) ELISA Kit	ADI-900-156 ADI-901-156 ADI-902-156	1x96 wells 5x96 wells 10x96 wells	0.64 pg/mL (7.8-1,000 pg/mL)	H	CS, P, S	< 3 Hours
MCP-1 (rat) ELISA Kit	ADI-900-077	1x96 wells	20.45 pg/mL (50-3,200 pg/mL)	R	CS, S	2 Hours
Osteoprotegerin (human) ELISA Kit	ALX-850-280A	1x96 wells	1.4 pg/mL (0-400 pg/mL)	H	P, S	~5 Hours
TGF-β1 ELISA Kit	ADI-900-155	1x96 wells	3.3 pg/mL in Assay Buffer 13; 10.8 pg/mL in Assay Buffer 30 (31.25-1000 pg/mL)	H, M, R, B	CS, P, S	4 Hours
TL1A soluble (human) Detection Set	APO-54N-024	5x96 wells	20 pg/mL (0-25 ng/mL)	H	CS, S	< 3 Hours
TL1A soluble (human) ELISA Kit	APO-54N-027	1x96 wells	15 pg/mL (39-2,500 pg/mL)	H	CS, S	< 3 Hours
TNF-R1 (Soluble) (human) ELISA Kit	ALX-850-047	1x96 wells	53 pg/mL (0.08-5 ng/mL)	H	CS, S	2.5 Hours
TNF-α (human) ELISA Kit	ADI-900-099 ADI-901-099	1x96 wells 5x96 wells	8.43 pg/mL (15.63-1,000 pg/mL)	H	CS, P, S	4 Hours
TNF-α (mouse) ELISA kit	ADI-900-047	1x96 wells	3.9 pg/mL (15.63-2,000 pg/mL)	M	CS, P, S, T	5 Hours
TNF-α (rat) ELISA kit	ADI-900-086A	1x96 wells	12.0 pg/mL in Assay Buffer; 26.7 pg/mL in culture media supplemented with 10% FBS (31.3-2,000 pg/mL)	R	CS	3 Hours

LEGEND
Species: B= bovine, C = canine (dog), H = human, M = mouse, MK = monkey, P = porcine (pig), R= rat, RB = rabbit
Sample Types: AM = amniotic fluid, CL = cell lysates, CSF = cerebral spinal fluid, CS = culture supernatants, F = feces, M = milk, NL = nasal lavage, P = plasma, S = serum, SA = saliva, SS= sputum supernatant, T = tissue, TC = tissue culture, U = urine, WhB = white blood cells. Product tables includes both certified and cited species and sample types.

EICOSANOIDS RESEARCH

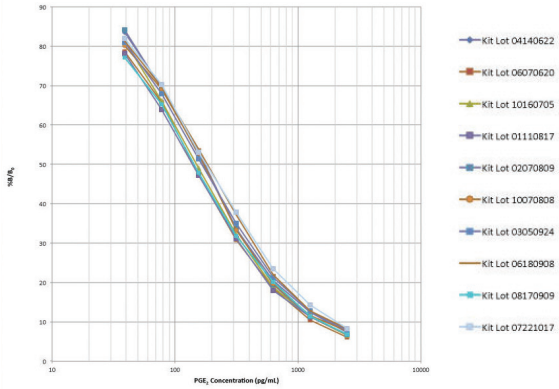
When inflammation is left unchecked, it can contribute to the pathogenesis of numerous diseases which include rheumatoid arthritis, chronic bronchitis, emphysema, asthma, psoriasis, cancer, and colitis. Molecules in the arachidonic acid enzyme cascade play a number of important biological roles, both normal and pathological. The derivatives of arachidonic acid are known as eicosanoids, a group of biologically active oxygenated unsaturated fatty acids. They include prostaglandins, thromboxanes, leukotrienes, hydroxyeicosatetraenoic acids (HETEs), and lipoxins. Eicosanoids have been shown to enhance, as well as attenuate inflammation and have also been linked to carcinogenesis. Enzo Life Sciences provides a wide selection of high sensitivity ELISA kits for detection of eicosanoids, as well as small molecules, antibodies and a bioactive lipid library for studying the role of eicosanoids in inflammation and immunity.

PROSTAGLANDIN E_2 ELISA KITS (ADI-900-001)

PGE_2 is an hormone-like lipophilic eicosanoid important in inducing fever, causing uterine contractions during labor, and stimulating osteoblasts to release factors that cause bone reabsorption. Enzo Life Sciences offers the most sensitive and complete colorimetric ELISA kits for quantification of prostaglandins in a wide variety of sample types.

- Ultra-sensitive colorimetric ELISAs to measure as little as 8.26 pg/mL PGE_2
- Widely cited in peer-reviewed literature
- Available to use for cell lysates, culture supernatants, serum, saliva, urine, and many more sample types
- High-throughput capabilities with chemiluminescent and fluorescent format options

Consistent Lot-to-Lot Performance for Over 5 Years



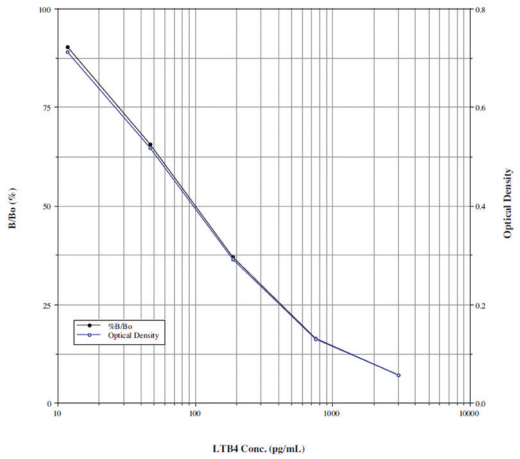
Lot-to-lot consistency: Graph demonstrates the robust and reproducible nature of the PGE_2 ELISA Kit (ADI-900-001) showing standard curves from 10 lots manufactured over 5 years.

LTB_4 ELISA KIT (ADI-900-068)

Leukotrienes are major products of 5-lipoxygenase metabolism of arachidonic acid. Leukotriene B_4 (LTB_4) stimulates leukocyte functions including lysosomal enzyme release, adhesion, and aggregation of polymorphonuclear leukocytes. This eicosanoid has also been implicated as a potent mediator of inflammatory diseases and immunoregulation.

- Detect as low as 5.63 pg/mL of LTB_4
- Broad dynamic range suitable for a large variety of samples
- Rapidly assay up to 39 samples in duplicate in just 4 hours
- Reproducible results day-after-day and lot-after-lot

Ultra-sensitive Detection of Leukotriene B_4



Standard curve experiment using the LTB_4 ELISA Kit (ADI-900-068).

