The development of adhesive as well as antiadhesive surfaces is essential in various biomaterial applications. In this study, we have used a multidisciplinary approach that combines biological and physicochemical methods to progress in our understanding of cell-surface interactions. Four model surfaces have been used to investigate fibronectin (Fn) adsorption and the subsequent morphology and adhesion of preosteoblasts. Such experimental conditions lead us to distinguish between anti- and proadhesive substrata. Our results indicate that Fn is not able to induce cell adhesion on antiadhesive materials. On adhesive substrata, Fn did not increase the number of adherent cells but favored their spreading. This work also examined Fn-surface interactions using ELISA immunoassays, fluorescent labeling of Fn, and force spectroscopy with Fn-modified tips. The results provided clear evidence of the advantages and limitations of each technique. All of the techniques confirmed the important adsorption of Fn on proadhesive surfaces for cells. By contrast, antiadhesive substrata for cells avoided Fn adsorption. Furthermore, ELISA experiments enabled us to verify the accessibility of cell binding sites to adsorbed Fn molecules.

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Probing fibronectin-surface interactions: a multitechnique approach.

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Recent Activity

Semiquantitative evaluation of fibronectin adsorption on unmodified and sulfonated polystyrene, as related to cell adhesion.


Photoreactive analog of peptide FN-C/H-V from the carboxy-terminal heparin-binding domains of fibronectin supports endothelial cell adhesion and spreading on biomaterial surfaces.


Force microscopy studies of fibronectin adsorption and subsequent cellular adhesion to substrates with well-defined surface chemistries.

[Langmuir. 2005]

Adsorption characteristics of human plasma fibronectin in relationship to cell adhesion.

[Langmuir. 2008]

Mediation of biomaterial-cell interactions by adsorbed proteins: a review.

[Tissue Eng. 2005]

Probing fibronectin-surface interactions: a multitechnique approach.

Characterization of biomaterials polar interactions in physiological conditions using log...

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