J Glycobiol 2015, 3:3
http://dx.doi.org/10.4172/2168-958X.S1.003

OMICS International
conferenceseries.com

Glycobiology World Congress

August 10-12, 2015 Philadelphia, USA

Radiolabeled glucose analogues for myocardial ischemia imaging and for diagnosing coronary artery disease

Diwakar Jain
New York Medical College, USA

Glucose and free fatty acids (FFA) are the predominant metabolic substrates in heart. Their relative uptake in normal hearts varies with the metabolic milieu (fed/fasting state), plasma levels and insulin levels. Myocardial ischemia results in a profound up-regulation of glucose and down regulation of FFA metabolism. Fluorine-18 labeled deoxyglucose (FDG); a glucose analogue is used extensively in clinical practice for imaging glucose metabolism in heart, tumors and other organs. Alternations in glucose metabolism accompanying several disease conditions can be used to diagnose these conditions. Exercise results in ischemia and up-regulates glucose uptake in regions perfused by diseased coronary arteries. This can be used for developing a non-invasive diagnostic imaging test for coronary artery disease (CAD). We evaluated the diagnostic potential of exercise FDG imaging for CAD and compared it with exercise-rest myocardial perfusion imaging (MPI), an established and routinely used test. FDG imaging had higher diagnostic sensitivity compared to MPI. Furthermore, increased regional FDG uptake is observed only on exercise images. Persistence of FDG uptake 24 hours later is seen in less than one third of cases and is indicative of more severe CAD. Cardiac imaging using radiolabeled sugars is a highly promising new diagnostic test for CAD and may also provide a powerful tool for studying the pathophysiology of myocardial ischemia.

dj2700@gmail.com

Cell-matrix interactions at the nanoscale

E Ada Cavalcanti-Adam
University of Heidelberg, Germany

In tissues of mesenchymal origin, cell-extracellular matrix interactions are necessary for adhesion and migration and rely on the assembly of focal adhesions, micrometer-sized structures comprising transmembrane and intracellular protein clusters. Over the past two decades these structures have been extensively studied to elucidate their organization, assembly and molecular composition as well as to determine their functional role. Synthetic materials decorated with biological molecules such as adhesive molecules and growth factors are widely used to mimic the extracellular environment and to induce specific cellular responses dependent on cell adhesion. Nanotechnology provides tools to mimic and investigate such responses at single molecule resolution. This lecture focuses on cell interactions with nanopatterned surfaces biofunctionalized with adhesive peptides recognized by integrins as well as on surfaces decorated with bone morphogenetic protein 2. Results on cell adhesion and adhesion-mediated signaling induced by surface immobilization and spatial distribution of the ligands will be presented. Surface patterning strategies for presenting on the same platform different chemical cues of the extracellular space will be also discussed.

ada.cavalcanti-adam@urz.uni-heidelberg.de