SELECT EICOSANOID ELISA KITS

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
12(S)-HETE ELISA Kit	ADI-900-050 ADI-901-050	1x96 wells 5x96 wells	146 pg/mL (195-50,000 pg/mL)	Species Independent	CS, renal interstitial fluid, P, S, T	5 Hours
15(S)-HETE ELISA Kit	ADI-900-051 ADI-901-051	1x96 wells 5x96 wells	69.21 pg/mL (78.1-20,000 pg/mL)	Species Independent	CS, P, S, U	Overnight + 1 Hour
13(S)-HODE ELISA Kit	ADI-900-108	1x96 wells	1.6 ng/mL (3.9-1,000 ng/mL)	Species Independent	CS, CL, P, S, SA, T, U	4 Hours
LTB_4 ELISA Kit	ADI-900-068 ADI-901-068	1x96 wells 5x96 wells	5.63 pg/mL (11.7-3,000 pg/mL)	Species Independent	Bronchioalveolar Lavage Fluid, CL, CS, Crevicular Fluid, P, SA, T, U, WhB	4 Hours
Cysteinyl leukotriene ELISA Kit	ADI-900-070 ADI-901-070	1x96 wells 5x96 wells	26.6 pg/mL (78.1-2,500 pg/mL)	Species Independent	CS, U	4 Hours
PGE_1 ELISA Kit	ADI-900-005 ADI-901-005	1x96 wells 5x96 wells	5.58 pg/mL (4.88-5,000 pg/mL)	Species Independent	CS, Simulated Interstitial Lung Fluid, P, S, SA, U	< 3 Hours
PGE_2 CLIA Kit	ADI-910-001	1x96 wells	6.03 pg/mL (7.81-1,000 pg/mL)	Species Independent	CS, S, SA, U, WhB	3 Hours
PGE_2 ELISA Kit	ADI-900-001 ADI-901-001	1x96 wells 5x96 wells	13.4 pg/mL (39.1-2,500 pg/mL)	Species Independent	CL, CS, CSF, Dialysate, Gingival Crevicular Fluid, P, S, SA, T, U, WhB	< 3 Hours
PGE_2 FPIA Kit	ADI-920-001	100 Tests	684 pg/mL (1,562-100,000 pg/mL)	Species Independent	CS	30 Minutes
PGE_2 High-Sensitivity ELISA Kit	ADI-930-001 ADI-931-001	1x96 wells 5x96 wells	8.26 pg/mL (7.8-1,000 pg/mL)	Species Independent	CS, P, S, SA, U, WhB	Overnight + 1 hour
6-keto-$PGF_{1\alpha}$ ELISA Kit	ADI-900-004 ADI-901-004	1x96 wells 5x96 wells	1.40 pg/mL (3.2-50,000 pg/mL)	Species Independent	CS, S, SA, U	< 3 Hours
$PGF_{2\alpha}$ ELISA Kit	ADI-900-069 ADI-901-069	1x96 wells 5x96 wells	6.71 pg/mL (3.05-50,000 pg/mL)	Species Independent	CL, CS, P, S, SA, U, WhB	< 3 Hours
$PGF_{2\alpha}$ High-Sensitivity ELISA Kit	ADI-930-069 ADI-931-069	1x96 wells 5x96 wells	0.98 pg/mL (1.95-2,000 pg/mL)	Species Independent	CS, M, P, S, SA, U	Overnight + 3 Hours
8-iso-$PGF_{2\alpha}$ ELISA Kit	ADI-900-010 ADI-901-010	1x96 wells 5x96 wells	16.3 pg/mL (6.1-100,000 pg/mL)	Species Independent	CS, P, T, U	< 3 Hours
Direct 8-iso-$PGF_{2\alpha}$ ELISA Kit	ADI-900-091 ADI-901-091	1x96 wells 5x96 wells	(2 hour) 103.2 pg/mL; (overnight) 40.0 pg/mL (160-100,000 pg/mL)	Species Independent	CL, P, S, T, U	< 3 Hours or Overnight + 45 Minutes
15-deoxy-$\Delta^{12,14}$-PGJ_2 ELISA Kit	ADI-900-023 ADI-901-023	1x96 wells 5x96 wells	36.8 pg/mL (195-200,000 pg/mL)	Species Independent	CS, P, SA, U	5 Hours
TXB_2 ELISA Kit	ADI-900-002 ADI-901-002	1x96 wells 5x96 wells	10.54 pg/mL (13.7-10,000 pg/mL)	Species Independent	CL, Coronary Effluent, CS, Liver Perfusate, Platelets, P, Rectal Dialysate, S, SA, U, WhB	< 3 Hours
11-dehydro-TXB_2 ELISA Kit	ADI-900-092 ADI-901-092	1x96 wells 5x96 wells	4.31 pg/mL (9.8-10,000 pg/mL)	Species Independent	CS, U, S	3 Hours
Urinary Prostacyclin ELISA Kit	ADI-900-025 ADI-901-025	1x96 wells 5x96 wells	6.58 pg/mL (7.81-2,000 pg/mL)	Species Independent	CS, U	< 3 Hours

LEGEND
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METABOLISM RESEARCH

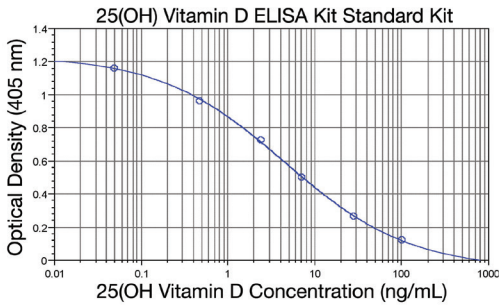
Metabolism includes enzyme-catalyzed reactions within cells that allow the organism to maintain their structure, grow, reproduce, and respond to their environment. Metabolism also involves the breakdown of organic substances (e.g. proteins, lipids, carbohydrates), harvesting of energy by way of cellular respiration, and using that energy to construct cellular components (e.g. proteins, nucleic acids). When the metabolic system is unbalanced, this can lead to metabolic diseases such as obesity, diabetes, insulin resistance, hypertension, atherosclerosis, and cancer. Enzo Life Sciences' ELISAs for metabolism research include kits for the analysis of popular metabolic biomarkers such as kidney failure (e.g. NGAL, KIM-1), bone mineralization (e.g. vitamin D), obesity (e.g. leptin) and several others.

25(OH) VITAMIN D ELISA KIT (ADI-900-215)

Known as the "sunshine vitamin", Vitamin D is responsible for metabolic intestinal absorption of calcium and phosphate, and is critical to the process of bone mineralization. Vitamin D deficiency is associated with a variety of diseases, including osteoporosis, rheumatoid arthritis, diabetes, and cancer. With a rapid assay time and easy-to-use protocol, Enzo's 25(OH) Vitamin D ELISA kit is the fastest, user-friendly assay on the market. Reduce your sample preparation and assay time without sacrificing sensitivity or reproducibility. Discover the benefits of this colorimetric, competitive immunoassay kit for quantifying 25(OH) Vitamin D_2 and D_3 in human plasma and serum samples.

- Measures as little as 1.98 ng/mL of 25(OH) Vitamin D_2 and D_3 in just 1.5 hours
- Easy-to-use protocol with rapid dissociation step reduces errors and bench time
- Convenient alternative to labor-intensive LC-MS method

Detect Low Concentrations of Common Forms of Vitamin D (D_2 & D_3)



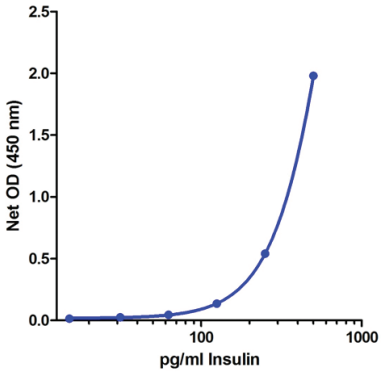
Standard curve experiment using the 25(OH) Vitamin D ELISA Kit (ADI-900-215).

INSULIN ELISA KIT (ENZ-KIT141)

Insulin is a peptide hormone made in the pancreas by beta cells and promotes the uptake of glucose from the blood into tissues, where it is stored in the form of glycogen and fat. By controlling glucose levels, insulin serves as the central regulator of fat and carbohydrate metabolism. The disease diabetes mellitus results when control of glucose levels is lost due to lack of insulin production (type 1 diabetes) or when sufferers develop an inability to respond to insulin (type 2 diabetes).

- Highly sensitive measurement of insulin, detecting as little as 21.6 pg/mL
- Negligible cross reactivity with proinsulin
- High-throughput format with results in 3 hours for up to 39 samples in duplicate
- Fully quantitative results that surpass semi-quantitative Western blot analysis

Highly Sensitive Measurement of Insulin



Standard curve experiment using Insulin ELISA Kit (ENZ-KIT141).

