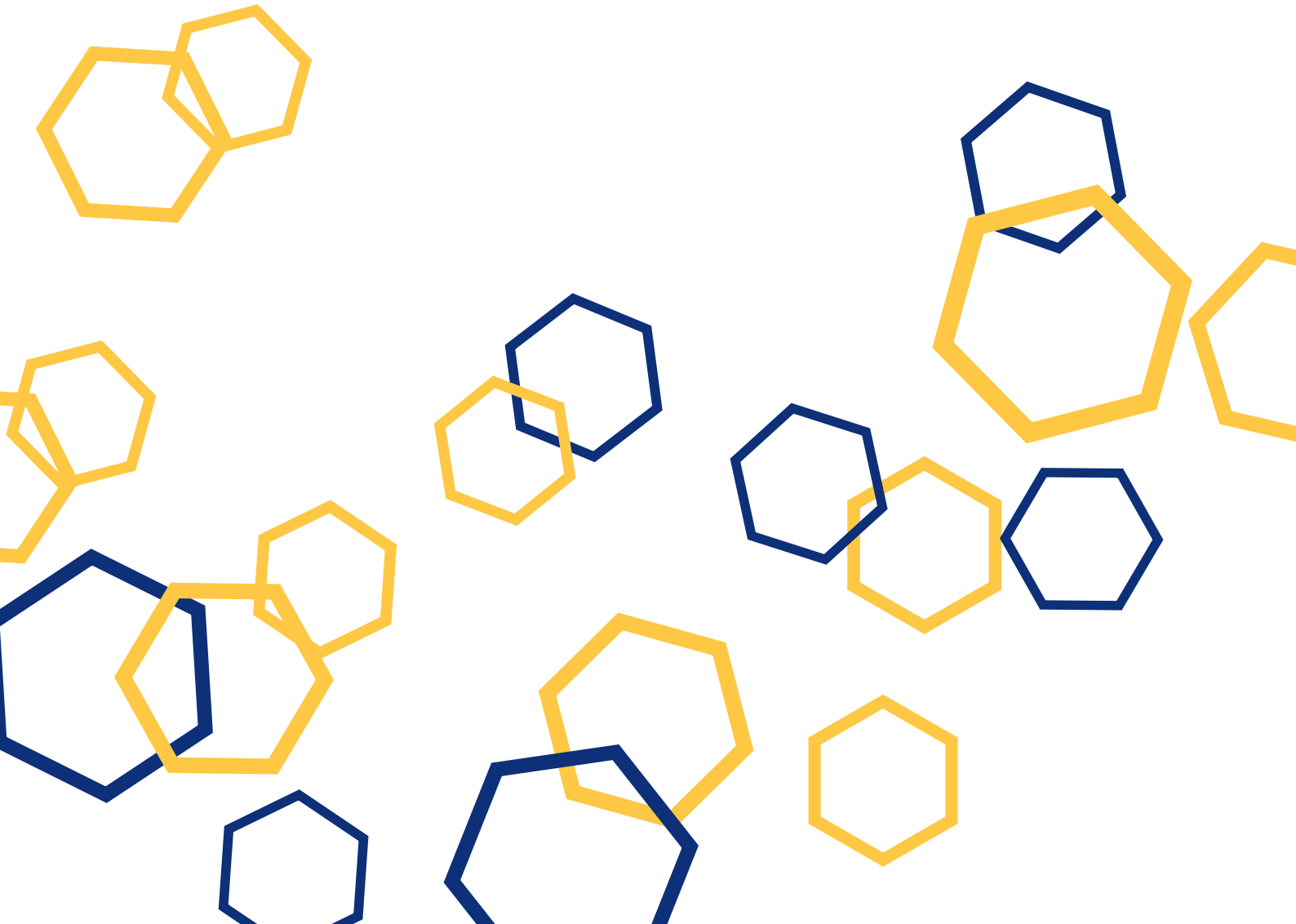
abbexa®

do better science

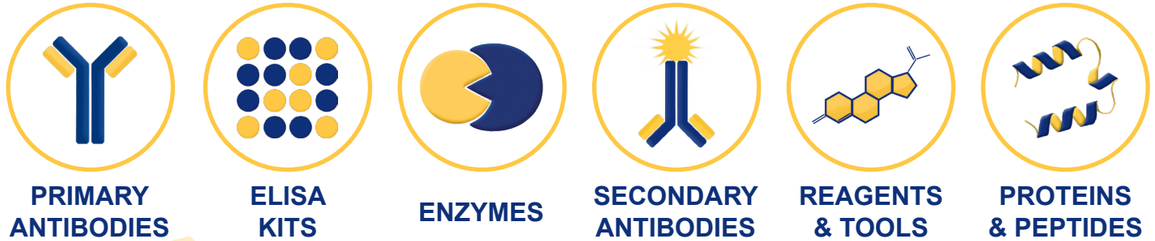


About Us

Who are we?

