4S-CBA™ Antibody Screening, Detection and Validation

GeneCopoeia's 4S-CBA™ Cell-Based Assay (CBA) antibody detection method greatly avoids false-negative and false-positive results caused by WB, ELISA and other detection methods, especially for membrane proteins associated with autoimmune diseases.

The antigen targets and target combinations used in 4S-CBA™ are overexpressed on the cell surface. Each target is associated with autoimmune diseases, such as Central Nervous System (CNS) Demyelination, Autoimmune Encephalitis, Autoimmune Cerebellar Ataxia, Paraneoplastic Syndrome (PNS), Myasthenia Gravis, Membranous Nephritis, and Stiff-Person Syndrome.

Applications

- Screening and validating antibody specificity for antibody discovery and production processes.
- Screening and validating protein-ligand or protein-protein binding activities.
- Providing quality control for IVD product development.
- Detecting autoantibodies from autoimmune disease patients' serum or cerebrospinal fluid (CSF) samples, for Research Use Only (RUO).

Advantages of 4S-CBA™Autoantibody Detection Method

- Membrane proteins or protein complexes overexpressed on the cell surface or in cellular compartments for better antigen-antibody binding to reduce false-negatives.
- Negative control cells lacking target antigens are included in the same well to reduce false-positives.
- Patented multi-target technology allows up to 12 antigen targets in one unit of cell culture to be analyzed in the same unit.
- Disease-associated antigen targets for clinical relevance and new discovery.

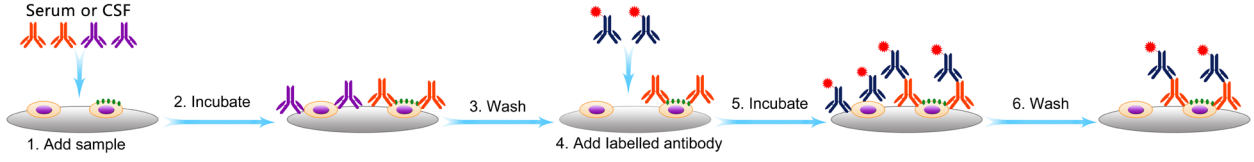
4S-CBA™ Products and Services

A large collection of pre-designed CBA antibody detection assays is available for detection services. Please contact us discuss your projects in more detail. Customized targets and target combinations can also be discussed.

- Monoclonal antibody screening and specificity validation for drug target family such as GPCR, mGluR, CLDN.
- Autoantibody detection for membrane antigen targets:
  - Central Nervous System (CNS) Demyelination-associated Antibody Detection
  - Autoimmune Encephalitis-associated Antibody Detection
  - Autoimmune Cerebellar Ataxia-associated Antibody Detection
  - Paraneoplastic Syndrome (PNS)–associated Antibody Detection
  - Myasthenia Gravis–associated Antibody Detection
  - Membranous Nephritis–associated Antibody Detection
  - Stiff-Person Syndrome–associated Antibody Detection

4S-CBA™ Detection Principle and Workflow

A pair of cell lines with and without the expression of the target antigen (membrane protein) and eGFP protein to be detected is constructed using cell engineering methods. Such pairs of cell lines with different cell numbers are added to each well of the cell culture plate according to the needs of the target combination to be detected. Samples to be tested, such as serum or cerebrospinal fluid (CSF), are diluted to different concentrations, and then added to cells for incubation. The corresponding antibodies in the samples specifically bind to the antigens to form antigen-antibody complexes. These complexes are then incubated with red fluorescent-labeled secondary antibodies. After thorough washing, the labeled complexes are photographed using a fluorescence microscope, followed by analysis and evaluation.



