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CeNT CENTRE
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TECHNOLOGIES

invites to a seminar by

Prof. Edward H. Egelman

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Cryo-EM of Helical Protein and Nucleoprotein Polymers at Near-Atomic Resolution

28th of May 2018 at 12 p.m.

Venue: Centre of New Technologies, Banacha 2C,
Lecture Hall 0142 (Ground floor)

Host: Joanna Trylska

Cryo-EM has recently undergone a revolution, driven by direct electron detectors, and a near-atomic level of resolution can now be reached almost routinely for many biological samples. While complexes such as the ribosome can be solved at higher resolution and more readily by cryo-EM than they can be by crystallography, they can still be crystallized. However, a vast number of complexes of biological interest are helical polymers, and most of these can never be crystallized. I will describe the application of cryo-EM to helical assemblies in several different areas, ranging from bacterial pili essential for pathogenesis to archaeal viruses which infect hosts living in nearly boiling acid. We now understand how the stability of DNA in several of these viruses is achieved, which appears to be in the same way that bacterial spores maintain the integrity of their genome in the harshest of environments. Several themes emerge from this work, including how small numbers of amino acid changes over evolution can lead to dramatic changes in higher-order assemblies, providing an amplification mechanism for evolutionary divergence.