Aging Science Seminar

“Somatic Retrotransposition in Cellular Senescence and Aging”

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Studies of diverse species have revealed that chromatin undergoes extensive changes during aging. All organisms have evolved mechanisms to repress the activity of their endogenous transposable elements (TEs). As a result of these defenses transposition in somatic cells was believed to be very low. Recent evidence however suggests that retrotransposition can be derepressed in some contexts in somatic mammalian tissues, for example during periods of embryonic development. We have found that during replicative cellular senescence, an important component of mammalian aging, the surveillance of endogenous retrotransposable elements (RTEs) is compromised. As a result, several RTE families increase their transcription. In addition, during natural aging of mouse tissues RTEs also become activated. Others have reported that retrotransposition is activated in a variety of cancers. We will discuss the molecular processes that may lead to the progressive derepression of RTEs with age, as well as the consequences of their activation on the host. We suggest that somatic retrotransposition is a hitherto unappreciated aging process, that activation of RTEs is likely to be an important contributor to the progressive dysfunction of aging cells, and that these processes could be ameliorated therapeutically.

Date: Friday, February 2th, 2018: Time: 16:00～17:00

Location: Biken Hall, 1st floor, main building, Research Institute for Microbial Diseases （微生物病研究所 本館1階 微研ホール）

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