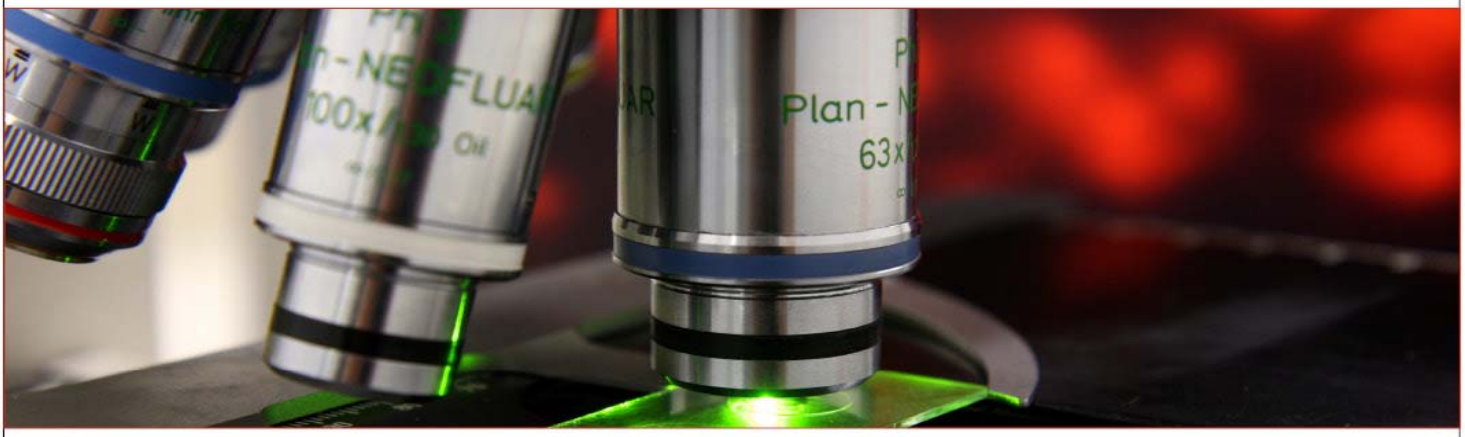
SÉMINAIRES ET CONFÉRENCES



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« Thinking about DNA in 4-dimension»

DNA, as all molecules in the cell, is constantly agitated through thermal energy and bombardment from water and neighboring masses. Through super-resolution tracking of DNA in live cells and simulation of the statistical mechanics of polymers we are building intuition into the function of DNA loops. We have discovered that the normal kinetics of replication fork progression allows time for thermal fluctuations of the DNA chain to explore configurational space. In the case of centromere, these loop configurations are essential for kinetochore assembly. The high concentration of DNA loops between sister kinetochores reveal how the density of loops stiffen chromatin, imparting an active function to the centromere in mitosis. Finally, we show how the parameters for motor stepping along the DNA result in drastically different geometries dictated by chromatin substrate dynamics. Through experiments and simulations we provide the first glimpse of how loop extrusion might work in living organisms.

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Le lundi, le 30 octobre 2017, 11:30

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