ID de Contribution: **10** Type: **Non spécifié**

Mapping Topoisomerase IV binding and activity sites on the E. coli genome

Catenation links between sister chromatids are formed progressively during DNA replication and are involved in the establishment of sister chromatid cohesion. Topo IV is a bacterial type II topoisomerase involved in the removal of catenation links both behind replication forks and after replication during the final separation of sister circular chromosomes. We have investigated the global DNA-binding and catalytic activity of Topo IV in E. coli using genomic and molecular biology approaches. ChIP-seq revealed that Topo IV interaction with the E. coli chromosome is controlled by DNA replication. During replication, Topo IV has access to most of the genome but only selects a few hundred specific sites determined by chromatin context for its activity. Strong DNA-binding and catalytic activities are found at the chromosome dimer resolution site, dif, located opposite of the replication origin. We reveal a physical and functional interaction between Topo IV and the XerCD recombinases acting at the dif site, modulated by the MatP protein involved in the organization of the Ter Macrodomain. These results show that Topo IV, XerCD/dif and MatP are parts of a network dedicated to the last step of chromosome management during the cell cycle.

Auteur principal: M. EL SAYYED, Hafez (Chromosome Dynamics Lab,CIRB - Collège de France)

Orateur: M. EL SAYYED, Hafez (Chromosome Dynamics Lab,CIRB - Collège de France)