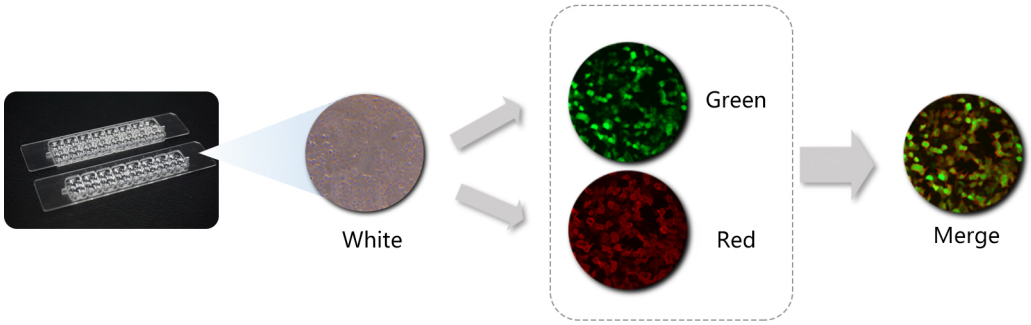


Figure 1. Principle and workflow of the 4S-CBA™ Cell Based Assay.

4S-CBA™ Multi-target Detection Technology

GeneCopoeia's patented multi-target cell culture and detection chamber slides enable detection of up to 12 autoantibody targets from the same sample in one cell. It also allows flexible target selection and target combinations based on the knowledge of disease-associated autoantibodies. Multiple samples can be analyzed on one chamber slide.

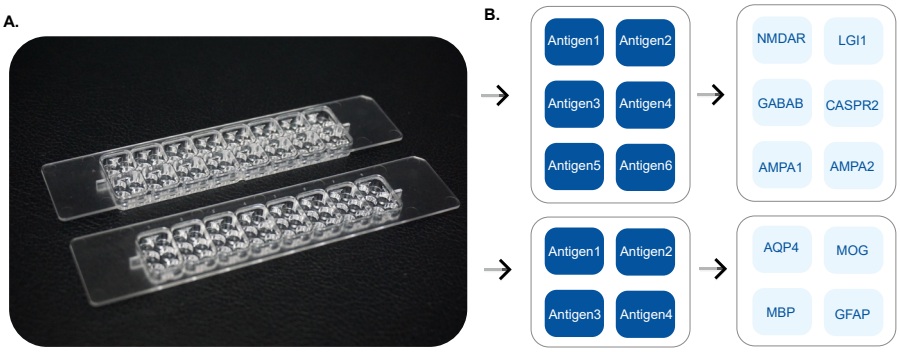


Figure 2.

Multi-target detection chamber slides.

A. 6-target and 4-target detection chamber slides.

B. Examples of 6-target and 4-target autoantibody target arrangement.

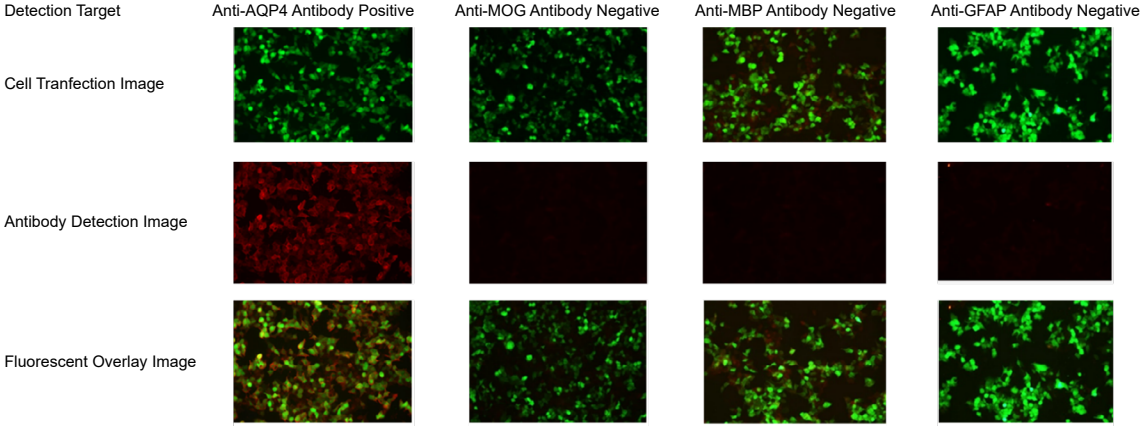


Figure 3. Example of 4-target combination CBA detection.

GeneCopoeia has 1,000+ membrane protein targets of the nervous system available for discovery of biomarkers for neuroimmune diseases and further use for disease diagnosis, disease course monitoring, efficacy and prognosis evaluation, drug target screening, etc.

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