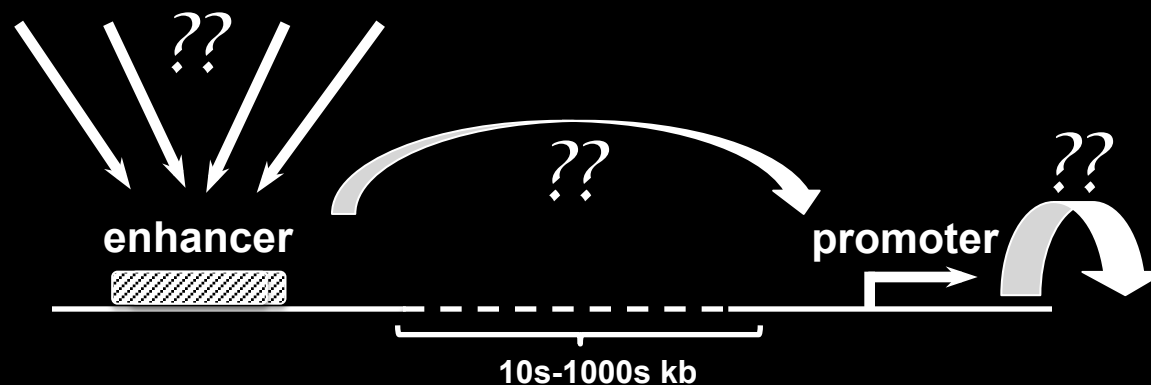


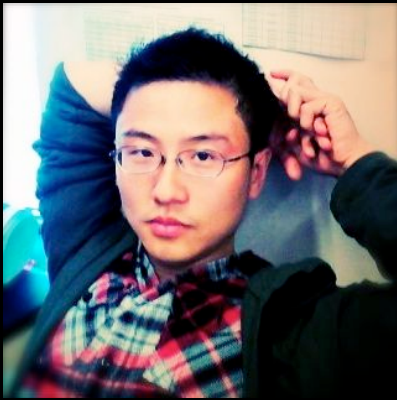
# Visualization of transcriptional regulation via long-range enhancer-promoter interactions

Thomas Gregor

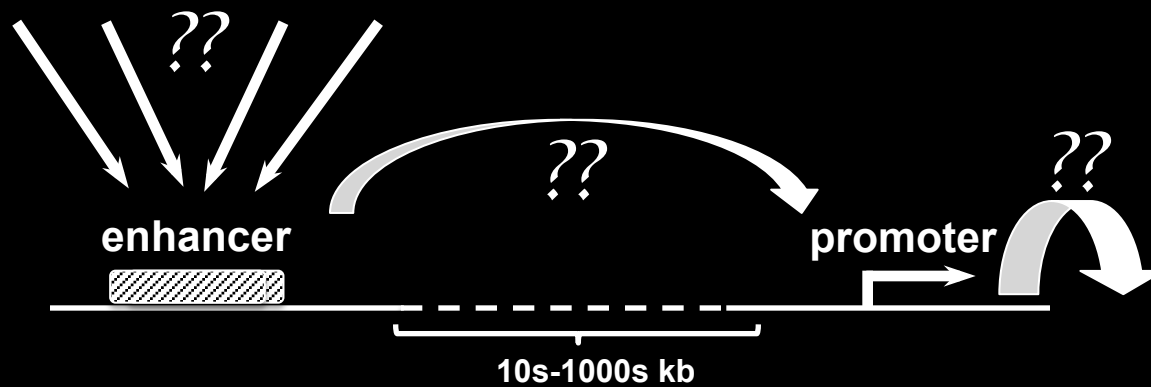
Department of Physics, Lewis-Sigler Institute for Integrative Genomics  
**Princeton University**

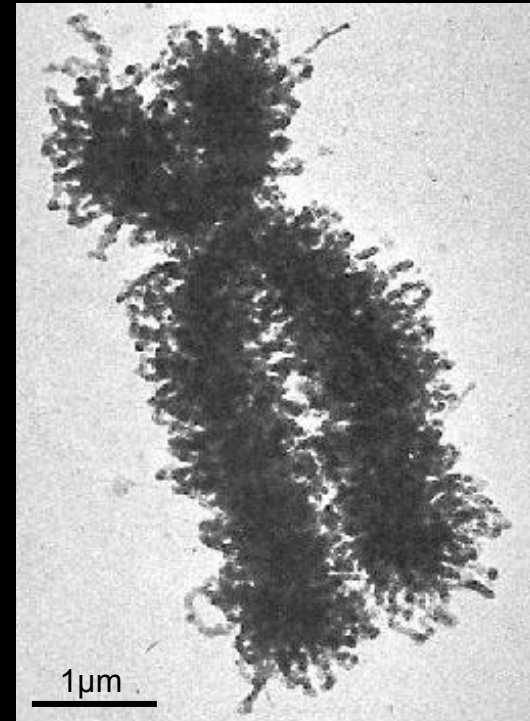
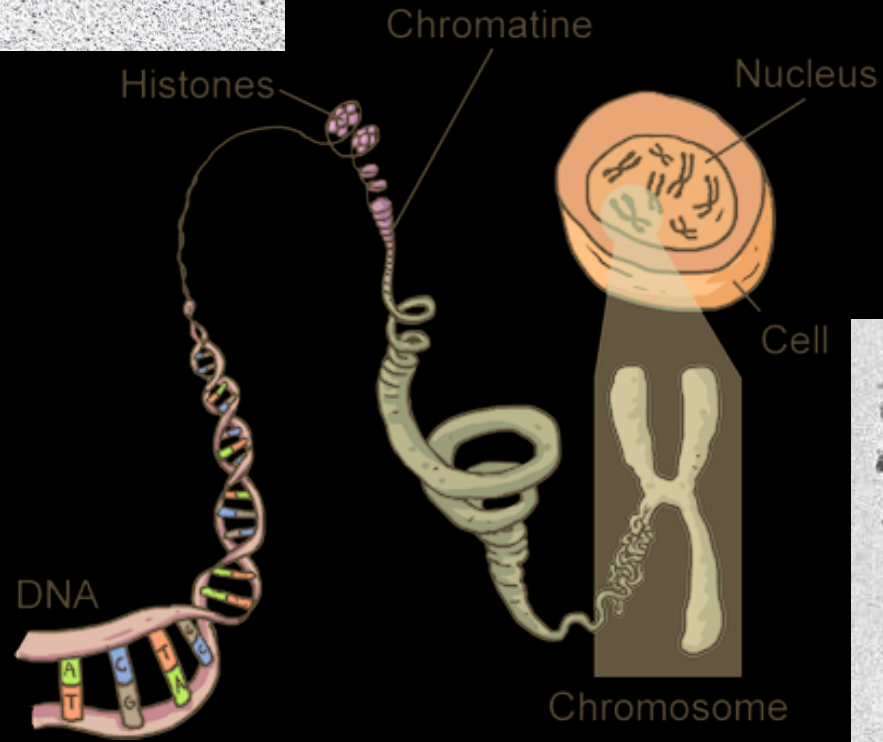
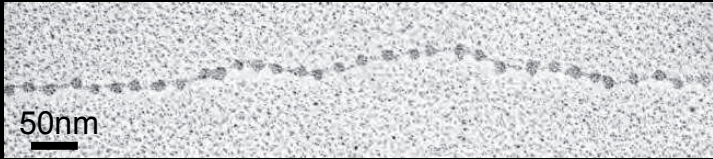
Department of Developmental and Stem Cell Biology  
**Institut Pasteur**





Hongtao Chen, Lev Barinov, Miki Fujioka, Michal Levo



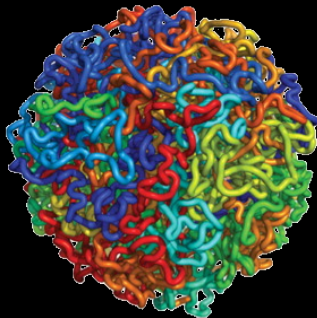




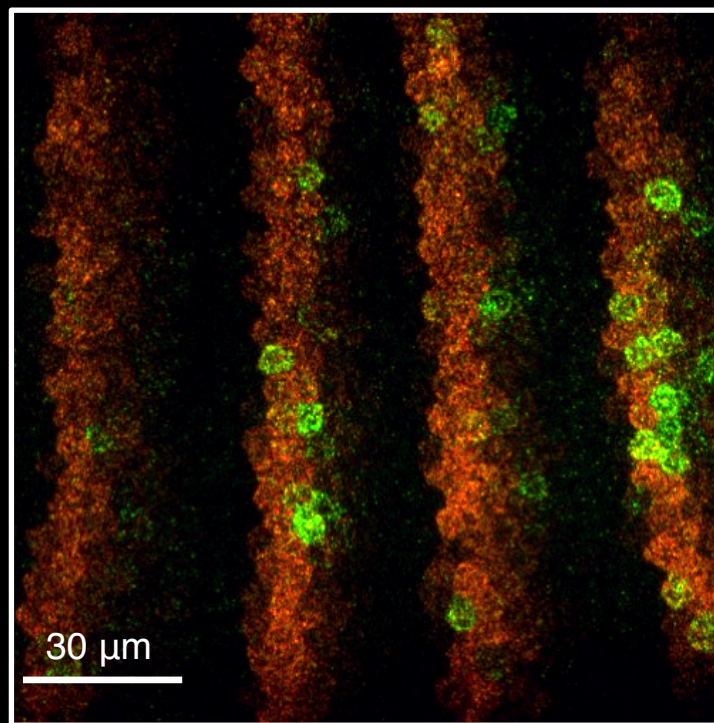
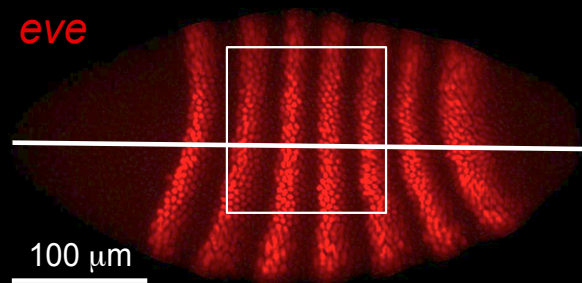
Several enhancers  
for typical insect gene



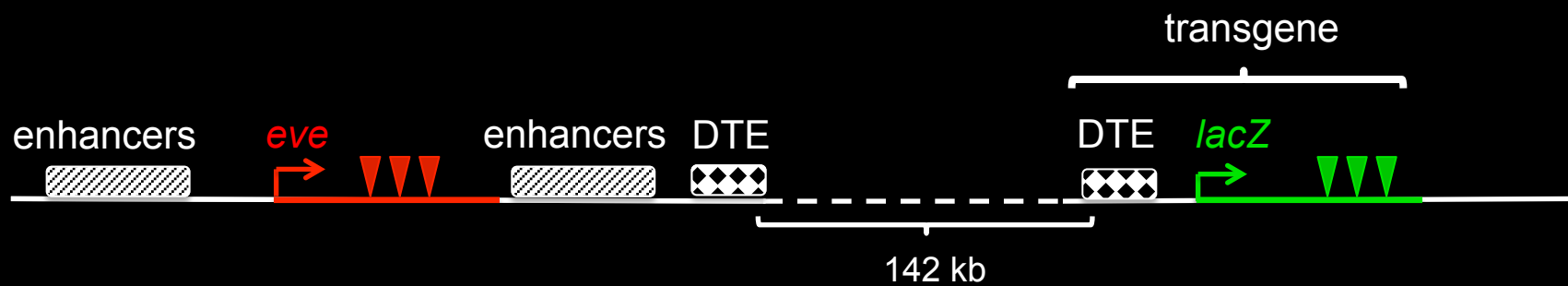
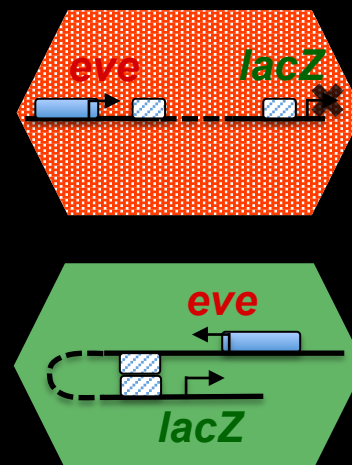
20–40 enhancers for  
typical mammalian gene