SELECT ELISA KITS FOR METABOLISM RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
25(OH) Vitamin D ELISA Kit	ADI-900-215	1x96 wells	1.98 ng/mL (0.5-1,010 ng/mL)	H	P, S	~1.5 Hours
Adiponectin (human) ELISA Kit	ALX-850-377	1x96 wells	0.156 ng/mL (CSF, urine); 0.47 ng/mL (plasma, serum) (1-150 ng/mL)	H	CSF, P, S, U	< 3 Hours
AMP'D® GLP-1 ELISA Kit	ENZ-KIT104	1x96 wells	5.5 pg/mL (range 7.8-250 pg/mL)	H	P, S	3 Hours
ApoE ELISA Kit	ENZ-KIT134	1x96 wells	14.063 ng/mL (23.438-1,500 ng/mL)	H	CS, P, S, T	3.5 Hours
Gastrin I (human) ELISA Kit	ADI-900-026	1x96 wells	7.27 pg/mL (39.1-10,000 pg/mL)	H	CS, P, S	5 Hours
Gastrin I (rat) ELISA Kit	ADI-900-149	1x96 wells	78.1 pg/mL (78.1-5,000 pg/mL)	R	CS, P, S	5 Hours
Insulin ELISA Kit	ENZ-KIT141	1x96 wells	21.6 pg/mL (15.6-500 pg/mL)	H, P	P, S	3 Hours
KIM-1 (human) ELISA Kit	ADI-900-226	1x96 wells	1.279 pg/mL (7.813-500 pg/mL)	H	U	< 2 Hours
Leptin (human) ELISA Kit	ADI-900-028A	1x96 wells	23.4 pg/mL (31.3-2,000 pg/mL)	H	CS, P, S	3 Hours
Leptin (mouse) ELISA Kit	ADI-900-019A	1x96 wells	25.4 pg/mL (50-3,200 pg/mL)	M	CS, P, S, T	3 Hours
Leptin (rat) ELISA Kit	ADI-900-015A	1x96 wells	67.2 pg/mL (100-6,400 pg/mL)	R	CS, P, S	3 Hours
Nampt (Visfatin/PBEF) (human) ELISA Kit	AG-45A-0006EK	1x96 wells	30 pg/mL (0.125-8 ng/mL)	H	S	2.5 Hours
Nampt (Visfatin/PBEF) (mouse/rat) Dual ELISA Kit	AG-45A-0007EK	1x96 wells	50 pg/mL (0.5-32 ng/mL)	M, R	S	< 4 Hours
NGAL (dog) ELISA Kit	BPD-KIT-043	1x96 wells	0.56 pg/mL (4-400 pg/mL)	C	CS, P, S, U, T	4 Hours
NGAL (human) ELISA Kit	BPD-KIT-036	1x96 wells	4 pg/mL (10-1,000 pg/mL)	H	CS, P, S, U, T	< 4 Hours
NGAL (monkey) ELISA Kit	BPD-KIT-045	1x96 wells	1.5 pg/mL (10-200 pg/mL)	MK	CS, P, S, U, T	< 4 Hours
NGAL (mouse) ELISA Kit	BPD-KIT-042	1x96 wells	0.75 pg/mL (10-1,000 pg/mL)	M	CS, P, S, U, T	4 Hours
NGAL (pig) ELISA Kit	BPD-KIT-044	1x96 wells	1 pg/mL (10-400 pg/mL)	P	CS, P, S, U, T	4 Hours
NGAL (rat) ELISA Kit	BPD-KIT-046	1x96 wells	0.5 pg/mL (4-400 pg/mL)	R	CS, P, S, U, T	4 Hours
NGAL rapid (human) ELISA Kit	BPD-KIT-037	1x96 wells	< 0.1 ng/mL (0.2-20 ng/mL)	H	P, U	1 Hour
Peptide YY ELISA Kit	ENZ-KIT133	1x96 wells	18.75 pg/mL	H	CS, P, S, T	3.5 Hours
Proinsulin ELISA Kit	ENZ-KIT149	1x96 wells	0.17 pM (1.56-50 pM)	H	P, S	3 Hours

LEGEND
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NEPHROLOGY RESEARCH

Chronic kidney disease (CKD) is a major public health problem, as 10% of the worldwide population is affected by CKD. There have been numerous studies focused on this disease over the years but there remains a need for improved therapeutics and identifying and/or predicting patient outcomes. One protein that has been identified as playing an important role in kidney disease is Kidney Injury Molecule-1 (KIM-1). It is the most highly upregulated protein in the proximal tubule of the injured kidney. It exists in very low levels in normal kidneys but when upregulated during injury, it is detectable in urine in a wide variety of human diseases. KIM-1 is a potential biomarker for renal injury, which would suggest it has great importance in various kidney diseases and disorders, such as chronic kidney disease (as mentioned above), as well as acute tubular necrosis and acute kidney failure.

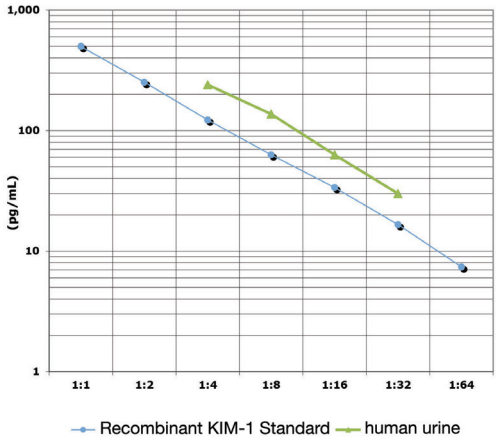
KIM-1 (HUMAN) ELISA KIT (ADI-900-226)

Acute kidney injury (AKI), the precursor to acute renal failure (ARF) is the rapid loss of the kidney's ability to remove metabolic waste and help balance fluids and electrolytes in your body. This sudden loss of kidney function, which is recoverable, can be the result of illness, physical trauma, or nephrotoxic drugs. Numerous studies have identified a number of proteins and metabolites present in blood or urine with varied utility as biomarkers of these various stages of kidney injury, disease progression, or nephrotoxicity. Enzo provides a variety of tools to detect the early stages of acute kidney injury or renal failure, including sensitive ELISA kits for detection of KIM-1 and NGAL (lipocalin-2). These rapid, high-sensitivity kits are validated for a variety of species and samples types.

The KIM-1 (human) ELISA kit provides ultra-sensitive quantification enabling reduced input sample and matrix interference.

- Sensitive ELISA measures as little as 1.2 pg/mL of KIM-1 in urine
- Low cross-reactivity to TIM-3 and TIM-4
- Rapid assay with results in < 2 hours

Rapidly Quantify KIM-1, an Early Biomarker of AKI



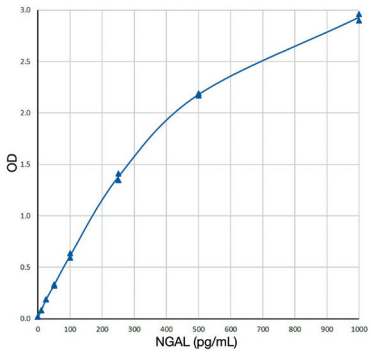
Parallelism analysis using the KIM-1 (human) ELISA Kit (ADI-900-226) indicates antigen binding characteristics are similar to native KIM-1 in urine samples with no matrix interference at the dilutions tested.

BIOPORTO® NGAL ELISA KITS

Neutrophil gelatinase-associated lipocalin (NGAL, lipocalin-2, siderocalin) is a small, robust protein detectable in urine and blood within 2 hours upon kidney tubular damage.

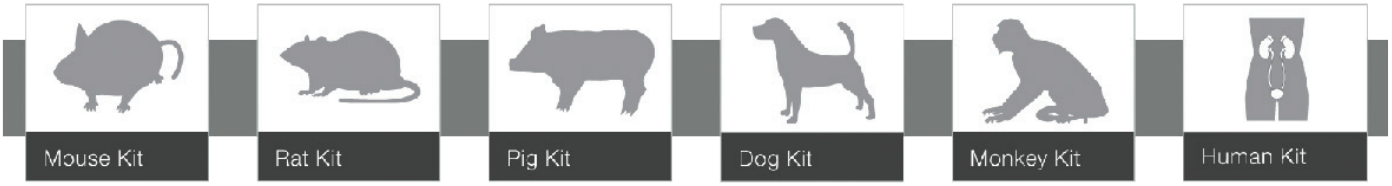
- Sensitive (pg/mL) ELISAs validated for human samples and a broad range of model systems
- Rapid human NGAL assay with results in less than 1 hour
- Large range of sample types including: culture supernatants, plasma, serum, tissue, and urine

Detect NGAL Across Diverse Model Systems



Calibration curve for NGAL (monkey) ELISA Kit (BPD-KIT-045).

