Unconjugated Gold and Silver Colloids (Silver Enhancement Kits on page 200)

BBINTERNATIONAL

- Available in a size range from 2 to 250nm.
- The particles are invaluable tools for light scattering, either Raman or plasmon resonance (Analytical Chemistry 1999, 71:4903-4908; Analytical BioChemistry 1998, 262:137-156).

Nanometer-sized gold and silver particles of uniform shape and size are invaluable tools in nanotechnology (assembled arrays), light scattering (elastic - plasmon resonance; inelastic - Raman effect) and single molecule detection. Gold nanoparticles can be attached to proteins, alkanethiols and DNA by various methods. Silver nanoparticles are evolving similar functional characteristics to their gold counterparts.

Ted Pella, Inc. is the leader in offering a wide range of both silver and gold nanoparticles for these applications. Talk to our applications engineer to find out about the new developments/applications. We are constantly developing new gold and silver colloids for new nanotechnology applications.

Silver Colloid Sizes

Technical Data:

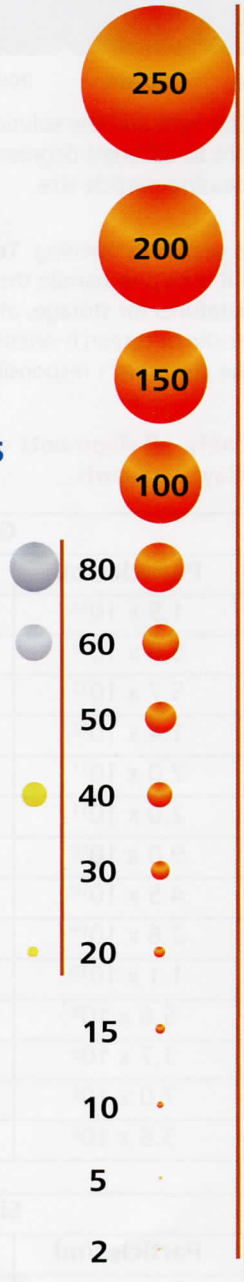
80nm
Extinction Coefficient: Not Calculated
OD: 0.3 at 460nm - Particles/ml: 1.1×10^9
Coefficient of Variation: <20%

60nm
Extinction Coefficient: Not Calculated
OD: 0.3 at 420nm - Particles/ml: 2.6×10^9
Coefficient of Variation: <20%

40nm
Extinction Coefficient: Not Calculated
OD: 0.3 at 410nm - Particles/ml: 9.0×10^9
Coefficient of Variation: <15%

20nm
Extinction Coefficient: Not Calculated
OD: 0.3 at 400nm - Particles/ml: 7.0×10^{10}
Coefficient of Variation: <15%

Gold Colloid Sizes



Technical Data[1]:

250nm
Extinction Coefficient: Not calculated
OD: 0.27 at 520nm - Particles/ml: 3.6×10^8
Coefficient of Variation: <8%

200nm
Extinction Coefficient: Not calculated
OD: 0.3 at 520nm - Particles/ml: 7.0×10^8
Coefficient of Variation: <8%

150nm
Extinction Coefficient: Not calculated
OD: 0.4 at 520nm - Particles/ml: 1.7×10^9
Coefficient of Variation: <8%

100nm
Extinction Coefficient: 1.905E11 M-1cm-1
OD: 0.7 at 520nm - Particles/ml: 5.6×10^9
Coefficient of Variation: <8%

80nm
Extinction Coefficient: 9.124E10 M-1cm-1
OD: 0.9 at 520nm - Particles/ml: 1.1×10^{10}
Coefficient of Variation: <8%

60nm
Extinction Coefficient: 3.531E10 M-1cm-1
OD: 1.1 at 520nm - Particles/ml: 2.6×10^{10}
Coefficient of Variation: <8%

50nm
Extinction Coefficient: 1.935E10 M-1cm-1
OD: 1.2 at 520nm - Particles/ml: 4.5×10^{10}
Coefficient of Variation: <8%

