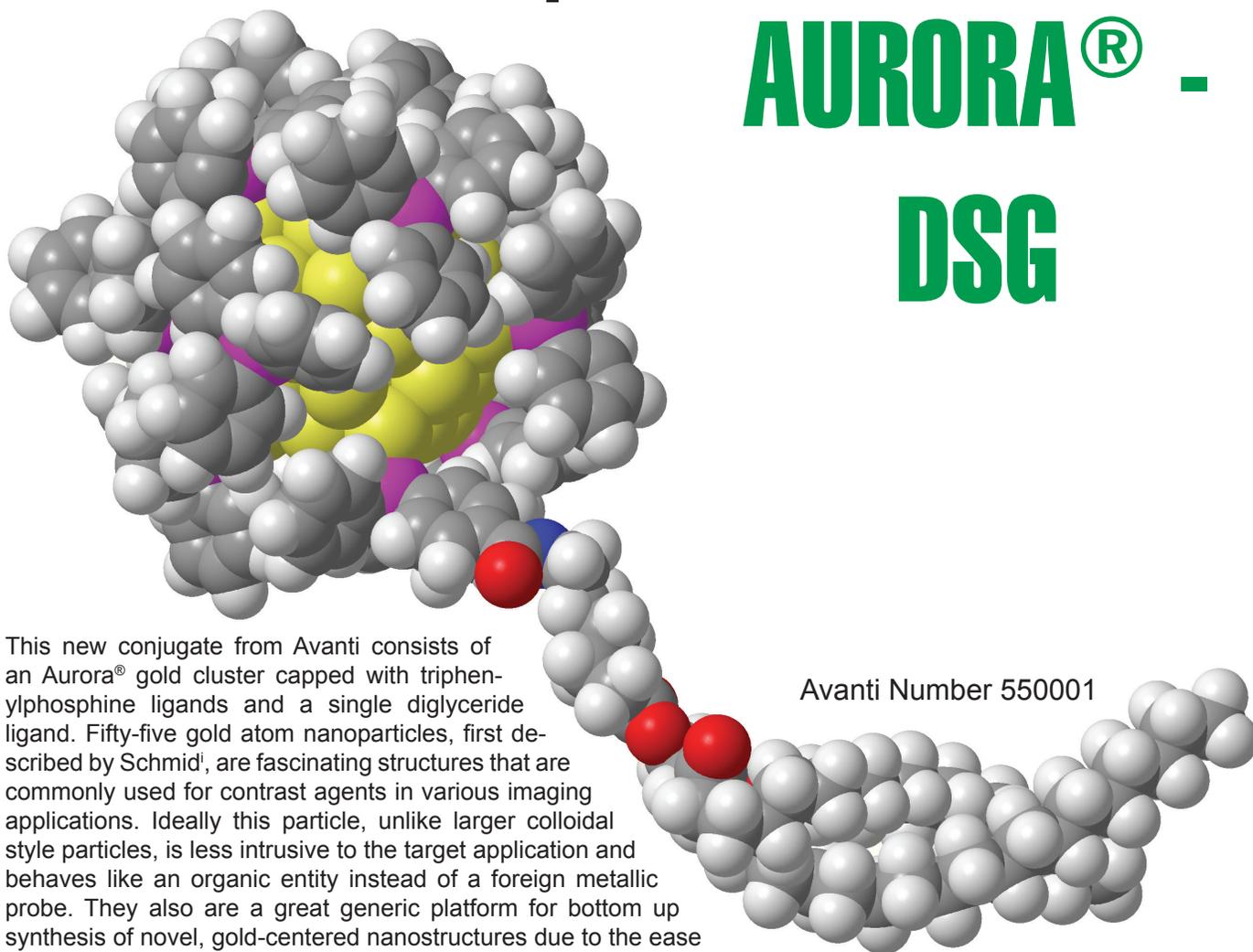


Avanti's New Nanoparticles

AURORA[®] -

DSG



Avanti Number 550001

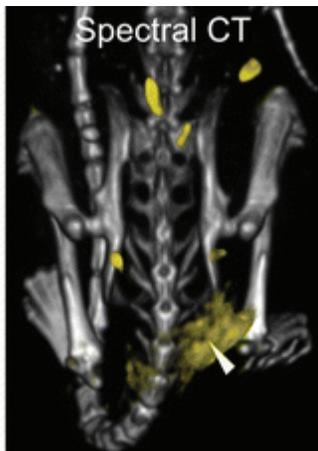
This new conjugate from Avanti consists of an Aurora[®] gold cluster capped with triphenylphosphine ligands and a single diglyceride ligand. Fifty-five gold atom nanoparticles, first described by Schmidⁱ, are fascinating structures that are commonly used for contrast agents in various imaging applications. Ideally this particle, unlike larger colloidal style particles, is less intrusive to the target application and behaves like an organic entity instead of a foreign metallic probe. They also are a great generic platform for bottom up synthesis of novel, gold-centered nanostructures due to the ease and completeness of ligand exchange reactions^{ii,iii}. This complex is readily visible under TEM and can also be viewed in optical microscopes if further processed using a silver development procedure. See literature selections for experimental design ideas^{iv,v,vi}.