Versatile NGAL ELISA Kits for Detection of NGAL in a Variety of Sample Types



SELECT ELISA KITS FOR NEPHROLOGY RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
KIM-1 (human) ELISA Kit	ADI-900-226	1x96 wells	1.279 pg/mL (7.813-500 pg/mL)	H	U	< 2 Hours
NGAL (human) ELISA Kit	BPD-KIT-036	1x96 wells	4 mL pg/mL (10-1,000 mL pg/mL)	H	CS, P, S, T, U	< 4 Hours
NGAL (dog) ELISA Kit	BPD-KIT-043	1x96 wells	0.56 pg/mL (4-400 pg/mL)	C	CS, P, S, T, U	4 Hours
NGAL (monkey) ELISA Kit	BPD-KIT-045	1x96 wells	1.5 pg/mL (range 10-200 pg/mL)	MK	CS, P, S, T, U	< 4 Hours
NGAL (mouse) ELISA Kit	BPD-KIT-042	1x96 wells	0.75 pg/mL (range 10-1,000 pg/mL)	M	CS, P, S, T, U	4 Hours
NGAL (pig) ELISA Kit	BPD-KIT-044	1x96 wells	1 pg/mL (range 10-400 pg/mL)	P	CS, P, S, T, U	4 Hours
NGAL (rat) ELISA Kit	BPD-KIT-046	1x96 wells	0.5 pg/mL (range 4-400 pg/mL)	R	CS, P, S, T, U	4 Hours

LEGEND
Species: B= bovine, C = canine (dog), H = human, M = mouse, MK = monkey, P = porcine (pig), R= rat, RB = rabbit
Sample Types: AM = amniotic fluid, CL = cell lysates, CSF = cerebral spinal fluid, CS = culture supernatants, F = feces, M = milk, NL = nasal lavage, P = plasma, S = serum, SA = saliva, SS= sputum supernatant, T = tissue, TC = tissue culture, U = urine, WhB = white blood cells. Product tables includes both certified and cited species and sample types.

NEUROSCIENCE RESEARCH

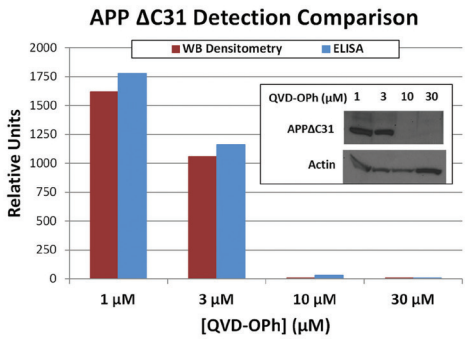
Neuroscience encompasses the study of the nervous system and includes neurodegeneration, which involves the progressive loss of structure or function of neurons. It is estimated the aging worldwide population will result in over 100 million sufferers of dementia by the year 2050, a postulate that continues to drive major research efforts in neurodegenerative diseases and the associated loss of cognitive function. Diseases such as Alzheimer's (AD), Parkinson's, Huntington's, and Amyotrophic Lateral Sclerosis are considered diseases of protein homeostasis (proteostasis), characterized by loss of specific neuronal populations, and the presence of inclusion bodies consisting of insoluble, unfolded proteins. Drug development programs for treatment of these diseases include modulators of key proteins and enzymes that regulate proper protein folding, modification, and clearance, seeking to reverse or prevent the accumulation of protein aggregates and toxic intermediates. Enzo offers several neuroscience ELISAs which include unique targets such as APP ΔC31, LVV Hemorphin 7, and SMN to understand specific neurodegenerative diseases.

APP ΔC31 ELISA KIT (ADI-900-227)

The progressive neurodegenerative disease, Alzheimer's disease, is characterized by senile plaques, neurofibrillary tangles and loss of synapses and neurons. AD has been largely viewed as a disease of toxicity being mediated by the accumulation of the amyloid beta (Aβ) peptide as plaques within the brain resulting in damage to brain cells from the binding of damaging metals, reactive oxygen species production and direct damage to cellular membranes. Recent research has suggested that the Aβ peptide is a multifunctional peptide with non-pathological effects. Its association with AD, in conjunction with other proteins such as the amyloid precursor protein (APP), results in the imbalance between the processes of memory formation and normal forgetting. Enzo Life Sciences offers a novel ELISA kit to measure APP ΔC31, an important amyloid precursor protein fragment with a unique pro-apoptotic mechanism leading to AD.

- Sensitive detection of an important APP fragment with a unique pro-apoptotic mechanism
- Validated for human cell lysates and cerebral spinal fluid sample types
- High specificity with low cross-reactivity to similar APP isoforms

Reliable Screening of APP ΔC31 Inhibition



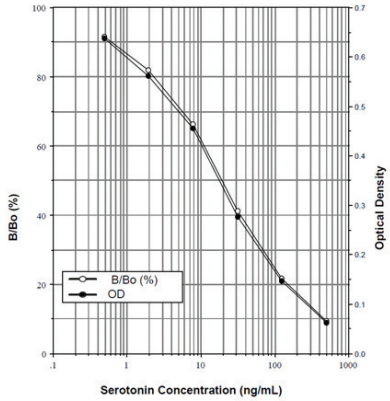
Inhibition experiment by ELISA (ADI-900-227) and Western blot analysis indicates both methods are in agreement using treatment of increasing concentrations of caspase inhibitor which reduces the production of APP ΔC31.

SEROTONIN ELISA KIT (ADI-900-175)

Serotonin (5-hydroxytryptamine, 5-HT) is a monoamine found in the central nervous system, gastrointestinal tract, and blood with broad physiological functions in neurotransmission, gastric motility, hemostasis, and cardiovascular integrity.

- Highly sensitive measurement of serotonin, detecting as little as 0.293 ng/mL
- No acylation required for standards and samples
- Thoroughly validated in multiple complex sample matrices
- High-throughput format with results in just 3 hours for up to 39 samples in duplicate

Highly Sensitive Measurement of Serotonin



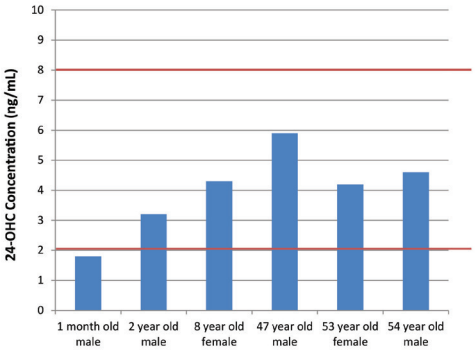
The Serotonin ELISA Kit (ADI-900-175) is a colorimetric competitive immunoassay kit with results in 3 hours.

24(S)-HYDROXYCHOLESTEROL ELISA KIT (ADI-900-210)

24(S)-Hydroxycholesterol (24-OHC), an enzymatically-generated side chain-hydroxylated derivative of cholesterol, is a pivotal marker in the study of cerebral cholesterol homeostasis. Cholesterol is unable to cross the blood-brain barrier, however, Cyp46 enzyme converts cholesterol to the more soluble 24-OHC, and this hydroxylated form of cholesterol is able to cross the blood-brain barrier. This conversion allows for the reduction of cholesterol in the brain and the efflux of 24-OHC from the brain into cerebral spinal fluid and blood. The flux of 24-OHC has been seen in patients with a variety of neurodegenerative diseases. In the instance of Alzheimer's disease, changes in 24-OHC concentrations may be indicative of different pathogenetic mechanisms and/or the progression of the disease. As in the case of multiple sclerosis, concentrations of 24-OHC have been shown to decrease, likely due to the loss of neuronal cells responsible for the synthesis.

