



# ICGEB

International Centre for Genetic  
Engineering and Biotechnology

Developing  
Knowledge

## ICGEB International SEMINAR PROGRAMME 2017

Wednesday, 10 May 2017 | 12:00 noon | ICGEB Seminar Room, W building | Padriciano, 99, Trieste, ITALY



### Marta MARZULLO

Sapienza, University of Rome,  
Department of Biology and Biotechnologies,  
C. Darwin,  
Rome, ITALY

*Drosophila* telomeres are sequence-independent structures that are maintained by transposition to chromosome ends of specialized retroelements rather than telomerase activity. Fly telomeres are capped by the terminin complex that localizes and function exclusively at telomeres and by a number of non-terminin proteins that do not serve telomere-specific functions. *pendolino* (*peo*), encodes a non-terminin protein homologous to the E2 variant ubiquitin-conjugating enzymes. Null *peo* mutants exhibit ~ 5 telomeric fusions (TFs) per cell. We have recently identified a viable hypomorphic allele of *peo* (*peo<sup>h</sup>*) that causes ~ 1 TF/cell; 99% of the TFs observed in this allele involve the heterochromatic telomeres (the Y, XR and 4th chromosome telomeres), a TF pattern never observed in the telomere capping mutants so far characterized, where all telomeres fuse with comparable frequencies. This suggests that heterochromatic telomeres are preferentially affected by *Peo* reduction and that this effect is masked in null mutants in which most telomeres are fused. The preferential fusion of the heterochromatic telomeres in *peo* mutants is likely to reflect a defect in late DNA replication, as *peo* mutants are defective in PCNA recruitment and *Peo* interacts both physically and genetically with SuUR, a suppressor of underreplication. We also found that *peo<sup>h</sup>* and Su(var)3-9 or *peo<sup>h</sup>* and Su(var)205 double mutants exhibit a strong increase in the TF frequency compared to *peo<sup>h</sup>* single mutants, while mutations in the Jil-1 kinase rescues the *peo* mutants TFs phenotype. These results show for the first time that "heterochromatic" and "euchromatic" telomeres have different fusogenic properties and that these properties are modified by downregulation of genes that control the structure and function of *Drosophila* heterochromatin.

**"Functional characterization of *pendolino*, a *Drosophila* gene required for epigenetic regulation of telomere stability"**

Host: F. Feiguin

Registered seminars are available on iTunes U and ICGEB Podcast at:

<http://www.icgeb.org/podcast-program.html>



Open event - Free entrance



More information at:

[seminars@icgeb.org](mailto:seminars@icgeb.org) | tel.: 040-3757377