References:

- i. Günter Schmid and Benedetto Corain. (2003). Nanoparticulated Gold: Syntheses, Structures, Electronics, and Reactivities. *Eur. J. Inorg. Chem.* 2003, 3081-3098.
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- vi. Marchesano, V., Y. Hernandez, W. Salvenmoser, A. Ambrosone, A. Tino, B. Hobmayer, J. M de la Fuente, and C. Tortiglione. (2013). Imaging inward and outward trafficking of gold nanoparticles in whole animals. *ACS Nano* 7:2431-42.

New Nanoparticles

Labeling Allows
Macroscopic
Imaging of LDL



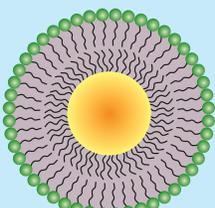
Mice bearing tumors display an accumulation of gold in the tumor region.

AURORA® - PLC

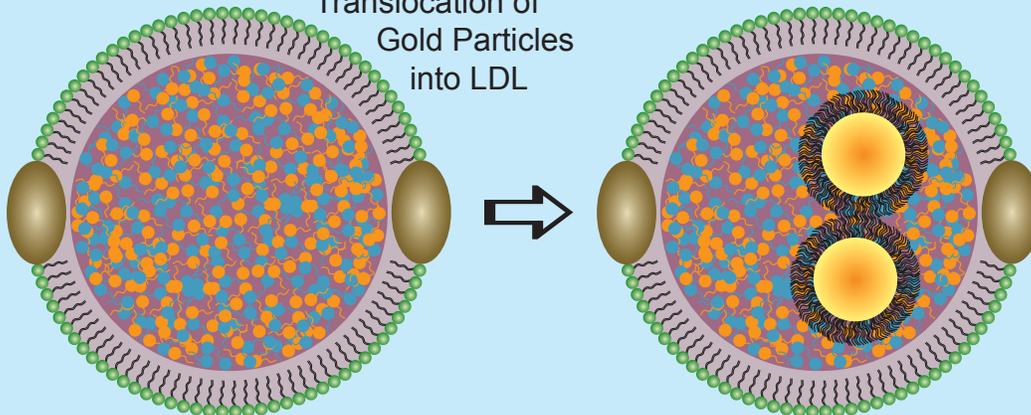
Elevated plasma LDL is a major risk factor in the formation of atherosclerotic lesions and has been linked to the progression of other diseases including cancer¹. Thus, novel methods that can be used to image LDL and study its biointeractions are of increasing importance¹. Avanti's new conjugate, Aurora-PLC, consists of dodecanethiol-coated gold nanoparticles encapsulated in a phospholipid micelle that can be easily translocated into LDL to act as a platform for a variety of imaging modalities¹. According to in-depth studies, the labeling procedure has minimal effect on the size, morphology, and oxidation level of LDL, and this particle is readily taken up in a receptor dependent manner, both *in vitro* and *in vivo*¹. Aurora-PLC exploits the ability of gold nanoparticles to serve as high contrast imaging agents and provides a novel tool for studying LDL interactions, labeling atherosclerotic plaques, and monitoring tumor growth¹.

Reference: ¹Allijn, I.E., W. Leong, J. Tang, A. Gianella, A.J. Mieszawska, F. Fay, G. Ma, S. Russell, C.B. Callo, R.E. Gordon, E. Korkmaz, J.A. Post, Y. Zhao, H.C. Gerritsen, A. Thran, R. Proksa, H. Daerr, G. Storm, V. Fuster, E.A. Fisher, Z.A. Fayad, W.J. Mulder, and D.P. Cormode. (2013). Gold nanocrystal labeling allows low-density lipoprotein imaging from the subcellular to macroscopic level. *ACS Nano* 7:9761-70.

Thiol-Coated
Gold
Nanoparticles
Coated with
Phospholipids



Translocation of
Gold Particles
into LDL



Avanti Number 550002

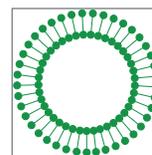
Au-LDL has the same morphology, size, and oxidation level as native human LDL and is taken up by cells in a receptor dependent manner.



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