

生命科学セミナー

Interplay of transcription factors and epigenetic modifiers in gene expression stability

Professor Ken Cho

Department of Developmental and Cell Biology
University of California, Irvine



12月12日(火) 16:00-17:00

高等研究院本館(東一条通東大路通北西角)2階セミナー室

The embryonic genome orchestrates gene expression during embryogenesis through the dynamic interplay of histone modifications and transcription factor accessibility. Histone tails, making up to 30% of histone mass, undergo critical post-translational modifications such as acetylation, influencing temporal and spatial gene activities around zygotic genome activation (ZGA). In *Xenopus*, a balance between histone acetyltransferases (e.g., Ep300) and deacetylases (e.g., Hdac1) is essential for cell fate decisions during gastrulation, with histone acetylation levels correlating with developmental plasticity. Our research reveals that Hdac1, maternally guided to the genome, plays a dual role. Hdac1 not only represses gene expression by sustaining a histone hypoacetylation state on inactive chromatin, but also maintains gene expression through participating in dynamic histone acetylation-deacetylation cycles on active chromatin. Our study illuminates Hdac1's integral role in the epigenetic modulation of the zygotic genome, providing a framework for understanding the molecular underpinnings of early vertebrate development.

京都大学大学院生命科学研究科

連絡先 神経発生学分野

氏名:見學美根子 内線番号:9833