40nm
Extinction Coefficient: 9.264E9 M-1cm-1
OD: 1.0 at 520nm - Particles/ml: 9.0×10^{10}
Coefficient of Variation: <8%

30nm
Extinction Coefficient: 3.585E9 M-1cm-1
OD: 1.0 at 520nm - Particles/ml: 2.0×10^{11}
Coefficient of Variation: <8%

20nm
Extinction Coefficient: 9.406E8 M-1cm-1
OD: 1.0 at 520nm - Particles/ml: 7.0×10^{11}
Coefficient of Variation: <8%

15nm
Extinction Coefficient: 3.640E8 M-1cm-1
OD: 0.8 at 520nm - Particles/ml: 1.4×10^{12}
Coefficient of Variation: <10%

10nm
Extinction Coefficient: 9.550E7 M-1cm-1
OD: 0.8 at 520nm - Particles/ml: 5.7×10^{12}
Coefficient of Variation: <10%

5nm
Extinction Coefficient: 9.696E6 M-1cm-1
OD: 0.8 at 520nm - Particles/ml: 5.0×10^{13}
Coefficient of Variation: <15%

2nm
Extinction Coefficient: 4.714E5 M-1cm-1
OD: 0.02 at 400nm - Particles/ml: 1.5×10^{14}
Coefficient of Variation: Not determined

The nanometer sized gold colloids can be characterized as follows:

- Monodispersed gold nanoparticles supplied in water, having trace amounts of citrate, tannic acid and potassium carbonate.
- Citrate stabilized with a net negative surface charge (Langmuir 2005, 21:9303-9307).
- Gold colloid pH's range from about 6 for 5nm gold to less than 9 for the larger sized particles (pH tends to increase with size).

[1]The data was extrapolated from mean-free-path corrected Mie-theory calculations performed by Wolfgang Haiss at the University of Liverpool in 2004. The data was experimentally verified in the diameter (d) range from 10-8-nm, and should not be used for d < 10nm. Surface effects may get increasingly important in this region.

Gold and Silver Colloid Color/Size Variation

Gold Colloid Color/Size Variation

2nm 5nm 50nm 100nm 200nm

The 2nm colloid is too small to scatter light and the solution is clear. The remaining sizes scatter light to different degrees and the solution color changes with increasing particle size.

Silver Colloid Color/Size Variation

20nm 40nm 60nm 80nm

The silver colloids are a newer offering and have not been characterized as well as the gold colloids. Silver colloids are citrate stabilized. They are supplied in water, have a negative surface charge and are available in 4 sizes from 20 to 80nm. The smaller colloids (20 and 40nm) are yellow in color and the larger sizes (60 and 80nm) are a light gray.

These products are stable for over a year after opening. **To insure product quality after receipt, read the following carefully**. To avoid contamination after opening, it is best to handle the product under clean room conditions to avoid contamination by dust or other airborne contaminants. Temperatures for storage, after opening, can vary from 4-8°C (39-46°F) to room temperature depending on whether the application is diagnostic or research-oriented. The colloid is stable on boiling and destroyed by freezing. When storing the product below 8°C (46°F) it is the customer's responsibility to ensure that their refrigerator can maintain a constant temperature in the range noted above.

NOTE: To best insure product quality, all shipments of unconjugated gold and silver colloids are sent for next day delivery. No Friday (weekend) or pre-holiday shipments.

