

Materials List for:

Design and Development of Aptamer–Gold Nanoparticle Based Colorimetric Assays for In-the-field Applications

Joshua E. Smith¹, Jorge L. Chávez^{2,3}, Joshua A. Hagen², Nancy Kelley-Loughnane²

¹Department of Science and Mathematics, Alvernia University

²Human Performance Wing, Air Force Research Laboratory, Wright-Patterson Air Force Base

³UES, Inc.

Correspondence to: Nancy Kelley-Loughnane at nancy.kelley-loughnane.1@us.af.mil

URL: <https://www.jove.com/video/54063>

DOI: [doi:10.3791/54063](https://doi.org/10.3791/54063)

Materials

Name	Company	Catalog Number	Comments
Gold(III) chloride hydrate	Sigma	254169	99.999% purity is important and solutions were made fresh every time
Sodium Citrate Dihydrate	Sigma	W302600-1KG-K	We have found the manufacturer greatly affects AuNP assays, and solutions were made fresh every time
Synergy	Bio-TEK	HT	Any absorbance spectrometer will work, but a platereader provides multiple sample analysis
4-(2-hydroxyethyl)piperazine-1-ethanesulfonic acid (HEPES) Buffer, 1 M sterilized	Amresco	J848	Any sterilized brand will work
Corning, 250 ml Filter System, 0.22 µm cellulose acetate	Fisher	430767	Other membranes have been found to remove the AuNPs
UV Spectrophotometer	Varian	Cary 300	Any absorbance spectrometer will work
Magnesium Chloride Hexahydrate	Fluka	63068	≥98% any brand will work
DNA	IDT	Custom	DNA was purified with a desalting column, higher purification techniques can be used
Procaine Hydrochloride	ACROS	AC20731-1000	99% stocks of 1 mg/ml in methanol were prepared
Hydrochloric Acid	Fisher	A144S-500	36.5-38.0% w/w other brands will work
Cocaine Hydrochloride	Lipomed	COC-156-HC-1LM	We have found the manufacturer greatly affects AuNP assays
Nitric Acid	Fisher	A509-SK212	65% w/w other brands will work
Sodium Chloride Solution, 5 M bioreagent grade	Sigma	S5150-1L	Sterile solutions made from solid will work
Diethyl Pyrocarbonate	Sigma	D5758-25 mL	≥97% any brand will work
Ecgoninemethylester Hydrochloride	Lipomed	COC-205-HC-1LM	We obtained the EME control from the same manufacturer as the cocaine target
Microcentrifuge Tubes, Axygen Scientific, nonsterile, 1.7 ml	VWR	10011-722	We have found the manufacturer greatly affects AuNP assays, and the tubes were autoclaved in house
nuclease free water			

methanol			
----------	--	--	--