Paul J Davis, J Stem Cell Res Ther 2014, 4:9
http://dx.doi.org/10.4172/2157-7633.S1.007

OMICS Group Conferences
Accelerating Scientific Discovery

3rd International Conference and Exhibition on
Cell & Gene Therapy
October 27-29, 2014 Embassy Suites Las Vegas, USA

Special Session

Nanoparticle-based targeting of integrin αvβ3: Potential cancer and inflammation management and diagnosis

Organized by
Paul J Davis
Albany Medical College, USA

ALBANY MEDICAL COLLEGE

Specific ligands of the extracellular domain of integrin αvβ3 include extracellular matrix proteins and nonpeptide hormones. The latter include thyroid hormone (L-thyroxine, T4; 3,5,3'-triiodo-L-thyronine, T3) and T4 analogue, tetraiodothyroacetic acid (tetrac). αvβ3 is generously expressed and activated in tumor cells and dividing endothelial cells. Targeting the thyroid hormone-tetrac receptor with nanoparticulate formulation of tetrac—in which tetrac is covalently bound to poly(lactic-co-glycolic acid) (PLGA)—enables modulation of cancer defense pathways, tumor-relevant angiogenesis and nonmalignant angiogenesis at sites of inflammation/infection. The tetrac may be radiolabeled to create diagnostic imaging products for tumor or inflammation. Further, the PLGA, itself, may be loaded with a traditional cancer chemotherapeutic agent, with anti-inflammatory agents (NSAIDS) or anti-infectives; the agent(s) will be locally unloaded when the tetrac-integrin complex is formed at the tumor or inflammation site, affording high local drug concentrations and reduced systemic drug exposure, compared to conventional administration. Bone-resorbing osteoclasts are a final class of cells that express large quantities of αvβ3 and this population of cells offers opportunities for treatment of bone mass loss and for diagnosis and management of local bone resorption. This presentation examines the advantages and liabilities of the options afforded by nanoparticle-based targeting of αvβ3 and discusses other therapeutic and diagnostic options that may be offered by such agents.