

HUMAN HEALTH

ENVIRONMENTAL HEALTH

FROM SMALL MOLECULES TO LIVE CELLS  
**THE ASSAY THAT  
MEASURES IT ALL**



Alpha Technology Solutions



# MANY APPLICATIONS ONE PROVEN ASSAY

Today's researchers study a wide variety of targets, from large endogenous protein complexes to very small molecules, and everything in between. Samples can range from serum and plasma to crude cell lysates and purified reagents. So when you need an efficient, highly

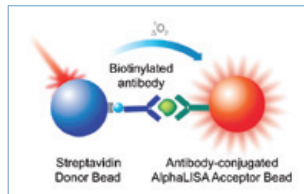
adaptable assay to study a variety of targets, there's only one solution: Alpha Technology. Alpha (amplified luminescent proximity homogeneous assay) is a versatile, bead-based platform that gives you the power to assay even the most complex samples – all in one well, with no wash steps.

Our Alpha Technology is part of a complete solution that includes a comprehensive assay platform, Alpha-certified detection, automation instrumentation, and custom assay development. It's everything you need to ensure consistent, reproducible results across a wide variety of applications.

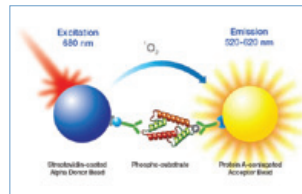
# ALPHA TECHNOLOGY SOLUTIONS

## Choose the Alpha solution that's right for you

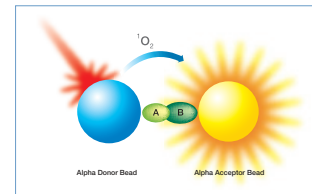
Alpha Technology is a bead-based proximity assay. When Alpha donor and acceptor beads are brought together, a cascade of chemical reactions is set in motion, creating a greatly amplified signal. The highly versatile beads can be coated with various biomolecules, enabling detection of unique biological events. There's an Alpha Technology solution for just about every research requirement:



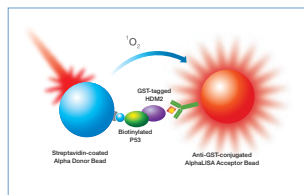
**AlphaLISA®** For results in half the time of ELISA, without wash steps, and with excellent sensitivity in a variety of matrices, including serum and plasma



**AlphaScreen® SureFire®**  
Great for cellular kinase assays, allowing detection of endogenous phosphoproteins in cell lysates and disease-related signal-transduction pathways



**AlphaScreen®** Perfect for studying fusion-tagged proteins or protein:protein interactions, and for testing cAMP, cGMP, phosphorylated peptides, or samples in a simple matrix



**Alpha Toolbox** Enables you to set up your own assay using ready-to-use Alpha beads for numerous capture solutions



**OnPoint<sup>SM</sup> Reagent Services**  
Delivering custom-built kits to your exact specifications

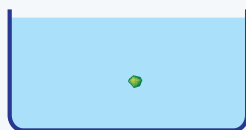


**Multimode Readers**  
Alpha-certified EnVision® and EnSpire® Multimode Plate Readers, enabling you to deliver optimal results, time after time

**Alpha Technology. It's the simple, no-wash assay that puts you in close proximity – for better results sooner.**

### How Alpha Technology Assays Work

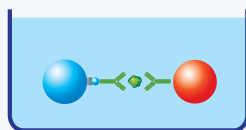
The simple, no-wash assay that allows for easy adoption, decreased variability, and results in *half the time* of a traditional ELISA.



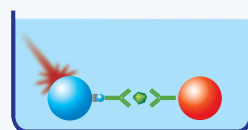
Add analyte to microplate.



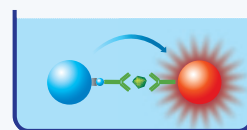
Add biotinylated anti-analyte antibody and anti-analyte antibody-conjugated acceptor beads. Incubate for 60 minutes.



Add streptavidin-coated donor beads. Incubate for 30 to 60 minutes. The interaction between bead-bound molecules and analyte brings the beads into proximity.



Excite the donor beads with red light.



