

Insights: Publications

# Transcriptional Repression by FACT Is Linked to Regulation of Chromatin Accessibility at the Promoter of ES Cells

*Life Science Alliance, Volume 1, No. 3*

June 13, 2018

Written by **Konstantinos Mylonas**

---

The conserved and essential histone chaperone, facilitates chromatin transcription (FACT), reorganizes nucleosomes during DNA transcription, replication, and repair and ensures both efficient elongation of RNA Pol II and nucleosome integrity. In mammalian cells, FACT is a heterodimer, consisting of SSRP1 and SUPT16. Here, we show that in contrast to yeast, FACT accumulates at the transcription start site of genes reminiscent of RNA polymerase II profile. Depletion of FACT in mouse embryonic stem cells leads to deregulation of developmental and pro-proliferative genes concomitant with hyper-proliferation of mES cells. Using MNase-seq, Assay for Transposase-Accessible Chromatin sequencing, and nascent elongating transcript sequencing, we show that up-regulation of genes coincides with loss of nucleosomes upstream of the transcription start site and concomitant increase in antisense transcription, indicating that FACT impacts the promoter architecture to regulate the expression of these genes. Finally, we demonstrate a role for FACT in cell fate determination and show that FACT depletion primes embryonic stem cells for the neuronal lineage.

## Related People

---



**Konstantinos Mylonas**

t 202.639.4729

cmylonas@ktslaw.com