conferenceseries.com

11th International Conference and Expo on

Nanoscience and Molecular Nanotechnology

October 20-22, 2016 Rome, Italy

Facile encapsulation of gold nanoparticles into PLGA nanocarriers: Toward visualizing polymeric nanoparticles inside biological compartments

Alaaldin M Alkilany¹, Ji E Park², Jonathan R Eller² and Catherine J Murphy² ¹University of Jordan, Jordan ²University of Illinois at Urbana-Champaign, USA

Polymeric nanoparticles are promising candidates as a selective drug delivery platform with tremendous number of biomedical applications. PLGA, poly(lactic-co-glycolic acid), is the most used polymer to prepare polymeric nanoparticles due to its well documented safety and biodegradability, high drug loading, ease of synthesis and being commercially available at reasonable cost. However, the fate of PLGA nanocarriers (PLGA-NCs), as well as other polymeric nanoparticles, in biological compartments is poorly understood. Available labelling approaches with fluorescent agents suffer from serious drawbacks such as photobleaching and desorption of the conjugated flourophores from nanoparticles. Herein, we report on loading PLGA-NCs with gold nanoparticles (GNPs) that serve as a probe for quantification and visualization of the hosting PLGA-NCs. In this contribution, we describe a facile method to encapsulate GNPs efficiently into PLGA-NCs. Moreover, we describe an interesting trend where the type of the capping agent on GNPs plays a crucial role in controlling the encapsulation efficiency into PLGA nanomatrix. Finally, we show preliminary results on visualizing "transparent" PLGA nanocarriers inside cancer cells using encapsulated GNPs as probes.

Biography

Alaaldin M Alkilany obtained his PhD at the University of Illinois Urbana-Champaign, USA (under the supervision of Professor Catherine Murphy). Afterward, he joined the Georgia Regents University (USA) as a Post-doctoral research fellow and then the University of Jordan as an Assistant Professor of Pharmaceutics and Pharmaceutical Technology in the Faculty of Pharmacy (Jordan). His research focuses on understanding the nano-bio interface toward desighning effective and safe nanotherapeutics. He has published more than 25 papers in reputed journals.

a.alkilany@ju.edu.jo

Notes: