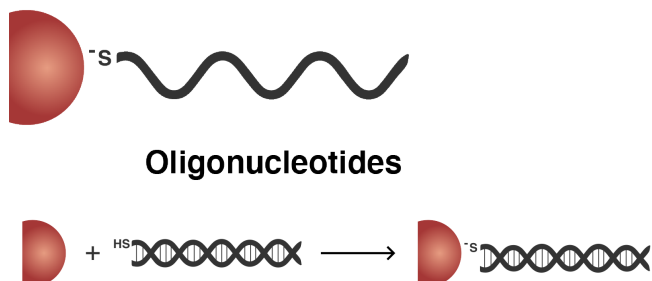


## PRODUCT DATA SHEET

### OligoREADY™ Gold Nanoparticle Conjugation Kit



#### Description

Cytodiagnosics OligoREADY™ gold conjugation kits have been optimized for high efficiency one-step conjugation of thiolated oligonucleotides directly to the gold surface.

The kit contains ready-to-use pre-made mixtures. No activation, manipulation, or time consuming “salt-aging” steps are required for conjugation. Simply mix your reduced thiol-modified oligonucleotide with the supplied pre-activated gold nanoparticles. Conjugation of the oligonucleotide is achieved by the formation of a strong and stable gold-thiol bond without any additional linkers.

#### Features & Benefits

- Allows conjugation of oligonucleotides to gold nanoparticles with sizes between 5nm-100nm.
- Fast and convenient one-step conjugation reaction with no pre-activation requirements or manipulation of the gold nanoparticles.
- No time-consuming “salt-aging” procedures.
- Results in a thiol-oligo conjugated directly to the gold surface without any linkers.
- Optimized for use in crosslinking based lateral flow applications.

#### Gold Nanoparticle Specifications

**Gold surface:** Proprietary OligoREADY™-coating

**Core diameter:** Available with diameters from 5nm-100nm

**Optical density (OD):** OD=2 when the contents of each vial is dissolved to a final volume of 1 ml.

**Particles per ml:** Core size dependant, please see table II.

**Lambda max:** Core size dependant, please see table II.

#### Storage

Store at -20° C. Stable for at least 3 months if stored as specified.

#### Product Safety and Handling

This product is for R&D use only, not for drug, household, or other uses. Please review the material safety datasheet (MSDS) available online for proper safety and handling procedures.

#### Procedure

##### *Reduction of thiol-modified oligonucleotides (e.g. trityl-S-S-Oligo)*

1. Prepare a 0.15 M sodium phosphate buffer, pH 8.5 supplemented with 0.1 M DTT.

**Note:** pH is important for proper reduction of oligonucleotide.

2. Dissolve lyophilized oligonucleotide to a final concentration of 500  $\mu$ M in H<sub>2</sub>O.
3. Mix 50  $\mu$ l of dissolved oligonucleotide with 450  $\mu$ l sodium phosphate buffer.
4. Incubate 1-2 hours at room temperature to reduce oligonucleotide.
5. Separate reduced oligonucleotide from trityl-SH and DTT using a NAP 5 column operated in H<sub>2</sub>O, GE Healthcare.
6. Final eluate from NAP 5 column will be 1ml in H<sub>2</sub>O with an approximate concentration of 25  $\mu$ M.

**Note:** Exact concentration of final eluate can be measured with UV-VIS spectroscopy by measuring the absorbance at 260nm.

##### *Conjugation of thiolated oligonucleotide to OligoREADY™ gold nanoparticles*

1. Resuspend one vial of lyophilized OligoREADY™ gold nanoparticle with 740  $\mu$ l of H<sub>2</sub>O.
2. Transfer into a 1.5 ml microcentrifuge tube.

- Add 160  $\mu\text{l}$  of reduced thiolated oligonucleotide at 7.5  $\mu\text{M}$  (0.0075 nmol/ $\mu\text{l}$ )\* in  $\text{H}_2\text{O}$  as prepared above and incubate for at least 1 hour at room temperature.

**\*Note:** 7.5  $\mu\text{M}$  oligonucleotide is a good starting concentration, but if aggregation or poor sensitivity is observed, the following oligonucleotide concentrations can be attempted for a given particle size range (based on a 30nt oligonucleotide):

Particle size (nm)	5	10-20	30-100
[oligonucleotide] ( $\mu\text{M}$ )	5-50	5-25	5-15

- Add 100  $\mu\text{l}$  of 1M NaCl.

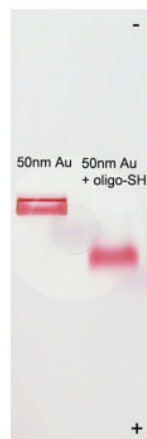
Incubate for at least 1 hour at room temperature to allow binding of the oligonucleotide to the gold surface.

**Note:** Longer incubation times may improve surface coverage.

- Centrifuge at the appropriate speed for your particular gold nanoparticle size (see table I) for 30 minutes to pellet your oligonucleotide gold conjugate.
- Remove supernatant.
- Resuspend conjugate in 200  $\mu\text{l}$  of storage buffer. The optical density of the particles should be 10 if a 100% recovery has been achieved.

