

# Biological Applications (III)

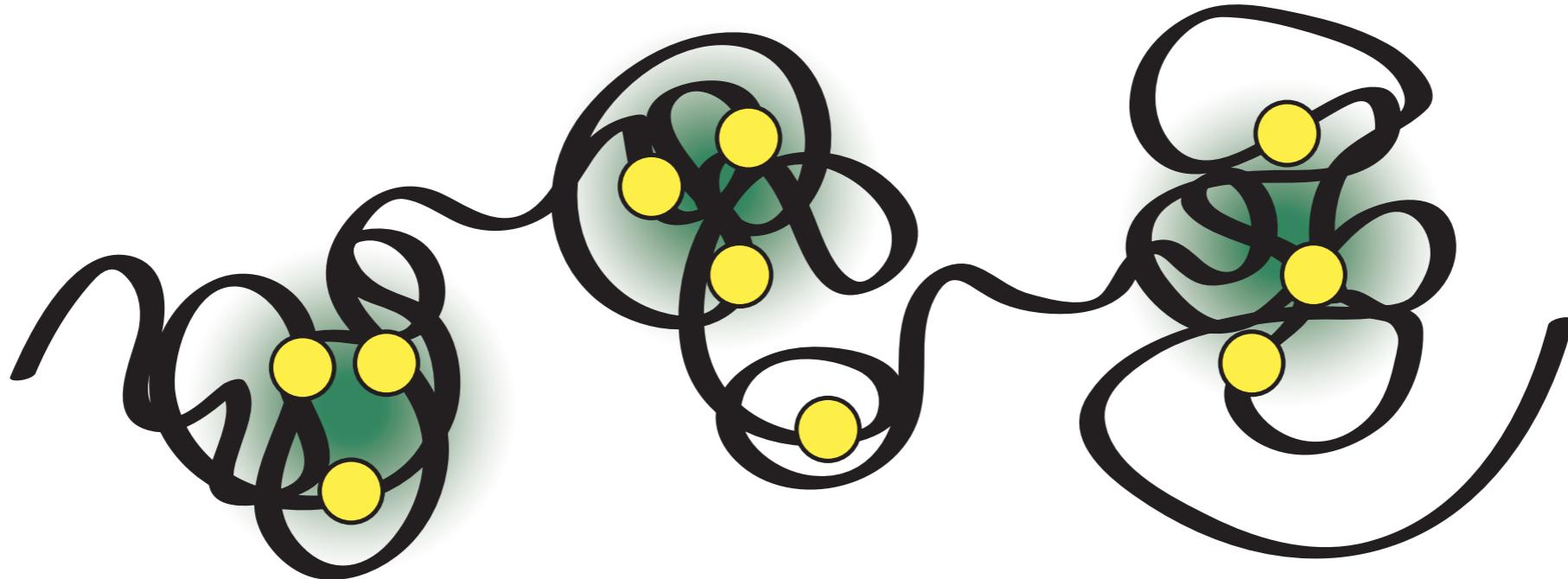
## Hormone induced TAD changes

François Serra, Marco Di Stefano & Marc A. Marti-Renom  
*Structural Genomics Group (CNAG-CRG)*

