

# Application Guide for Gold Nanoparticles

KRISHGEN provides a comprehensive list of functional, coated, conjugated, and fluorescent gold nanoparticles through precise surface engineering. applications include protein conjugation, oligonucleotide conjugation, western blot, lateral flow immunoassays, immunohistochemistry, cellular uptake, lateral flow, ELISA, darkfield microscopy, and more. Our products meet your unique needs in many fields.

Application	Gold Nanoparticle Size Range	Types of Particles	Benefits
Protein Conjugation	0.8 nm - 1500 nm	Citrate NHS Maleimide Carboxyl Amine Streptavidin DBCO Azide Alkyne	Quick Covalent conjugation to primary amines, increased conjugate stability, less non-specific protein binding. Covalent conjugation to thiols, increased conjugate stability, less non-specific protein binding. Covalent conjugation to primary amines, increased conjugate stability, less non-specific protein binding. Conjugation of NHS and carboxyl ligands. Conjugation to biotinylated ligands. Covalent conjugation to molecules with a terminal azide through click chemistry. Covalent conjugation to molecules with a terminal alkyne through click chemistry. Covalent conjugation to molecules with a terminal azide through click chemistry.
Modification With Thiolate Ligands	0.8 nm - 1500 nm	Citrate Stabilized	Classic starting material, no additional stabilizers added. Increased stability during functionalization but reduced binding kinetics.
Oligonucleotide Conjugation	5 nm - 20 nm 5 nm - 100 nm 0.8 nm - 1500 nm 0.8 nm - 1500 nm	Citrate OligoREADY NHS Maleimide	Ideal for conjugation of thiol-modified oligos to small particle sizes (5 nm-20 nm). Does not work well for larger particles. Ideal for conjugation of thiol-modified oligos directly to the gold surface. Ideal for covalent conjugation of amine-modified oligos. Final conjugate will have a PEG-linker between oligo and gold surface. Ideal for covalent conjugation of thiol-modified oligos. Final conjugate will have a PEG-linker between oligo and gold surface.
Immunoblotting/Western Blot	5 nm - 20 nm	Secondary Antibody Gold Conjugates	Colorimetric detection. Permanent label
Immunohistochemistry	5 nm - 40 nm	Secondary Antibody Gold Conjugates	High contrast label
Cellular Uptake	10 nm - 80 nm	Transferrin Gold Conjugates Citrate Fluorophore Labeled Gold Nanoparticles	Active uptake through endocytosis Non-specific cellular uptake High-efficient cellular uptake
Darkfield Microscopy	50 nm - 100 nm	Gold Conjugates	Conjugated gold nanoparticles exhibit extinctions many orders of magnitude greater than fluorophores.
Lateral Flow	20 nm - 80 nm	Citrate NHS Maleimide Gold Conjugates Carboxyl	Ideal for generation of gold conjugates through passive adsorption of antibodies to the gold nanoparticle surface. Ideal for covalent conjugation of antibodies to gold nanoparticles. Ideal for conjugation of thiol-modified ligands to gold nanoparticles. Pre-made secondary antibody conjugates Ideal for conjugation of proteins, antibodies or peptides to gold nanoparticles.
Tumor Targeting	20 nm - 80 nm	Methyl (methoxy) Gold Nanoparticles	Can in some cases be used for passive targeting of certain tumors in vivo. Inert material with low non-specific protein binding in serum.
Light Microscopy	5 nm - 10 nm	Gold Conjugates	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.
ELISA	5 nm - 30 nm	Gold Conjugates	Colorimetric Detection
Enhanced Sensitivity	150 nm	Carboxyl NHS Streptavidin	Negative surface for covalent conjugation Rapid covalent conjugation, no activation required Convenient conjugation to biotinylated biomolecules
<i>In-vivo</i> Imaging	1.8 nm - 150 nm	Gold Conjugates with in-vivo polymer	Ideal for in-vivo application
Nuclei Uptake	1.8 nm - 3 nm	Gold Conjugates for Nuclei Uptake	Cell transfection and nuclei uptake These gold nanoparticles shown efficient cell transfection and uptake into cell nuclei, specifically targeting PML bodies and have potential for drug and oligo delivery to cell nuclei.
Fluorescence Imaging	1.8 nm - 200 nm	Fluorescent Gold Nanoparticles	Excellent biocompatibility, surface plasmon resonance and fluorescence-enhanced optical properties