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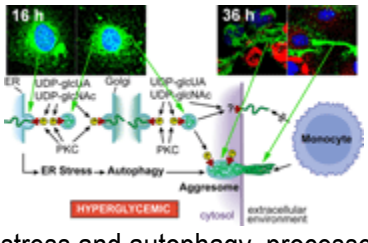
Regulatory roles of hyaluronan in health and disease (page 1411)

Vincent Hascall and Nikos Karamanos

This introduction to the minireview series focuses on the emerging regulatory roles of hyaluronan in health and disease. The series describes the novel mechanism for biosynthesis of hyaluronan and fresh insights on the roles of its interaction with variants of the cell surface receptor CD44. These aspects provide the basis for the exceptional versatility of hyaluronan in normal and pathological processes, including diabetes and cancer.

Hyaluronan matrices in pathobiological processes (pages 1412–1418)

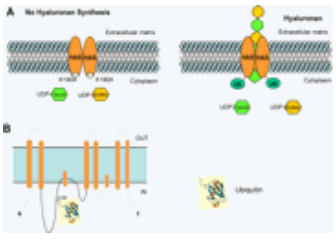
Aimin Wang, Carol de la Motte, Mark Lauer and Vincent Hascall



Hyaluronan matrices are ubiquitous in normal and pathological biological processes. The mechanisms involve active hyaluronan synthases at the cell membrane when cell stresses occur in physiological levels of glucose. However, dividing cells in hyperglycemic levels of glucose initiate synthesis of hyaluronan in intracellular compartments, which induces endoplasmic reticulum stress and autophagy, processes that likely contribute greatly to diabetic pathologies.

Transcriptional and post-translational regulation of hyaluronan synthesis (pages 1419–1428)

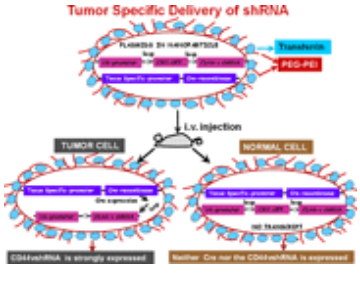
Raija H. Tammi, Alberto G. Passi, Kirsi Rilla, Evgenia Karousou, Davide Vigetti, Katri Makkonen and Markku I. Tammi



Changes in the content, molecular mass and turnover rate of hyaluronan are crucial for cell proliferation, migration, and apoptosis, processes that control tissue remodeling during embryonic development, inflammation, injury and cancer. Here, transcriptional regulation of hyaluronan synthase (*Has1-3*), post-translational control of HAS activity and the supply of the UDP-sugar substrates of HAS are highlighted as regulators of hyaluronan synthesis.

Hyaluronan–CD44 interactions as potential targets for cancer therapy (pages 1429–1443),

Suniti Misra, Paraskevi Heldin, Vincent C. Hascall, Nikos K. Karamanos, Spyros S. Skandalis, Roger R. Markwald and Shibnath Ghatak



CD44 family of transmembrane glycoprotein is comprised of members that differ in the extracellular domain where 10 variant exons are inserted. Hyaluronan induces signaling when it binds to CD44 variants (CD44v) in cancer/inflammatory disease. CD44v were implicated in tumorigenesis due to its selective binding to growth-factors and their receptor-tyrosine-kinases. Accordingly targeting specific CD44v by appropriate shRNA can be useful for cancer therapy.