分子細胞生物学セミナー

Heterochromatin Protein 1 in DNA repair

- confocal and super-resolution microscopy studies -

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北キャンパス・シオノギ棟１階　会議室１・２

In 1986 heterochromatin protein 1 (HP1) was described as a major component of heterochromatin and a factor involved in gene silencing. Subsequently several groups demonstrated that HP1 can interact with a number of nuclear proteins. In 2008 it was demonstrated that HP1α and HP1β are recruited to DNA oxidative damage and DSBs. A systematic study showed recruitement of HP1 to various types of DNA damage, including oxidative damage, double strand breaks and UV-induced damage. There is experimental evidence suggesting involvement of HP1α, HPβ and HPγ in repair of DSBs. HP1 may be mediating recruitment of BRCA1 and RAD51 to DSBs. Interestingly, HP1β has been shown to interact with PCNA in regions of DNA replication and repair (Trembecka-Lucas and Dobrucki, 2012 and 2013). It is now recognized that HP1β is a protein involved in a number of key nuclear processes. Major questions pertaining to the role played by HP1β which is recruited to damage remain to be solved and some controversies need to clarified. They include the dynamics of HP1β at the site of DNA damage, since not only recruitement, but also HP1β dissociation was reported, the roles played by the three orthologs in repair, and the role of HP1 in repair of UV-induced damage. Current views, hypotheses and micrcroscopy studies of HP1 in the context of DNA repair will be discussed.

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