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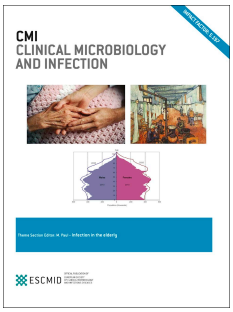

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Picture of a microorganism

Topography imaging of herpesvirus in native condition using atomic force microscopy

Martin Delguste[1,*], Melanie Koehler[1,*], Laurent Gillet[2], David Alsteens[1]

[1]Nanobiophysics lab, Université catholique de Louvain, Louvain-la-Neuve, Belgium

[2]University of Liège, Immunology-Vaccinology, FARAH, Liège, Belgium

* M.D. and M.K. equally contributed to this work.

Correspondence to: (D.A.) david.alsteens@uclouvain.be

Currently two principal techniques are used to visualize virus structure: X-ray diffraction and electron microscopy. However, those techniques require virus fixation or drying steps. In addition, they are averaging methods that do not reveal the characteristics of individual particles.

To circumvent these limitations, atomic force microscopy (AFM) appears as a promising tool. This direct imaging technology is based on a relatively simple physical principle. Briefly, a sharp tip placed at the free end of a cantilever contours the sample surface and generates a 3D image of the sample that accurately depicts its surface features. Different operating modes allow the imaging of fragile biological samples to be performed by reducing lateral forces. Using AFM, individual virions can be imaged at high-resolution under physiological conditions (buffer, temperature, etc.). While lateral resolution, limited by the width of the cantilever tip (few nanometers), height resolution is exceptional, at approximately 0.5 nm.

Herpesviruses and especially members of the gammaherpesvirinae subfamily are highly prevalent viruses in human populations. Most of the time, virions establish latency in their hosts so that the