Gold Colloids (Sols)				
Size nm	**Particles/ml**	**20ml Prod. No.**	**100ml Prod. No.**	**500ml Prod. No.**
2nm	1.5×10^{14}	**15701-20**	**15701-1**	**15701-5**
5nm	5.0×10^{13}	**15702-20**	**15702-1**	**15702-5**
10nm	5.7×10^{12}	**15703-20**	**15703-1**	**15703-5**
15nm	1.4×10^{12}	**15704-20**	**15704-1**	**15704-5**
20nm	7.0×10^{11}	**15705-20**	**15705-1**	**15705-5**
30nm	2.0×10^{11}	**15706-20**	**15706-1**	**15706-5**
40nm	9.0×10^{10}	**15707-20**	**15707-1**	**15707-5**
50nm	4.5×10^{10}	**15708-20**	**15708-5**	**15708-55**
60nm	2.6×10^{10}	**15709-20**	**15708-6**	**15708-65**
80nm	1.1×10^{10}	**15710-20**	**15708-8**	**15708-85**
100nm	5.6×10^{9}	**15711-20**	**15708-9**	**15708-95**
150nm	1.7×10^{9}	**15712-20**	**15709-10**	**15709-105**
200nm	7.0×10^{8}	**15713-20**	**15709-11**	**15709-115**
250nm	3.6×10^{8}	**15714-20**	**15709-12**	**15709-125**

Silver Colloids (Sols)				
Size nm	**Particles/ml**	**20ml Prod. No.**	**100ml Prod. No.**	**500ml Prod. No.**
20nm	7.0×10^{11}	**15705-20SC**	**15705-1SC**	**15705-5SC**
40nm	9.0×10^{10}	**15707-20SC**	**15707-1SC**	**15707-5SC**
60nm	2.6×10^{10}	**15709-20SC**	**15708-6SC**	**15708-65SC**
80nm	1.1×10^{10}	**15710-20SC**	**15708-8SC**	**15708-85SC**

■ Gold Conjugates for Electron Microscopy, Light Microscopy, Blotted Proteins and Lateral Flow Applications

All of the solutions below are produced exclusively by BBI, British BioCell International.

BBI INTERNATIONAL

British BioCell International (BBI) gold conjugates consist of the finest purified antibodies conjugated to gold nanoparticles manufactured to demanding size and shape specifications.

Conjugates are available for the following immunolabeling applications:

- **Electron microscopy** - cryoultramicrotomy, freeze fracture or plastic sections
- **Light microscopy** - plastic, paraffin, cryostat or vibratome sections
- **Blotting** – identification of proteins transferred to membranes (e.g. nitrocellulose, etc.)
- **Lateral Flow Applications** - Diagnostic test kits

The gold conjugates are made to the highest standards and specifications, yielding excellent results when correctly used. All gold conjugates are supplied in one of the two buffers listed below. Buffer constituents dictate the shelf life and storage conditions for the individual conjugates.

Gold conjugates for electron microscopy (EM), light microscopy (LM) and blotting applications (BL) are supplied in the following buffer: 20mM Tris (tris-hydroxymethyl-aminomethane); 20mM sodium azide; 154mM NaCl; 1% glycerol; pH 8.2.

Recipe to make 100ml: 0.242g (20mM) Tris + 0.9g (154mM) NaCl + ultrapure water to make 100ml. Adjust pH from 7.2 to 8.2 with 1N HCl or 1N NaOH.

Storage: Stable for 1 year at 4°C; stability for 2+ years at -20°C. The conjugates demonstrate remarkable stability at ambient temperatures for up to 7 days. Repeat freezing and thawing is not recommended.

Gold conjugates for lateral flow applications are supplied in the following buffer: 2mM sodium tetraborate at pH 8.2 containing 0.095% sodium azide.

Storage: Stable for 1-2 years at 4-8°C. DO NOT FREEZE. The conjugates demonstrate remarkable stability at ambient temperatures for up to 7 days.

Product Information

Each gold conjugate has a technical data sheet which indicates the following information: 1) Number of particles counted; 2) Mean particle diameter; 3) Coefficient of variation given as a percent; 4) Percent of single particles; 5) Percent of particles larger than triplets; and 6) Minimum detectable protein. The coefficient of variation is an important parameter in describing the relative distribution of gold particle sizes around the mean for a given batch. The coefficient of variation equals the standard deviation divided by the mean.