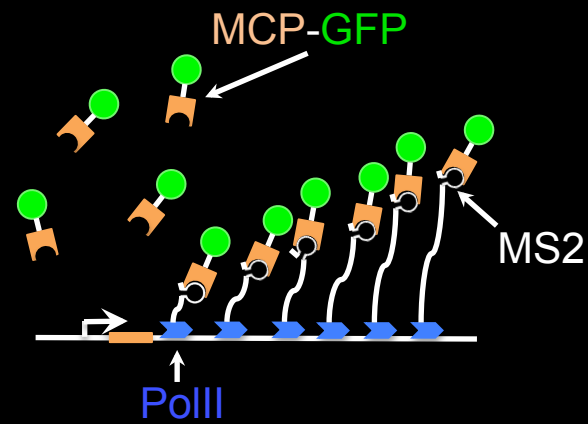




*eve* smFISH, *lacZ* smFISH



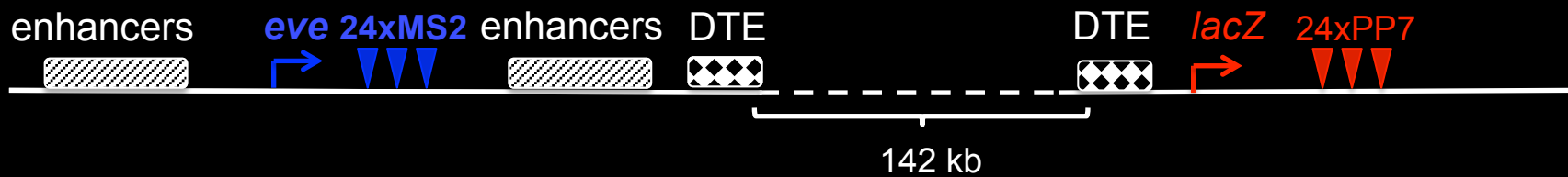
50 $\mu$ m



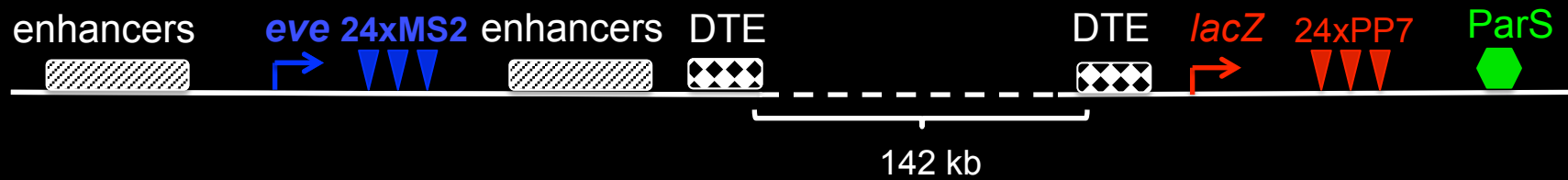
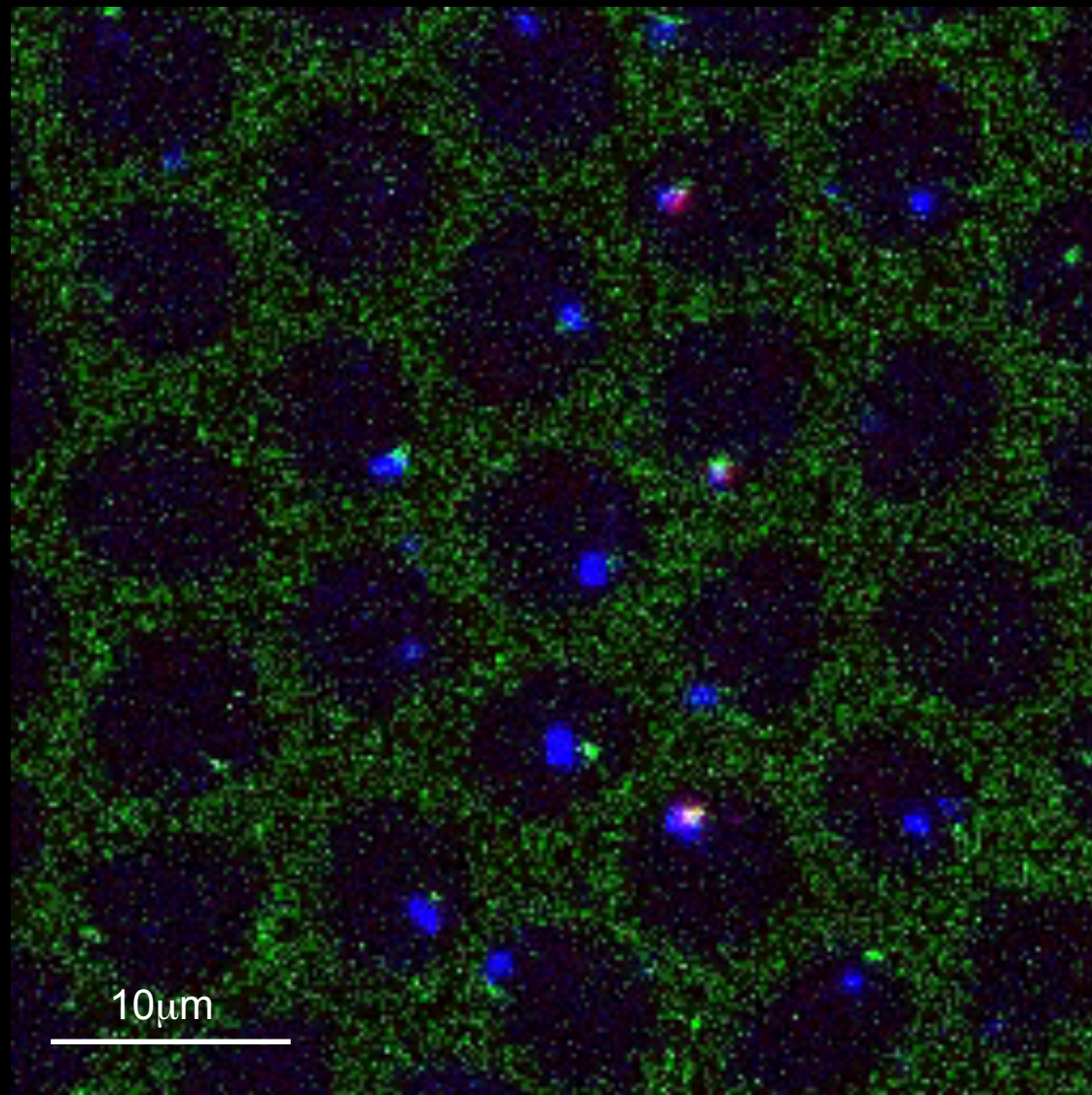
eve stripe 3

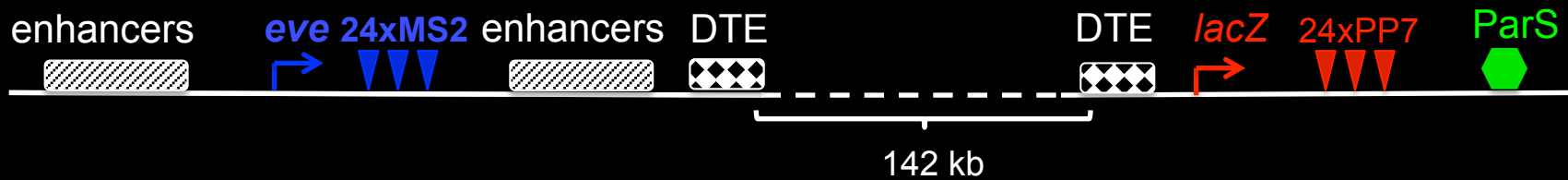
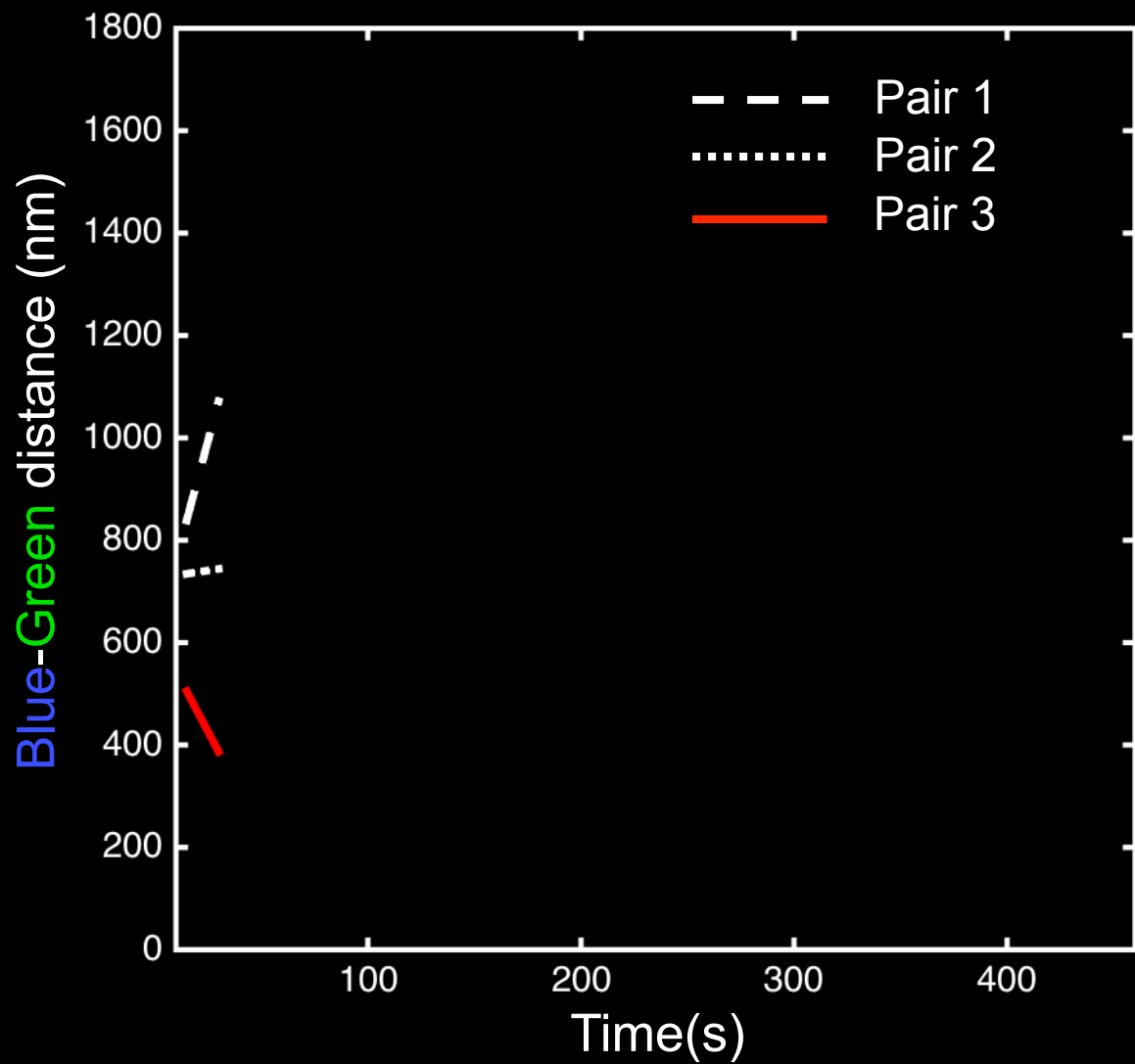
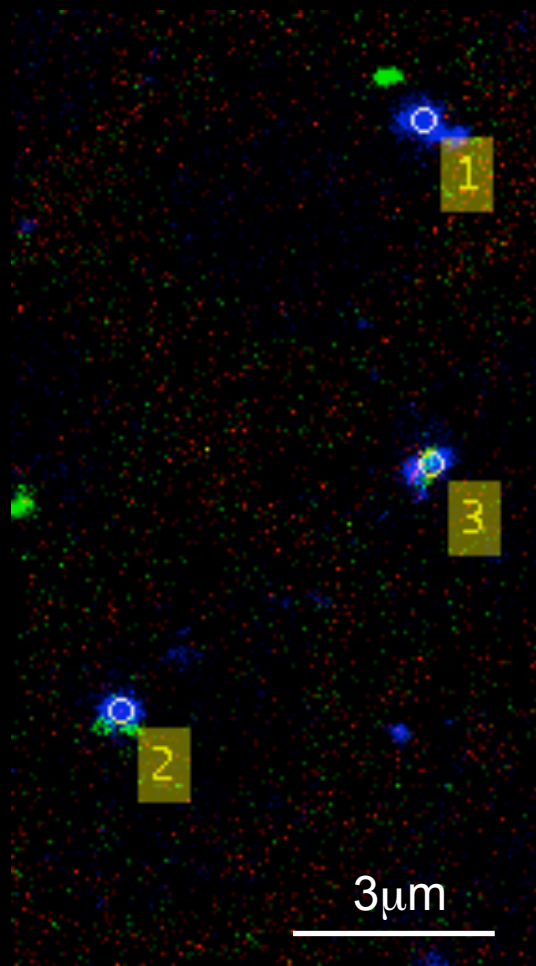
eve stripe 4

