AnteoBind™ Biosensor

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RUO For research use only.
Not for use in diagnostic procedures

Symbol Glossary

The following symbols can be found on kit packaging and components and throughout this instruction for use:

Symbol	Meaning	Symbol	Meaning
	Identifies the catalogue number.		Identifies the batch or lot code.
	Identifies the manufacturer of the kit.		Indicates the maximum and minimum storage temperature limits.
	Indicates the volume of the kit component.		Indicates the kit expiration date.
	Indicates that the kit is for research use only.		Indicates that the instructions for use shall be consulted.

Warnings and Precautions

1. The Instruction for Use (IFU) must be read and understood prior to commencing the use of this Kit.
2. For research use only. Not for use in diagnostics procedures.
3. Kit Safety Data Sheet (SDS) is available by contacting AnteoTech Technical Support.
4. Wear appropriate personal protective equipment when using this kit.
5. Follow institutional safety procedures for working with chemicals and handling biological samples.
6. Handle waste as per institutional procedures and in accordance with local regulations.
7. Do not use the kit beyond the expiration date.

AnteoTech Technical Support

For assistance and support please contact AnteoTech Technical Support for guidance.

Telephone: +61 7 3219 0085

Email: support@anteotech.com

For additional information, visit our website www.anteotech.com

This IFU may be updated periodically. To ensure that you have the current version, please visit https://www.anteotech.com/life-science/products/ or contact AnteoTech Technical Support.

AnteoBind™ Biosensor Publications

To access publications that have utilised AnteoBind™ Biosensor please visit the AnteoBind Biosensor section of our Publications webpage https://www.anteotech.com/life-science/anteobind/publications/.

Publications of particular interest include:

Planar Surface	*Reference*
Cyclic olefin copolymer plastic	Ooi, H. W., Cooper, S. J., Huang, C. Y., Jennins, D., Chung, E., Maeji, N. J., & Whittaker, A. K. (2014). Coordination complexes as molecular glue for immobilization of antibodies on cyclic olefin copolymer surfaces. Analytical biochemistry, 456, 6–13. https://www.anteotech.com/wp-content/uploads/2019/12/Coordination-complexes-as-molecular-glue-for-immobilization.-Analytical-Biochemistry.pdf
Glass	Karimian, Tina, Roland Hager, Andreas Karner, Julian Weghuber, and Peter Lanzerstorfer. (2022) A Simplified and Robust Activation Procedure of Glass Surfaces for Printing Proteins and Subcellular Micropatterning Experiments" *Biosensors* 12, no. 3: 140. https://www.anteotech.com/wp-content/uploads/2022/09/biosensors-12-001401-Uni-of-Austria-A-Simplified-and-Robust-Activation-Procedure-of-Glass.pdf
Polystyrene	Barnett, J. M., Monnier, B. M., Tyler, S., West, D., Ballantine-Dykes, H., Regan, E., ...Luxton, R. (2020). Initial trail results of a magnetic biosensor for the rapid detection of Porcine Reproductive and Respiratory Virus (PRRSV) infection. Sensing and Bio-Sensing Research, 27, 100315. https://www.anteotech.com/wp-content/uploads/2022/04/Sensing-and-Bio-Sensing-Research.pdf
Carbon Nanotube	Sánchez-Tirado, E., Salvo, C., González-Cortés, A., Yáñez-Sedeño, P., Langa, F., & Pingarrón, J. M. (2017). Electrochemical immunosensor for simultaneous determination of interleukin-1 beta and tumor necrosis factor alpha in serum and saliva using dual screen printed electrodes modified with functionalized double-walled carbon nanotubes. Analytica chimica acta, 959, 66–73. https://www.anteotech.com/wp-content/uploads/2019/12/Electro-Immunosensor-for-determination-of-IL-1-TNF.-Analytica-Chimica-Acta.pdf

Description

AnteoBind™ Biosensor has been developed to activate planar surfaces in preparation for biomolecule conjugation. AnteoBind is a molecular glue comprised of polymeric metal ions that facilitates conjugation via the utilisation of co-ordination avidity binding of synthetic surfaces and biomolecules. The result is a simplified conjugation process that provides native and secure biomolecule binding.

This kit is available in 5 mL, 10 mL, 50 mL, and custom volume configurations. This kit is recommended for the activation of cyclic olefin copolymer plastic, glass, polystyrene, carbon nanotube, silicon oxide, titanium oxide and ceramic planar surfaces that are commonly used in biosensors.

Due to the vast diversity of biomolecule composition, conjugation performance is not guaranteed and must be optimised by the end user. For assistance and support regarding biomolecule conjugation please contact AnteoTech Technical Support.