Normal Gaussian distributions work as follows: ±1 standard deviation describes 68% of the area under the curve; ±2 standard deviations describe 95% of the area under the curve; ±3 standard deviations describe 99.73% of the area under the curve. As an example, you have purchased a gold conjugate - Goat anti-Rabbit IgG (H+L), 10nm - having a mean particle diameter of 9.8nm with a coefficient of variation of 4.1%. First, the standard deviation needs to be determined. In this case it is 0.402nm (4.1% x mean particle diameter). Statistically, 68% of the particles will be from 9.40 to 10.20nm, 95% from 9.00 to 10.60nm and 99.73% from 8.60 to 11.00nm. A reliable size characterization has been determined for the batch. T; M (Tech Note and MSDS on web page)

Note: All shipments of Gold Conjugate products must be for next day delivery due to temperature requirements. No Friday (weekend) or pre-holiday shipments.

Conjugates for Electron/Light Microscopy and Blotting:	EM	LM	BL
Bovine Serum Albumin (negative control)	X	X	
Cationic Colloidal Gold (poly L-Lysine conjugated)	X	X	X
Donkey anti-Sheep IgG (H+L)	X	X	X
Goat anti-Biotin	X	X	X
Goat anti-Fluoroscein	X		
Goat anti-Guinea Pig IgG (H+L)	X	X	X
Goat anti-Horseradish Peroxidase	X	X	
Protein A	X	X	X
Protein G	X	X	X
Streptavidin	X	X	X
Goat anti-Human IgG (H)	X	X	X
Goat anti-Human IgG (H+L)	X	X	
Goat anti-Human IgM (mu chain)	X	X	X
Goat anti-Mouse IgA+IgM+IgG	X		
Goat anti-Mouse IgG (H+L) (AH)	X	X	
Goat anti-Mouse IgG (H+L) (RSP)	X	X	
Goat anti-Mouse IgG (H+L) + IgM (mu chain) (AH)	X	X	X
Goat anti-Mouse (Fab')2 IgG (H+L) + IgM (mu chain) (AH)	X	X	
Goat anti-Mouse F(ab') 2 IgG (H) (AH)	X	X	
Goat anti-Mouse IgM (mu chain)	X	X	
Goat anti-Mouse F(ab')2 IgM (mu chain)	X	X	
Goat anti-Rabbit IgG (H+L) (AH)	X	X	X
Goat anti-Rabbit IgG F(ab')2 (H+L) (AH)	X	X	
Goat anti-Rat IgG (H+L) (AH)	X	X	X
Goat anti-Rat IgG (H+L) (MA)	X	X	
Rabbit anti-Chicken IgG (H+L)	X	X	
Rabbit anti-Goat IgG (H+L)	X	X	X
Rabbit anti-Goat IgG (H+L) (AH)	X	X	

Explanations of Abbreviations

(H+L) binds with heavy and light chain of primary antibody
(H) binds with heavy chain only of primary antibody
(AH) conjugate absorbed against human serum proteins
(RSP) conjugate absorbed against rat serum proteins
(MA) conjugate absorbed against mouse serum proteins
F(ab')2 conjugate contains both Fab subunits (no Fc subunit) of the antibody

Conjugates for Lateral Flow Applications:
Goat anti-Biotin
Goat anti-Human IgG
Goat anti-Human IgM
Goat anti-Human IgA
Goat anti-Mouse IgG
Goat anti-Mouse IgM
Goat anti-Rabbit IgG
Protein A
Streptavidin

■ Gold Conjugates for EM, LM and Blotting

Bovine Serum Albumin (negative control)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15850	15850-1
10	15851	15851-1
15	15852	15852-1
20	15853	15853-1
Light Microscopy		
5	15920	15920-1

Donkey anti-Sheep IgG (H+L)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15805	15805-1
10	15806	15806-1
15	15807	15807-1
20	15808	15808-1
Light Microscopy		
5	15909	15909-1
Blotted Proteins		
20	—	15946-1