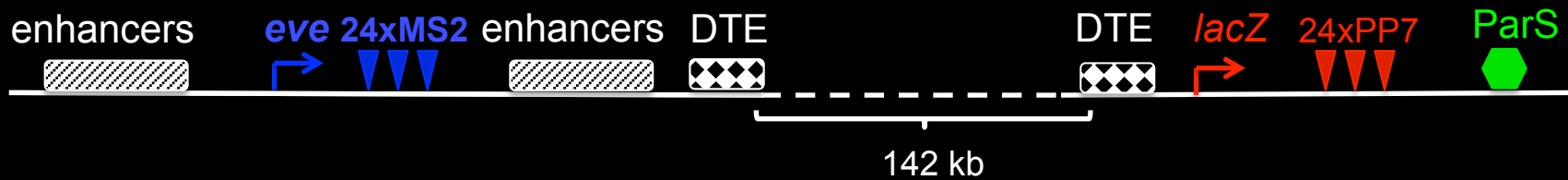
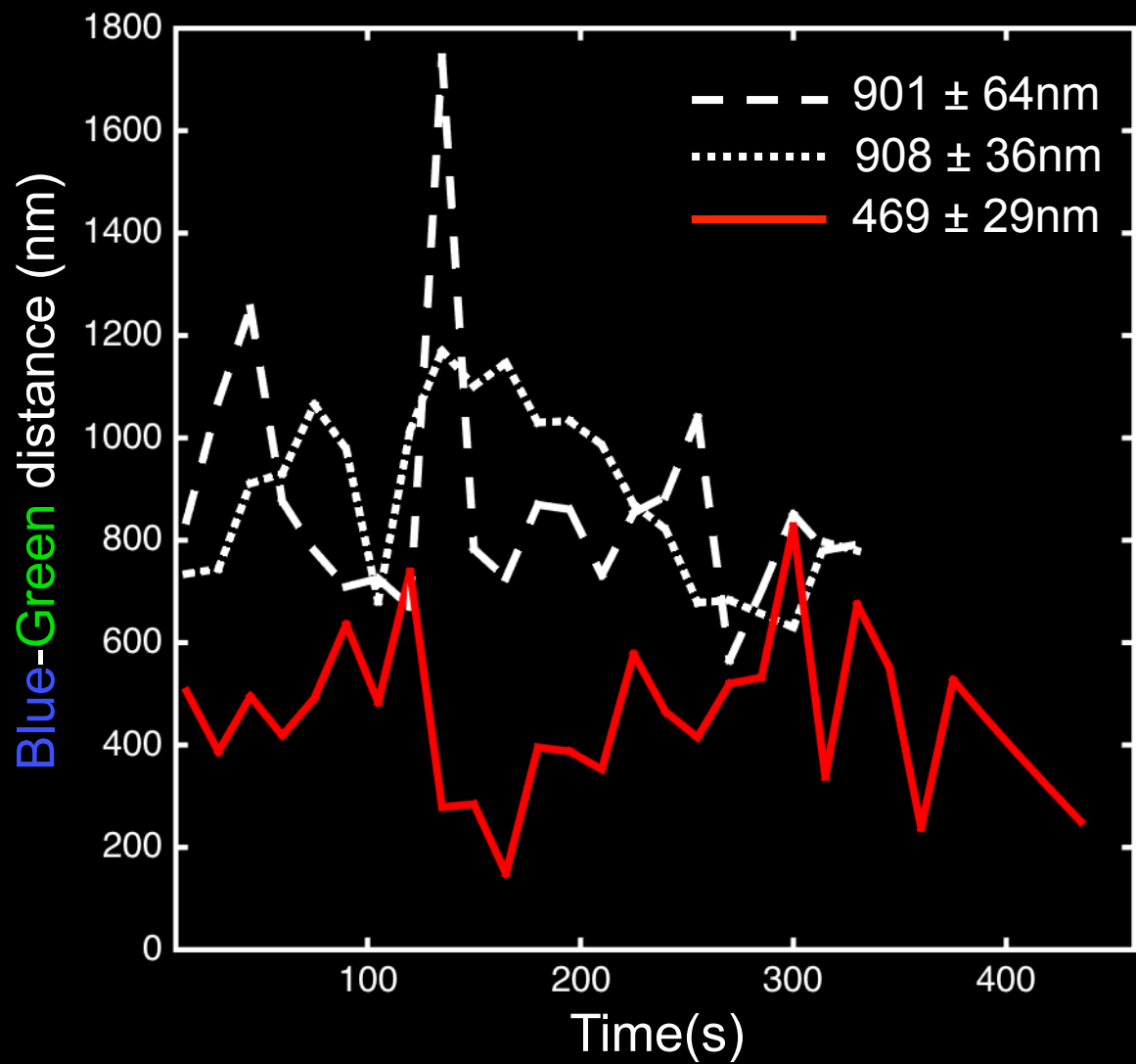
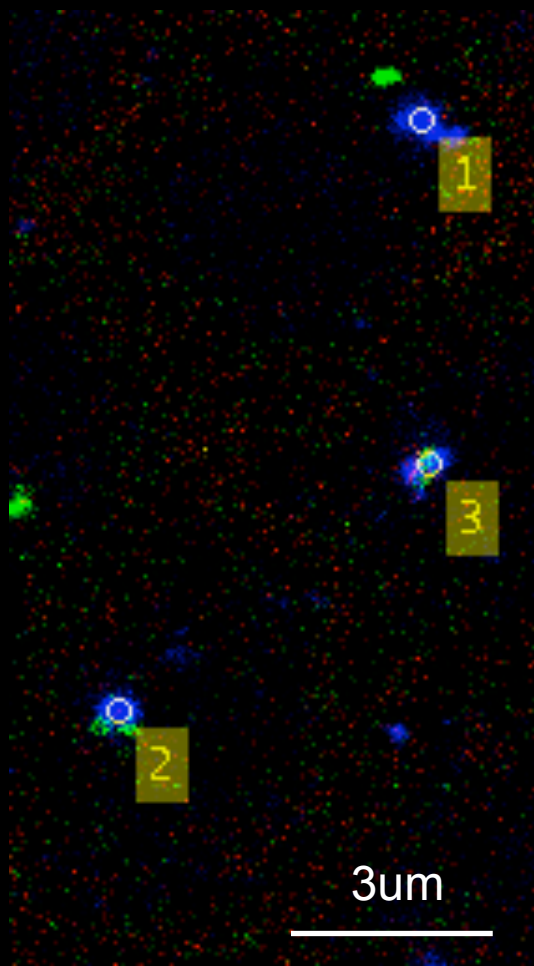
10 $\mu$ m

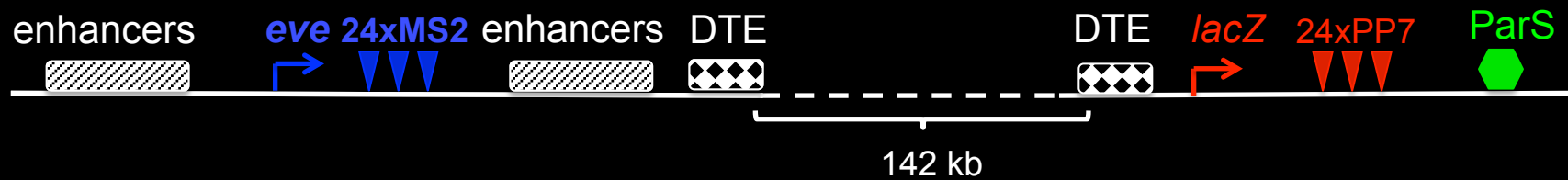
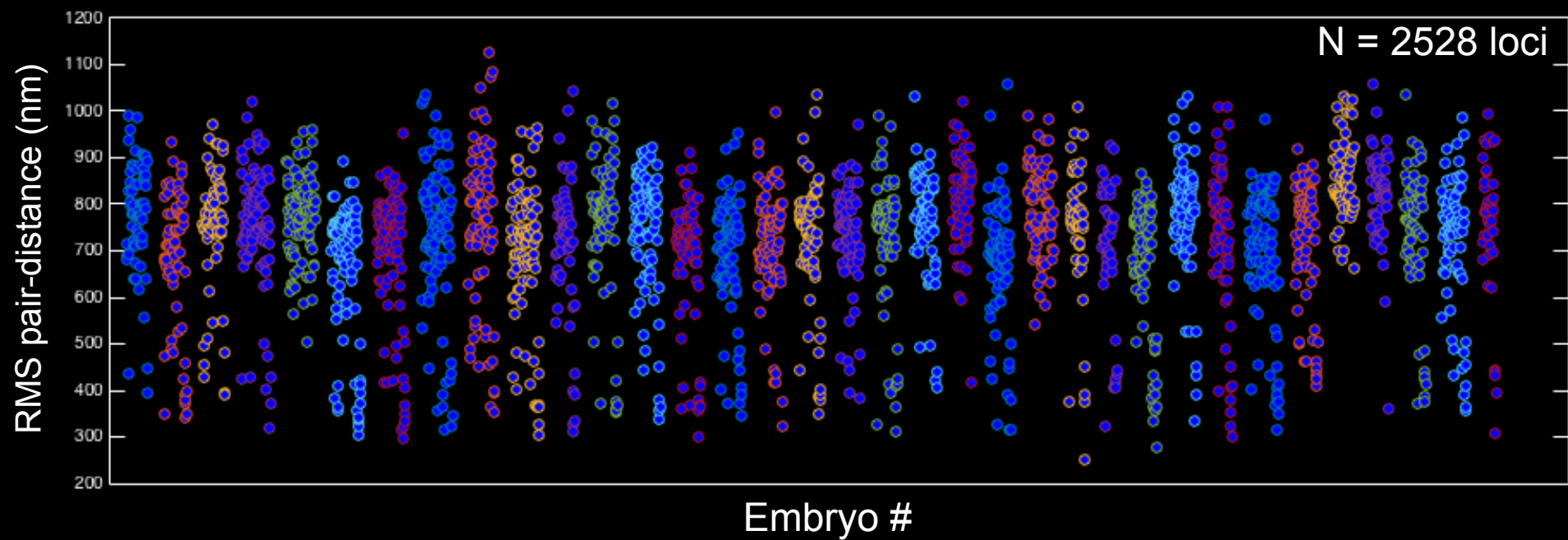