Principles of AnteoBind™

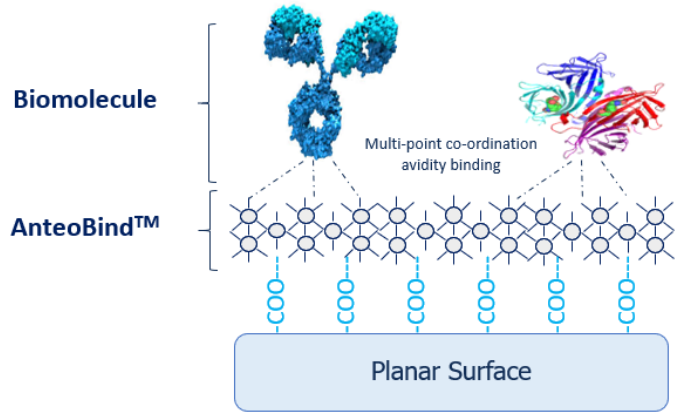


Image left: Schematic representation of AnteoBind functioning as a molecular glue, facilitating the conjugation of synthetic surfaces and biomolecules.

The conjugation process involves two major steps, planar surface activation with AnteoBind and AnteoBind enabled biomolecule conjugation. The AnteoBind technology takes advantage of supramolecular chemistry, that is, the generation of non-covalent bonds between molecules. AnteoBind contains proprietary water based oligomeric metal-ion complexes that creates a nanometre thin molecular glue on the planar surface, in essence 'activating' the planar surface, priming it for native and secure biomolecule binding.

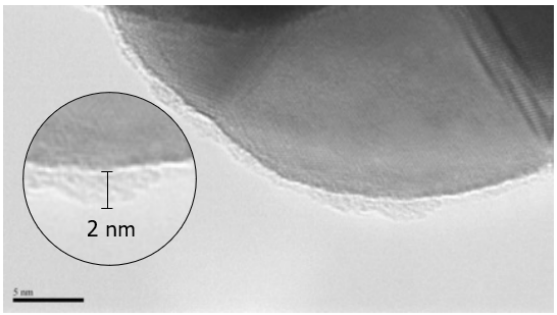


Image left: Transmission electron microscope image demonstrating surface activation. This image of an activated gold nanoparticle demonstrates that the surface is coated in approximately 2 nm of AnteoBind and is ready for biomolecule conjugation.

Provided Materials

Component	Reference	Step	Amount provided			
			5 mL	10 mL	50 mL	Custom
AnteoBind™ Biosensor	A-PLSC010	**Step 1**	1 x 5 mL	1 x 10 mL	1 x 50 mL	Variable

Required Materials – not provided

- Planer surface
- Low binding fluid transfer equipment/consumables
- Type 1 water (Step 1)
- Wash buffer (Step 2 & 3)
- Biomolecule prepared in user optimised diluent (Step 2)
- Blocker Agent prepared in user optimised diluent (Step 3)

