The 159th RIKEN BRC SEMINAR

RIKEN BRC

The Conventional and Non-conventional Roles of Protein N-α-acetyltransferase in Development and Obesity

2020年1月22日（水）16:00～17:30

バイオリソース研究センター BRC棟1階 森脇和郎ホール

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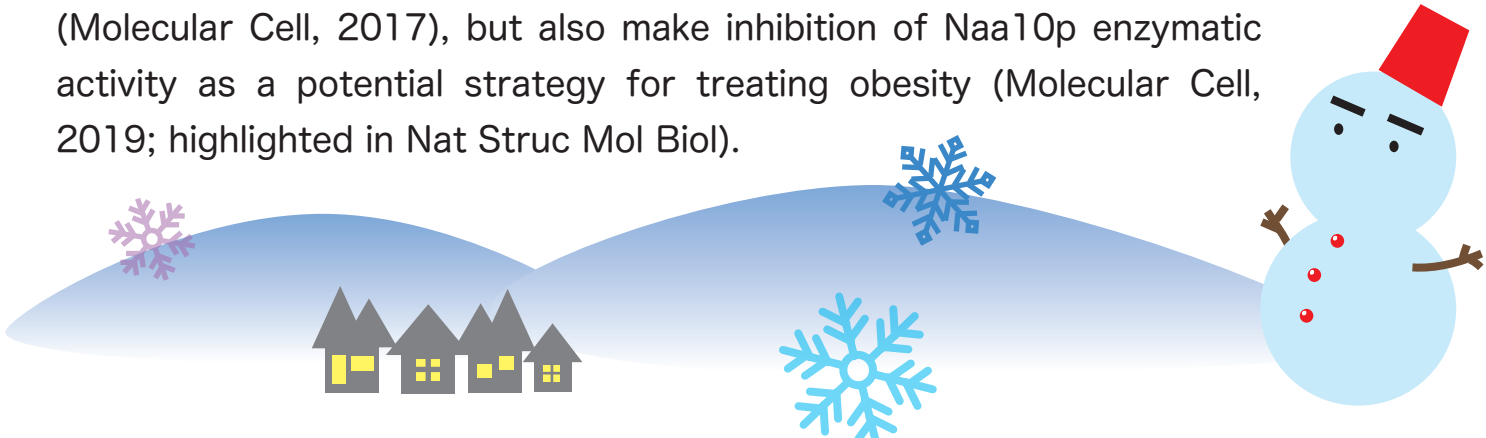
Mammalian N-terminal acetyltransferases (Nats) cotranslationally acetylates N-termini (at the α amino group) of 80~90% of human proteins. Despite the prevalence, the biological functions of protein N-terminal acetylation and NATs are still largely unknown. Importantly, mutation of N-α-acetyltransferase 10 protein (Naa10p) the catalytic subunit of NatA complex is linked to severe developmental defects including mental retardation and infancy death in the human Ogden syndrome. In contrast, overexpression of Naa10p facilitates DNA methyltransferase 1 (DNMT1) to methylate and shut down specific tumor suppressor genes, leading to lung tumorigenesis (J Clinc Invest, 2010). In the past few years, we have been focusing on Naa10p for studying the biological functions of NatA using traditional and tissue-specific knockout (KO) mice. Here, I will present conventional and non-conventional functions of Naa10p to you by summarizing our previous and recent works. Our results not only link Naa10p mutation-associated human disease to defective DNA methylation and genomic imprinting (Molecular Cell, 2017), but also make inhibition of Naa10p enzymatic activity as a potential strategy for treating obesity (Molecular Cell, 2019; highlighted in Nat Struc Mol Biol).



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