Anil K Bamezai, J Nanomedic Nanotechnol 3:1
doi: http://dx.doi.org/10.4172/2157-7439.S1.04

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference and Exhibition on
Nanotechnology & Nanomedicine
March 12-14, 2012 Omaha Marriott, USA

TITLE

Nano-structures on plasma membrane of immune cells: Isolation and characterization

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Animal cells have nano-structures, also known as lipid rafts, on the plasma membrane. Saturated lipids, cholesterol and key signaling receptors as well as enzymes are present in these membrane structures. Lipid rafts play a prominent role in signaling from the cell membrane to the cell interior. Receptors that play a key role in immune response and cell-cell adhesion protein that participate in cellular interactions are present in these nano-structures. Their isolation and characterization will be essential to unraveling the mechanisms of biological response by cells. The insolubility of lipid raft nanostructures in non-ionic detergents has aided in their biochemical isolation from the plasma membrane of cells by density gradient centrifugation. More recently, isolation of lipid rafts was carried out using detergent-free methods. We have developed methods and approaches to investigate the lipid raft nano-structures by electron microscopy and a number of biochemical assays after their isolation by the detergent-based and detergent-free isolation. Characterization of isolated lipid rafts has indicated their heterogeneity in size and composition. Accumulation of immune stimulatory molecules in these natural, biological nano-structures may allow their use in the delivery of vaccines and therapeutics for human and animal health.

Biography

Dr. Anil K. Bamezai has completed his Ph.D at All India Institute of Medical Sciences, New Delhi, India and postdoctoral studies from Harvard University School of Medicine, Boston, Massachusetts, USA. He is an associate professor of Biology at Villanova University, in the greater Philadelphia area, Pennsylvania, USA. He has published 25 peer-reviewed articles, 8 book/conference periodical chapters. He has served as a guest editor of the journal "Immunology, Endocrinology and Metabolic agents in Medicinal Chemistry".