

Abstract Submitted
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Stabilising the Herpes Simplex Virus capsid by DNA packaging GIJS WUITE, VU University, Amsterdam, KERSTIN RADTKE¹, BEATE SODEIK, Medizinische Hochschule Hannover, Germany, WOUTER ROOS, VU University, Amsterdam — Three different types of Herpes Simplex Virus type 1 (HSV-1) nuclear capsids can be distinguished, A, B and C capsids. These capsids types are, respectively, empty, contain scaffold proteins, or hold DNA. We investigate the physical properties of these three capsids by combining biochemical and nanoindentation techniques. Atomic Force Microscopy (AFM) experiments show that A and C capsids are mechanically indistinguishable whereas B capsids already break at much lower forces. By extracting the pentamers with 2.0 M GuHCl or 6.0 M Urea we demonstrate an increased flexibility of all three capsid types. Remarkably, the breaking force of the B capsids without pentamers does not change, while the modified A and C capsids show a large drop in their breaking force to approximately the value of the B capsids. This result indicates that upon DNA packaging a structural change at or near the pentamers occurs which mechanically reinforces the capsids structure. The reported binding of proteins UL17/UL25 to the pentamers of the A and C capsids seems the most likely candidate for such capsids strengthening. Finally, the data supports the view that initiation of DNA packaging triggers the maturation of HSV-1 capsids.

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