Singlet oxygen generated by donor beads excites the acceptor beads, which emit light proportional to the level of interaction.

# IT'S SIMPLE CONSISTENT REPRODUCIBLE AND RIGHT ON TARGET

Since the introduction of genetically engineered human insulin in the 1970s, biotherapeutic drugs have been approved for treatment of many diseases, including cancer, inflammatory disease, and rare diseases with highly targeted and specific natures. As biotherapeutics is a highly regulated arena, researchers are looking to novel techniques that will allow them to develop these drugs faster, while still meeting regulatory demands.

That's the idea behind our consistent, efficient Alpha Technology.



## Target identification

Alpha Technology provides results in half the time of ELISA, when looking at cell response to a stimulus.

To help you validate your targets, we offer specialized reagents for almost any biological event.

- cAMP, cGMP
- Phosphorylation
- Cytokine secretion

## Cloning and expression

Alpha Technology is gaining in popularity among researchers because it requires no separation or washing and runs in half the time of ELISA.

The technology simplifies your workflow and improves data quality generated during the cloning and expression process.

- Clone screening and selection
- Isotyping
- Phage panning
- Functional screening

## Alpha Technology: The Clear Difference

Compared to standard assays, AlphaLISA delivers benefits that are easy to measure:

- Consistent results (%CVs less than 10%)
- Results in half the time of ELISA
- Superior sensitivity, exceeding FDA guidelines of 250-500 ng/mL, without wash steps
- Easy, automation-friendly protocol

## Alpha Technology



## Standard Immunoassay (including heterogeneous electrochemiluminescence assay)



### Process development

Identifying process-related impurities ensures the quality and safety of bioterapeutics and vaccines. Highly sensitive, robust Alpha kits are developed and manufactured to satisfy strict performance requirements for the detection of key drug impurities. The simple, fast protocol provides accurate results while allowing for efficient transfer between departments.

- Fucosylated IgG quantitation
- Cell culture additives
- Antibody glycosylation
- Host cell protein detection
- Residual Protein A
- Lot release assays

### Manufacturing and QC

You can save precious time and avoid bottlenecks in manufacturing and QC processes using AlphaLISA assays. AlphaLISA reduces hands-on time and automation stress while improving reproducibility, delivering minimal lot-to-lot variation between reagents and improved confidence in your crucial QC and lot-release assays.

- More than 120 biomarker detection kits
- Functional assays
- Process-contaminant detection and quantitation

### Safety and preclinical

Safety of bioterapeutics – and ultimately, patients – depends on high-quality, reproducible data.

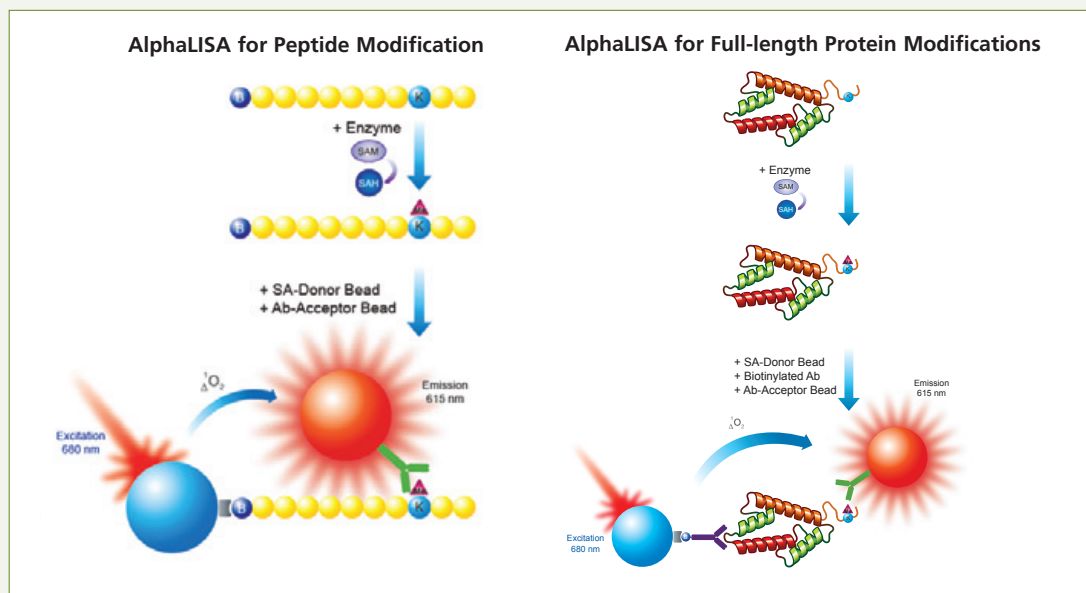
Whether your work involves monoclonal antibodies or proteins and peptides, the robust inter- and intra-assay consistency, optimal detection of true positive samples, and simple protocol of Alpha Technology streamline your workflow and provide an ideal alternative to ELISA or ECL assays.

