

## Our Products

**Nanoprobes, Inc.** manufactures and provides gold and other metal nanoparticle-based products for laboratory research with applications in light, electron and fluorescent microscopy, blotting, medical pathology research, and micro-CT imaging.

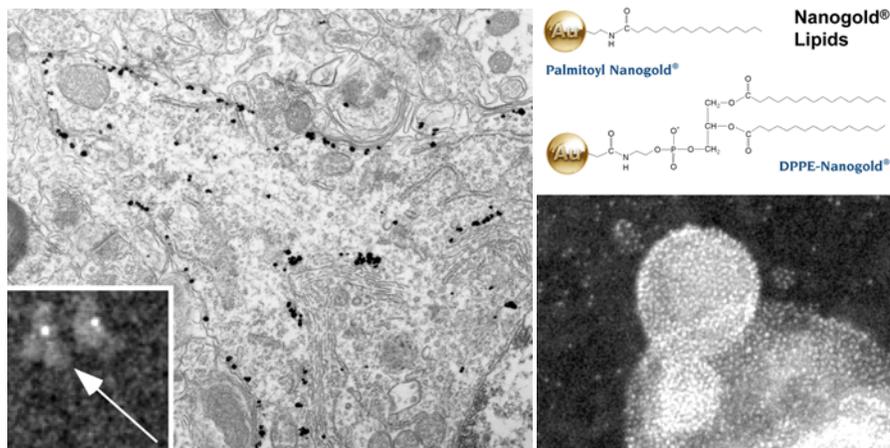
## Gold Nanoparticle Reagents

A major product line is **chemically functionalized small gold nanoparticles**. We provide the **1.4 nm Nanogold<sup>®</sup>** and **0.8 nm Undecagold** ("ultrasmall") with reactive groups including amino, maleimido, *Sulfo-NHS* (*Sulfo-N*-hydroxysuccinimide) and carboxyl for covalent labeling of biological molecules, small molecules, polymers or other materials. **Our gold nanoparticle reagents enable specific, selective and stoichiometrically controlled conjugation.** In addition, our **3 nm and 5 nm Gold Nanomaterials** (Coated gold nanoparticles) offer hydrophobic, hydrophilic and amphiphilic solubilities for different needs.



Labeling with Monomaleimido- and Mono-Sulfo-NHS-Nanogold<sup>®</sup>

## Gold Nanoparticle Conjugates

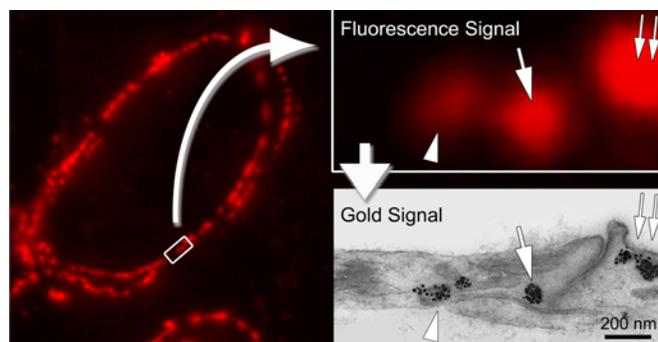


(left) EM labeling with Nanogold<sup>®</sup>-Fab' (*S. Cheng, NIH*); Inset: STEM of Nanogold<sup>®</sup>-IgG. (right) Nanogold<sup>®</sup> lipids and a "metalloosome," or Nanogold<sup>®</sup>-decorated liposome.

microscopic or optical visualization. Our **Negative Stains** produce highly amorphous, uniform space filling, and thus define tissue and cellular structures without obscuring visualization of specific Nanogold<sup>®</sup> labeling during electron microscopic imaging.

## FluoroNanogold<sup>™</sup>

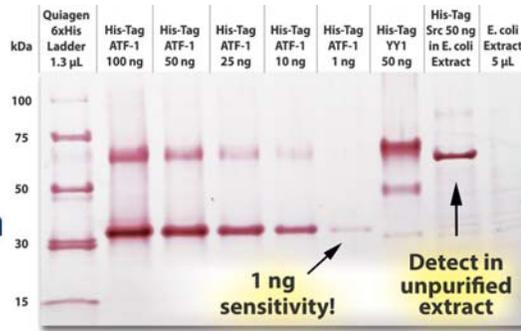
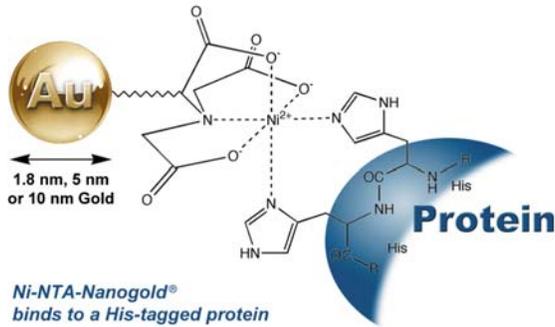
**FluoroNanogold<sup>™</sup>** is a line of immunoprobes containing both a fluorescent tag and the 1.4 nm Nanogold<sup>®</sup> label. With FluoroNanogold<sup>™</sup>, researchers can image the same structure by both fluorescence and electron microscopy. FluoroNanogold<sup>™</sup> probes are ideal for correlative light and electron microscopy (CLEM); electron microscopists may use the fluorescent tag to screen labeling by fluorescence microscopy prior to EM processing. FluoroNanogold<sup>™</sup> conjugates include Alexa Fluor<sup>®</sup> 488, 546, 594, 647 and Fluorescein, a range that spans the visible spectrum.