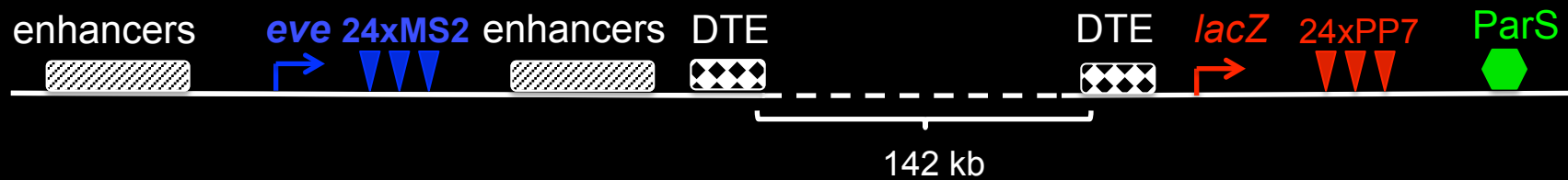
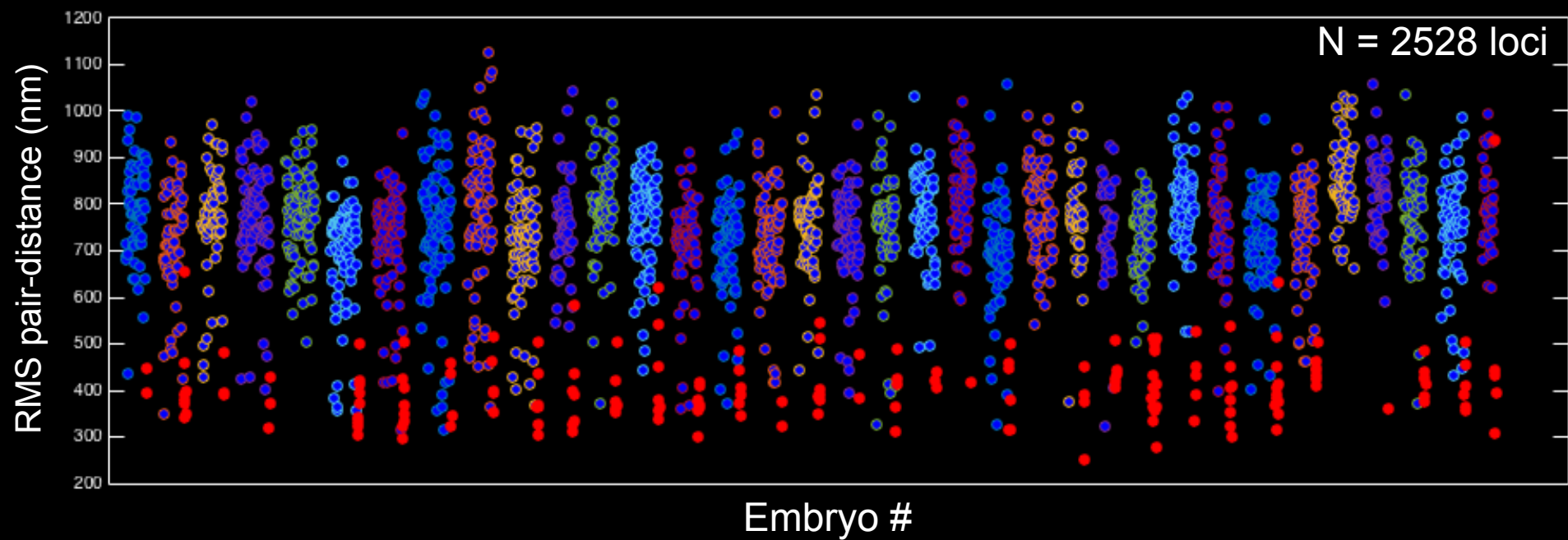




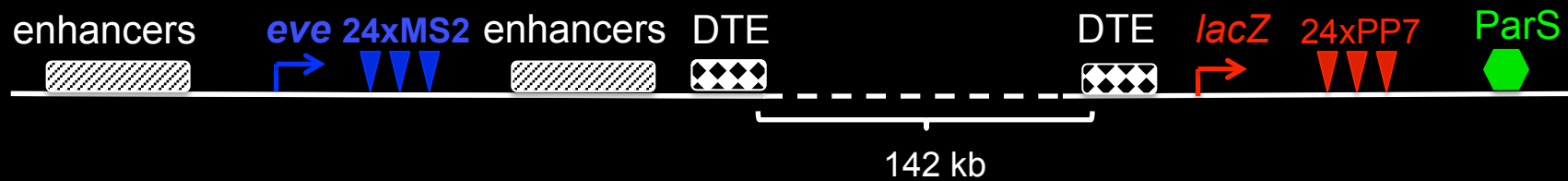
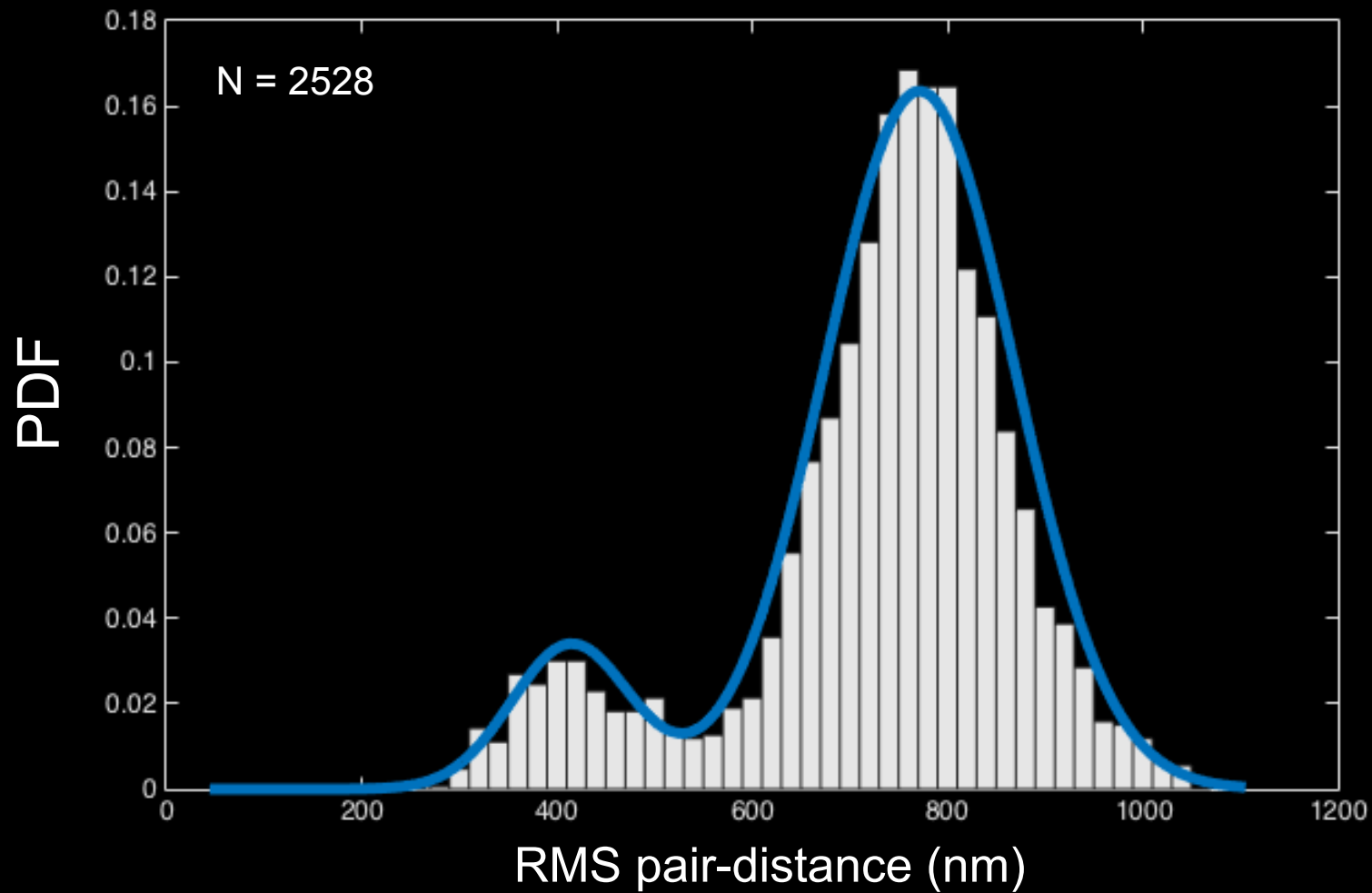


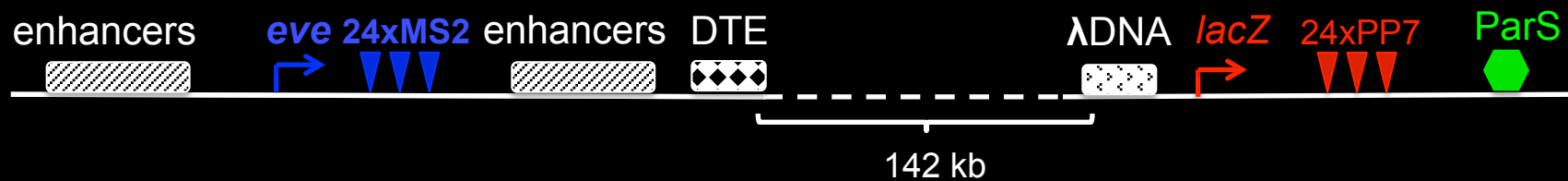
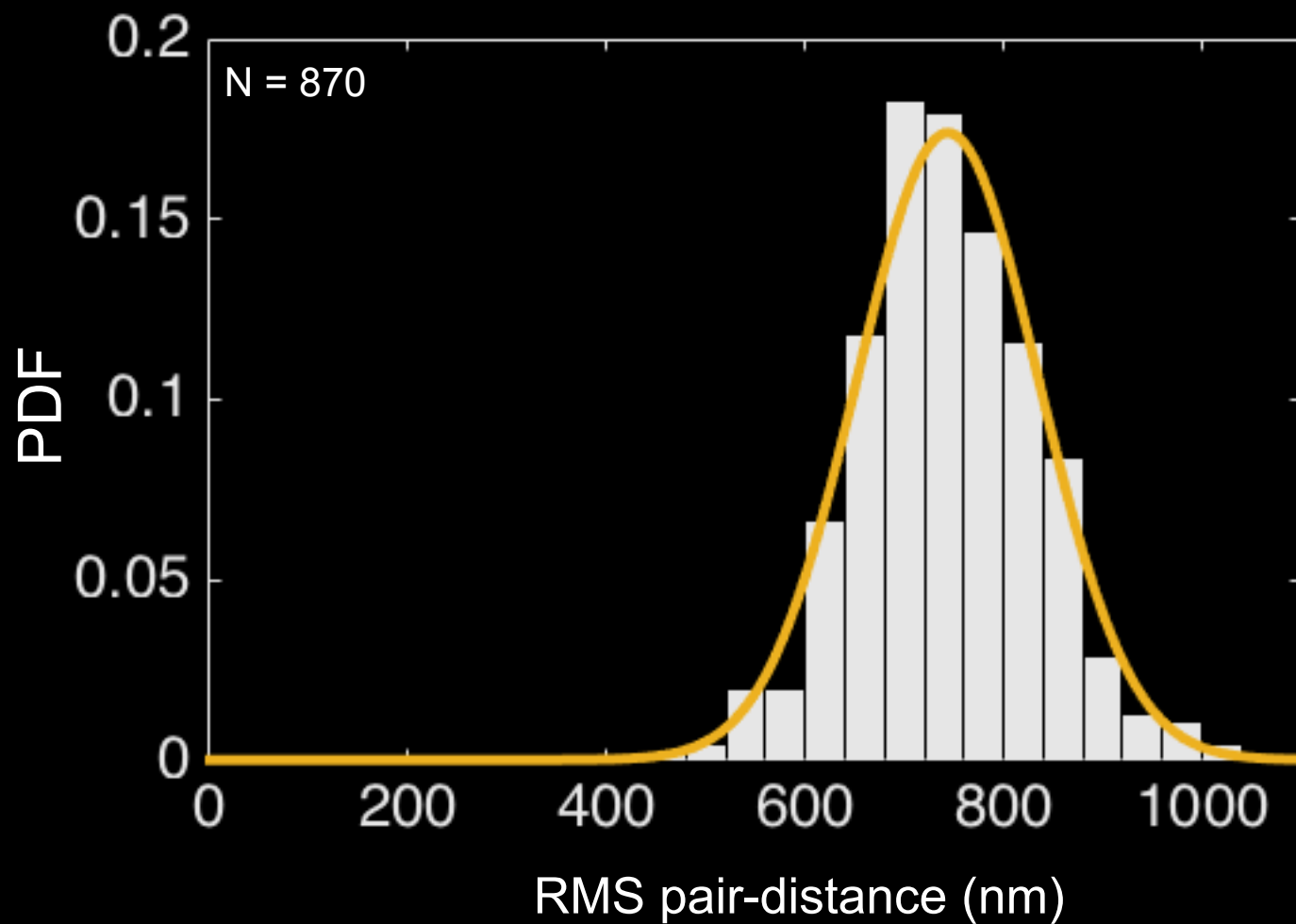


