

## Cell-protein-biomaterial interaction in 3D cell culture platforms

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Bio-molecules of the extracellular matrix, proteins or polysaccharides, interact directly with cells through transmembrane proteins or indirectly by sequestering and presenting to the cells growth factors and cytokines that mediate cell - cell interaction. In cell culture platforms, the effectivity in these functions depends in large extent on the conformation and dynamics of the layer of bio-molecules adsorbed, or fixed as a coating, on the supporting material being in 3D configuration or in the form of flat supports. Protein conformation on the biomaterial surface is modulated by its chemical, morphological and dynamic properties. Cell adhesion depends on the exhibition of specific ligands of the bio-molecules that can be recognized by specific integrin pairs in the cell, but also on the ability of cells to remodel the protein layer to which they attach initially. Certain bio-molecules fixed on the biomaterial are able to retain soluble molecules to keep them available for the cells in a very dynamic process what requires molecular mobility. This stresses the interest for the development of functional biomaterials on the research of the dynamics of the complex consisting of protein, water and biomaterial.