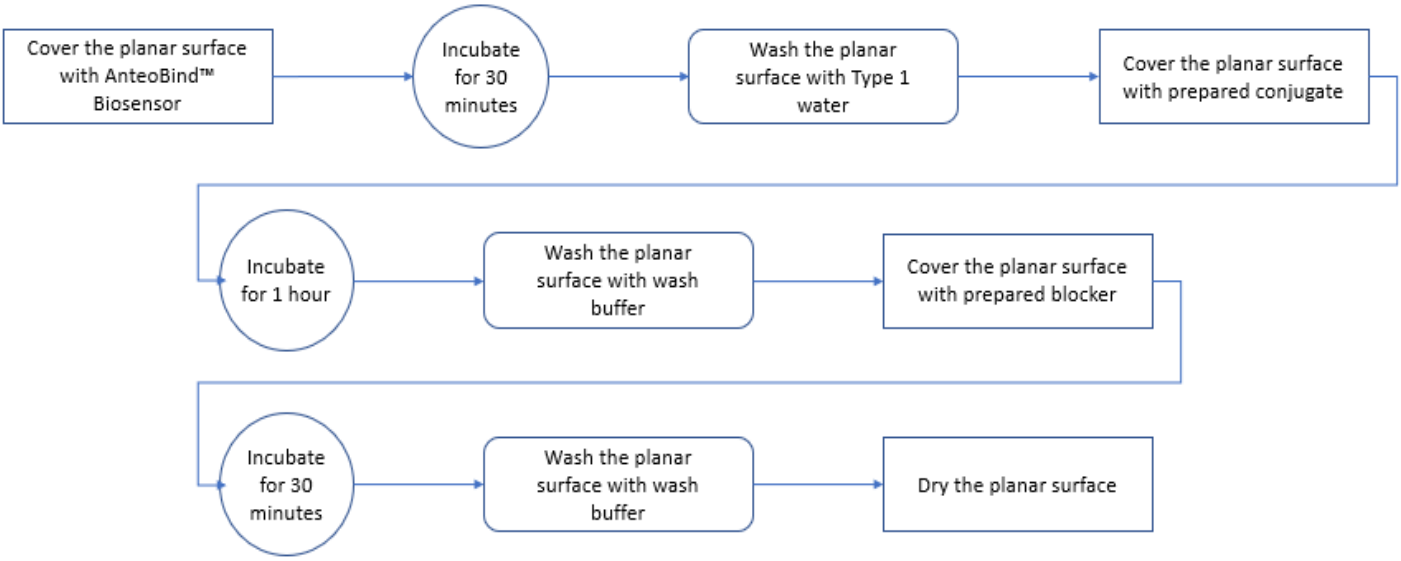
Suggested Equipment

Process	Equipment required
Activation, conjugation and blocking	Orbital shaker

Special Operating Instructions

Biomolecule compatibility	Biomolecule compatibility is not guaranteed and must be determined by the user.
Planar surface compatibility	AnteoBind™ Biosensor is compatible with cyclic olefin copolymer plastic planar surfaces and is recommended for use with glass, polystyrene, carbon nanotube, silicon oxide, titanium oxide and ceramic planar surfaces. Compatibility is dependent on biomolecule and surface type and must be determined by the user.
Conjugate concentration	Optimal conjugate concentration is dependent on biomolecule and planar surface type and must be determined by the user.
Incubation times	Optimal activation, conjugation and blocking incubation times must be determined by the user.
Activated planar surface storage	Activated surfaces should be stored at 2-8 °C under low humidity conditions.
Buffer compatibility	Avoid the use of buffers that include additives such as detergents (e.g. Tween-20), metal chelators (e.g. EDTA) or high phosphate concentrations, especially during biomolecule conjugation. AnteoBind™ Biosensor is not suitable as a biomolecule or blocker agent diluent. Optimal buffer type is dependent on the planar surface and/or biomolecule to be utilized and must be determined by the end user.
Automation	Automated apparatuses may contain surfaces suitable for AnteoBind™ Biosensor. AnteoBind™ Biosensor should be tested using manual procedures prior to being introduced to automated systems.

Process Workflow



General Procedure

The following procedure details the general process for the activation of a planar surface with AnteoBind™ Biosensor followed by biomolecule conjugation.

Refer to Special Operating Instructions above prior to the commencement of this procedure.

Before commencing please note:

- Ensure all materials are at room temperature before use.

Step 1: Planar Surface Activation

1. Cover the entirety of the planar surface with AnteoBind™ Biosensor.
2. Incubate for 30 minutes at room temperature.

   Note: *Planar surface activation may be facilitated by continuous gentle agitation (e.g. orbital shaker at 25 rpm).*

   Note: *Planar surfaces may be activated in as little as 5 minutes. The optimal activation incubation time must be determined by the user.*

3. Wash the planer surface with Type 1 water and then dry.

   Note: *Optimal drying conditions must be determined by the user.*

Step 2: Planar Surface Conjugation

1. Cover the entirety of the planar surface with biomolecule in diluent.

   Note: *The optimal biomolecule concentration and diluent must be determined by the user.*

2. Incubate for 1 hour at room temperature.

   Note: *Planar surface conjugation may be facilitated by continuous gentle agitation (e.g. orbital shaker at 25 rpm).*

   Note: *Planar surfaces may be conjugated in as little as 10 minutes. The optimal conjugation incubation time must be determined by the user.*

3. Wash the planer surface with wash buffer and then dry.

   Note: *The optimal wash buffer must be determined by the user.*

   Note: *Optimal drying conditions must be determined by the user.*

Step 3: Planar Surface Blocking

1. Cover the entirety of the planar surface with blocker agent in diluent.

   Note: *The optimal blocker agent diluent must be determined by the user.*

2. Incubate for 30 minutes at room temperature.

   Note: *Planar surface blocking may be facilitated by continuous gentle agitation (e.g. orbital shaker at 25 rpm).*

   Note: *The optimal blocking incubation time must be determined by the user.*

3. Wash the planer surface with wash buffer and then dry.

   Note: *The optimal wash buffer must be determined by the user.*

   Note: *Optimal drying conditions must be determined by the user.*

4. Activated surfaces should be stored at 2-8 °C under low humidity conditions.