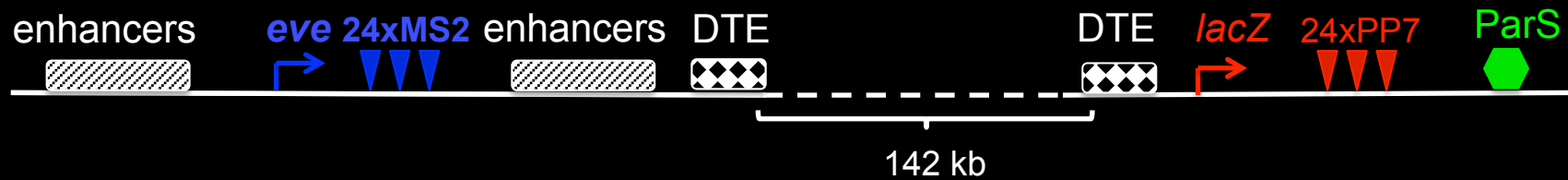
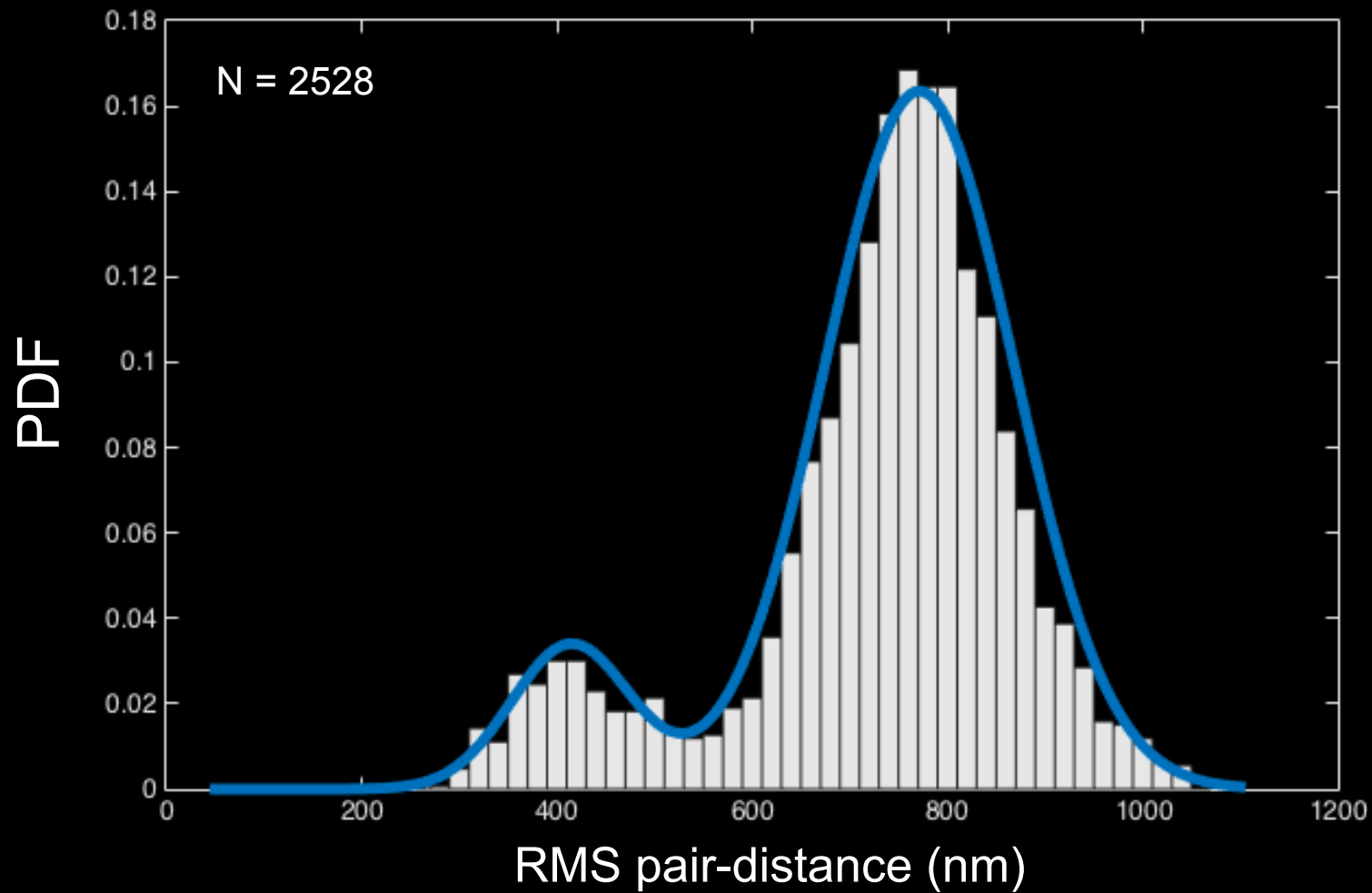


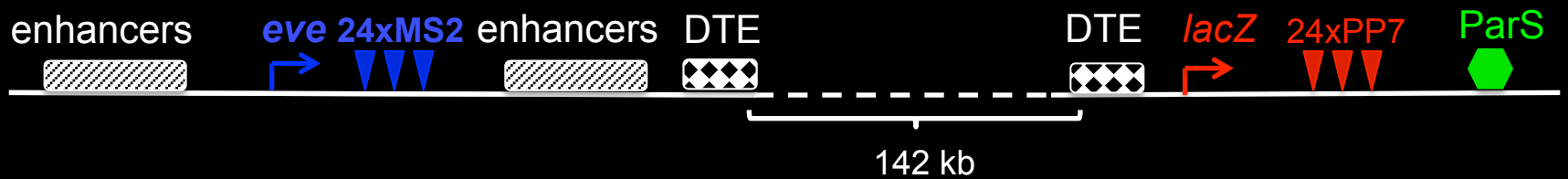
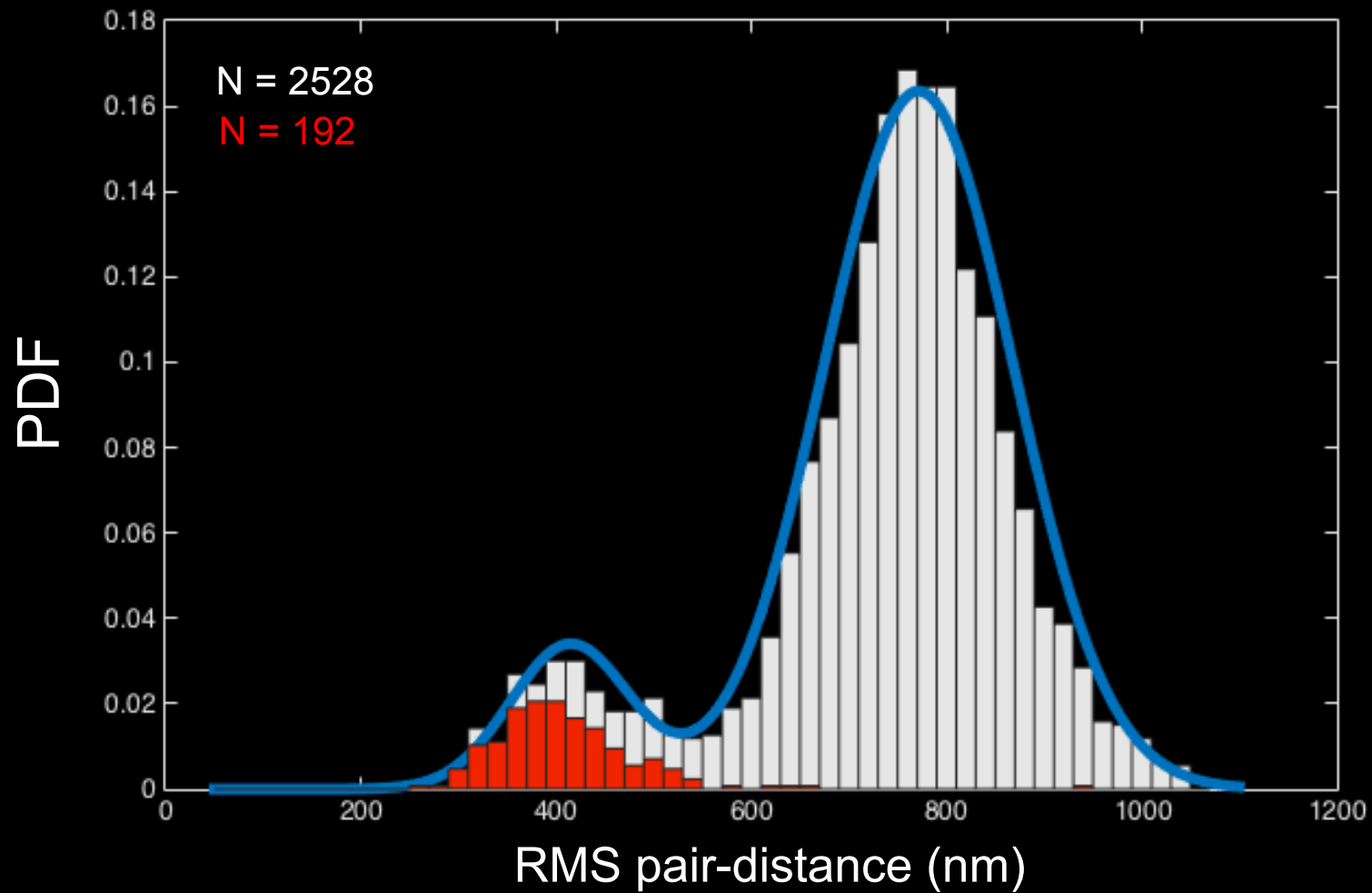