*Common storage buffer: 10 mM sodium phosphate buffer, pH 7.0, 100 mM NaCl and 0.01% (w/v) NaN<sub>3</sub>.*

- Measure optical density with a spectrophotometer and adjust concentration as desired.
- Store conjugate at +4°C



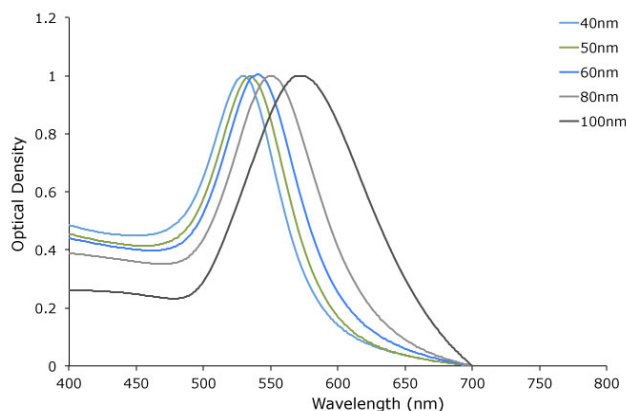
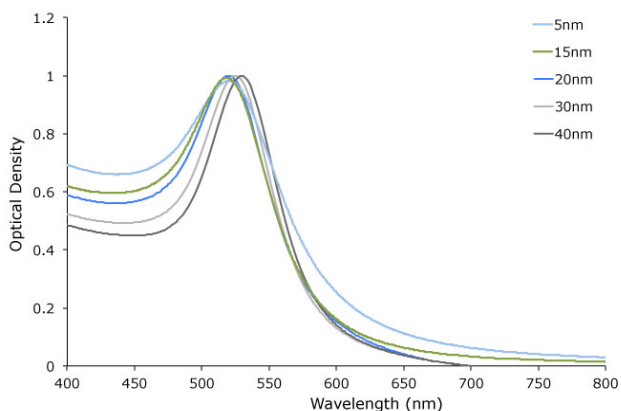
**Figure 1.** 0.5% (w/v) agarose gel analysis of 50nm OligoREADY™ gold nanoparticles before and after functionalization with a thiolated oligonucleotide (20 bases). Gel was operated at 100V in 0.5X TBE buffer for 30 minutes.

**Table I.** Appropriate G forces for centrifugation of gold nanoparticles. Note that recommended conditions are for a volume of 1ml and centrifugation using a microcentrifuge, except for 5nm gold nanoparticles that require an ultracentrifuge.

Size (nm)	Speed (g)	Time (min)
5	100,000	30
10	17,000	60 (~50% recovery)
15	17,000	30
20	6,500	30
30	4,500	30
40	2,500	30
50	2,000	30
60	1,125	30
80	600	30
100	400	30

**Table II.** Gold nanoparticle specifications by size. Please note that all values below are indicated at an optical density of 1 (OD/cm-1) at their respective lambda max. At other optical densities the values needs to be adjusted (e.g. NPS/ml (@OD2) = 2 x NPS/ml (@OD1)).

Diameter (nm)	Peak SPR Wavelength (nm)	NPS/ml	Wt. Conc. (mg/ml)	Molar Ext (M <sup>-1</sup> cm <sup>-1</sup> )	Size Dispersity (+/-nm)	Particle Volume (nm <sup>3</sup> )	Surface Area (nm <sup>2</sup> )	Surface/Volume Ratio	Particle Mass (g)	Molar Mass (g/mol)	Molar Conc.
5	515-520	5.47E+13	6.94E-02	1.10E+07	<15%	6.54E+01	7.85E+01	1.2	1.27E-18	7.64E+05	9.08E-08
10	515-520	5.98E+12	6.07E-02	1.01E+08	<15%	5.24E+02	3.14E+02	0.6	1.02E-17	6.11E+06	9.93E-09
15	520	1.64E+12	5.61E-02	3.67E+08	<12%	1.77E+03	7.07E+02	0.4	3.43E-17	2.06E+07	2.72E-09
20	524	6.54E+11	5.31E-02	9.21E+08	<12%	4.19E+03	1.26E+03	0.3	8.12E-17	4.89E+07	1.09E-09
30	526	1.79E+11	4.91E-02	3.36E+09	<12%	1.41E+04	2.83E+03	0.2	2.74E-16	1.65E+08	2.98E-10
40	530	7.15E+10	4.65E-02	8.42E+09	<12%	3.35E+04	5.03E+03	0.15	6.50E-16	3.91E+08	1.19E-10
50	535	3.51E+10	4.45E-02	1.72E+10	<10%	6.54E+04	7.85E+03	0.12	1.27E-15	7.64E+08	5.83E-11
60	540	1.96E+10	4.30E-02	3.07E+10	<10%	1.13E+05	1.13E+04	0.1	2.19E-15	1.32E+09	3.25E-11
70	548	1.20E+10	4.17E-02	5.03E+10	<10%	1.80E+05	1.54E+04	0.086	3.48E-15	2.10E+09	1.99E-11
80	553	7.82E+09	4.06E-02	7.70E+10	<10%	2.68E+05	2.01E+04	0.075	5.20E-15	3.13E+09	1.30E-11
90	564	5.37E+09	3.97E-02	1.12E+11	<8%	3.82E+05	2.54E+04	0.067	7.40E-15	4.46E+09	8.92E-12
100	572	3.84E+09	3.89E-02	1.57E+11	<8%	5.24E+05	3.14E+04	0.06	1.02E-14	6.11E+09	6.37E-12



Catalogue Number	Description	Sizes
OGC-5-X*	5nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-10-X*	10nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-15-X*	15nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-20-X*	20nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-30-X*	30nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-40-X*	40nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-50-X*	50nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-60-X*	60nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-70-X*	70nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-80-X*	80nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-90-X*	90nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions
OGC-100-X*	100nm OligoREADY Gold Nanoparticle Conjugation Kit	3 reactions & 10 reactions

*\*X Indicates quantity, i.e. -1 for a 3 reaction kit and -2 for a 10 reaction kit  
For custom sizes and information on bulk quantities and prices please contact our customer service department.*

## Ordering Information

For ordering call 866-344-3954 or visit us online.