Abbexa is a dedicated worldwide antibody and protein supplier. Abbexa's mission is to consistently surpass the high standards of quality and service demanded by our customers in the scientific community by offering unrivalled expertise and outstanding quality laboratory consumable products that provide reliable, reproducible results every time.

Abbexa provides the scientific community with primary antibodies, secondary antibodies, proteins, ELISA kits and enzymes as well as other kits and tools for use in research. Working with various laboratories across the world, the company aims to develop relevant, high quality, tested products for the biomedical research market.



The company has 2 branches in the UK, including a state-of-the-art testing and research lab, a location in Houston, Texas, USA and a location in Leiden, The Netherlands, to serve customers worldwide.

Our Values

Who are we?

We pride ourselves in our company values; striving for continuous improvement, learning from all situations to better any future actions and responses. We aim for 100% customer satisfaction.

Curiosity

Abbexa supports the importance of asking questions to learn, improve and innovate.

Agility

Abbexa values time and aims to respond quickly and ship orders as fast as possible.

Simplicity

Abbexa continually improves processes and procedures to create clarity throughout.

Quality

Abbexa provides reliable, tested products for trusted, reproducible results.

Supporting your Research

We recognise the significance of biological and medical research.

We want to give our customers the highest level of support, that's why when you order with us, our expert Technical Team is always available to help with any queries and keen to provide answers and solutions. We will respond to all enquiries in less than 24 hours.

If you are unhappy with the performance of your product we will offer you an immediate replacement or refund.

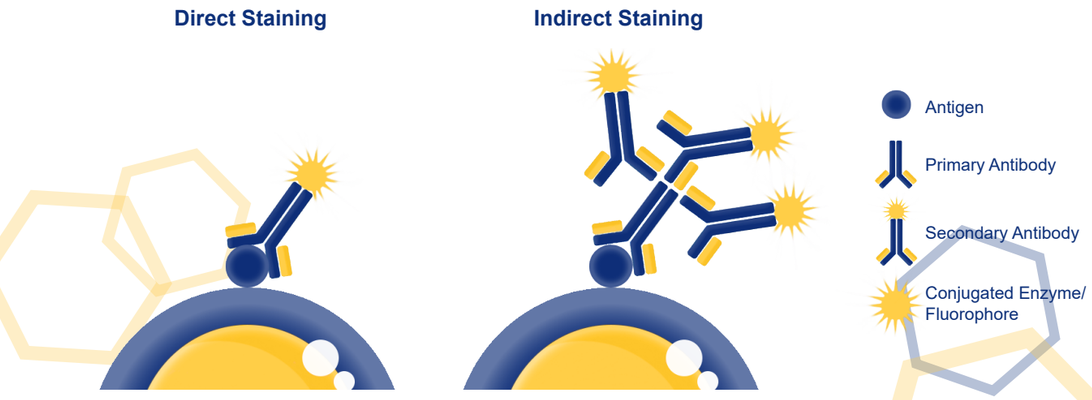
Visit our scientific support webpage or quality guarantee for further details, or contact us anytime.

Primary Antibodies

A wide range of Primary Antibodies are available that specifically bind with high affinity to a protein or organic molecule for purification, detection or quantification. We provide these from a variety of hosts including mouse, rat, rabbit and goat, targeting different species accurately, and producing definite and reliable results.

Primary Antibodies can measure changes in the levels of analytes and modifications such as glycosylation, methylation and phosphorylation. Additionally, they can detect specific biomarkers to help understand diseases. Certain Primary Antibodies are supplied already conjugated to various labels for detection in different applications and settings.

Primary Antibody, Secondary Antibody, Antigen, Conjugated Enzyme/Fluorophore



Specific Primary Antibodies can be coupled to a solid support for affinity purification of target proteins. Proteins can also be isolated using immunoprecipitation studies on identity, structure and expression. Variations of this technique, such as Chromatin-induced Immunoprecipitation (ChiP) provides information on protein-DNA interactions.

Antibodies are required in applications such as Western blotting following fractionation by SDS-PAGE for the detection of analytes, immunohistochemistry and immunocytochemistry (IHC/ICC) to locate the antigen and cytometry for cell analysis. ELISAs are used as the main way to quantify levels of analytes.

More information can be found in the ELISA section.

Protocols, troubleshooting tips and frequently asked questions can be found at www.abbexa.com-/scientific-support

Primary Antibodies

Primary Antibodies are available as monoclonal or polyclonal forms. Monoclonal antibodies are homogenous antibodies produced in cell cultures against a single epitope. This production strategy results in antibodies with a high specificity consisting of a single antibody subtype.