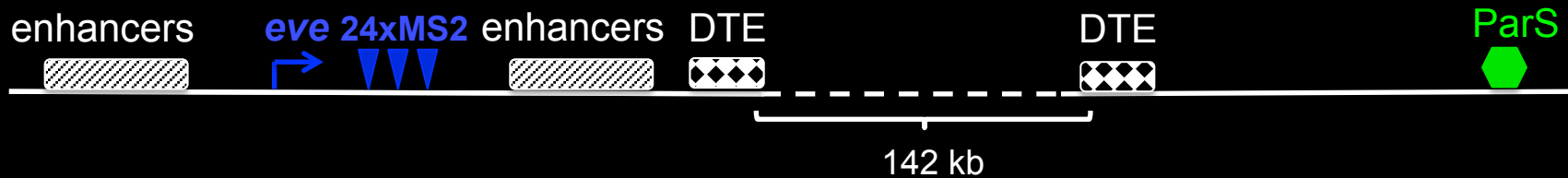
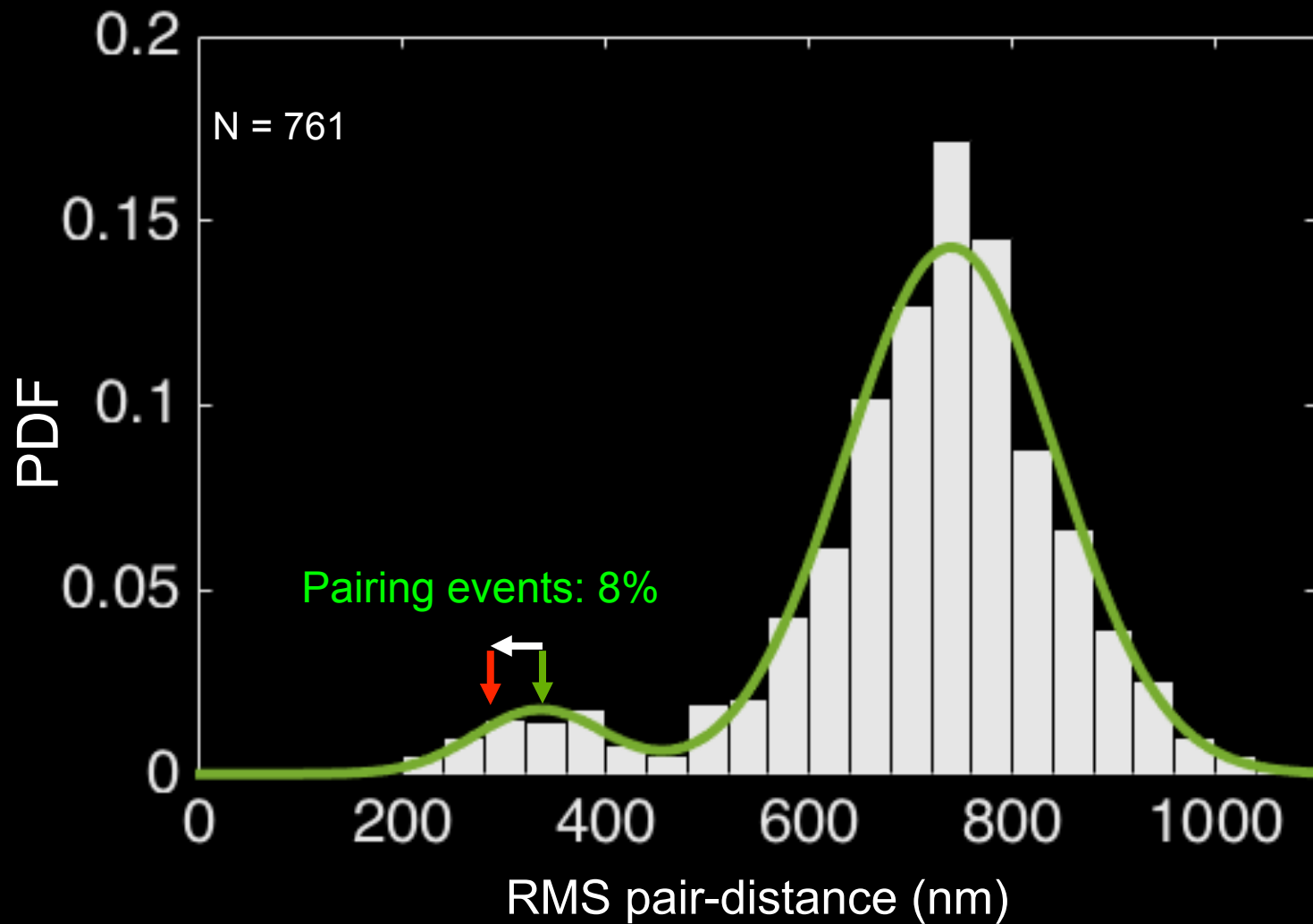


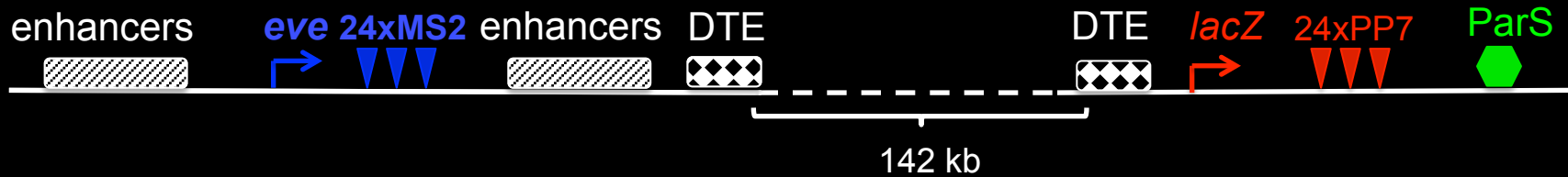
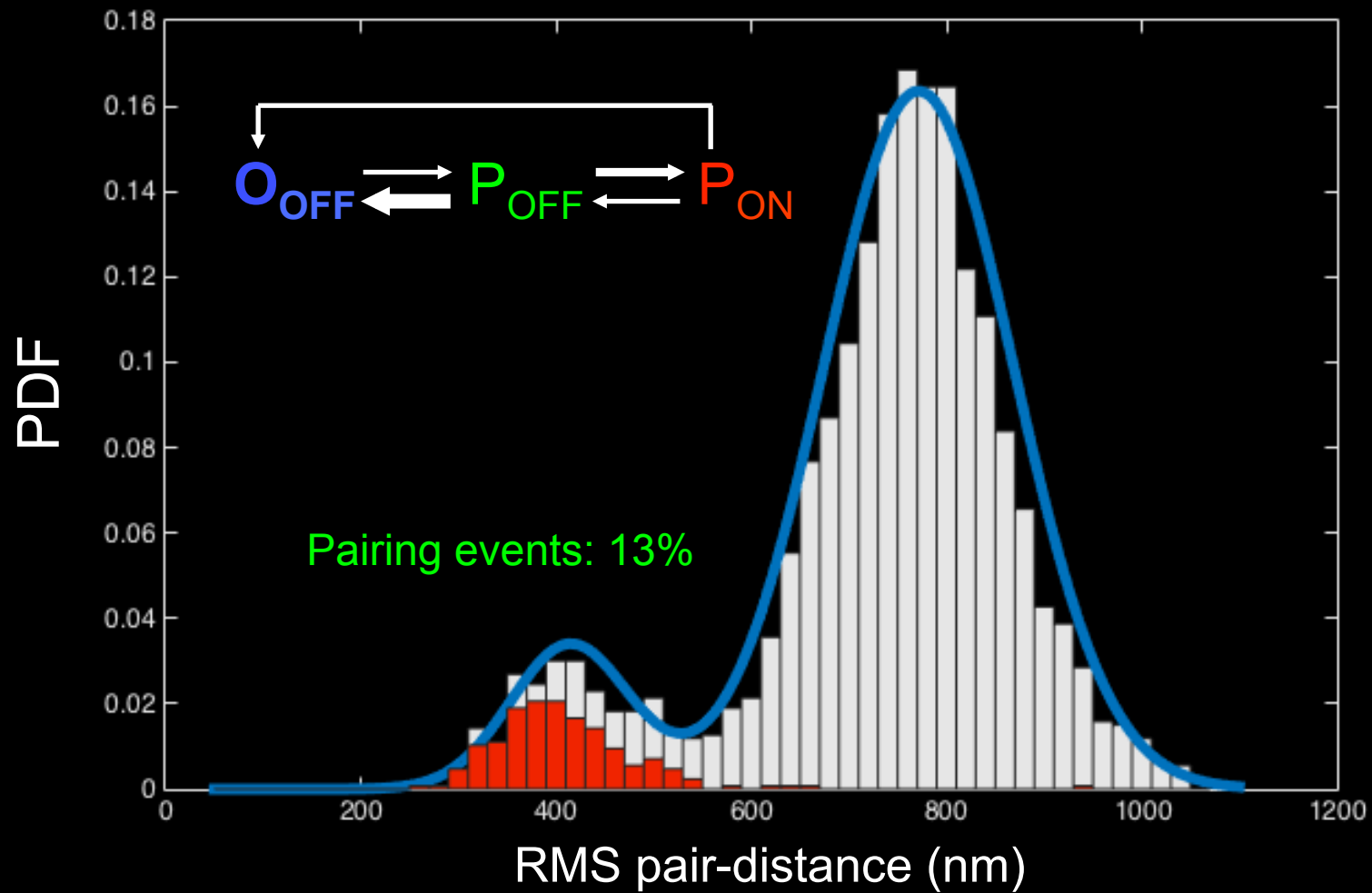




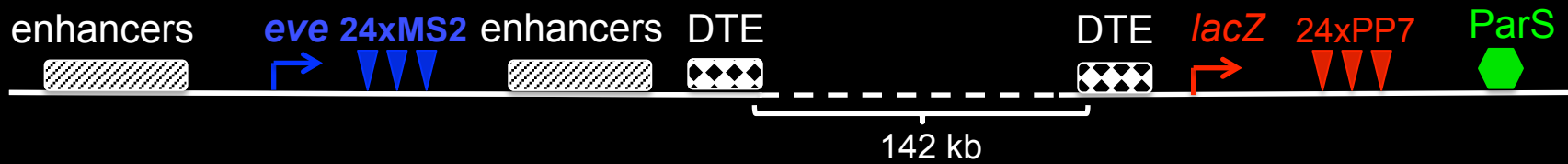
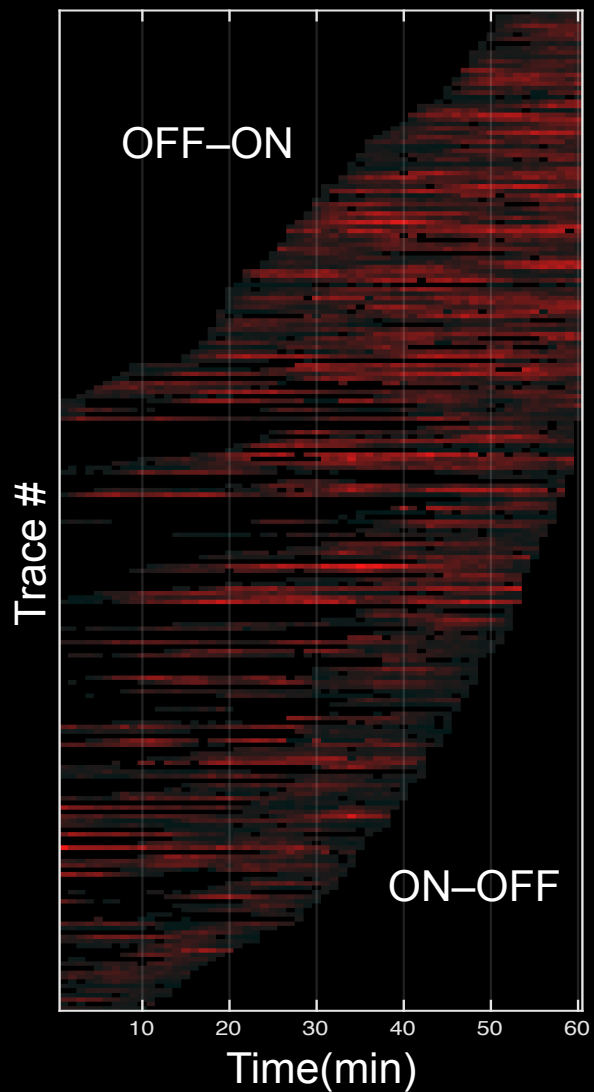




