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Molecular trafficking in tissue engineered cartilage constructs ENRICA DE ROSA, CRISTINA BORSELLI, PAOLO ANTONIO NETTI, Università di Napoli 'Federico II' - DIMP — Tissue processing in vitro requires an effective trafficking of biologically active agents within three-dimensional constructs for induction of appropriate and enhanced cellular growth, biosynthesis and tissue remodeling. Moreover, nutrients and waste products need to move freely through the cellular constructs to minimize the presence of regions with necrotic and/or apoptotic cells. In tissue-engineered cartilage, for example, during the time of culture, cells seeded within the three-dimensional constructs lay-down their own extracellular matrix and this may lead to a heterogeneous distribution of transport properties both in time and space. In this work the diffusion coefficient of BSA and 500kDa dextran has been measured with FRAP thecnique in agarose gel chondrocytes constructs at different position and time during the culture. The diffusion coefficient of both molecular probes within the developing tissue well correlated with the ECM production and assembly. Moreover the comparision between BSA and dextran transport parameters revealed a selective hindrance effect of the neo tissue on high interacting molecules.

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