- Measure as little as 0.78 ng/mL of 24(S)-Hydroxycholesterol in just 2 hours
- Convenient, user-friendly alternative to mass spectrometry
- Low cross-reactivity with structurally related molecules

Detect Normal and Diseased Levels of 24(S)-Hydroxycholesterol



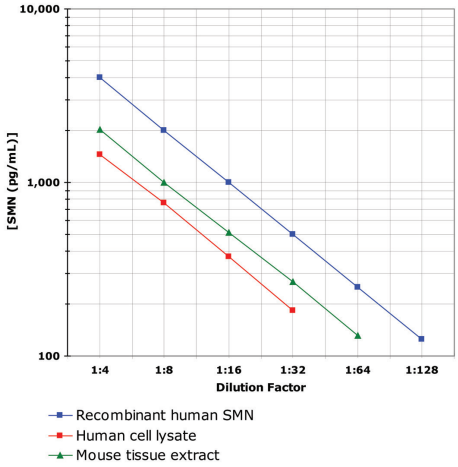
Normal human cerebral spinal fluid samples were diluted 1:2 in assay buffer and analyzed in the assay (ADI-900-210) for 24(S)-Hydroxycholesterol levels.

SMN ELISA KIT (ADI-900-209)

Survival Motor Neuron (SMN) is a ~38 kDa protein produced primarily by the SMN1 gene. Deletion or mutation of the SMN1 gene results in a reduced level of full-length SMN protein and manifests as a range of neuromuscular phenotypes in humans as the disease spinal muscular atrophy (SMA). The kit provides reproducible, fully quantitative results for the detection of mouse and human SMN in cell lysates, surpassing semi-quantitative Western blot analysis.

- Detect as little as 50 pg/mL of SMN
- Results in just 3 hours from up to 39 samples in duplicate
- ELISA kit developed in collaboration with the SMA Foundation

First Ready-to-use ELISA for Quantifying Human or Mouse SMN



Parallelism analysis using the SMN ELISA Kit (ADI-900-209) indicates antigen binding characteristics are similar to native SMN in human and mouse cell lysate samples with no matrix interference at the dilutions tested.

SELECT ELISA KITS FOR NEUROSCIENCE RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
24(S)-Hydroxycholesterol ELISA Kit	ADI-900-210	1x96 wells	0.78 ng/mL (0.39-100 ng/mL)	Species Independent	CSF, CS, T	2 Hours
APP ΔC31 ELISA Kit	ADI-900-227	1x96 wells	0.92 pM (11.72-1,500 pM)	H	CL, CSF	~2 Hours
Dopamine ELISA Kit	ENZ-KIT188	1x96 wells	0.938 ng/mL (1.56-100 ng/mL)	Species Independent	P, S, T, TC	2 Hours
Histamine ELISA Kit	ENZ-KIT140	1x96 wells	0.03 ng/mL (0.098-25 ng/mL)	H, M, R, C	P, TC, U	2 Hours
LVV Hemorphin 7 ELISA Kit	ADI-900-205	1x96 wells	6.1 pg/mL (9.8-10,000 pg/mL)	Species Independent	S, T	3 Hours
Melatonin ELISA Kit	ENZ-KIT150	1x96 wells	0.162 ng/mL	Species Independent	S, SA, P, Fruit	2 Hours
Oxytocin ELISA Kit	ADI-900-153A ADI-901-153A	1x96 wells 5x96 wells	15 pg/mL (15.6-1,000 pg/mL)	Species Independent	CS, CSF, M, P, S, SA, T, U	Overnight + 1 Hour
Serotonin ELISA Kit	ADI-900-175	1x96 wells	0.293 ng/mL (0.49-500 ng/mL)	Species Independent	P, S, U	3 Hours
SMN ELISA Kit	ADI-900-209	1x96 wells	50 pg/mL (50-3,200 pg/mL)	H, M	CL	3 Hours
Substance P ELISA Kit	ADI-900-018A ADI-901-018A	1x96 wells 5x96 wells	5.3 pg/mL (9.76-10,000 pg/mL)	Species Independent	CS, P, S, SA, T, U	3 Hours

LEGEND
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Sample Types: AM = amniotic fluid, CL = cell lysates, CSF = cerebral spinal fluid, CS = culture supernatants, F = feces, M = milk, NL = nasal lavage, P = plasma, S = serum, SA = saliva, SS= sputum supernatant, T = tissue, TC = tissue culture, U = urine, WhB = white blood cells. Product tables includes both certified and cited species and sample types.

OXIDATIVE STRESS RESEARCH

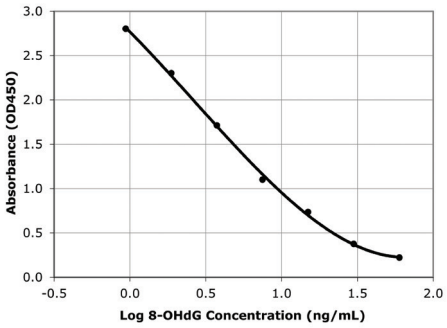
The term oxidative stress reflects an imbalance in free radical formation within a cell or organism, most commonly in the form of reactive oxygen or nitrogen species (ROS/RNS). ROS/RNS such as superoxide anions, hydroxyl radicals, hydrogen peroxide, nitric oxide, and peroxynitrite originate from a variety of sources including changes in aerobic metabolism, immune activation, UV radiation, heme accumulation, and hypoxia. Failure of the cell's defense mechanisms to compensate for accumulating insults such as mitochondrial dysfunction, DNA damage, misfolded proteins, and lipid peroxidation can trigger programmed cell death pathways, and has been linked to clinically relevant diseases including cancer, cardiovascular disease, asthma, ischemia, diabetes, and neurodegenerative disease. Choose one of our sensitive ELISAs to detect a variety of oxidative stress biomarkers.

DNA DAMAGE (8-OHDG) ELISA KIT (ADI-EKS-350)

Exposure of cells to oxidative and environmental stresses frequently results in the breakdown or oxidation of genomic DNA. Assays to evaluate the integrity of genomic DNA, or to assess the presence of oxidized DNA are frequently used as a means of verifying the onset of apoptosis or DNA damage.

- Quantify levels of < 1ng/mL in less than 2.5 hours
- Tested in a variety of biofluids (urine, serum, saliva)
- Convenient, colorimetric 96-well plate formats

Rapidly Detect < 1 ng/mL 8-OHdG



Standard curve experiment using the DNA Damage ELISA Kit (ADI-EKS-350).

SELECT ELISA KITS FOR OXIDATIVE STRESS RESEARCH

Product Name	Product #	Size	Sensitivity (Range)	Species	Sample Types	Assay Time
ADMA Direct (mouse/rat) ELISA Kit	ALX-850-327	1x96 wells	0.05 µmol/L	M, R	P, S	15 to 20 Hours + 1 Hour
ADMA Direct ELISA Kit	ALX-850-323	1x96 wells	0.05 µmol/L (expected value: 0.45 µmol/L ± 0.19 µmol/L)	H	P, S	15 to 20 Hours + 1 Hour
Cytochrome C (human) ELISA Kit	ADI-900-141	1x96 wells	6.03 pg/mL (28.13-900 pg/mL)	H	CL	3 Hours 15 Minutes
DNA Damage ELISA Kit	ADI-EKS-350	1x96 wells	0.59 ng/mL (1.875-60 ng/mL)	Species Independent	CL, CS, P, S, SA, U, seminal fluids, DNA extracts	< 2.5 Hours
HO-1 (human) ELISA Kit	ADI-EKS-800	1x96 wells	0.78 ng/mL (0.78-25 ng/mL)	H	CL, P, S, T	< 2.5 Hours
HO-1 (rat) ELISA Kit	ADI-EKS-810A	1x96 wells	0.036 ng/mL (0.195-12.5 ng/mL)	R	CL, P, S, T, bronchoalveolar lavage fluid	< 3 Hours
IMMUNOSET® HO-1 (human) ELISA Development Set	ADI-960-800	5x96 wells	49 pg/mL (0.195-12.5 ng/mL)	H	CL, T	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
IMMUNOSET® HO-1 (mouse) ELISA Development Set	ADI-960-071	5x96 wells	96 pg/mL (0.195-12.5 ng/mL)	M	CL, P, S, T	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
IMMUNOSET® HO-1 (rat) ELISA Development Set	ADI-960-810	5x96 wells	39 pg/mL (0.195-12.5 ng/mL)	R	CL, P, S, T, bronchoalveolar lavage fluid	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
Myeloperoxidase (human) ELISA Kit	ADI-900-115	1x96 wells	Assay Buffer 13: 0.028 ng/mL; Assay Buffer 31: 0.019 ng/mL (0.195-12.5 ng/mL)	H	CS, Li-heP, NL, P, SS, U	3 Hours
IMMUNOSET® PDI ELISA Development Set	ADI-960-072	5x96 wells	3.93 ng/mL (7.8-250 ng/mL)	H, M, R	CL, CS, P, T	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
Protein Carbonyl ELISA Kit	ALX-850-312	1x96 wells	Not applicable	N/A	P, T	4.5 Hours
SDMA (human) ELISA Kit	ALX-850-331	1x96 wells	0.05 µmol/L (0.1-2 µmol/L)	H	P, S	15 to 20 Hours + 1 Hour
Superoxide Dismutase (Cu/Zn) ELISA Kit	ALX-850-033	1x96 wells	0.04 ng/mL (0.08-5 ng/mL)	H	CS, S	< 2 Hours

