第80回生命科学先端研究センター学術セミナー

共催：財団法人田村科学技術振興財団
日本生化学会北陸支部

日時：平成24年12月10日（月）午後4時から

場所：杉谷キャンパス 薬学部研究棟Ⅱ７階 セミナー室８

講師： Làszlò Tora 先生
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演題：「Towards the understanding of histone acetyl transferase complexes in transcription regulation and cellular differentiation」

ABSTRACT:

Gene expression is a tightly regulated process. Initiation of transcription by RNA polymerase II (Pol II) is believed to be the outcome of a number of sequential events beginning with the binding of specific activators to their cognate binding sites. This initial step will trigger the recruitment of coactivator complexes and general transcription factors at promoters to allow the loading of Pol II into the preinitiation complex (PIC) to achieve transcription initiation. In this process, coactivators play multiple crucial roles through enzymatic as well as non-enzymatic functions. GCN5 and PCAF are mutually exclusive histone acetlyl transferase (HAT) subunits of two functionally distinct, but related, multi-subunit coactivator complexes, the SAGA (Spt-Ada-Gcn5-Acetyltransferase) and the ATAC(Ada-Two-A-Containing) complexes. These complexes have been shown to differentially regulate both locus specific gene expression and global chromatin structure through their enzymatic activities (HAT, and histone deubiquitination).

I will describe how these human HAT complexes are targeted to different genomic loci representing functionally distinct regulatory elements both at broadly expressed and tissue specific genes. While SAGA can principally be found at promoters, ATAC is recruited to promoters and enhancers, yet only its enhancer binding is cell-type specific. Furthermore, I will show that ATAC functions at a set of enhancers that are not bound by p300, revealing a class of enhancers not yet identified. These findings demonstrate important functional differences between SAGA and ATAC coactivator complexes at the level of the genome and define a role for the ATAC HAT complex in the regulation of a set of enhancers.

Moreover, the role and the requirement of five different HAT complexes will be discussed in pluripotent ES cell and during differentiation to neuronal cells.

Reference:

1)Krebs AR, Karmodiya K, Lindahl-Allen M, Struhl K, Tora L. *Mol Cell.* 44, 410-423, 2011.
2)Helmrich A, Ballarino M, Tora L. *Mol Cell.* 44, 966-977, 2011.

※Tora教授は転写とエピジェネティクス研究の第一人者で、フランスのPierre Chambon教授の愛弟子です。この度、田村科学技術振興財団の御後援により来日していただくことになりました。エキサイティングな最近の遺伝子発現研究の御講演を聴くことができると思います。大変良い機会ですので、皆様の御来聴をよろしくお願い申し上げます。本セミナーは、大学院医学薬学教育部の単位認定の対象となります。

◎問い合わせ先

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