Goat anti-Biotin

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15810	15810-1
10	15811	15811-1
15	15812	15812-1
20	15813	15813-1
Light Microscopy		
5	15913	15913-1
Blotted Proteins		
20	—	15951-1

Goat anti-Fluoroscein

Electron Microscopy		
Size (nm)	¼ ml	1 ml
10	15989	15989-1

Goat anti-Guinea Pig IgG (H+L)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15785	15785-1
10	15786	15786-1
15	15787	15787-1
20	15788	15788-1
Light Microscopy		
5	15908	15908-1
Blotted Proteins		
20	—	15948-1

Goat anti-Horseradish Peroxidase

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15965	15965-1
10	15966	15966-1
Light Microscopy		
5	15927	15927-1

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■ Gold Conjugates for EM, LM and Blotting *continued*

Protein A

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15820	15820-1
10	15821	15821-1
15	15822	15822-1
20	15823	15823-1
Light Microscopy		
5	15910	15910-1
Blotted Proteins		
20	—	15949-1

Protein G

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15830	15830-1
10	15831	15831-1
15	15832	15832-1
20	15833	15833-1
Light Microscopy		
5	15911	15911-1
Blotted Proteins		
20	—	15950-1

Streptavidin

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15840	15840-1
10	15841	15841-1
15	15842	15842-1
20	15843	15843-1
Light Microscopy		
5	15907	15907-1
Blotted Proteins		
20	—	15947-1

Goat anti-Human IgG (H)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15775	15775-1
10	15776	15776-1
15	15777	15777-1
20	15778	15778-1
Light Microscopy		
5	15904	15904-1
Blotted Proteins		
20	—	15944-1

Goat anti-Human IgG (H+L)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15780	15780-1
10	15781	15781-1
15	15782	15782-1
20	15783	15783-1
40	15784	—
Light Microscopy		
5	15924	15924-1

Goat anti-Human IgM (mu chain)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15975	15975-1
10	15976	15976-1
Light Microscopy		
5	15925	15925-1

Goat anti-Mouse IgG (H+L) (AH)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15750	15750-1
10	15751	15751-1
15	15752	15752-1
20	15753	15753-1
30	15754	15754-1
40	15754-4	15754-5
Light Microscopy		
5	15918	15918-1

Gold Conjugates for EM, LM and Blotting *continued*

Goat anti-Mouse IgG (H+L) (RSP)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15980	15980-1
10	15981	15981-1
Light Microscopy		
5	15923	15923-1

Goat anti-Mouse F(ab')2 IgG (H) (AH)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15845	15845-1
10	15846	15846-1
Light Microscopy		
5	15916	15916-1

Goat anti-Mouse IgG (H+L) + IgM (mu chain) (AH)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15735	15735-1
10	15736	15736-1
15	15737	15737-1
20	15738	15738-1
30	15739	15739-1
Light Microscopy		
5	15903	15903-1
Blotted Proteins		
20	—	15943-1

Goat anti-Mouse F(ab')2 IgG (H+L) + IgM (mu chain) (AH)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15740	15740-1
10	15741	15741-1
Light Microscopy		
5	15915	15915-1

Goat anti-Mouse IgM (mu chain)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15755	15755-1
10	15756	15756-1
15	15757	15757-1
20	15758	15758-1
30	15759	15759-1
Light Microscopy		
5	15902	15902-1
Blotted Proteins		
20	—	15942-1

Goat anti-Mouse F(ab')2 IgM (mu chain)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15760	15760-1
10	15761	15761-1
Light Microscopy		
5	15917	15917-1

Goat anti-Mouse IgA+IgM+IgG

Electron Microscopy		
Size (nm)	¼ ml	1 ml
10	15985	15985-1

Goat anti-Rabbit IgG (H+L) (AH)

Electron Microscopy and 2nm		
Size (nm)	¼ ml	1 ml
2	15860	15860-1
5	15725	15725-1
10	15726	15726-1
15	15727	15727-1
20	15728	15728-1
30	15729	15729-1
40	15729-4	15729-5
Light Microscopy		
5	15900	15900-1
Blotted Proteins		
20	—	15940-1