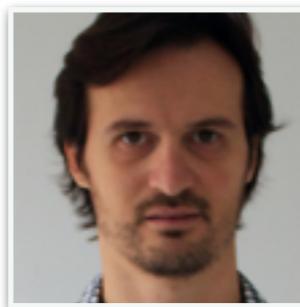




# On TADs and hormones



François le Dily



Davide Baù



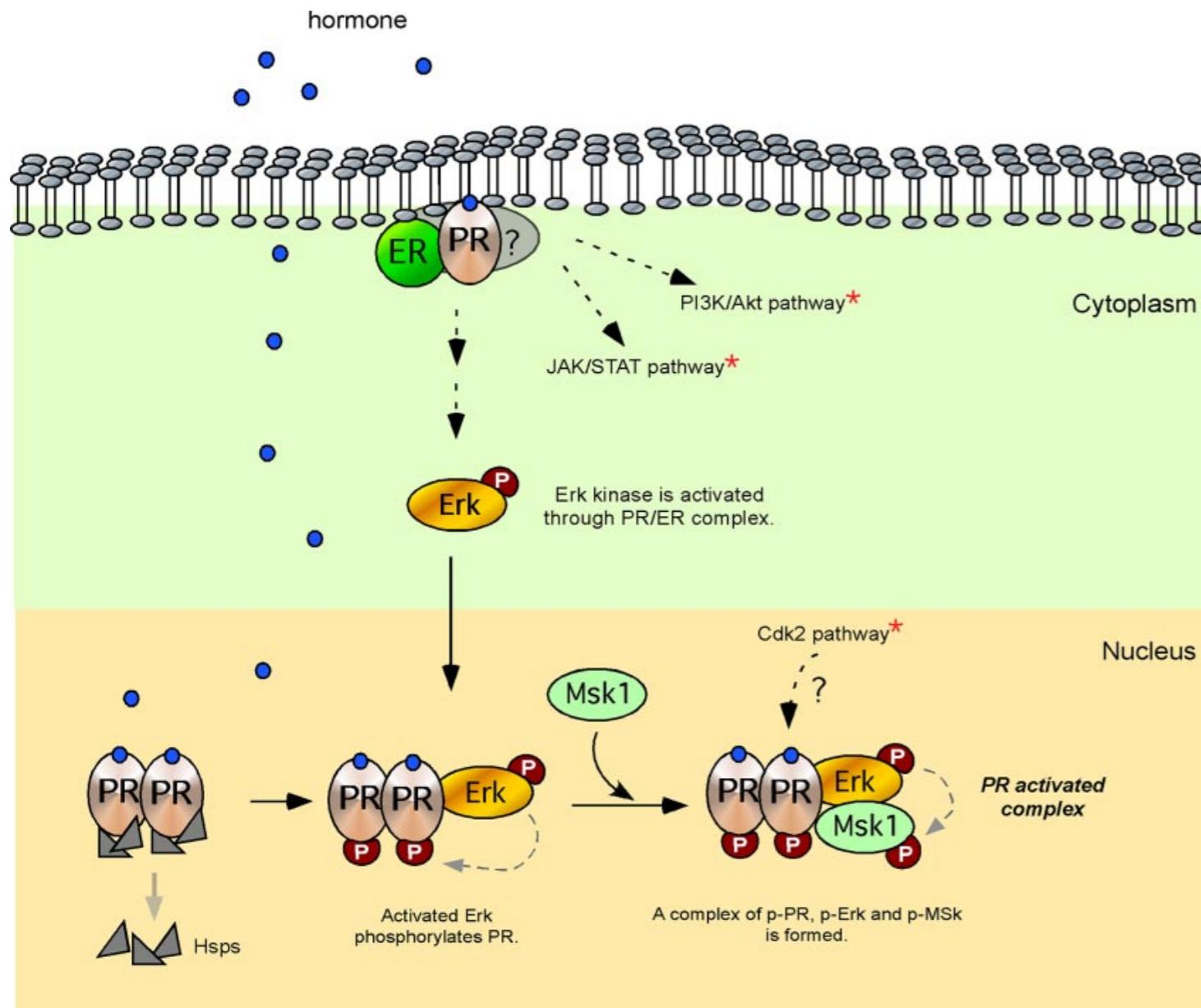
François Serra



Miguel Beato & Guillaume Fillion

Gene Regulation, Stem Cells and Cancer  
Centre de Regulació Genòmica  
Barcelona, Spain

