

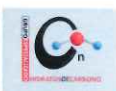
MADRID

14th - 16th March 2016

Centro de Investigaciones Biológicas - CSIC



BIENNIAL MEETING OF THE CHEMICAL BIOLOGY GROUP XII CARBOHYDRATE SYMPOSIUM



XII CARBOHYDRATE SYMPOSIUM / III CHEMICAL BIOLOGY MEETING

Francisco Javier Cañada and Sonsoles Martín-Santamaría

Chairs of the Organizing and Scientific Committees

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CENTRO DE INVESTIGACIONES BIOLÓGICAS, CIB-CSIC

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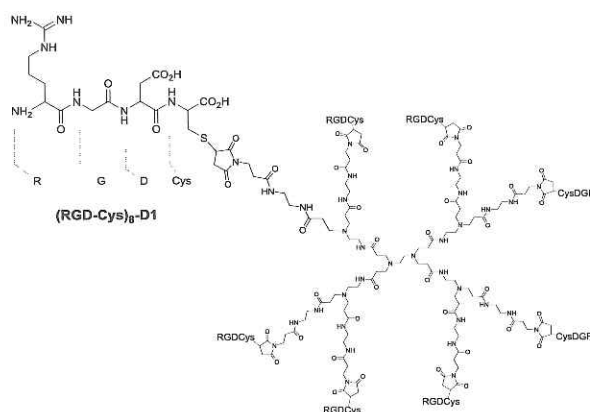
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RGD peptide on Dendrimer surfaces Affects Mesenchymal Stem Cells Adhesion.

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Mesenchymal stem cells (MSCs) are promising candidates for a range of tissue regeneration applications. Adequate scaffolds are necessary for their application *in vivo*, where interactions between cells and the surface material are critical. Arginine-glycine-aspartic acid tripeptides (RGD) were conjugated to Polyamidoamine (PAMAM) dendrimers and used to pre-treat test surfaces. We demonstrate that dendrimer-presented tripeptides efficiently increase surface cell adhesion to MSCs, and that their effectiveness is related to how they are presented by the dendrimer to the cell.



Cell adhesion process is governed by the nanoscale arrangement of the extracellular matrix (ECM), being more affected from local than from global concentration of cell adhesive ligands. Dendrimers grafted on surfaces showed the benefits of the local increase in concentration provided by the dendritic configuration, in many cell-based studies. Dendrimer nanopatterning is applied to address RGD density effects on cell adhesion, where cell experiments showed a clear correlation with dendrimer surface layout. Therefore, dendrimer nanopatterning is presented as a suitable and controlled approach to address the effect of local ligand density in cell response.^[1]

References

[1] Lagunas, A.; Castaño, A. G.; Artés, J. M.; Vida, Y.; Collado, D.; Pérez-Inestrosa, E.; Gorostiza, P.; Claors, S.; Andrades, J. A.; Samitier, J. *Nano Res.*, 2014, 7, 399.