

Abstract Submitted  
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**Modulation of DNA condensation by cation valence** PREETHI CHANDRAN, Section on Tissue Biophysics and Biomimetics, NICHD; NIBIB; National Institutes of Health, Bethesda, MD 20892, EMILIOS DIMITRIADIS, Laboratory of Bioengineering and Physical Science, NIBIB, National Institutes of Health, Bethesda 20892, CANDIDA SILVA, PETER BASSER, FERENC HORKAY, Section on Tissue Biophysics and Biomimetics, NICHD, National Institutes of Health, Bethesda, MD 20892 — Aggrecan is a negatively charged bottlebrush-shaped proteoglycan in the extracellular matrix, with unique polyelectrolyte properties. Aggrecan-hyaluronic acid aggregates are responsible for the compressive resilience of articular cartilage. Unlike linear polyelectrolytes such as DNA, aggrecan is insensitive to the presence of multivalent counterions (e.g., calcium ions) and self-assembles into micro-gels in near-physiological salt solutions. These features are preserved by aggrecan adsorbed on mica surfaces. To probe both the nature of aggrecan assemblies in solution and their surface interactions, we image the aggrecan assemblies adsorbed on mica surface using Atomic Force Microscopy The effect of counterion valence on the hydration-dehydration properties of the aggrecan assemblies will be discussed.

Preethi Chandran  
Section on Tissue Biophysics and Biomimetics, NICHD; NIBIB;  
National Institutes of Health, Bethesda, MD 20892

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