

分子細胞生物学セミナー

Telomeric Chromatin in Health and Disease

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8月28日(金) 17:00~18:30

北キャンパス シオノギ棟 1階会議室

Telomeres consist of repetitive DNA sequences, multiple proteins and noncoding RNAs. Telomeres play crucial roles as guardians of genome stability and tumor suppressors. Short telomeres induce cellular senescence suppressing the growth of precancerous lesions. In cancer this barrier is overcome through re-expression of the telomerase enzyme, which extends shortened telomeres. However, while telomere shortening suppresses tumorigenesis, premature telomere shortening can have detrimental effects, when it occurs in highly proliferative normal tissues. This is seen during aging and in telomere syndromes, which give rise to a number of fatal degenerative disorders which can for example affect the bone marrow (dyskeratosis congenita, aplastic anemia) or the lungs (idiopathic pulmonary fibrosis). Notably, telomere functions and dysfunctions are not elicited *per se* by the telomeric DNA but by the proteins that bind to it and their alterations. Thus, identification of telomeric chromatin differences between functionally normal and disease states is of crucial importance to understand the molecular defects of diseased telomeres in pathologies and aging. To tackle this problem, our laboratory has established a quantitative telomeric chromatin isolation protocol (QTIP) for human cells, in which chromatin is cross-linked, immunopurified and analyzed by mass spectrometry. I will report on the identification of novel proteins by QTIP at telomeres and their roles in controlling telomeric DNA damage and telomere architecture.

連絡先 先端生命科学研究院 小布施 力史 / 内線9015