PROTEOSTASIS/CHAPERONES RESEARCH

Protein homeostasis or 'proteostasis' is the process that regulates proteins within the cell in order to maintain the health of both the cellular proteome and the organism itself. Proteostasis involves a highly complex interconnection of pathways that influence the fate of a protein from synthesis to degradation. As individual components are affected, the others adjust accordingly to maintain normal function. Disruption of one or more of these proteostasis influencers can manifest in pathologies such as Alzheimer's disease, cancer, and diabetes.

To fuel your proteostasis research, Enzo Life Sciences has an unrivaled portfolio of ubiquitin/proteasome and heat shock protein research reagents through our acquisition of Biomol International, Stressgen Bioreagents and Assay Designs. Our development efforts within the areas of protein synthesis, modification, and degradation continue to produce cutting-edge tools for dissecting key biological processes at the forefront of academic discourse in the proteostasis field. This commitment is evidenced most recently by first-to-market immunoassays, cell-based assays, and compound libraries for autophagy, an emerging pathway of interest in cellular regulation of protein turnover and its relation to disease.

CHAPERONES/HEAT SHOCK PROTEINS

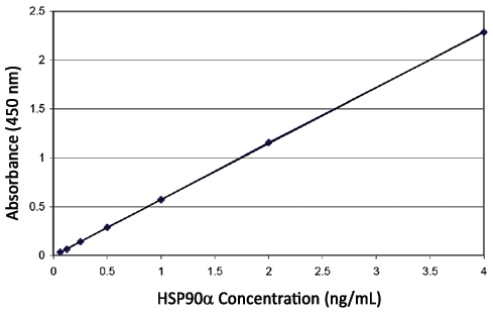
Building proteins within the cell is a complex process involving post-translational modification and protein folding. Because of the critical role proteins play, incorrect folding can have devastating consequences. Enzo has a number of assay kits and reagents directed at monitoring the delicate balance of protein synthesis, folding, and degradation. These include highly conserved heat shock proteins (HSPs) that are constitutively expressed and function as molecular chaperones which facilitate the synthesis and folding of proteins. HSPs also participate in protein assembly, export, turnover and regulation. Under stressful conditions such as heat shock, pH shift or hypoxia, increased expression of HSPs protects the cell by stabilizing unfolded proteins, giving the cell time to repair or re-synthesize damaged proteins. Enzo offers a number of kits, antibodies, proteins, inhibitors and more reagents to study HSPs/chaperones, HSF's, GRP's, ERp's, clusterin and other stress-related molecules. Our ELISAs for proteostasis and chaperone research are sensitive, widely published and available for multiple species and sample types.

HSP90α (HUMAN) ELISA KIT (ADI-EKS-895)

The HSP90 family of heat shock proteins represents one of the most abundantly expressed and highly conserved families of cellular chaperones whose expression can be upregulated under conditions of cellular stress. This family includes cytoplasmic (HSP90α and β), ER (GRP94), and mitochondrial (TRAP1) localized members. Structurally, HSP90 is characterized by an N-terminal ATP-binding domain, a medial substrate binding domain, and a C-terminal dimerization motif. HSP90 dimers function in cooperation with co-chaperones (e.g. HSP40, HSP70, Hop, p23) to stabilize a multitude of client protein substrates, including steroid hormone receptors, protein kinases, and transcription factors. The essential binding and hydrolysis of ATP by HSP90 is inhibited by ansamycin drugs (e.g. geldanamycin, 17-AAG) which occupy the N-terminal HSP90 nucleotide binding pocket. Many HSP90 client proteins such as erbB2/Her-2, c-raf, BCR-Abl, p53, and hTERT, are members of well characterized oncogenic pathways, making HSP90 inhibitors useful anticancer agents.

- Detect as little as 50 pg/mL of human HSP90α in just 3 hours
- Highly reproducible with less than 10% variation between assays
- No cross-reactivity with HSP90β, GRP94, HSP60, or HSP70 (HSP72)
- Obtain quantitative results for cell lysates, serum and tissue sample types

Most Sensitive Detection of Human HSP90α



Standard curve experiment using the HSP90α (human) ELISA Kit (ADI-EKS-895).

LEGEND
Species: B= bovine, C = canine (dog), H = human, M = mouse, MK = monkey, P = porcine (pig), R= rat, RB = rabbit
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PROTEOSTASIS/CHAPERONES RESEARCH

SELECT ELISA KITS FOR PROTEOSTASIS/CHAPERONES RESEARCH						
Product Name	**Product #**	**Size**	**Sensitivity (Range)**	**Species**	**Sample Types**	**Assay Time**
IMMUNOSET® αB-Crystallin ELISA Development Set	ADI-960-074	5x96 wells	0.59 ng/mL (1.25-40 ng/mL)	H, M, R, B	CL	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
IMMUNOSET® Grp75 ELISA Development Set	ADI-960-143	5x96 wells	0.762 ng/mL (3.125-100 ng/mL)	H, M, R	CL	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
Grp78/BiP ELISA Kit	ADI-900-214	1x96 wells	8.4 ng/mL (1.4-4,500 ng/mL)	H, M, R	CL, S	2.5 Hours
IMMUNOSET® Grp94 ELISA Development Set	ADI-960-077	5x96 wells	1.29 ng/mL (6.25-200 ng/mL)	H, M, R, C	CL, T	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
HSF1 ELISA kit	ADI-900-198	1x96 wells	61 pg/mL (0.39-12.5 ng/mL)	H, M	CL, T	3 Hours
[pSer^{326}]HSF1 ELISA Kit	ADI-900-199	1x96 wells	35 pg/mL (0.39-12.5 ng/mL)	H, M	CL, T	3 Hours
IMMUNOSET® HSP25 (rodent) ELISA Development Set	ADI-960-075	5x96 wells	0.38 ng/mL (0.78-25 ng/mL)	M, R	CL	Plate coating - Overnight + 1 Hour; Assay - 3 Hours
HSP27 (human) ELISA kit	ADI-EKS-500	1x96 wells	0.39 ng/mL (0.39-25 ng/mL)	H	CL, P, S, T	< 3 Hours
[pSer^{15}]HSP27 (human) ELISA Kit	ADI-900-170	1x96 wells	10.15 pg/mL (31.25-1,000 pg/mL)	H	CL, P, S	3 Hours
[pSer^{78}]HSP27 (human) ELISA Kit	ADI-900-165	1x96 wells	4.30 pg/mL (31.25-1,000 pg/mL)	H	CL, P, S	3 Hours
IMMUNOSET® HSP27 High Sensitivity (human) ELISA Development Set	ADI-960-076	5x96 wells	97 pg/mL (0.1-3.2 ng/mL)	H	CL, P, S	Plate coating - Overnight + 1 Hour; Assay - 2 Hours 45 Minutes
HSP60 (human) ELISA Kit	ADI-EKS-600	1x96 wells	3.125 ng/mL (3.125-100 ng/mL)	H	CL, S, T	< 3 Hours
Anti-HSP60 IgG/A/M (human) ELISA Kit	ADI-EKS-650	1x96 wells	2.88 ng/mL (7.81-250 ng/mL)	H	S	< 4 Hours
HSP70 ELISA Kit	ADI-EKS-700B	1x96 wells	200 pg/mL (780-50,000 pg/mL)	H, M, R, F	CL, S, T	4.5 Hours
HSP70 High Sensitivity ELISA Kit	ADI-EKS-715	1x96 wells	90 pg/mL (0.20-12.5 ng/mL)	H, M, R	CL, S, P, U	4.5 Hours
AMP'D® HSP70 High Sensitivity ELISA Kit	ENZ-KIT-101	1x96 wells	7 pg/mL (0.039-5 ng/mL)	H, M, R	S, P	4.5 Hours
Anti-HSP70 IgG/A/M (human) ELISA Kit	ADI-EKS-750	1x96 wells	6.79 ng/mL (31.25-1,000 ng/mL)	H	S	< 4 Hours
HSP70B' ELISA Kit	ADI-EKS-725A	1x96 wells	62 pg/mL (0.156-10 ng/mL)	H	CL, S, T	< 4.5 Hours
HSP90α (human) ELISA Kit	ADI-EKS-895	1x96 wells	50 pg/mL (62.5-4,000 pg/mL)	H	CL, S, T	< 3 Hours
Proteasome ELISA Kit	BML-PW0575	1x96 wells	Not applicable	N/A	Biological samples	< 3.5 Hours