If a Secondary Antibody is required for detection, reactivity to the correct isotype must be chosen. The recognition of a single epitope reduces the chances of cross-reactivity with other proteins, minimising the background staining in samples. Results from experiments using monoclonal antibodies are highly reproducible providing the conditions are kept constant.

Polyclonal antibodies are manufactured following the inoculation of a suitable mammal, usually a rabbit or goat, with the required antigen which induces the production of specific immunoglobulins by B-lymphocytes.

These are purified from the serum resulting in antibodies that will recognise and bind multiple epitopes on the antigen.

The benefit of Polyclonal Antibodies is their ability to bind to multiple epitopes. Multiple antibodies will bind a single target thereby amplifying the signal. This can be useful for target proteins with low expression levels.

Because of this, Polyclonal Antibodies are better at monitoring minor differences in antigens, such as phosphorylation, glycosylation and polymorphism. The immunogen sequence should be carefully checked to ensure cross-reactivity does not influence results.

For most applications a polyclonal antibody is suitable; in some cases, such as when highly specific and consistent results are required, a monoclonal antibody may be a better choice.

For further information, visit www.abbexa.com/scientific-support

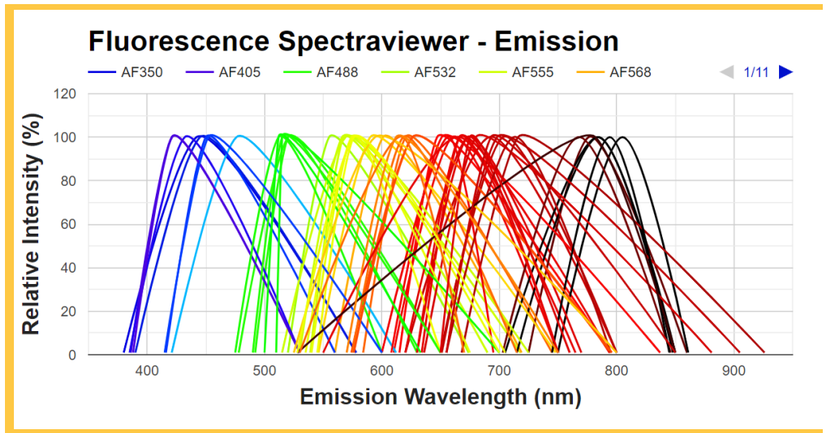
Secondary Antibodies

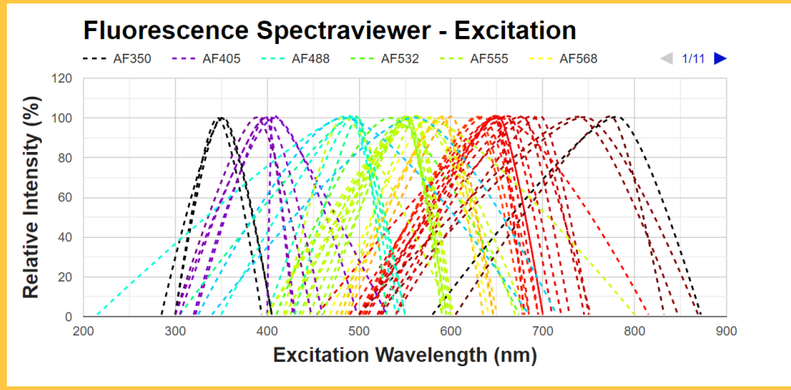
We also supply a wide range of Secondary Antibodies for amplifying the signal of a primary antibody. We provide these for many target species, with a large variety of different labels for chemiluminescent, colorimetric and fluorescent detection. They are designed to accurately bind the target host's Primary Antibody Fc region or light chains for clearer and stronger detection.A Custom Production Service is available for the production and labelling of Secondary Antibodies.

Exploitation of this interaction allows Secondary Antibodies to be used indirectly in the detection, purification and sorting of target antigens. For this, the Secondary Antibody must have specificity for the species and isotype of the Primary Antibody.

Therefore, when choosing a Secondary Antibody for detection, certain factors must be considered. The antibody chosen should be raised against the species of the Primary Antibody. For example, when using a mouse IgG monoclonal, the Secondary Antibody should be anti-mouse IgG.

The detection assay should also be considered. Western blotting and ELISAs permit the use of colorimetric, chemiluminescent and fluorescent conjugates. Generally, for immunofluorescence and cytometry, fluorescent reporters are the most applicable. All of our antibodies are supplemented with a comprehensive datasheet including tested applications.





See our online fluorescence spectraviewer at
www.abbexa.com/conjugations
to discover our full range of conjugations for your antibodies.