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■ Gold Conjugates for EM, LM and Blotting *continued*

Goat anti-Rabbit IgG F(ab')2 (H+L) (AH)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15730	15730-1
10	15731	15731-1
Light Microscopy		
5	15914	15914-1

Goat anti-Rat IgG (H+L) (MA)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15770	15770-1
10	15771	15771-1
Light Microscopy		
5	15921	15921-1

Goat anti-Rat IgG (H+L) (AH)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15765	15765-1
10	15766	15766-1
15	15767	15767-1
20	15768	15768-1
30	15769	15769-1
Light Microscopy		
5	15905	15905-1
Blotted Proteins		
20	—	15945-1

Rabbit anti-Chicken IgG (H+L)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15970	15970-1
10	15971	15971-1
Light Microscopy		
5	15926	15926-1

Rabbit anti-Goat IgG (H+L)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15795	15795-1
10	15796	15796-1
15	15797	15797-1
20	15798	15798-1
Light Microscopy		
5	15906	15906-1
Blotted Proteins		
20	—	15952-1

Rabbit anti-Goat IgG (H+L) (AH)

Electron Microscopy		
Size (nm)	¼ ml	1 ml
5	15790	15790-1
10	15791	15791-1
Light Microscopy		
5	15919	15919-1

■ Gold Conjugates for Lateral Flow Applications

Available in 50 OD amounts
(50 OD = 5ml at a concentration of 10 OD)

M; T

15775D-4G Goat anti-Human IgG, 40nm . . . . . .50 OD
15775D-4M Goat anti-Human IgM, 40nm . . . . . .50 OD
15775D-4A Goat anti-Human IgA, 40nm . . . . . .50 OD
15745D-4 Goat anti-Mouse IgG, 40nm . . . . . .50 OD
15755D-4 Goat anti-Mouse IgM, 40nm . . . . . .50 OD
15725D-4 Goat anti-Rabbit IgG, 40nm . . . . . .50 OD
15810D-4 Goat anti-Biotin, 40nm . . . . . .50 OD
15820D-2 Protein A, 20nm . . . . . .50 OD
15820D-4 Protein A, 40nm . . . . . .50 OD
15840D-4 Streptavidin, 40nm . . . . . .50 OD

NOTE: All shipments of Colloidal Conjugate products must be for next day delivery due to temperature requirements. No Friday (weekend) or pre-holiday shipments.

Diagnostic Conjugates: Do Not Freeze - Ship by FEDSON or FED1
Storage Recommendations: Store at 4 degrees C.

M = MSDS on web page
T = Tech Note on web page

■ Silver Enhancement Kit for Light and Electron Microscopy

A light insensitive kit designed for the amplification (10-100x) of gold label on grids or slides. When the kit components are mixed, metallic silver is deposited on the gold label.

NOTE: Enhancement times that do not exceed 2 minutes will greatly reduce nonspecific background. A second or third 2 minute enhancement will usually produce sharp, clean results.

Kit Components: 15ml of Developer - 15ml of Enhancer (Initiator M; Enhancer M;

Storage Conditions: Store at 4°C or -25°C

15718 Silver Enhancement Kit for Light and Electron Microscopy 30ml

■ Silver Enhancement Kit for Proteins and Nucleic Acids

A light insensitive kit designed for the amplification (10-100x) of gold labeled dots or blots on membranes. When the kit components are mixed, metallic silver is deposited on the gold labeled proteins or nucleic acids. The kit is designed for use with PROTOGOLD® or gold conjugated antibodies.

