グローバルCOE特別セミナー

分子細胞生物学研究所セミナー

演者: **Camilla Sjögren 博士**

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演題:**SMC protein complexes in chromosome segregation and repair**

日時:11 月 5 日（月）14:00~15:00

場所:東京大学分子細胞生物学研究所総合研究棟2階会議室

Correct chromosome segregation and DNA damage repair are essential processes required for the stable propagation of the genome. Failure of either leads to genome instability and is linked to human disease. We investigate two Structural Maintenance of Chromosome (SMC) protein complexes: cohesin and the Smc5/6 complex. Both of these complexes represent a functional connection between chromosome segregation and DNA double strand-break (DSB) repair. During each cell cycle cohesin forms protein links that connect the products of replication, the sister chromatids, until their separation at anaphase. This linkage is called sister chromatid cohesion and is required for both correct chromosome segregation and DSB repair. The repair process is also dependent on the localization of cohesin to the break site, and on the formation of cohesion in response to damage induction. The role of the Smc5/6 complex remains more undefined, but also this complex is needed for both segregation and chromatid-based DSB repair. Recent observations indicate that the Smc5/6 complex might influence cohesion during the repair process. Here we will present results from our ongoing investigations on the two complexes.

1) Postreplicative recruitment of Cohesin to double-strand breaks is required for DNA repair. Mol. Cell, 16; 1003-1015 (2004). 2) Chromosomal association of the Smc5/6 complex reveals that it functions in differently regulated pathways.Mol. Cell, 22; 755- 767 (2006). 3) Post replicative formation of cohesion is required for repair and induction by a single DNA break. Science 317, 242-245 (2007)

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