- Antidrug antibody (ADA) assays
- Neutralizing antibody (NAb) assays
- Pharmacokinetics (PK)
- Pharmacodynamics (PD)

# IDENTIFY EPIGENETIC DRUG CANDIDATES FASTER

Epigenetics is a rapidly growing field that presents a significant opportunity for drug discovery. So the development of robust and biologically relevant assays for screening, lead identification, and optimization is more critical than ever before.

We deliver the first portfolio of epigenetics assays fully validated for mark specificity and optimized for high-throughput applications, while providing the flexibility to work across the full spectrum of substrates – from peptides, histones, and nucleosomes to truly nonrecombinant cell lines. These screen-ready assays accelerate epigenetic drug discovery by improving the efficiency of lead-compound identification and enabling interrogation of hit validity in more biologically relevant contexts.



PerkinElmer epigenetics assays are available in two homogeneous formats: AlphaLISA detection assays for peptide and full-length protein modifications. Let your science determine your screening strategy.

## Biochemical Toolbox

The Epigenetic Biochemical Toolbox reagents are available for both AlphaLISA and LANCE® *Ultra* TR-FRET platforms, highly sensitive and robust technologies that offer simple, no-wash protocols that are automation-friendly. All reagents have been tested extensively to ensure they detect the specific epigenetic mark of interest with minimal cross-reactivity. Assays are also optimized to deliver the highest sensitivity, even at low enzyme concentrations, and are completely HTS-compatible. The toolbox provides the flexibility to work across the full range of substrates, from peptides to histones to whole nucleosomes – an enabling feature when working with challenging enzymes that exhibit substrate preferences and/or low turnover.

## Cellular Detection Kits

Complementing the Biochemical Toolbox are the novel AlphaLISA Epigenetic Cellular Detection Kits for cell-based detection of epigenetic modifications. These are the first cellular assays on the market that offer the utmost sensitivity

## A Growing Portfolio of Reagents

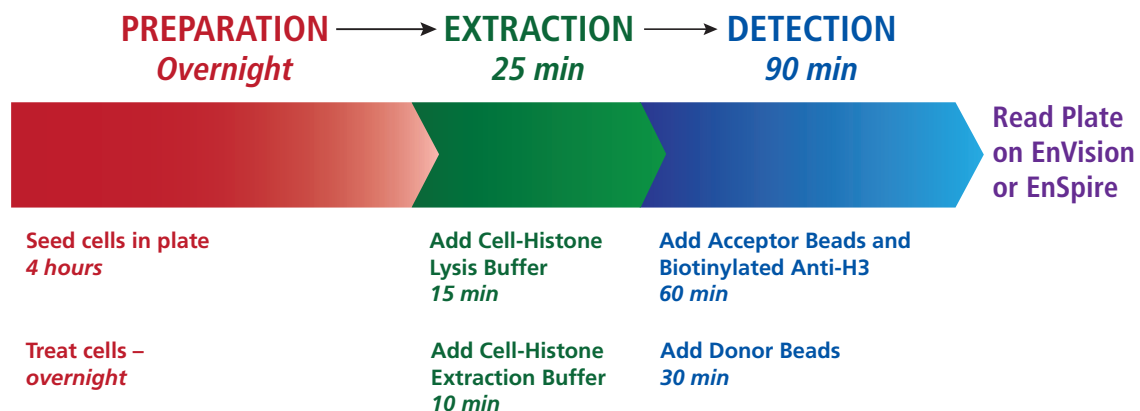
Assays for key epigenetic enzymes, including:

- DOT1L
- EZH2
- G9a
- HDAC1
- LSD1
- JMJD2A
- NSD2
- PRMT1
- SET7
- TIP60

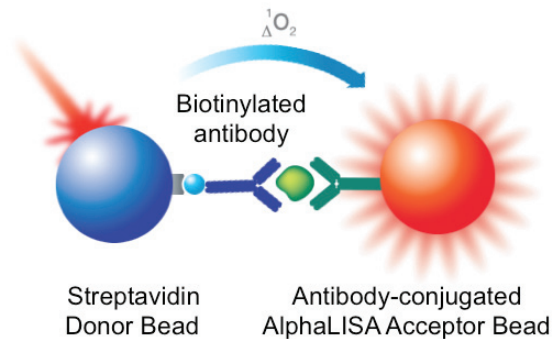
For the most up-to-date portfolio information, visit [www.perkinelmer.com/epigenetics](http://www.perkinelmer.com/epigenetics).

and enable rapid and direct detection of endogenous modification of epigenetic marks in a one-well, no-wash assay. The simple, user-friendly protocol eliminates the need for tedious ELISA and western blot assays. The kits are suitable for endogenous and recombinant cell lines, providing the flexibility to work with biologically relevant cell models.

## CELLULAR DETECTION KITS: ALL-IN-ONE WELL PROTOCOL



# THE ELISA ALTERNATIVE FOR BIOMARKERS WITH NO LIMITS



Immunoassay technology continues to be a critical part of how we understand concentrations of biological material in various sample media. ELISA and radioimmunoassays (RIA) have been the industry standard for many years but are known to be labor intensive and don't always provide the reliability scientists require in today's competitive environment. AlphaLISA no-wash immunoassays, as well as our complementary DELFIA® and LANCE assay platforms, ensure that your immunoassays perform as sensitively, efficiently, and accurately as your research requires – in half the time of ELISA. For optimum results, use EnSpire and EnVision plate readers, which have been validated for use with Alpha, DELFIA, and LANCE technologies.

A highly sensitive, homogeneous alternative to traditional ELISA technology, the AlphaLISA assay platform delivers a wide dynamic range and easy automation for analysis of biomarkers and other analytes.

## Autophagy

Our exclusive AlphaLISA platform offers results in half the time of ELISA with superior sensitivity and dynamic range for analyzing key autophagy targets, including LC3B and p62.

## Biologics/Bioprocess

AlphaLISA kits shorten the time it takes to quantitate monoclonal antibodies and detect contaminants, impurities, host cell proteins, cell culture additives, and leachables to less than three hours while still improving %CVs.

## Cancer

Measure more cancer biomarkers faster with a highly reproducible ELISA alternative. Choose from a broad range of AlphaLISA kits for key targets that utilize a simple protocol and small sample volumes (1-5  $\mu$ l).

## Cardiovascular

Achieve results in half the time of ELISA and conserve precious samples so multiple cardiovascular markers can be run faster, significantly decreasing hands-on time and costs with AlphaLISA.

## Central Nervous System

CNS research faces the same hurdles as other therapeutic areas – the need to move faster with limited resources. Traditional methods fall short in meeting these requirements. Save time and decrease costs using AlphaLISA kits developed specifically for the most important CNS markers, including Tau, amyloid  $\beta$ , and APP.

## Inflammation

AlphaLISA allows the measurement of key biomarkers and cytokines in assays developed specifically for your targets. Elimination of transfer or wash steps shortens the run time and improves reproducibility, while maintaining wide dynamic range and high sensitivity.

## Metabolic

With AlphaLISA you can shorten the time it takes to measure multiple biomarkers such as insulin, C-peptide, leptin, and FGF21, while conserving precious samples.

## Virology

The AlphaLISA HIV p24 research immunoassay kit is designed for the quantitative determination of HIV p24 in buffered solution or cell culture medium.



