Abir O. El-Sadik, J Nanomed Nanotechol 2012, 3:9
http://dx.doi.org/10.4172/2157-7439.S1.011

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference on
Nanotek and Expo

December 3-5, 2012 DoubleTree by Hilton Philadelphia Center City, USA

Promises and challenges of nanotechnology for tissue regeneration

Abir O. El-Sadik
King Saud Bin Abdulaziz University for Health Sciences, Saudi Arabia

Nanomaterials exhibit modified chemical and physical properties that give them the ability to interact with the biological systems at the cellular and molecular levels. These interactions enhance the biomedical applications of nanotechnology in the field of tissue regeneration. A wide range of nanomaterials made of organic and inorganic composites could be self assembled in nanoscale size that simulates more accurately the dimensions of the natural human tissues such as nanoparticles, nanosurfaces and nanoscaffolds. These novel nanomaterials significantly influence the behavior and development of stem cells. The applications of nanotechnology in specific tissue regeneration, such as bone, cartilage, cardiovascular and neural tissues were investigated by several researchers. Nanostructures have been used to promote stem cell viability, proliferation and differentiation. Nanotechnology provides biodegradable and biocompatible biomimetic fabricates that restore and improve the tissue functions. Nanocomposition and nanotopography of a tissue engineered material determine the implant fate providing 3 dimentional tissue culture systems that promote normal cell growth and differentiation without adverse tissue reaction. Recent progress in the synthesis allows the cultured cells to react to the internal and external stimuli and to exchange the signaling factors between those cells and the external environment. However, further understanding to the interactions of nanomaterials with the biological system and more investigations of the safety of these nanostructures are still required before their full application in human tissue repair.

Biography

Abir El-Sadik has completed her Ph.D from Faculty of Medicine, Cairo University. She is an Assistant professor of Anatomy, and Embryology in King Saud Bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia, a Member of the Curriculum Committee, University Pre-professional Program and the Director of the Basic Sciences Laboratory. She has a list of publications for recent medical studies in reputed journals and an author of recent international scientific books in the field of nanotechnology and tissue regeneration and an editor of international book series of nanomedicine.

abgh50@yahoo.com