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Mesenchymal stem cells adhesion, proliferations and advanced differentiation on 3D gold-peptides polymer decorated nanosubstrate

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Here, we report the synthesis of 3D Gold-Peptides Polymer Decorated Nanosubstrate for the Mesenchymal Stem Cells Adhesion, Proliferations and Advanced Differentiation. We intend to understand the mechanism through which gold nanoparticles along with biological molecules-laminin and collagen control cellular differentiation. We show that the topology, surface chemistry and mechanical properties along with biomolecule signaling have been found to be critical in controlling the cell phenotype. This scaffold acts as an extracellular matrix and can be constructed with controllable topographic stability and chemistry and high mechanic-biological properties due to the possibility of driving the interconnection and further aggregation of the proteins' fibers and their gold nanoparticles cross-linking. Pre-differentiation of placental stem cells on suitable scaffolds could make them potential candidates for use in the regeneration of tissue or treatment of various cardiac and neurological disorders.

Biography

Anamaria Orza focuses primarily on the area of development of innovative architectural nano composites for biomedical applications. Prior to her arrival at Emory in the fall of 2013, she served as a Postdoctoral Researcher at the Center for Integrative Nanotechnology Sciences at the University of Arkansas at Little Rock. She has been recognized as a European Union fellow receiving her PhD in Chemistry from Babes Bolyai University, Romania and working in close collaboration with Liverpool University, United Kingdom. She has authored and co-authored 2 patents and over 32 papers in leading journals and at leading international conferences in the field (with over 170 citations) and 2 book chapters in the fields of Applied Nanotechnology in Cancer Research and Tissue Engineering.

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