Correlative LM and EM of caveolin (*T. Takizawa, Tokyo Univ.*)

Nanoprobes supplies a range of **secondary Nanogold<sup>®</sup> antibody and streptavidin conjugates** for immunodetection by electron or light microscopy and blotting. 1.4 nm Nanogold<sup>®</sup> antibody and streptavidin conjugates offer a unique ultra-small probe size: Nanogold<sup>®</sup> Fab' conjugates are the smallest commercially available gold conjugates, and can penetrate and access cellular and tissue targets within specimens up to 80 microns thick. We also offer **Gold Lipids** for preparing gold-labeled liposomes and other structures. Our **Gold and Silver Enhancers** will enlarge the Nanogold<sup>®</sup> to any desirable particle size for

## Ni-NTA-Nanogold (His-Tag Detection)



**Ni-NTA-Nanogold<sup>®</sup>** provides 1.8, 5 or 10 nm gold nanoparticles modified with Ni<sup>2+</sup>-nitrilotriacetic acid for fast, specific localization or detection of poly-histidine (His)-tagged proteins by electron microscopy or Western blots.

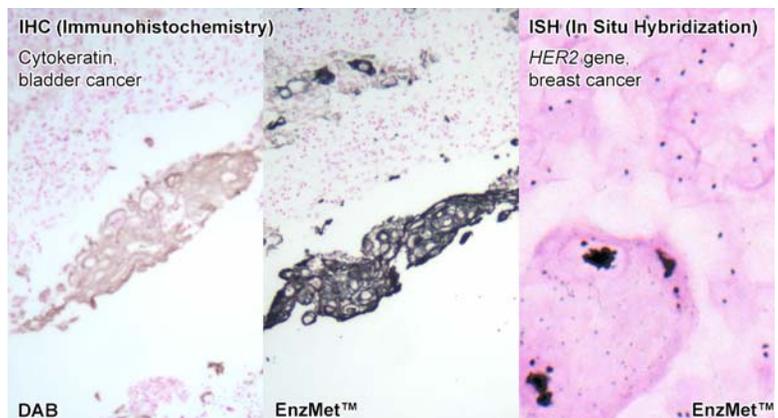
(left) Ni-NTA-Nanogold<sup>®</sup> binds to His-tagged protein; (right) GoldiBlot<sup>™</sup> detection of His-tagged protein.

Our **GoldiBlot<sup>™</sup> His** Western Blot Kit allows visualization and characterization of His-tagged proteins on western blots. Our His-Quick<sup>™</sup> test kit (coming soon) gives quick screening of His-tagged protein fractions from Immobilized Metal Affinity Chromatography (IMAC) separations.

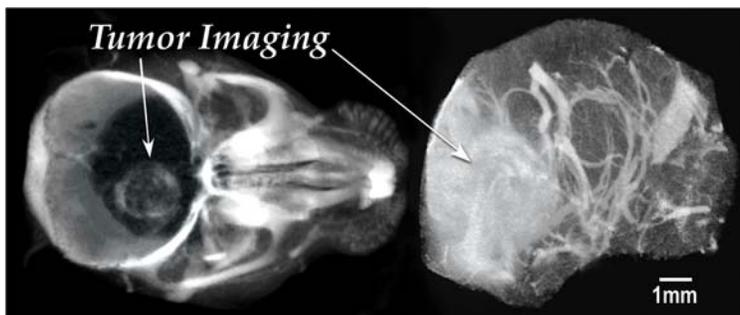
## EnzMet<sup>™</sup>

**EnzMet<sup>™</sup> is a substrate for chromogenic detection of horseradish peroxidase (HRP).** EnzMet<sup>™</sup> kits generate discrete, non-diffusing black silver staining at HRP sites. The EnzMet<sup>™</sup> IHC/ISH kit is specifically designed for high sensitivity detection of targets in tissues and cells using light and electron microscopy. The EnzMet<sup>™</sup> Western Blot HRP Detection Kit gives quick (under 15 minutes), permanent HRP visualization with high contrast and sensitivity.

*DAB vs. EnzMet<sup>™</sup> for IHC (left) and EnzMet<sup>™</sup> ISH showing single gene copies (right)*



## X-Ray Contrast Agents



*AuroVist<sup>™</sup>-15 nm loaded mouse brain tumor visualized by micro-CT.*

**AuroVist<sup>™</sup> gold nanoparticle contrast agents for preclinical X-ray and micro-CT imaging** provide high contrast and resolution with very low toxicity, low osmolality even at high concentrations, and low viscosity for trauma-free injection even into small vessels. **AuroVist<sup>™</sup>-15 nm** has longer blood pool residence (half-life 24 hours or more) than iodine or other contrast agents, providing clear *in vivo* vascular and tumor imaging. **AuroVist<sup>™</sup> 1.9 nm** is ideal for kidney imaging.

## Magnetic Nanoparticles

**FerroMag<sup>™</sup>-PEG is a new product: 10 nm PEG-functionalized superparamagnetic iron oxide nanoparticles.** FerroMag<sup>™</sup>-PEG is highly biocompatible, with low toxicity and a long blood half-life. It provides excellent heating in an alternating magnetic field. FerroMag<sup>™</sup>-PEG can be used in Magnetic Resonance Imaging as well as therapeutic applications such as magnetic hyperthermia.

*FerroMag<sup>™</sup> particles heat in alternating magnetic field.*