LEGEND
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%CV IN ELISA: HOW TO REDUCE THEM AND WHY THEY ARE IMPORTANT

INTRODUCTION

For ELISA users, having a low coefficient of variability (CV or %CV) between sample replicates is crucial in demonstrating an assay was well-run and the resultant data is precise and accurate. Reliable assay results are assessed by standardized measures such as coefficient of variability.

$$C_v = \frac{\sigma}{\mu}$$

General mathematical formula for Coefficient of Variability (%CV).

The coefficient of variability is a dimensionless numerical ratio used to describe the level of variability within a population independently of the absolute values of the observations. In statistical analysis of numerical data, if your absolute values are similar, sample populations can be assessed by using standard deviations; when absolute values vary, you must consider using an approach such as %CV, to assess the precision of a laboratory technique. CV is calculated by dividing the standard deviation (σ) of a set of measurements by the mean (μ) of the set which is then expressed as a percentage of variation to the mean.

In ELISA data interpretation, %CV can highlight inconsistencies among sample replicates which is demonstrated in the data as variation among Optical Density (OD) readouts post-assay. These directly reflect the performance of the assay in the hands of the end-user. There are two types of %CVs that are used to express the precision of immunoassay results: intra-assay CV and inter-assay CV. Intra-assay CV is a measure of the variance between data points within an assay, meaning sample replicates ran within the same plate. Inter-assay CV is a measure of the variance between runs of sample replicates on different plates that can be used to assess plate-to-plate consistency. As a general guideline, to gauge the overall reliability of your immunoassay results, inter-assay %CV should be less than 15% while intra-assay %CV should be less than 10%.

It is important to identify the causes of high %CV in ELISAs. Human technical error can play a role such as inaccurate pipetting technique, splashing of reagents between wells, drying out of the wells, inconsistent sample handling e.g. variability due to freeze-thaw cycles among samples, and use of differing filter settings to start. Additionally, high %CV can be the result of machine error such as usage of uncalibrated automated machine pipettes, uncalibrated plate readers, and inappropriate plate reader software settings to analyze samples in wells. Lastly, plate, sample, and reagent contamination can lead to a high %CV. Cross-contamination between reagents can occur from handling errors leading to bacterial or fungal contamination of samples and reagents derived from compromised sterility.

How To Reduce %CV

1. Use fresh pipette tips for each addition. Discarding old tips for new tips between each addition can prevent cross-contamination between wells which can keep the background and %CV low between sample replicates.
2. It is not recommended to pour excess reagent from a reservoir back into the original bottle as this can unintentionally contaminate your stock solution which will be reflected in your readouts and could produce a high %CV.
3. Pre-wetting pipette tips 2-3 times in the solution that is to be pipetted also can help to improve %CV.
4. Proper pipette technique can also be a major factor in lowering %CV. Some general practices include: holding the pipette vertically (and not at an angle), aspirating slowly and smoothly, making sure the tip touches the vessel when withdrawn to avoid extra liquid outside the tip, and ensuring the tip is just under the surface of the liquid in the reservoir when dispensing.
5. Regular re-calibration of autopipettes is a good practice that can extend to other instruments including the plate washer and reader.

Group:							
Sample	Values	Net OD	%Bound	Result	Mean Result	Std. Dev.	CV%
100	0.541	0.543	58.68	18.449	17.172	1.806	**10.5**
	0.565	0.567	61.276	15.894			
102	0.531	0.533	57.599	19.626	21.196	2.22	**10.5**
	0.507	0.509	55.003	22.766			
103	0.399	0.401	43.321	45.333	41.39	5.576	**13.5**
	0.428	0.43	46.458	37.447			
141	0.451	0.453	48.945	32.312	31.709	0.852	**2.7**
	0.457	0.459	49.594	31.106			
150	0.471	51.109	28.482	26.733	2.473		**9.3**
	0.492	0.494	53.38	24.985			
151	0.45	0.452	48.837	32.518	34.155	2.315	**6.8**
	0.435	0.437	47.215	35.792			
152	0.357	0.359	38.778	60.662	57.035	5.129	**9**
	0.375	0.377	40.725	53.408			
157	0.362	0.364	39.319	58.529	60.036	2.132	**3.6**
	0.355	0.357	38.561	61.543			
159	0.425	0.427	46.133	38.184	35.664	3.563	**10**
	0.447	0.449	48.513	33.144			

An example of high and low intra-assay %CV values from data using Aldosterone ELISA Kit. Bolded in red are high% CVs (over 10) seen amongst sample replicates. Bolded in green are low %CV (underneath or at 10) seen between sample replicates

1. Always read and follow the product instructions. The information contained in the kit manual is your first source of knowledge for your particular assay. If there is any special handling information that you need to be aware of, it will be recorded in the kit insert. The insert has been written to provide you with the maximum amount of useful information in one convenient location. NOTE: Do not use the same kit insert repeatedly since the kits and inserts are periodically improved. The information that comes packaged with each kit contains information about any improvements and is the most current information available.
2. Check the calibration of the pipets that will be used for the assay. Each manufacturer should supply the recommended calibration protocol and performance specifications with each instrument. You need to verify that the volumes you are measuring are correct.
3. Do not mix components from different lots or kits. Each component is lot-specific and designed to give you a defined level of performance when used before the expiration date.
4. Always store the kit components at the recommended conditions. In some instances, special components may need to be frozen for maximum stability. Each component will have specific storage information printed on its label. Kits containing materials that require special storage should be clearly marked on the outside of the box.
5. Do not use the kit past the expiration date marked on the box. While many of the individual components may have expiration dates that extend beyond the kit date, the total kit expiration date has been determined based on the stability of all the materials stored at the suggested conditions.
6. Allow the plate to warm to room temperature before opening. The wells in the microtiter plate are coated with an antibody solution. While this coating is stable and robust, moisture will corrupt it causing a decrease in performance. The coated plate is shipped in a reusable mylar bag containing a mini-desiccant packet to ensure dry conditions. When not in use, the wells should be stored at 4°C, tightly sealed in the mylar bag with desiccant. Do not throw the plate frame away after your first assay. You will need it for the remaining wells stored in the foil bag.
7. Allow all reagents to warm to room temperature before opening unless instructed otherwise. Many of the reagents contain temperature-dependent components that may come out of solution when cold. Using the reagents at room temperature ensures that you have a consistent formulation from assay to assay.
8. Pre-rinse pipet tips with the reagent before transferring a volume. To pre-rinse, insert the end of the pipet tip just under the surface of the reagent and draw up a volume according to the pipet manufacturer's directions using a slow even motion. Expel the volume using the same steady motion. Typically you should pre-rinse the tip three times, using the fourth "draw" as your transfer volume. This is good lab practice regardless of the tip manufacturer's claims of low retention. Precision and accuracy will be maximized by taking the time to pre-rinse tips on a consistent basis. You need to pre-rinse a tip only once if you are using it to make multiple transfers. Always change the pipet tip if it has been accidentally contaminated.
9. Always use a fresh pipet tip for each standard, sample or reagent. Do not use the same tip for your standards even when pipetting from the lowest to highest concentrations as you will sacrifice precision.
10. Pipet the first reagent into the bottom of each well. Pipet subsequent volumes in different locations on the sides of each well, being careful to avoid cross-contaminating reagents. A simple way to avoid contamination is to pipet one reagent into all of the wells at the same location (e.g.: left side wall), then turn the plate 90° and pipet the next reagent at the same position (e.g.: left side wall). Because you rotated the plate, this position will put your pipet tip at a new location within the well.
11. Be careful handling the microtiter wells and reagents to prevent contamination. You have a variety of enzymes on your skin including proteases and endogenous alkaline phosphatase. If you accidentally touch a pipet tip, you can transfer these enzymes to your reagents resulting in unusable kit components. This is especially important for your substrate. The use of contaminated substrate will result in a less sensitive assay.
12. If culture media (CM) samples are being analyzed, then the standards should be diluted in non-conditioned media. Do not assume that all CM are the same. Not only does the medium differ in formulation, but serum supplements will also differ by type and lot. You should expect to find a basal level of endogenous analyte in media containing serum supplements. In addition, other medium supplements can contribute to the overall detection in an assay. If non-conditioned media is used as the standard diluent, then all samples will be relative to the standard curve. Using non-conditioned media usually results in a modest depression of the standard curve relative to standards diluted in kit assay buffer. This depression is acceptable since it is more important for the samples to be relative to the appropriate standard curve.
13. It is simply good lab practice to run duplicates for repeatability verification. In addition, you maximize your results when you run all wells in duplicate. It is easier to edit one outlying data point than to run the experiment over again because you were not able to get an appropriate measurement for some standard or sample. An outlying measurement can result from an improper amount of a reagent being added to a well or losing a portion of the volume during preparation or incubation. While one never thinks that this will happen to them, unforeseen things sometimes happen with unfortunate results.