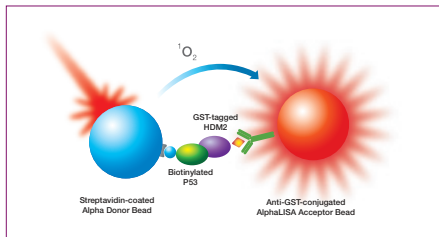
AlphaLISA Kits for Biomarkers and Cytokines				
<b>Angiogenesis</b>	EPO VEGFB	TNF $\alpha$ VEGFC	TNF $\alpha$ (mouse) VEGFD	VEGFA (mouse) VEGF
<b>Autophagy</b>	p62	LC3B		
<b>Biologics/Bioprocess</b>	Albumin (human) IgA IgG1 (isotyping) IgG4 (pharmacokinetic) Residual Protein A	CHO-P IgE IgG2 (isotyping) IgM	CHO-P broad reactivity IgG IgG3 (isotyping) NSO-P	<i>E. coli</i> HCP IgG1 (pharmacokinetic) IgG4 (isotyping) PER.C6
<b>Cancer</b>	AFP EPO MMP1 MMP9 (mouse) TFF3	CA125 ERBB2/HER2 MMP2 $\beta$ -NGF TIMP1	Caspase-3 active HGFR/c-MET MMP3 PSA	CXCL11/I-TAC IFN- $\beta$ MMP9 TNF $\alpha$
<b>Cardiovascular</b>	Alpha-2 macroglobulin ICAM-1 PCSK9	Cardiac Troponin I Myeloperoxidase Plasminogen	D-dimer Myoglobin Renin/Prorenin	EPO PAI-1 tPA
<b>Central Nervous System</b>	Amyloid $\beta$ 1-15 Amyloid $\beta$ 1-42 Amyloid $\beta$ oligomers	Amyloid $\beta$ 1-40 Amyloid $\beta$ 1-42 (high specificity) sAPP $\alpha$ (C-term specific)	Amyloid $\beta$ 1-40 (high specificity) Amyloid $\beta$ 1-42 (mouse/rat) Tau	Amyloid $\beta$ 1-40 (mouse/rat) Amyloid $\beta$ 1-x
<b>Inflammation</b>	CXCL1/GRO- $\alpha$ CCL4/MIP-1 $\beta$ CXCL9/MIG GM-CSF (mouse) IL1 $\alpha$ IL2 (mouse) IL6 IL8 IL1 $\beta$ (rat) IL15 (mouse) TNF $\alpha$	CCL2/MCP1 CCL5 / RANTES CXCL10/IP-10 IFN- $\alpha$ IL1 $\beta$ IL3 IL6 (mouse) IL10 IL12 (p70) IL17 TNF $\alpha$ (mouse)	CCL2/MCP1 (mouse/rat) CCL5 / RANTES (mouse) G-CSF IFN- $\gamma$ IL1 $\beta$ (mouse) IL4 IL7 IL10 (mouse) IL13 IL17A (mouse/rat)	CCL3/MIP-1 $\alpha$ CRP GM-CSF IFN- $\gamma$ (mouse) IL2 IL5 IL7 (mouse) IL11 IL15 IL18
<b>Metabolic</b>	Adiponectin C-peptide (mouse/rat) IGF1 Leptin (mouse)	Adiponectin (mouse) FGF21 IGF2 Prolactin	Albumin (human) GLP-1 Insulin	Albumin (mouse) Growth hormone Leptin
<b>Virology</b>	HIV p24 (high sensitivity)	HIV p24		

We are regularly adding new kits, so for the most up-to-date information, visit [www.perkinelmer.com/alphatech](http://www.perkinelmer.com/alphatech)

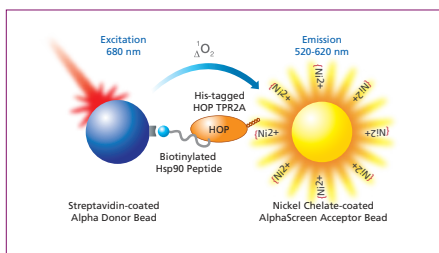
# HANDLE LARGE PROTEIN:PROTEIN INTERACTIONS WITH EASE

Protein:protein interactions are implicated in a large number of biological processes. With Alpha Technology, you benefit from a remarkably efficient and sensitive assay, enabling you to study the interactions and complexities of protein epitopes interacting within 200 nm distance.