Proteins and Peptides

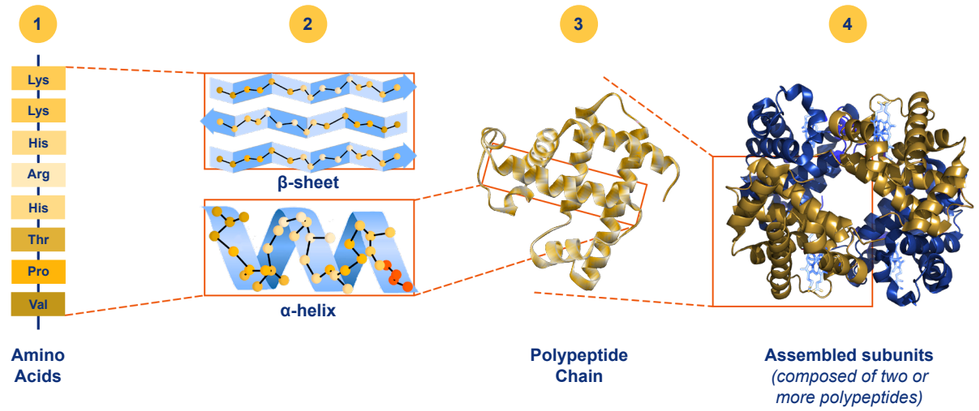
Peptides are short chains of amino acid monomers linked by amide bonds, usually between 2 to 50 amino acids in length. They are distinguished from proteins by their smaller size. Proteins Proteins are longer amino acid chains that may be bound to other chains as well as prosthetic groups.Proteins are essential to organisms and participate in the vast majority of cellular processes.

An extensive range of proteins and peptides validated in numerous applications including SDS-PAGE, Western blotting, ELISA and immunoprecipitation are available from Abbexa.

Proteins for use as positive controls and standards are available to ensure quality and reliability of assays along with proteins such as GFP and Streptavidin-HRP for detection.

Peptides are most commonly used as immunogens to produce antibodies to a very specific region of a protein, eliminating the need to purify the protein of interest. When non-specific binding is an issue, for example in Western blotting and IHC, peptides can be used as blockers to block the antibody's binding sites. Proteins and peptides can also be used as inhibitors and for the study of protein structure and function.

Protein Structure

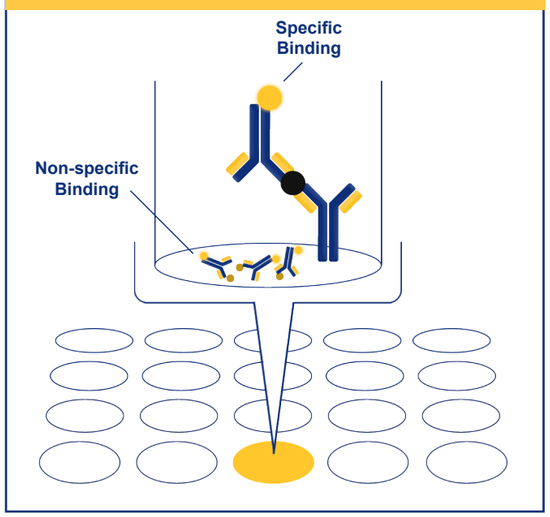


Proteins and Peptides

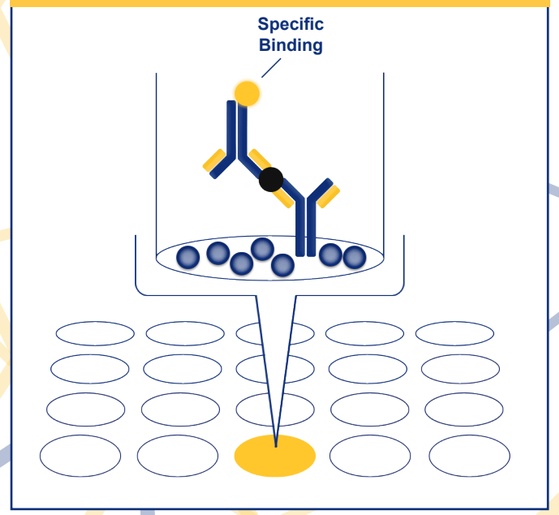
Blocking reagents are used to prevent non-specific binding within the assay. Proteins and other biomolecules may bind to unoccupied spaces on the surface of the wells. This can be detrimental to the specificity and sensitivity of the assays results, as less of the target antigen will be able to bind.

For example, in Western blotting occasionally multiple bands will be observed when probing with a primary antibody. To eliminate, non-specific binding conditions must be completed i.e. a lane probed with blocked antibodies. Non-specific binding is more prevalent with polyclonal antibodies but can also occur with monoclonal antibodies.