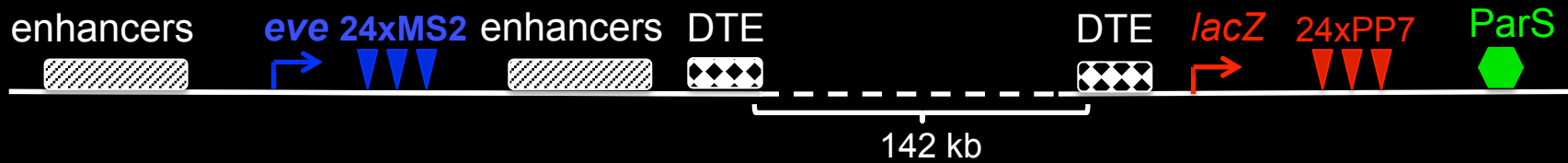
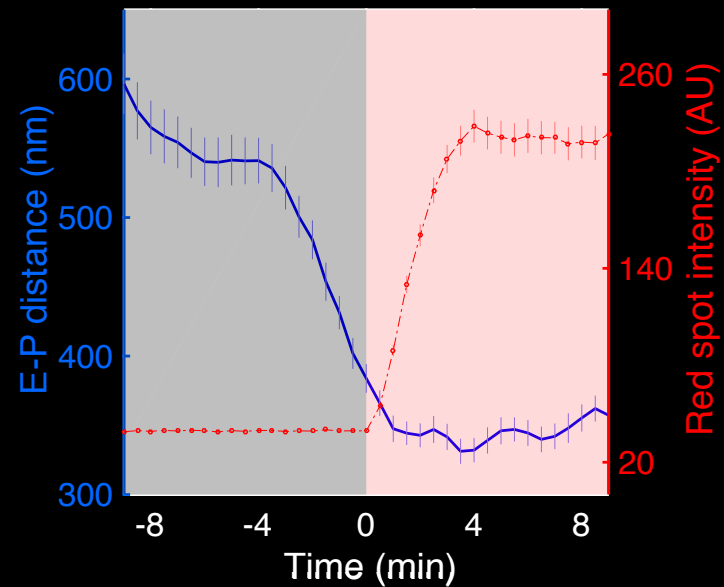
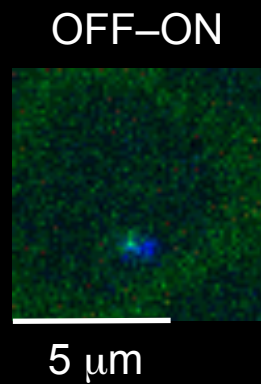
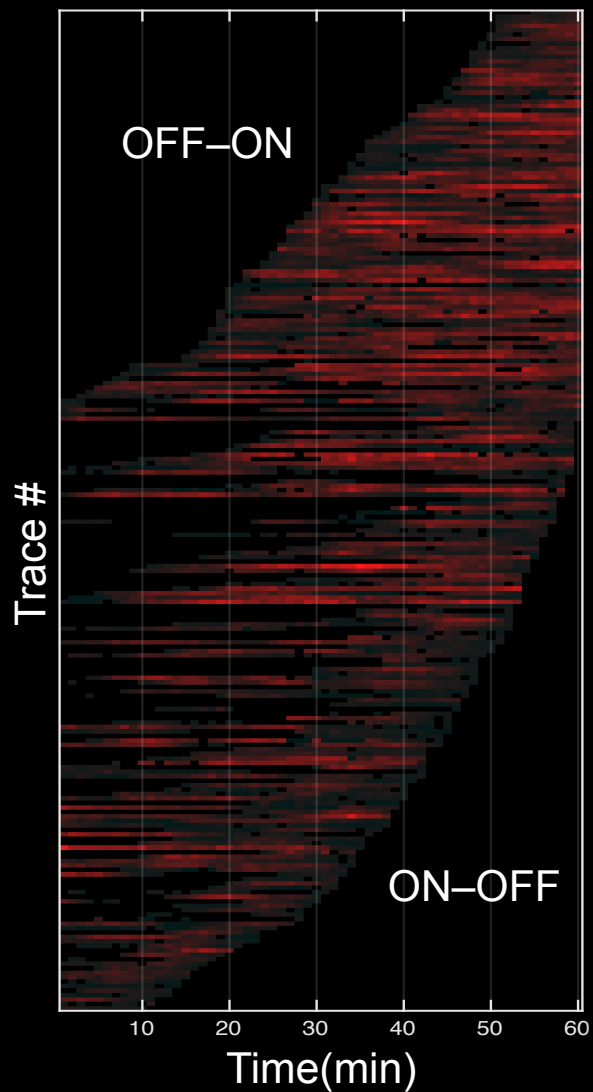




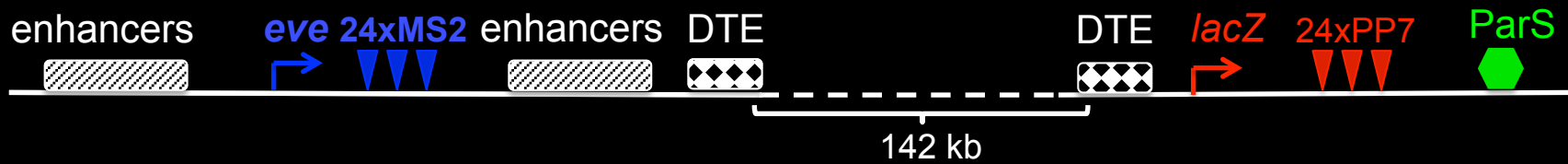
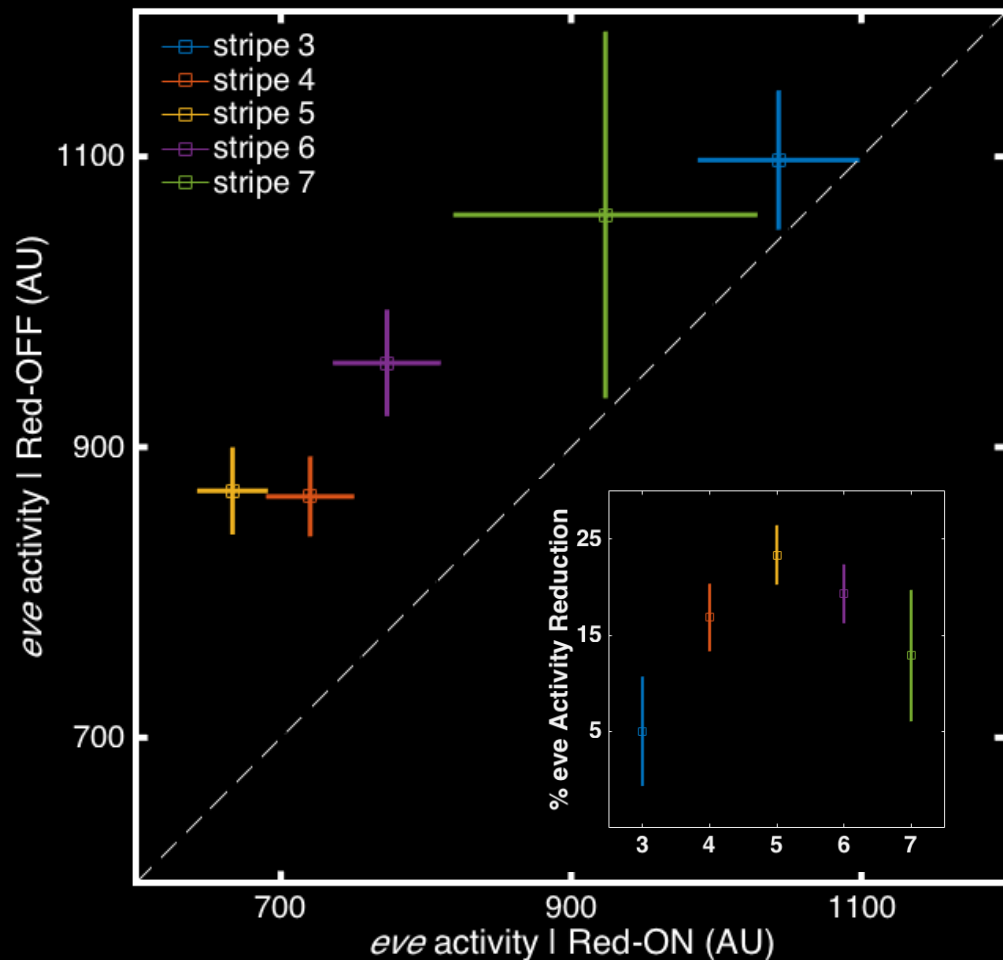
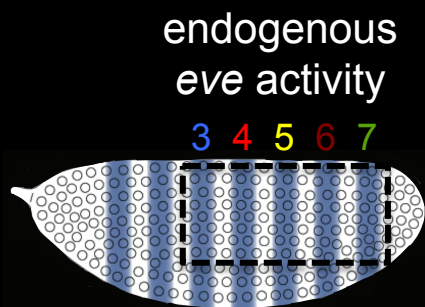
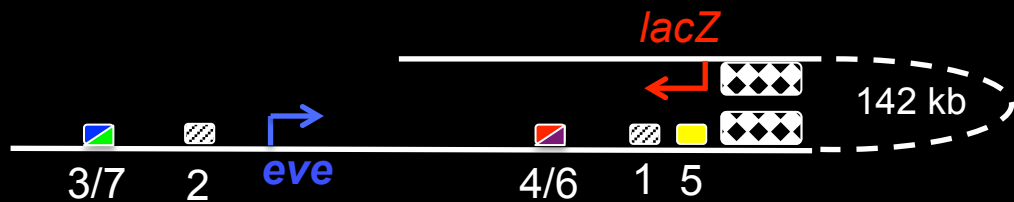
# 219 transcription traces

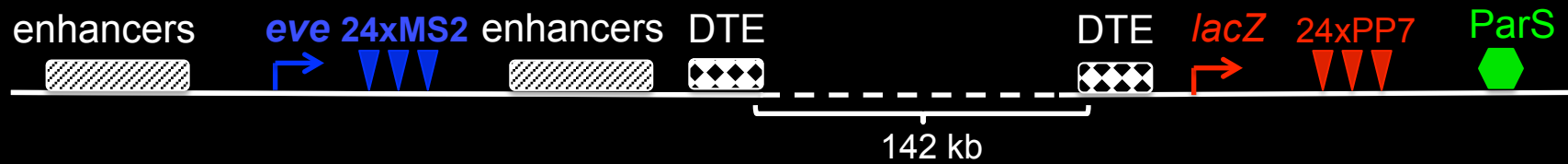
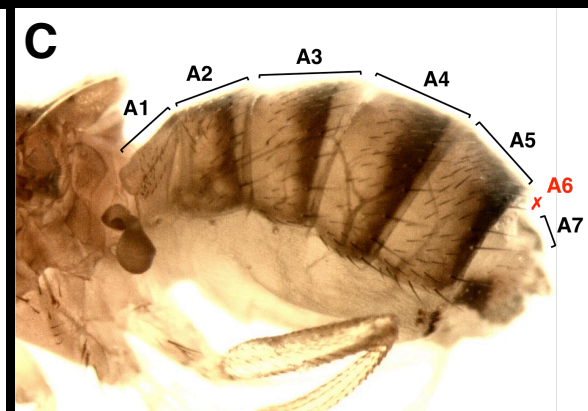
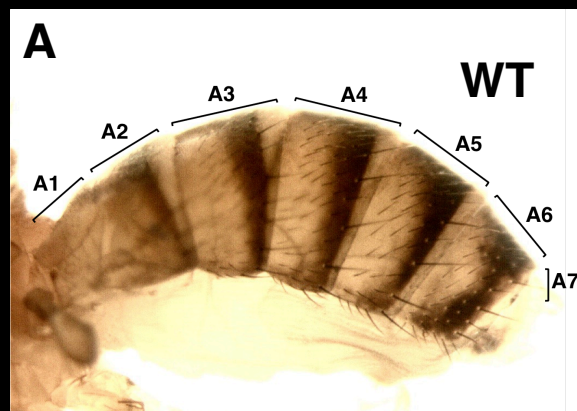
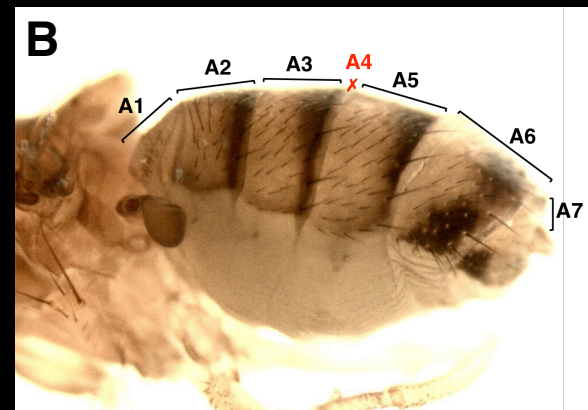
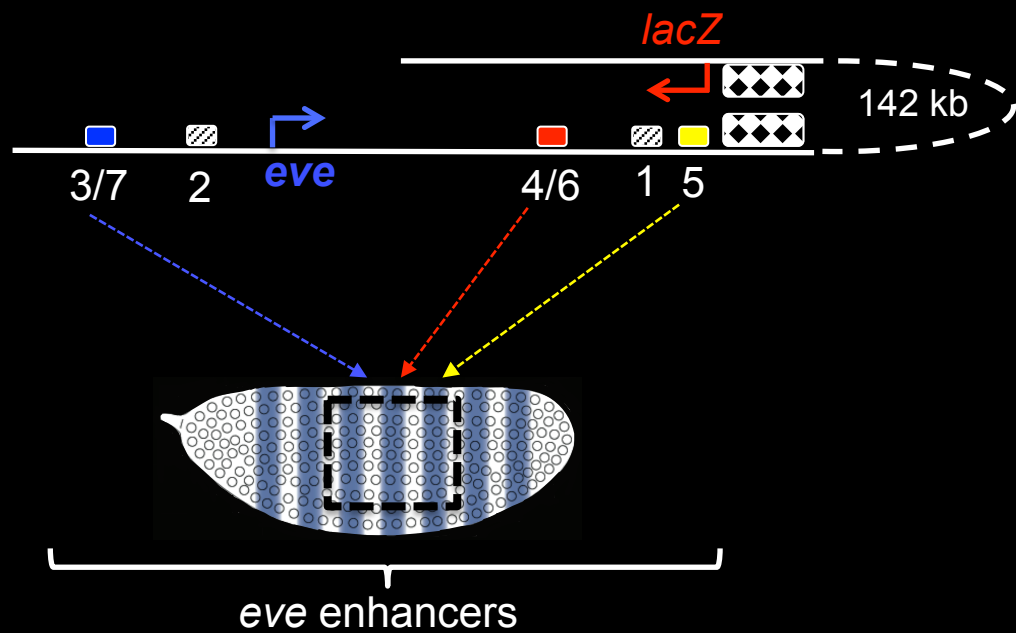