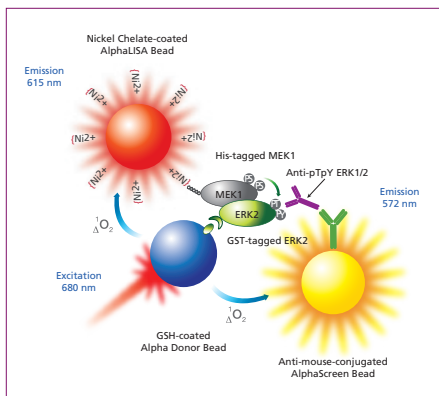
A highly flexible, homogeneous, bead-based proximity assay, Alpha Technology offers the possibility to assay many biological targets, including enzymes, receptors, ligands, second messengers, DNA, RNA, proteins, peptides, sugars, and small molecules and their corresponding interaction partners. The range of interaction affinities measurable with Alpha is huge – even low affinity interactions like sugar/lectin can be measured.



Binding of GST tag p53 to HDM2.



AlphaScreen with recombinant protein and peptide, Hsp90 with its cochaperone HOP.



AlphaScreen and AlphaLISA in a single well with recombinant proteins.

## Get the Alpha Technology advantage

Choose Alpha Technology for the study of proteins and their interactions using both biochemical and cell-based assays.

**AlphaLISA** – Delivers the greatest flexibility with a toolbox range of beads to mix and match

**AlphaScreen** – Best off-the-shelf solution, ideal for fusion tag detection

Alpha Technology offers:

- Ability to detect weak interactions that would be difficult to detect using traditional assays; this allows highly sensitive measurement of low-affinity and high-affinity interactions (low millimolar to picomolar range)
- Ability to detect interactions in crude cell extracts or with purified proteins used at low nM and biologically relevant concentrations
- Cost-efficiency: use small amounts of samples and reagents
- Easy miniaturization
- Flexibility – choose custom or off-the-shelf solutions
- No separation steps; homogeneous no-wash assay
- EnVision and EnSpire systems for studying interactions and complexities of proteins up to 200 nm in size.

## Custom or off-the-shelf technologies – you decide

The Alpha Toolbox gives you a wide range of beads coated with commonly used antiprotein tag antibodies and binding motifs, allowing you to build an assay to measure complex biological interactions. We also provide unconjugated beads that you can coat yourself. It's up to you – the possibilities are endless.

	Alpha Donor Beads	AlphaLISA Acceptor Beads	AlphaScreen Acceptor Beads	AlphaScreen Fusion Tag Detection Kits**
Fusion Tag Detection	Streptavidin	Streptavidin	Nickel Chelate	Anti-Myc
	<i>Strep</i> Tactin*	<i>Strep</i> Tactin	Anti-GST	Anti-DIG
	Nickel Chelate	Nickel Chelate	Anti-c-myc	Anti-FITC
	Glutathione (GSH)	Glutathione (GSH)	Anti-FLAG	Anti-FLAG
	Anti-FLAG*	Anti-GST	Anti-DIG	Anti-GST
		Anti-Maltose-Binding Protein (MBP)	Anti-FITC	
		LCA (Lens Culinaris Agglutinin)		
		Anti-DIG		
Antibody Capture	Protein A	Protein A	Anti-human IgG3 (isotyping)	Protein A
	Anti-rabbit IgG <sup>†</sup>	Protein G	Anti-human IgG4 (isotyping)	Anti-rabbit IgG <sup>†</sup>
	Anti-mouse IgG <sup>†</sup>	Protein L	Anti-rabbit IgG <sup>†</sup>	Anti-mouse IgG <sup>†</sup>
		Anti-human IgG <sup>†</sup>	Anti-mouse IgG <sup>†</sup>	
		Anti-human IgG1 (pharmacokinetic)	Anti-rat IgG <sup>†</sup>	
		Anti-human IgG4 (pharmacokinetic)	Anti-goat IgG <sup>†</sup>	
		Anti-human IgG1 (isotyping)	Anti-sheep IgG <sup>†</sup>	
		Anti-human IgG2 (isotyping)	Anti-mouse IgM	
			Anti-chicken IgY	

Custom coatings and conjugations are available.

