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Molecular Basis of  
Evolutionary Innovations

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**The Ambulacraria-specific COMPASS-like protein contributes to *sns5* chromatin insulator function in the sea urchin embryo**

The sea urchin chromatin insulator *sns5* lies within the early histone gene cluster, basically between the *H2A* enhancer and *H1* promoter. The COMPASS-like (CMPI) protein, which is expressed exclusively by the ambulacrarian group of metazoans, represents the first insulator binding protein so far identified in echinoderms. Specific association of CMPI with *sns5* has been demonstrated by using a yeast one-hybrid system, and further corroborated by ChIP-qPCR and *trans*-activation assays in developing embryos. Challenging CMPI function, either by injecting into zygotes a purified CMPI antibody or expressing the DNA-binding domain of CMPI, impaired the enhancer-blocking function of *sns5*, as indicated by the specific increase of the *H1* expression level. Furthermore, coinjection of the CMPI antiserum and a synthetic mRNA encoding a forced repressor of the *H2A* enhancer-bound factor restores the normal *H1* mRNA abundance. Altogether, these results strongly support the conclusion that the recruitment of CMPI on *sns5* is required for buffering the *H1* promoter from the *H2A* enhancer activity, and this, in turn, accounts for the different level of accumulation of linker and nucleosomal transcripts.

**November 27 , 17:30**

**Institute for Genetics, Zülpicher Str. 47a, Lecture Hall, 4th Floor**

Hosts: Andreas Beyer and Thomas Wiehe

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