# Progesterone-regulated transcription in breast cancer

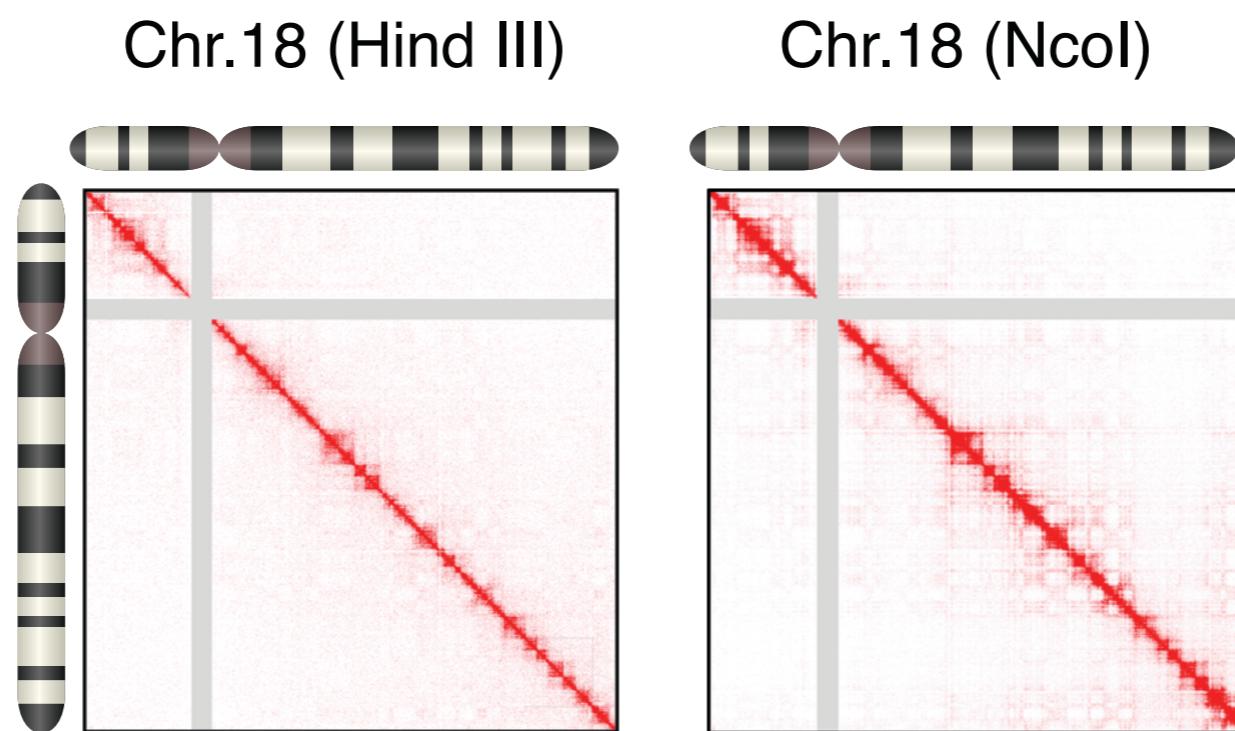
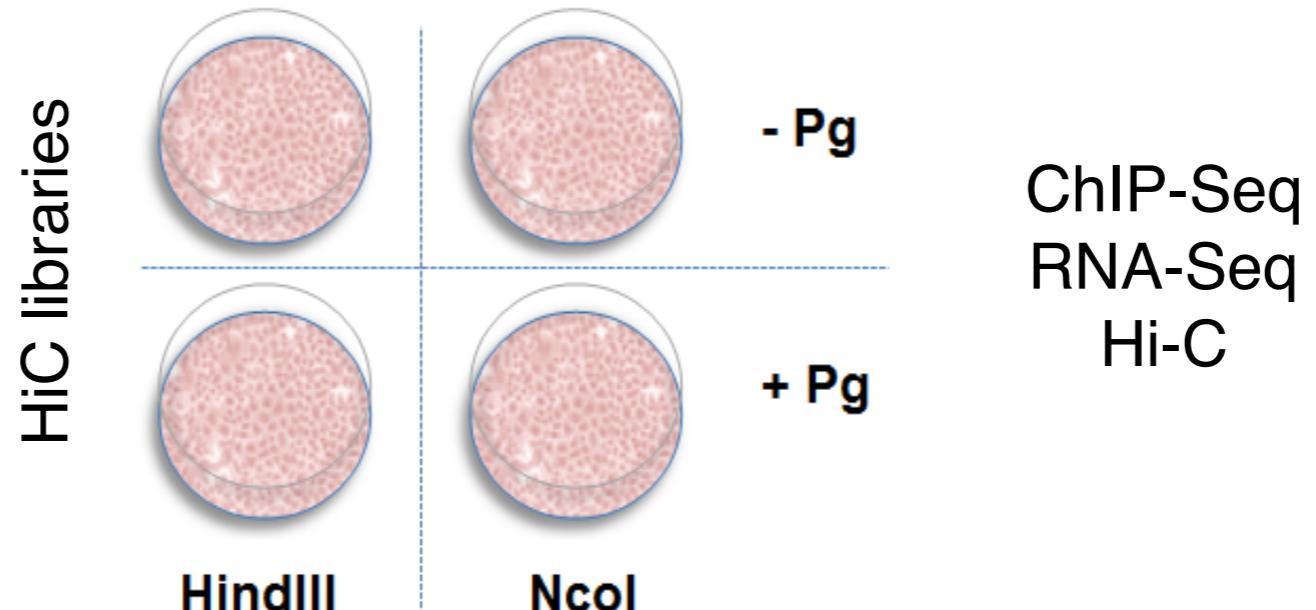


