TSG-6 induced remodeling of hyaluronan matrices.

Natalia S. Baranova[1], Anthony J. Day[2], Ralf P. Richter[1, 3]

[1]Biosurfaces Unit, CICbiomaGUNE, Donostia-San Sebastian, Spain. [2]Wellcome Trust Center for Cell-Matrix Research, University of Manchester, United Kingdom. [3]Max-Plank-Institute for Metals Research, Stuttgart, Germany. Email: nbaranova@cicbiomagune.es

Pericellular coats (PCC), the hyaluronan (HA) rich membrane-bound parts of the extracellular matrix, are exposed to strong remodeling upon inflammation and inflammation-like process, as ovulation. It was hypothesized that hyaladherins, expressed under inflammation, can induce HA cross-linking resulting in formation of different supra-molecular structures (1). The simultaneous presence of TSG-6, IαI, PTX3, for example, is crucial for stabilizing the swollen cumulus oocyte complex matrix that develops during ovulation (2).

It is our *goal* to understand the mechanisms of PCC assembly and how the resulting supra-molecular structures relate to biological functions of the PCC under inflammatory conditions.

Based on a recently developed (3) model system of PCCs, films of HA that is end-grafted to lipids bilayers, we have studied the structural changes of HA films under hyaladherin incorporation. The model films are created on solid supports giving the possibility to use quantitative biophysical techniques like quartz crystal microbalance with dissipation monitoring (QCM-D), ellipsometry and reflection interference contrast microscopy (RICM) for their characterization.

Our data indicate that TSG-6 readily incorporates into HA films and induces profound changes in the films´ thickness and mechanical properties. Moreover, TSG-6 can enzymatically transfer heavy chains (HCs) of IαI into HA films. We found that the properties of the HA films with covalently attached HCs differ markedly from the films with incorporated TSG-6.

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