<sup>†</sup>Fc-specific.

\*AlphaScreen acceptor beads emits 520-620 nm.

\*\*Kits include both a donor and acceptor bead.

We are regularly adding new kits, so for the most up-to-date information, visit [www.perkinelmer.com/alphatech](http://www.perkinelmer.com/alphatech).

### Control Beads

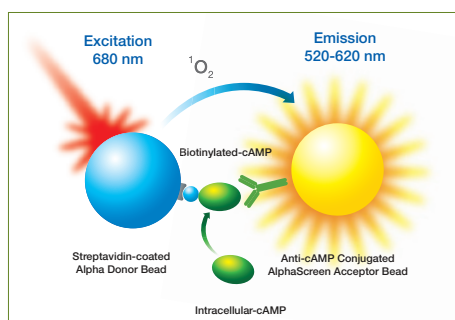
Omnibeads

TruHits Kit



# THE SIMPLE WAY TO MEASURE COMPLEX GPCRS

You need versatile and reliable assays to study multiple signaling pathways activated by GPCRs. So we provide a variety of high-performance Alpha Technology solutions for you to choose from, enabling you to measure cAMP levels or endogenous levels of phosphorylated MEK, ERK, AKT, and CREB, quickly and easily. What's more, the EnSpire Multimode Plate Reader with Alpha and Corning® Epic® label-free technology allows you to study subconfluent cells and difficult GPCR targets using two orthogonal approaches – labeled and label-free analyses on one versatile platform.

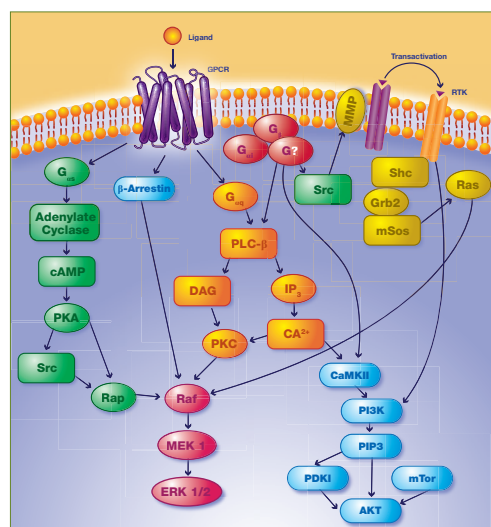


## AlphaScreen cAMP

Detection of cAMP with AlphaScreen is based on the competition between cAMP produced by cells and a biotinylated cAMP probe that's recognized by the streptavidin-donor and anti-cAMP conjugated acceptor beads. AlphaScreen cAMP provides very high sensitivity for measuring G<sub>1</sub>- and G<sub>s</sub>-coupled GPCRs and delivers very large signal-to-background ratios and high Z<sub>1</sub> values, in a technology that's extremely simple to automate.



EnSpire Multimode Plate Reader with Corning® Epic® label-free technology.



## AlphaScreen SureFire MEK, ERK, AKT, and CREB assays

To measure endogenous levels of phosphorylated ERK with the highest levels of sensitivity, you can rely on our AlphaScreen SureFire technology. It allows you to screen tough GPCR targets not optimally coupled through cAMP or calcium pathways. Plus, it enables you to evaluate secondary pathway activation/inhibition in a high-throughput format.

## Expand your potential with orthogonal analysis

The EnSpire Multimode Plate Reader delivers established Corning® Epic® label-free technology in addition to Alpha labeled technology. Multimode detection means you can characterize GPCRs in all classes, taking a complementary, confirmatory approach that enables you to describe multiple receptor subtypes and/or modes of action.

# WE CARE ABOUT YOUR APPLICATION YOUR CONSUMABLES YOUR SCIENCE

At PerkinElmer, we share your commitment to answering challenging biological questions. Our broad portfolio of instruments, reagents, assays, informatics, and services empowers you to do more. You'll have the flexible, efficient solutions you need to study a large number of biological processes and interactions. No matter where your research stands, we can help you move it forward with the data and analysis that lead to insight – and breakthrough answers.

