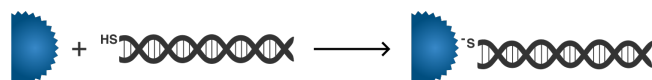


PRODUCT DATA SHEET

OligoREADY™ Gold NanoUrchin Conjugation Kit



Description

Cytodiagnosics OligoREADY™ Gold NanoUrchin conjugation kits have been optimized for high efficiency one-step conjugation of thiolated oligonucleotides directly to the gold NanoUrchin 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 NanoUrchs. 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 NanoUrchs with sizes between 50nm-100nm.
- Fast and convenient one-step conjugation reaction with no pre-activation requirements or manipulation of the gold NanoUrchs.
- No time-consuming “salt-aging” procedures.
- Results in a thiol-oligo conjugated directly to the gold NanoUrchin surface without any linkers.
- Optimized for use in crosslinking based lateral flow applications.

Gold NanoUrchin Specifications

Gold surface: Proprietary OligoREADY™ coating

Core diameter: Available with diameters from 50nm-100nm

Optical density (OD): OD=2 when the contents of each vial are 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 μM in H₂O.
3. Mix 50 μl of dissolved oligonucleotide with 450 μl 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 H₂O, GE Healthcare.
6. Final eluate from NAP 5 column will be 1ml in H₂O with an approximate concentration of 25 μM.

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 NanoUrchs

1. Resuspend one vial of lyophilized OligoREADY™ gold NanoUrchs with 740 μl of H₂O.
2. Transfer into a 1.5 ml microcentrifuge tube.

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3. Add 160 μl of reduced thiolated oligonucleotide at 7.5 μM (0.0075 nmol/ μl)* in H_2O as prepared above and incubate for at least 1 hour at room temperature.

Note: 7.5 μM oligonucleotide is a good starting concentration, but if aggregation or poor sensitivity is observed, the following oligonucleotide concentrations can be attempted for a given NanoUrchin size range (based on a 30nt oligonucleotide):

Particle size (nm)	50-70	80-100
[oligonucleotide] (μM)	5-20	0.25-10

4. Add 100 μl of 1M NaCl.
5. Incubate for at least 1 hour at room temperature to allow binding of the oligonucleotide to the gold NanoUrchin surface.

Note: Longer incubation times may improve surface coverage.

6. Centrifuge at the appropriate speed for your particular gold NanoUrchin size (see table I) for 30 minutes to pellet your oligonucleotide gold NanoUrchin conjugate.
7. Remove supernatant.
8. Resuspend conjugate in 200 μl 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) NaN₃.

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

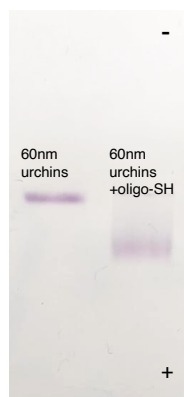


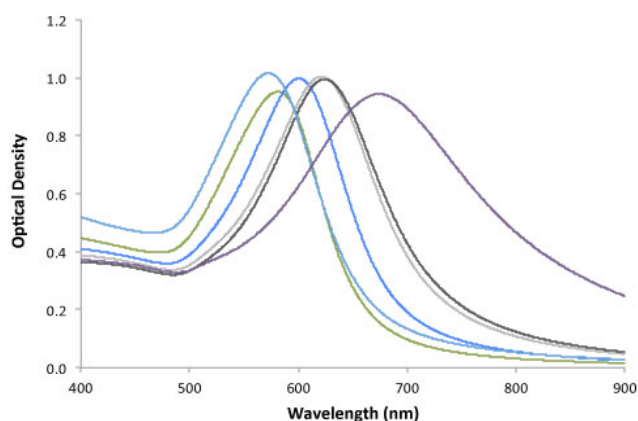
Figure 1. 0.5% (w/v) agarose gel analysis of 60nm OligoREADY™ gold NanoUrchins before and after functionalization with a thiolated oligonucleotide (30 bases). Gel was operated at 100V in 0.5X TBE buffer for 30 minutes.

Table I. Appropriate G forces for centrifugation of gold NanoUrchins. Note that recommended conditions are for a volume of 1ml and centrifugation using a microcentrifuge.

Size (nm)	Speed (g)	Time (min)
50	2,000	30
60	1,125	30
70	700	30
80	600	30
90	500	30
100	400	30

Table II. Gold NanoUrchin 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 need 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 ⁻¹ cm ⁻¹)	Size Dispersity (+/-nm)	Particle Volume (nm ³)	Surface Area (nm ²)	Surface/Volume Ratio	Particle Mass (g)	Molar Mass (g/mol)	Molar Conc.
50	560	3.51E+10	4.45E-02	1.72E+10	<8%	6.54E+04	7.85E+03	0.12	1.27E-15	7.64E+08	5.83E-11
60	585	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	600	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	620	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	630	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	670	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
OUC-50-X*	50nm AptamerREADY Gold NanoUrchin Conjugation Kit	3 reactions & 10 reactions
OUC-60-X*	60nm AptamerREADY Gold NanoUrchin Conjugation Kit	3 reactions & 10 reactions
OUC-70-X*	70nm AptamerREADY Gold NanoUrchin Conjugation Kit	3 reactions & 10 reactions
OUC-80-X*	80nm AptamerREADY Gold NanoUrchin Conjugation Kit	3 reactions & 10 reactions
OUC-90-X*	90nm AptamerREADY Gold NanoUrchin Conjugation Kit	3 reactions & 10 reactions
OUC-100-X*	100nm AptamerREADY Gold NanoUrchin 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.