The Success of Your Application Lies in its Surface

Blood and serum samples may consist of over 90% unwanted biological material that can cause significant background noise in different diagnostic applications and interfere with the detection of trace biomarkers in the samples. SurModics’ specialized polymer coatings have intrinsic non-fouling properties that prevent the adsorption of these unwanted proteins to plastics, metals, glass, and other substrates, while increasing the signal and processing speed of the test by eliminating time-consuming blocking steps. Furthermore, the biocapture chemistries of the surfaces provide for the homogeneous addition of increased densities of bioanalytes to virtually any surface.

A SurModics TRIDIA™ In Vitro Diagnostic (IVD) Surface is composed of three distinct parts:

1) A **photo-reactive group** to covalently couple the polymer backbone to the surface. While other coatings may be used only on glass or silica-derived substances, TRIDIA IVD surfaces incorporate our PhotoLink® surface modification technology, which produces a fast and reliable coupling of the polymer to a variety of materials including plastics, metals, glass, and latex.

2) A **passivating polymer** to prevent nonspecific binding of unwanted biomaterial in samples while providing a three-dimensional environment to aid in hybridizations or other associations between related biomolecules. The polymer backbone can be tailored by substituting any of several different passivating polymers to meet your specific hydrophilic or hydrophobic needs.

3) A **reactive group**, or biocapture chemistry, to bind the antibody, ligand, antigen, DNA, microRNA, or other biomolecule. These reactive groups can also be tailored to meet your specific needs and include NHS esters, epoxides, biotin-avidin, and others.

Additionally, we offer surfaces not intended to capture analyte, but rather to increase the wettability, hemocompatibility, or lubricity of surfaces in diagnostics instruments and other test components.

Standard formats for evaluation purposes currently include *glass slides* and *96-well plates*.

**TRIDIA™ HD (High-Density) Surface**

**Description:**
This is the surface used on CodeLink® HD (High Density) Activated Slides, developed by SurModics. It is a specially modified surface polymer similar to the TRIDIA NHS surface that has been formulated for additional hydrophobicity to allow for greater spotting density per area of surface covered with the coating. On glass slides, more than 20,000 features per slide can be achieved.

**Features:**
- Bind amine-modified oligos/DNA
- Bind proteins (antibodies, antigens)
- Higher spotting densities than the TRIDIA NHS surface

**Common Applications:**
- MicroRNA profiling and analysis
- Next Generation Sequencing
- DNA methylation studies
- SNP analysis
- Array CGH
- Ligand-receptor profiling
- Protein arrays

**Reactive Chemistry:**
- N-oxysuccinimide (NHS ester)

**Passivating Polymer:**
- Polymer A (non-fouling, ultra-thin hydrogel with added hydrophobicity)
**TRIDIA™ EP (Epoxy) Surface**

**Description:**
This coating contains an epoxide reactive group for binding amine-modified nucleic acids via the terminal amine. It also binds non-modified nucleic acids via the exocyclic amine groups of the bases and through the hydroxyl groups of the sugar phosphate backbone. Proteins bind with the same efficiency via their exposed amine, thiol, and hydroxyl groups.

**Features:**
- Bind amine-modified oligos/DNA
- Bind unmodified oligos/DNA
- Bind proteins (antibodies, antigens)
- Bind PCR products
- Bind peptides

**Common Applications:**
- DNA methylation studies
- SNP analysis
- Array CGH
- Ligand-receptor profiling
- Peptide arrays

**Reactive Chemistry:**
- Epoxy

**Passivating Polymer:**
- Polymer B (non-fouling, ultra-thin hydrogel)

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**Lower backgrounds and better sensitivity with TRIDIA IVD surface chemistries:**

Cardiac Troponin I was assayed on three different epoxide surfaces including a TRIDIA EP surface. All slides were printed with a mouse monoclonal antibody to troponin at 1 mg/mL. Slides were blocked and incubated with various concentrations of troponin, washed, and incubated in 1 μg/mL rabbit anti-troponin. All surfaces were then washed and incubated with Cy3 goat anti-rabbit, washed again, dried, and scanned. TRIDIA EP surfaces demonstrated significantly lower backgrounds and higher signals compared to competitor surfaces.

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**TRIDIA™ NHS Surface**

**Description:**
This surface chemistry consists of an amine-reactive polymeric top coating for covalent immobilization of protein molecules, peptides, antibodies without the use of any special tag or chemical modification of the protein structure. It also binds DNA oligos that are amine modified. This is the original surface used on CodeLink® Activated Microarray Slides, developed by SurModics. It is composed of a specialized surface polymer designed to minimize nonspecific binding of unwanted biomolecules in different sample types, including blood and serum.

**Features:**
- Bind amine-modified oligos/DNA
- Bind proteins (antibodies, antigens)

**Common Applications:**
- MicroRNA analysis
- Peptide arrays
- Next Generation Sequencing
- DNA methylation studies
- SNP analysis
- Array CGH
- Ligand-receptor profiling

**Reactive Chemistry:**
- N-oxysuccinimide (NHS ester)

**Passivating Polymer:**
- Polymer B (non-fouling, ultra-thin hydrogel)
**TRIDIA™ BA (Biotin-Avidin) Surface**

**Description:**
This surface chemistry consists of a polymeric top coat covalently attached to an avidin derivative via an NHS ester. This polymer is designed to minimize nonspecific binding of unwanted biomolecules in different sample types, including blood and serum, while the avidin derivative allows for the easy attachment of biotinylated antibodies specific for the capture and analysis of any biomarker of interest. The extraordinarily strong interaction between the biotin and the avidin derivative ensures the integrity of the attachments under a wide range of experimental conditions.

**Features:**
- Bind biotin-modified oligos and biotin-labeled DNA and cDNA
- Bind biotinylated proteins (antibodies, antigens, peptides) specific for your bioanalyte

**Common Applications:**
- Antibody arrays
- Cell capture
- Protein biosensors
- Single molecule spectroscopy
- Microfluidic devices

**Reactive Chemistry:**
- Biotin-Avidin derivative

**Passivating Polymer:**
- Polymer A or B

![Diagram of TRIDIA™ BA (Biotin-Avidin) Surface](image)

**Other SurModics Surfaces**
Whether it's slides, membranes, microtiter plates, beads, or some other surface, SurModics provides an array of coating chemistries to optimize your diagnostic assay.

**Custom Surfaces:**
- Combine your choice of passivating polymers with various reactive chemistries
- Utilize SurModics' *PhotoLink* process to covalently link molecules to various surfaces
- Improve flow characteristics for membranes and microfluidic channels with SurModics wettable surfaces
- Reduce the adherence of interfering blood components with SurModics hemocompatible surfaces

**Standard evaluation formats:**
- Glass slides
- 96-well plates

**Ordering Information**
For additional product or technical information, please visit [www.surmodics.com](http://www.surmodics.com).

To Place an Order:
- Phone: 952-500-7200
- Toll-free: 800-755-7793 (North America)
- Fax: 952-500-7201
- Email: orders@surmodics.com

*For technical assistance:* IVDtechsupport@surmodics.com

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