Without Blocking Buffer



With Blocking Buffer



Two major classes of blocking reagents are proteins and detergents.

BSA is a common type of protein blocker which will block the unoccupied spaces on the antibody surface and also stabilise the biomolecules bound to the surface, helping to reduce denaturation.

More information about the detergents available can be found in the Tools section.

The surface you are blocking dictates the type of blocker that should be chosen.

ELISA Kits

Enzyme-linked Immunosorbent Assay (ELISA) Kits are used to detect and quantify analytes. A reactant is immobilised to the assay plate either by direct adsorption or adsorption of a capture antibody. Once the desired analyte has been captured by the immobilised reactant, a detection antibody linked to an enzyme or other tag is added. This antibody is specific and will only bind to the analyte. The substrate is then introduced and the enzyme catalyses a reaction to produce a measurable result, e.g. a colour change.

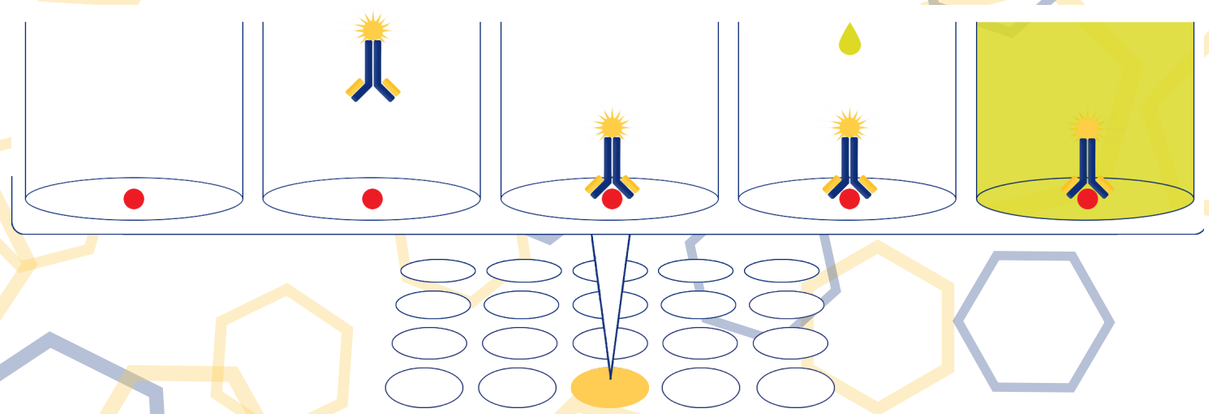
The four main types of ELISA Kits are: **Direct, Indirect, Sandwich and Competitive**

Direct ELISAs

Direct ELISAs are considered the simplest form of ELISA.

The sample is coated onto the plate either directly or via a capture antibody. Detection is via a labelled primary antibody which produces a colour change upon the addition of substrate. Direct ELISAs are beneficial as no secondary antibody is required thus preventing cross reactivity between antibodies. This ELISA can also use a labelled antigen to detect an antibody coated onto the plate.

Compared to Indirect ELISAs, sensitivity is recognised to be lower due to the signal being less amplified. However, they can be performed much faster as only one step is required for detection



ELISA Kits

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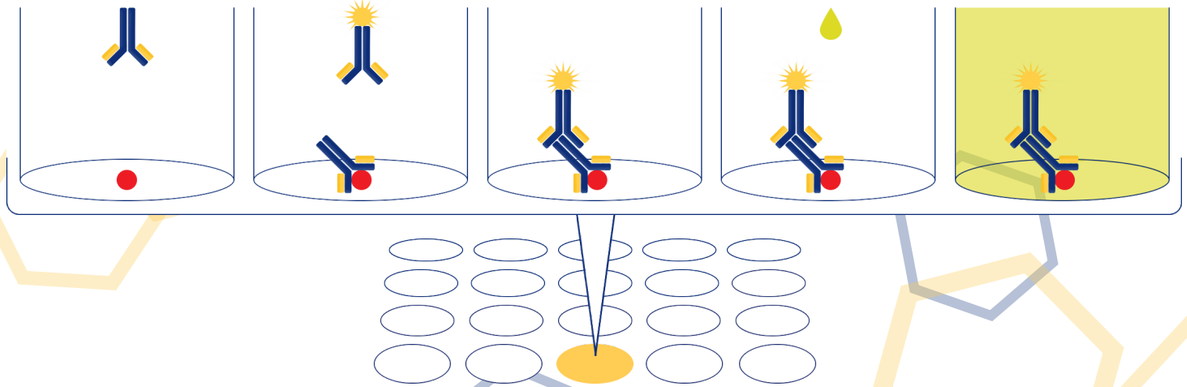
Indirect ELISAs

Indirect ELISAs use a secondary antibody conjugated to an enzyme to detect the primary antibody. The analyte is first coated onto the plate before primary antibody is added which will specifically bind to the analyte. Labelled secondary antibody is then introduced which will bind the primary antibody at a different epitope to the analyte. The addition of substrate results in a colour change, the intensity of which correlates with the concentration of analyte.