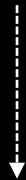
# 219 transcription traces



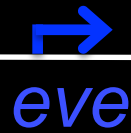
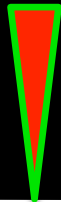


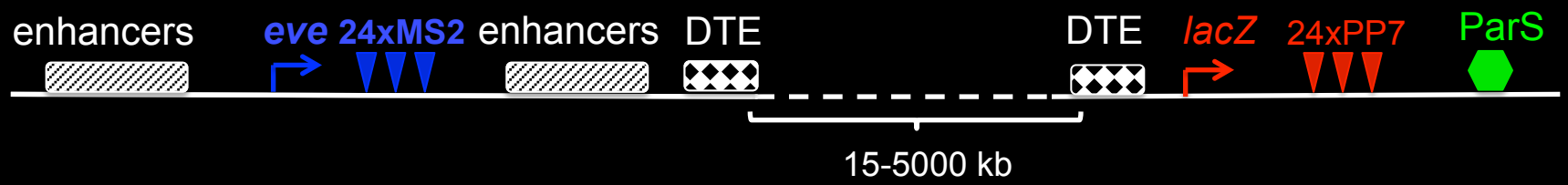
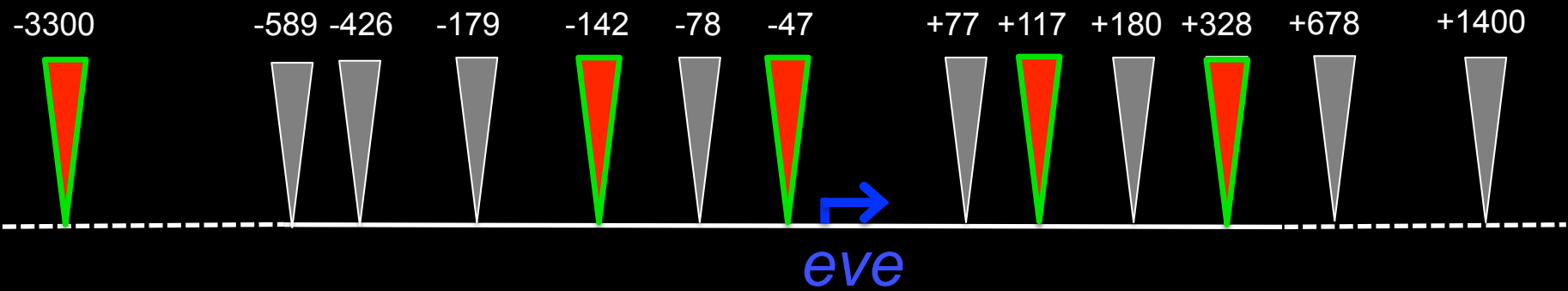
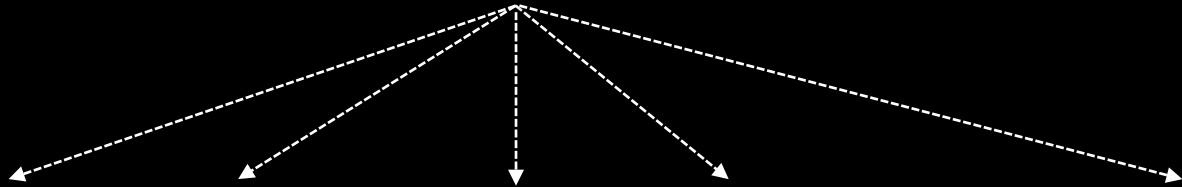






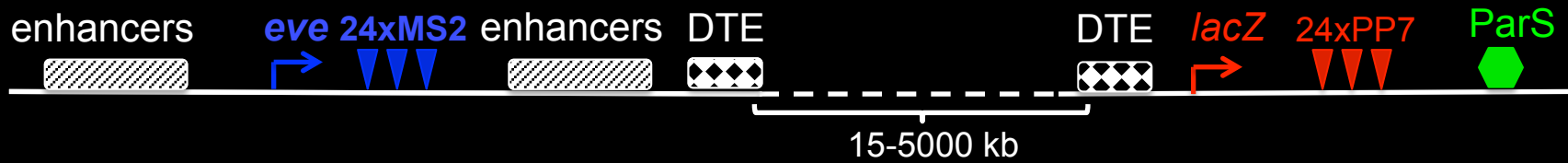
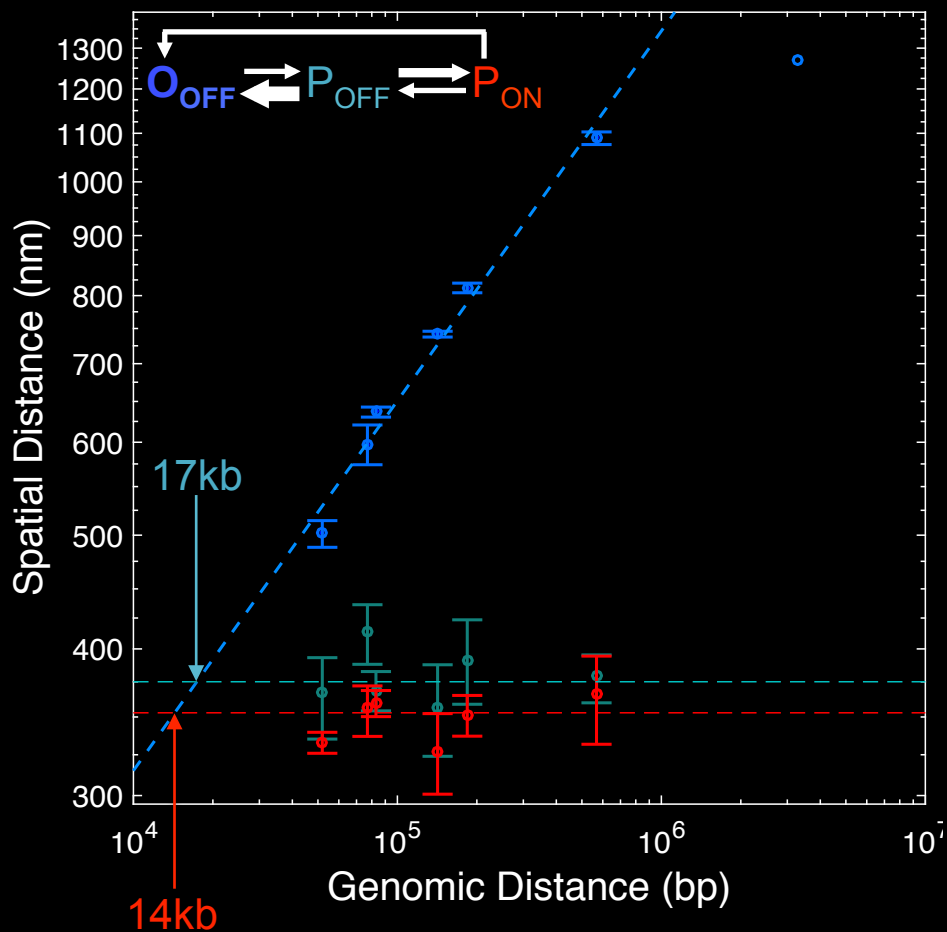
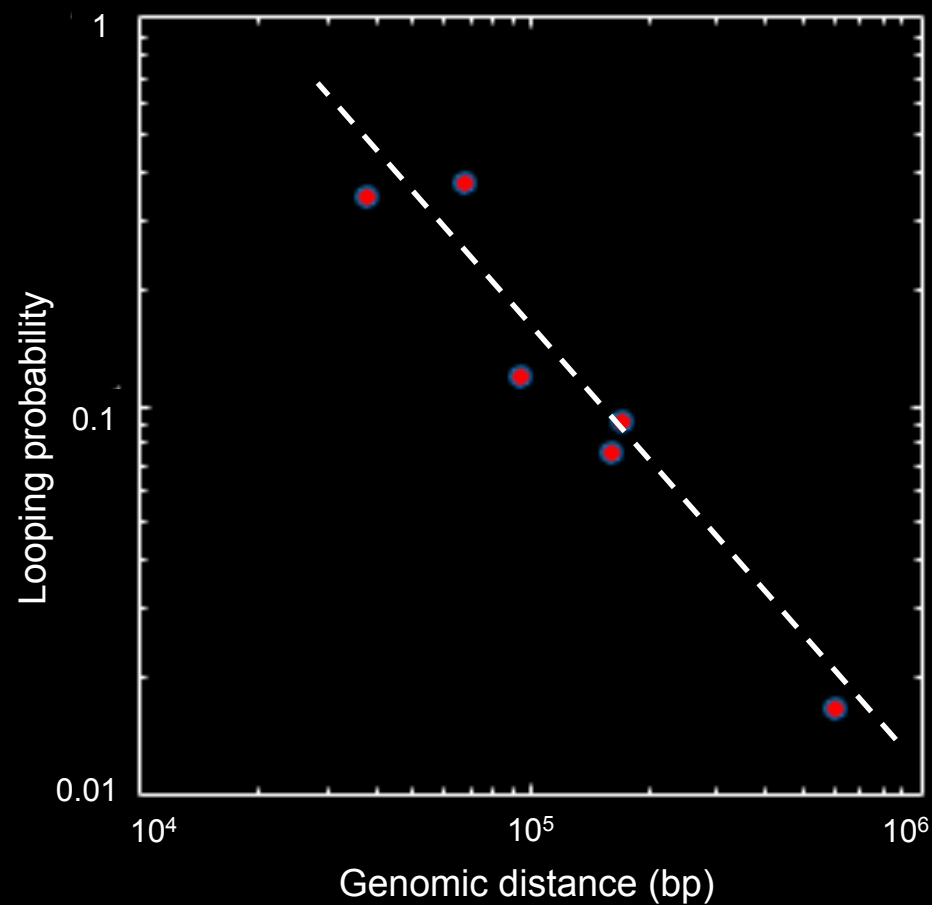
-142





$$\Delta F = \Delta E_{el} - T\Delta S_{loop}$$

$$\langle R^2 \rangle = 2N_{bp}\xi/v$$



How do multiple endogenous enhancers interact with the same promoter at the same time?

How does that control cellular differentiation?

→ Export tools to mammalian systems

→ New lab @Pasteur/Paris