Kit Components: 250ml of Developer - 250ml of Enhancer (Initiator M; Enhancer M;

Storage Conditions: Store at 4°C or -25°C

15719 Silver Enhancement Kit for Proteins and Nucleic Acids 500ml

■ PROTOGOLD® - Protein Staining Kit

The kit is intended for use with negatively charged membranes like nitrocellulose or polyvinylidene difluoride (PVDF). Up to 1µg per band or dots is recommended. The gold particles are negatively charged and suspended in a low pH solution. The stain is permanent and can be enhanced 10-100x with Prod. No. 15719 Silver Enhancement Kit. The kit will stain over 20 blots with high intensity.

Kit Components: 500ml of Protogold Sol - 5ml of Detergent

Storage Conditions: Store at 4°C - DO NOT FREEZE

15720 PROTOGOLD® - Protein Staining Kit 500ml

Section Adhesive - Mounting Media

■ BIOBOND™ - Tissue Section Adhesive

Supplied in 20ml volumes and used as a 2% solution in acetone for coating slides. Use fresh solution each time.

Storage Conditions: Store at room temperature

■ Irritant; M; T

15715 BIOBOND™ - Tissue Section Adhesive 20ml

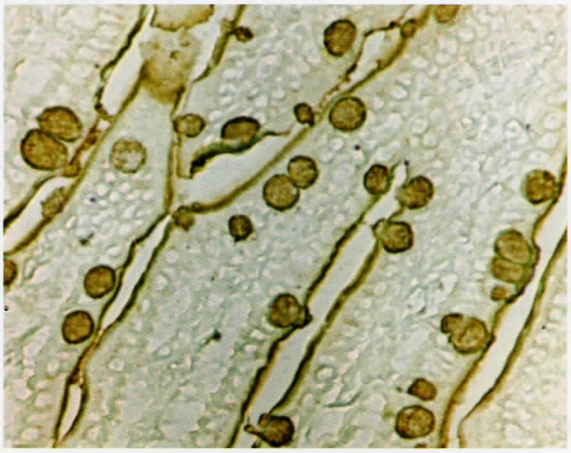
■ Blocking Agents

15713 Tween 20® 10ml
Storage Conditions: Store at room temperature

15717 Cold Water Fish Gelatin, 45% M 10ml
Storage Conditions: Store at room temperature

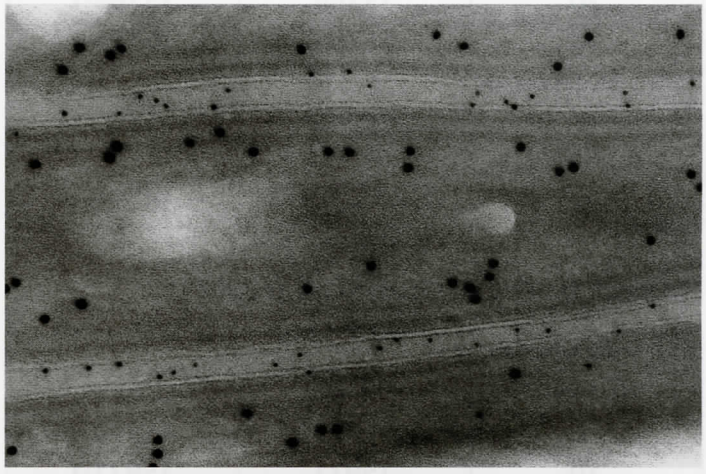
15716 Bovine Serum Albumin 10g

Immunogold Labeling for Light and Electron Microscopy



*Goblet cells, found in the intestine, and the mucus they secrete have been labeled with 5nm gold conjugated to poly-L-lysine. Antigen localization (mucus secretion of the goblet cells) is demonstrated by subsequent silver enhancement of the gold with Prod. No. **15718**, Silver Enhancement Kit. Silver enhancement produces a background free label when enhancement steps do not exceed 2 minutes.*

Source: R&D Ted Pella, Inc.



Desmosomes are labeled for an extracellular component (5nm gold) and a cytoplasmic component (10nm).

Source: Dr. Alison North, Director of the Rockefeller Univ. Bio-Imaging Facility

M = MSDS on web page
T = Tech Note on web page