This type of ELISA has increased sensitivity due to the presence of multiple epitopes on the primary antibody that can be bound by the labelled secondary antibody. Flexibility may also be increased as more than one secondary detection antibody can be used with a single primary detection antibody. There may also be a reduction in cost to perform this assay as only one type of antibody will need to be labelled.



Competitive ELISAs

Competitive ELISA's are commonly used to determine small molecules such as lipids, hormones and small peptides. A purified antigen is labelled and competes with the unlabelled antigen in the sample to bind the capture antibody. Signal output is measured and compared with an expected signal output to determine the concentration of analyte present in the sample.

ELISA Kits

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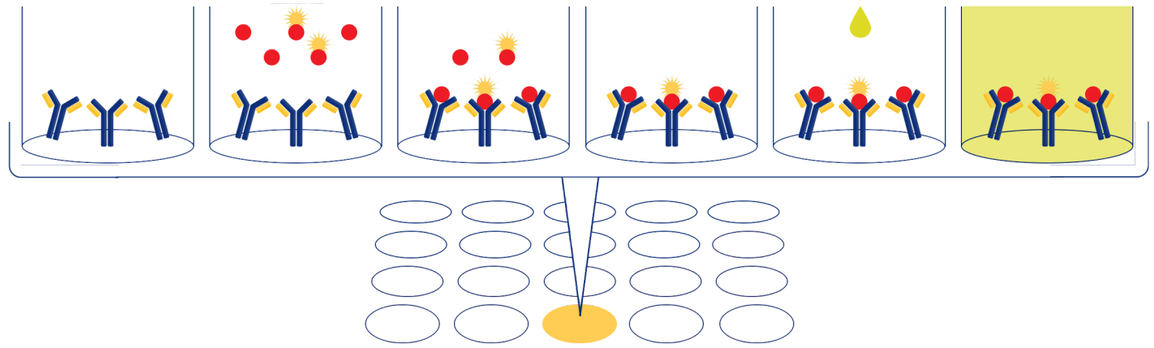
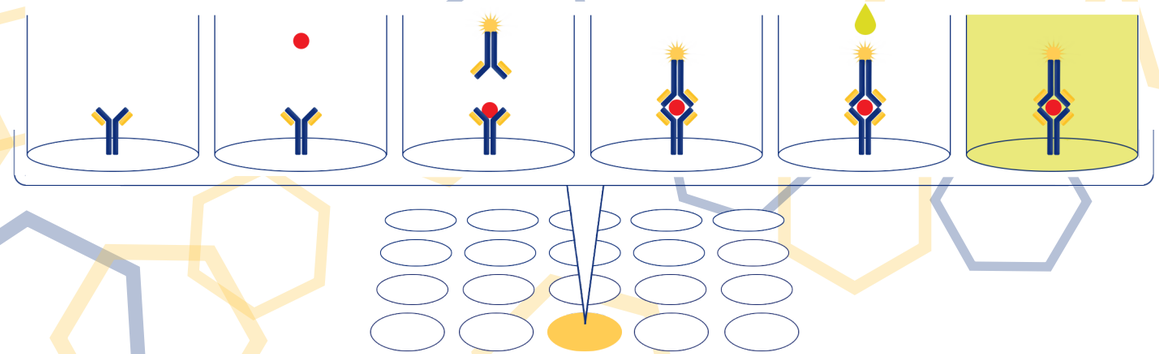


Sandwich ELISAs

Sandwich ELISAs tend to be the most readily recognised. The analyte to be measured is sandwiched, as the name suggests, between two antibodies, one for capture and one for detection. Detection of this ELISA can either be directly or indirectly. The analyte for Sandwich ELISA's should be fairly large in size to ensure the antibodies used are able to bind at different epitopes. When carrying out a sandwich Elisa it is important that the antibodies used are matched pairs. Matched pairs refers to antibodies being specifically tested together to ensure that they bind to different epitopes of an antigen. This prevents the chance of the antibodies binding to the same site or recognising each other.

