Silver Nanoparticle Product Selection Guide

1 Protein Conjugation

Size Range: 5 nm-100 nm

1.1 Surface: Citrate

Advantage: Quick

1.2 Surface: NHS

Advantage: Covalent conjugation to primary amines, increased conjugate stability, less non-specific protein binding.

1.3 Surface: Carboxyl

Advantage: Covalent conjugation to primary amines, increased conjugate stability, less non-specific protein binding.

1.4 Surface: Streptavidin

Advantage: Conjugation to biotinylated ligands.

2 Modification with thiolated ligands

Size Range: 10nm-100nm

2.1 Surface: citrate-coated

Advantage: Classic starting material, no additional stabilizers added.

3 Oligonucleotide Conjugation

3.1 Surface: citrate

Size Range: 10nm-20nm

Advantage: Ideal for conjugation of thiol-modified oligos to small particle sizes (10nm-20nm). Does not work well for larger particles.

3.2 Surface: NHS

Size Range: 10nm-100nm

Advantage: Ideal for covalent conjugation of amine-modified oligos. Final conjugate will have a PEG-linker between oligo and silver surface.

4 Immunoblotting/Western Blot

Size Range: 10nm-30nm

4.1 Surface: Secondary Antibody Silver Conjugates

Advantage: Colorimetric detection. Permanent label

5 Immunohistochemistry

Size Range: 10nm-40nm

5.1 Surface: Secondary Antibody Silver Conjugates

Advantage: High contrast label

6 Cellular Uptake

Size Range: 30nm-80nm

6.1 Surface: citrate-coated

Advantage: Non-specific cellular uptake

7 Darkfield Microscopy

Size Range: 50nm-100nm

7.1 Surface: Silver Conjugates

8 Lateral Flow/Dip-Stick Assays

Size Range: 20nm-80nm

8.1 Surface: citrate-coated

Advantage: Ideal for generation of silver conjugates through passive adsorption of antibodies to the silver nanoparticle surface.

8.2 Surface: NHS

Advantage: Ideal for covalent conjugation of antibodies to silver nanoparticles.

8.3 Surface: Silver Conjugates

Advantage: Pre-made secondary antibody conjugates

9 Tumor Targeting

Size Range: 30nm-80nm

9.1 Surface: methyl (methoxy)-PEG

Advantage: Can in some cases be used for passive targeting of certain tumors in vivo. Inert material with low non-specific protein binding in serum.

10 Light Microscopy

Size Range: 10nm

10.1 Surface: Silver Conjugates

Advantage: Ability to label tissue sections for both light and electron microscopy. Alternative to peroxidase and PAP-based stains. Sensitivity can be enhanced with silver enhancement techniques.

11 ELISA

Size Range: 5 nm-30 nm

11.1 Surface: Silver Conjugates

Advantage: Colorimetric Detection