Weak Color Development

Was substrate added at the correct point in the assay?
See the assay procedure provided in the instruction manual.

Were the antibody and conjugate added at the correct time?
See the assay procedure provided in the instruction manual. The antibody and conjugate provided are often color-coded for convenience and to help reduce laboratory errors.

Did all of the components belong to the specific kit being used?
When customers order more than one type of kit, they can sometimes confuse the reagents between kits.

How long was the substrate incubation?
It is possible that Stop Solution was added to the plate without allowing the full substrate incubation.

What were the conditions of the substrate incubation?
If a plate is left to incubate on a cold lab bench or under a drafty area during ambient incubations, signal values (e.g. optical density) may be lower than expected.

Were reagents brought to room temperature prior to use?
It is important to ensure that all reagents are brought to room temperature prior to use, or as mentioned in the product specific instruction manual. Usually leaving the kit out on the bench top at ambient temperature for about half an hour prior to setting up the assay will be sufficient, when the reagents can be stored at 4°C. Frozen volumes take a little more time to come to room temperature. Do not thaw frozen reagents in a water bath. If a different standard/sample diluent is used (such as culture media) this must also be warmed.

Was the plate read at the correct wavelength?
See the assay procedure provided in the instruction manual to ensure you're reading the plate at the correct wavelength. It may be necessary to check the filters in your plate reader and the program using during reading. If others used the instrument, they may make changes to the settings for their experiment.

Were the proper volumes of reagents added?
See the assay procedure provided in the instruction manual.

What were the conditions of the incubations?
If the incubation times and temperatures are not observed, this can lead to lower than expected signal values (e.g. optical density). Pay attention that in air-conditioned rooms the temperature does not drop below 21°C.

How was the plate shaken during incubations (if required)?
If customers do not have a plate shaker, they will often use an orbital flask shaker or some other piece of equipment. This is not a problem as long as the liquid is vigorously displaced about 3/4 of the way up the sides of the wells without coming out. It is very important that the plate is secured into place. If the plate is not shaken and it is required in the procedure, a longer incubation may be necessary to bring the reagents to equilibrium.

How long after the addition of Stop Solution was the plate read?
The plate needs to be read at the correct wavelength as soon as possible after the addition of the Stop Solution. We generally recommend that the plate be read within 10 minutes.

Poor Standard Curve

What was used as the standard diluent?

Diluents other than the supplied assay buffer may contain interfering substances that can affect the standard curve.

How was the precision of the standard curve?

If the %CV values for the standard curve signal values (e.g. optical density) are consistently above 5%, it may be a good idea to pay particular attention to pipetting technique. If the standard curve signal values were acceptable but the sample precision was not, the problem relates to the sample. Also, see recommendations under "Poor Precision".

Were the Blank and NSB values subtracted out?

If the net signal values (e.g. optical density) are not used, the signal values will appear higher than those presented in the sample data in the instruction manual.

How were the standard dilutions prepared?

It is important that test tubes of an appropriate size and material are used. Standard dilutions must be properly mixed (e.g. vortexed) while preparing the serial dilutions. It is also crucial that the standard dilutions be prepared and used within the time specified in the product specific instruction manual. Never store unused standard dilutions for a later use.

Poor Precision

Were the wells washed properly?

All wells receive the same treatment during the wash step. If some are washed less than others, this can translate to poor precision. It is important that the plate is washed thoroughly. If plate washing is troublesome, a squirt bottle can be filled with diluted Wash Buffer and all of the wells completely filled from this. The plate contents can be dumped into the sink and shaken to remove excess buffer. This should be repeated for the number of times recommended in the instruction manual. It is important to remember that adding too little Wash Buffer can result in high background, while adding too much is not a problem. The contents of the wells should be aspirated and the plate tapped dry on lint-free paper towels. Plate tapping should consist of a few taps since excessive tapping may lead to plate drying and inconsistent assay.

Were the wells aspirated sufficiently after the wash steps?

It is very important that as little Wash Buffer as possible remains in the wells after aspiration. Residual buffer can cause dilution of subsequent reagents. After the last wash step, it is a good idea to hit the plate several times over a piece of paper towel to remove excess buffer.

How were reagents pipetted into wells?

In order to eliminate precision error, customers need to remember to pre-rinse all pipet tips used in the assay. We usually recommend that the customer draw up the liquid into the tip and aspirate it three times prior to addition into the well. Regular pipet calibration and maintenance is also essential to ensure that the tips fit properly and that the correct volumes are dispensed. Be sure reagents are not splashed between wells or outside of the wells during pipetting (especially if using repeater pipets).

High Background

How was the plate washed?

It is important that the plate is washed thoroughly. If plate washing is troublesome, a squirt bottle can be filled with diluted Wash Buffer and all of the wells completely filled from this. The plate contents can be dumped into the sink and shaken to remove excess buffer. This should be repeated for the number of times recommended in the instruction manual. It is important to remember that adding too little Wash Buffer can result in high background, while adding too much is not a problem. The contents of the wells should be aspirated and the plate tapped dry on lint-free paper towels.

What were the incubation times and temperatures?

If the plate was incubated for too long or at a higher than recommended temperature, high background could result.

Edge Effects

Where was the plate incubated?
Oftentimes the conditions for ambient incubations can be less than ideal. If there is a draft in the area or the plate is incubated on a cold lab bench, this can lead to uneven color development.

If multiple plates were run, were they stacked on top of each other during incubation?
Multiple plates should only be incubated in a single layer. This will assure that no area of the plate is at a different temperature than any other.

If a non-ambient incubation was required, was the plate properly sealed?
Making sure that the plate sealer is tightly covering all of the wells will help to discourage uneven evaporation of the well contents, or condensation for colder incubation conditions.

Drift

Were reagents brought to room temperature prior to use?
If the reagents are not at a constant temperature prior to their addition into the wells, the results from one side of the plate to the other can differ depending on the temperatures at addition.

Was the set-up of the assay interrupted?
If the assay is interrupted at any point during the addition of reagents, it is possible that differing results will be seen before the interruption versus after. The wells that had reagents added before the interruption will have been incubating for longer than those after.

Have specific troubleshooting or technical questions?
Call our tech support team! We are here to help!

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