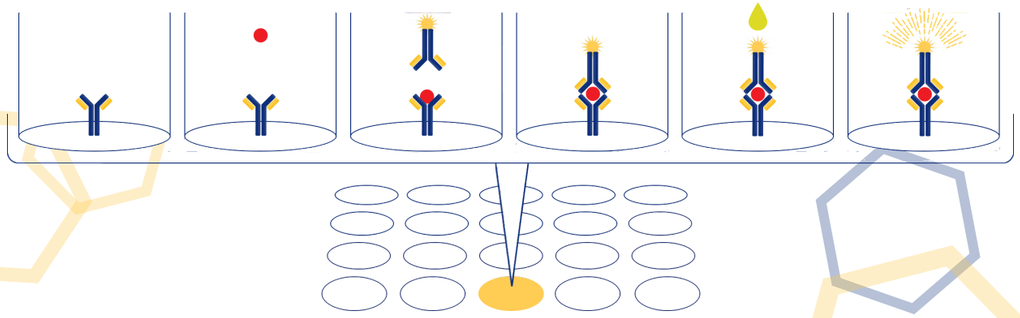
This technique is beneficial when the target analyte concentration is low. Following binding to the capture antibody, any other proteins within the sample that have not bound will be washed away.



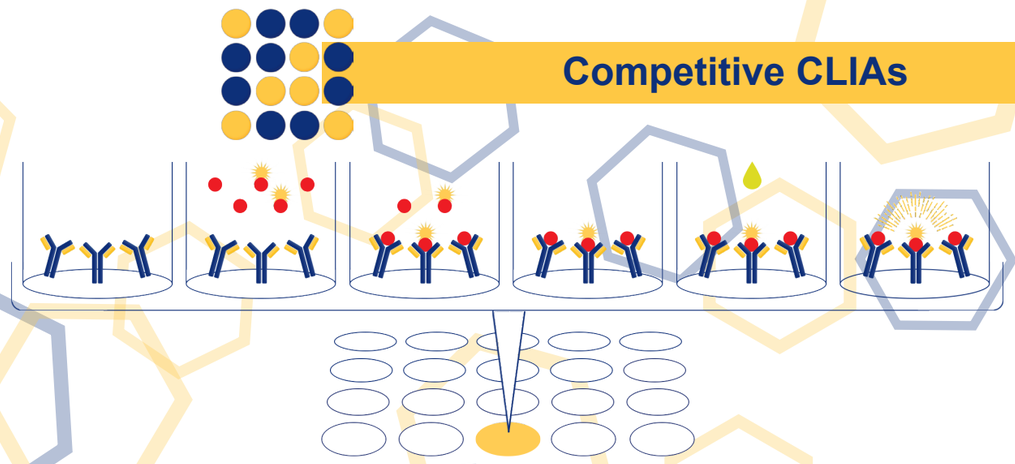
CLIA Kits

Chemiluminescence Immuno Assay (CLIA) Kits are a variation of the standard ELISA. They are highly sensitive and possess a wide dynamic range. Instead of producing a colour change, an oxidation reaction excites a chemiluminescent substance forming an excited intermediate. Upon the return to ground state of the excited intermediate, a photon is released, which can be detected by a luminescent signal instrument. An enhancer can be used which acts as an enzyme protector to enhance the chemiluminescent reaction by allowing the reaction to occur for a longer period of time without a reduction in the light output. Their processing times are considerably shorter than ELISAs and they have a superior lower end sensitivity due to the signal multiplication and amplification. Abbexa offers **Sandwich and Competitive CLIA kits.**

Sandwich CLIAs



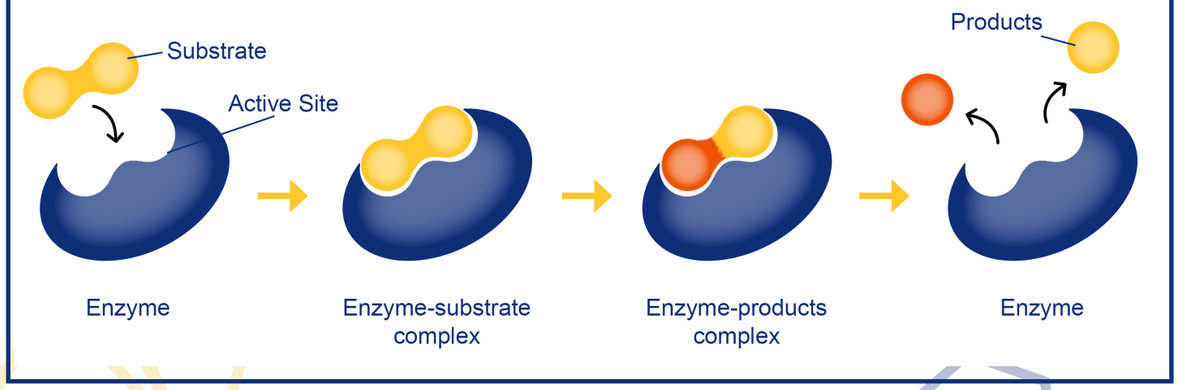
Competitive CLIAs



Enzymes

Enzymes are biological catalysts that speed up reactions by providing an alternative reaction pathway of lower activation energy. Their unique three-dimensional structure dictates the specificity and unlike chemical catalysts, enzymes are highly selective and will only catalyse certain reactions.

