

新学術創成研究機構 数理神経科学研究ユニット
「神経科学セミナー」
Institute for Frontier Science Initiative
Mathematical Neuroscience Unit
<Neuroscience Seminar>

平成28年7月5日(火) 10:30-11:30
修士課程セミナー室(宝町 医学類F棟1階)
July 5th (Tue), 2016. 10:30-11:30
Master course seminar room, bldg. F

Mecom Directs Promoter Nucleosome Clearance for Neural Stem Cell Maintenance via Notch Signaling

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Neural stem cell maintenance is critical for generating the nervous system. The Notch pathway controls the balance between self-renewal and differentiation through transcriptional induction of Hes1, a rapid and robust event that must be tightly regulated to prevent unrestrained proliferation or precocious differentiation. The factors and mechanism that create the critical specificity and amplitude of Hes1 induction remain unknown. We demonstrate that the proto-oncogene Mecom drives the neural stem cell G1/S phase transition and self-renewal through promoting Hes1 induction via precision clearance of promoter nucleosomes. We used the transcription start site identification method CAGE and nucleosome mapping to show that Mecom directs the clearance of specific Hes1 promoter nucleosomes; this uncovering opens access to the Notch-effector Rbpj and results in amplification and lateral spreading of promoter initiation upon Notch activation. These findings characterize an unanticipated chromatin control mechanism for stem cell maintenance that in other contexts may contribute to cancer.

博士課程共通・医学専攻up-to-dateセミナーとして認定します

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