## Ask an expert about your application

Want to create your own assay? Scientist to scientist, our team of field application experts is here to give you the in-lab support, guidance, and expertise to accelerate your science and drive your business.

## Assay Support Knowledge Base (ASK)

Find concise technical overviews, help with assays, video tutorials, and practical tips and troubleshooting – all intended to help you use PerkinElmer reagents for a wide range of applications. More at [www.perkinelmer.com/ASK](http://www.perkinelmer.com/ASK)

## PerkinElmer Life Sciences Citations Library

Explore hundreds of useful citations and peer-reviewed scientific literature published by scientists who use our products. Search by abstract, key words, journal title, or author at [www.perkinelmer.com/citations](http://www.perkinelmer.com/citations)

## PerkinElmer Microplates

Why trust your precious samples to generic labware plates when you can have the microplates that are exclusively certified for your Alpha assay? All our microplates have been designed to optimize your assay results with low background, optimum light transmission, and little or no crosstalk. And they meet SBS/ANSI standards.

Choose the plates that best fit the research you do, including:

- AlphaPlates®
- OptiPlates™
- ProxiPlates™
- Half-area plates



AlphaPlates are specially designed to optimize your Alpha assay results, reducing crosstalk that may result from differences in sample concentrations on the same plate.

## OnPoint Custom and Reagent Services

Your scientists are your most valuable resource. But when they have to develop their own assays and reagents, they have less time to spend investigating and innovating. That's the thinking behind our OnPoint Custom and Reagent Services – the complete solution for accelerating and simplifying life science research and drug discovery.

We know that no two projects are exactly alike. If you're working on a proprietary target or don't find what you need in our catalog, we can design a customized solution for you. OnPoint scientists are experts in our state-of-the-art assay and reagent technologies and detection instrumentation, so they're able to recommend solutions from one of the industry's broadest portfolio of innovative technologies – the platform of choice for many leading biotechnology and pharmaceutical companies around the world. These solutions include:

- Assay development for biotherapeutics, epigenetics, protein:protein interactions, protein:DNA interactions, protein:RNA interactions, biomarker, GPCR, kinase, phosphatase, or ELISA conversion assays
- Custom labeling services
- Custom microplate barcoding and coating
- Custom radiosynthesis

We can also give you advice and support, enabling you to develop the assay yourself, in your own lab.

## New ways to integrate and visualize your data

Make new discoveries by combining data from different sources and looking at them from different angles. TIBCO Spotfire® software is the collaborative platform for data aggregation and visualization. It makes it easy for you to integrate data acquired from experiments using Alpha and other detection technologies, such as luminescence, absorbance, fluorescence, and label-free, with compound data, such as structures and chemical properties, enabling you to create intuitive visual dashboards to analyze complex data in minutes. With a few clicks, you'll be running visualizations and making new discoveries.

To accelerate your biological discovery processes even further, our E-Notebook for Biology solution delivers an intuitive, flexible, collaborative electronic lab notebook that minimizes the time you spend collecting, collating, analyzing, and managing data, giving you more time to concentrate on your science.



### The OnPoint Assay Development Process

#### OnPoint Scientific Consultation

Our Assay Development Scientists conduct a technical assessment, discussing assay and reagent specifics and performance criteria.

#### Assay and Reagent Development Proposal

The OnPoint team creates a customized quote and service proposal for your project, including a detailed description of the assay development plan, deliverables and estimated timelines.

#### Development and Optimization

The team provides preliminary feedback on progress and reports key milestones and any suggested changes or additions to the project plan, which are only implemented with your approval.

#### Complete Technology Transfer

The transfer process includes:

- Proof-of-concept report
- Training on your assay, in your lab by one of our expert Drug Discovery Application Specialists

**PerkinElmer, Inc.**  
940 Winter Street  
Waltham, MA 02451 USA  
P: (800) 762-4000 or  
(+1) 203-925-4602  
[www.perkinelmer.com](http://www.perkinelmer.com)



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For a complete listing of our global offices, visit [www.perkinelmer.com/ContactUs](http://www.perkinelmer.com/ContactUs)

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