Each enzyme has one or more active sites which are specific in shape to the target substrate. Enzymes work at optimum temperatures and pH levels to catalyse a reaction. When exposed to unfavourable temperatures or chemical denaturants, the 3D structure is disrupted and activity is lost. Enzymes do not undergo permanent changes and do not become part of the final product they catalyse so they are able to continue reacting until all substrate available has been depleted. In theory, enzymes can be re-used almost limitlessly given the correct conditions.



A variety of enzymes encompassing all classes are available for numerous applications:

1. The oxidoreductases such as dehydrogenases and oxidases catalyse oxidation/reduction reactions via the transfer of hydrogen and oxygen atoms or electrons from one substance to another.

2. Functional groups such as methyl-, acyl-, amino- and phosphate groups are transferred between substances using the transferases, for example transaminase and kinase.

3. Enzymes which catalyse the hydrolytic cleavage of bonds including C-O, C-N and C-C belong to the hydrolases group. This consists of enzymes such as lipase, amylase and peptidase.

Enzymes

4 Another group responsible for cleavage reactions are the lyases which cleave bonds such as C-C, C-O and C-N by elimination resulting in double bonds or rings or addition of groups.

5 Intramolecular rearrangements, geometric and structural, such as isomerisation are catalysed by the isomerases. They may also be called racemases, epimerases, cis-trans-isomerases, tautomerases, mutases and cycloisomerases. The subclasses reflect the type of isomerism and the sub-subclasses indicate the type of substrates.

Enzymatic reporter molecules are available to complement the antibody and protein conjugates such as horseradish peroxidase (HRP), luciferase and beta-galactosidase for detection purposes. HRP is most commonly used in ELISAs to yield a colorimetric product for the quantification of analytes.

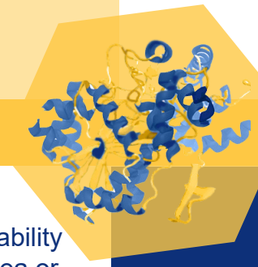
For further information about conjugations please see the Custom Production section.

Custom Antibodies

We also offer a professional Custom Antibody Production Service of rabbit polyclonal and mouse monoclonal antibodies.

This is a comprehensive service which covers immunogen design and production, immunisation, purification and validation.

We will support you throughout the whole production process.



Peptide design and synthesis or full-length protein production

Protein antigens can be naturally occurring or recombinant. Firstly, we will ask you to pick an area of particular interest on your protein. We will analyse the suitability of this area and report back. If it is not suitable, we will let you choose another area or suggest one which we believe will work. The size and the propensity to aggregate can both affect the quality of the antibody produced, generally the larger the better. Once the peptide has been finalised, we will produce it and couple it to KLH (keyhole limpet hemocyanin) ready for immunisation. Should you prefer to use a full-length protein, we will work with you to ensure the protein is produced to specification.

1

Antibody production and selection

A 5-round immunisation process is then undertaken for optimal results. The antibody is produced in a highly regulated clean room to ensure superior quality. The clonality chosen, monoclonal or polyclonal, will dictate the method for immunisation. Monoclonal Antibodies undergo a thorough selection process in which we identify which set of cells is producing the best antibody in the highest quantity. If you have an application of choice, we can select the antibody which works best for this.

2

Custom Antibodies

abbexa®

Antibody Purification

3

This step involves separating the antibody from other proteins, purification is required to prevent undesired interactions during assay procedures. Three methods of purification are available: IgG/IgA purification, immunogen column purification and ammonium sulphate precipitation purification.

We are happy to advise the suitability of each method, but the final decision will depend on which is most applicable to your needs and experiment. Ammonium sulphate precipitation is commonly used as a primary step in purification. Antibodies will precipitate at a lower concentration of ammonium sulphate than most components in serum therefore it is good for the concentration and enrichment of the antibody. IgG/IgA purification will purify all antibodies of the target class which is immobilised onto the solid phase. Immunogen column purification uses the antigen to bind the antibody, all other components of the solution are discarded, including non-specific immunoglobulins.

Antibody testing

In addition to the standard testing of custom antibodies we offer an additional array of popular screening and testing methods to validate use in specific applications. We offer testing in; Enzyme-Linked Immunosorbent Assay (ELISA), Western Blot (WB), Immuno-histochemistry (IHC) and Immunoprecipitation (IP).

Peptide design, protein production and antibody testing are also offered as independent services.

4

For more information on all of Abbexa's products please visit our website
Alternatively, contact info@abbexa.com for more information