



The 126th RIKEN

BRC SEMINAR

日時:2015年 4月 22日(水) 16:00~17:00

場所:バイオリソースセンター1階 森脇和郎ホール

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Nucleosome to toroid organization of somatic nuclei chromatin through the transient expression of protamine

Chromatin remodeling in spermatids is induced by a timely regulated translation of mRNAs coding for histone variants and testis-specific bromo-domains proteins, which destabilize the nucleosomes in preparation to the sequential deposition of transition proteins and protamine. Protamine binding confers the DNA the compact, hydrodynamic structure shared by all male gametes. In the seminar, I will demonstrate that the transient expression of protamine 1 (PR1) in fibroblasts induces a dramatic nuclear remodeling. Transfected fibroblasts express foci of PR1 scattered in the nuclei which coalesce into a “spermatid-like” structure 48 hours post transfection. The nuclear remodeling is reversible, for enucleated oocytes injected with protaminized nuclei develop a large pronucleus, where protamine is exchanged with oocyte specific histone TH2B. Our finding represents a simplified model of male-specific chromatin remodeling, which might help to clarify the earliest protaminized domain of the genome, providing insights on the spatial organization leading to the universal nuclear shape of male gametes. Also, these findings can result in a dramatic improvement of nuclear reprogramming in SCNT.

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