> 2,000 genes Up-regulated  
> 2,000 genes Down-regulated

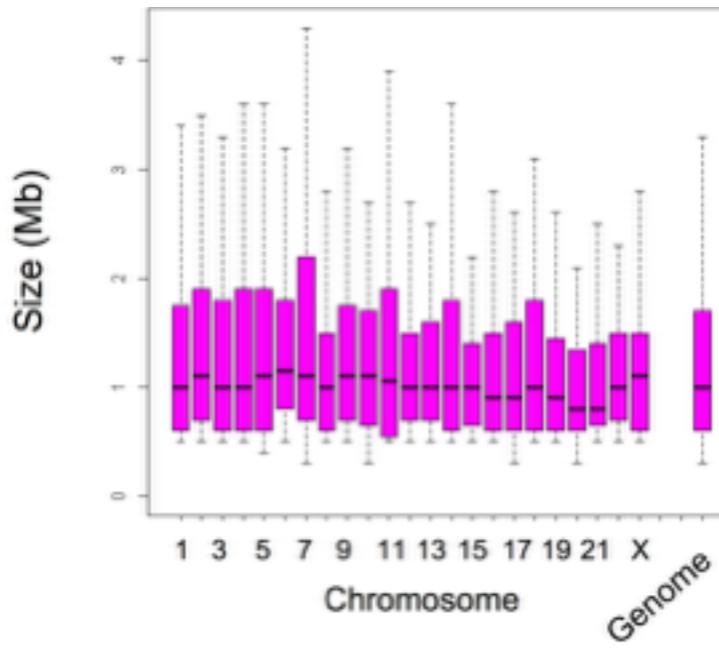
**Regulation in 3D?**

Vicent *et al* 2011, Wright *et al* 2012, Ballare *et al* 2012

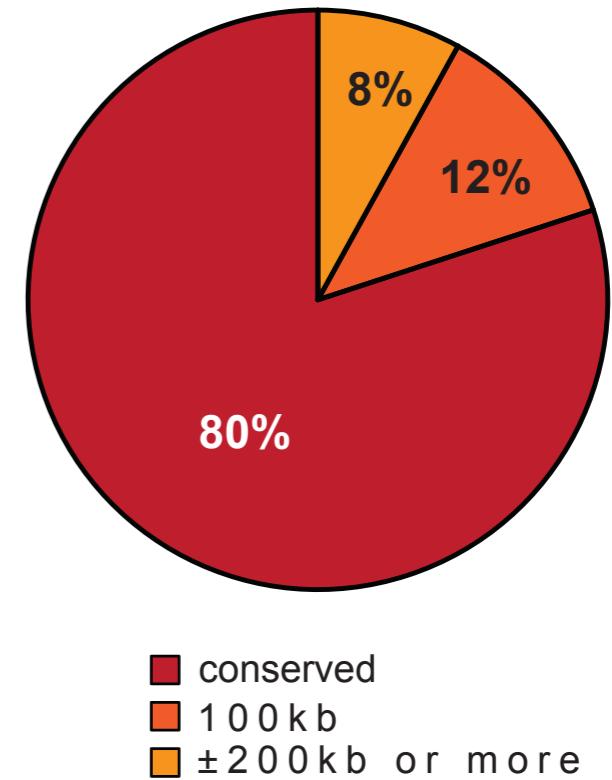
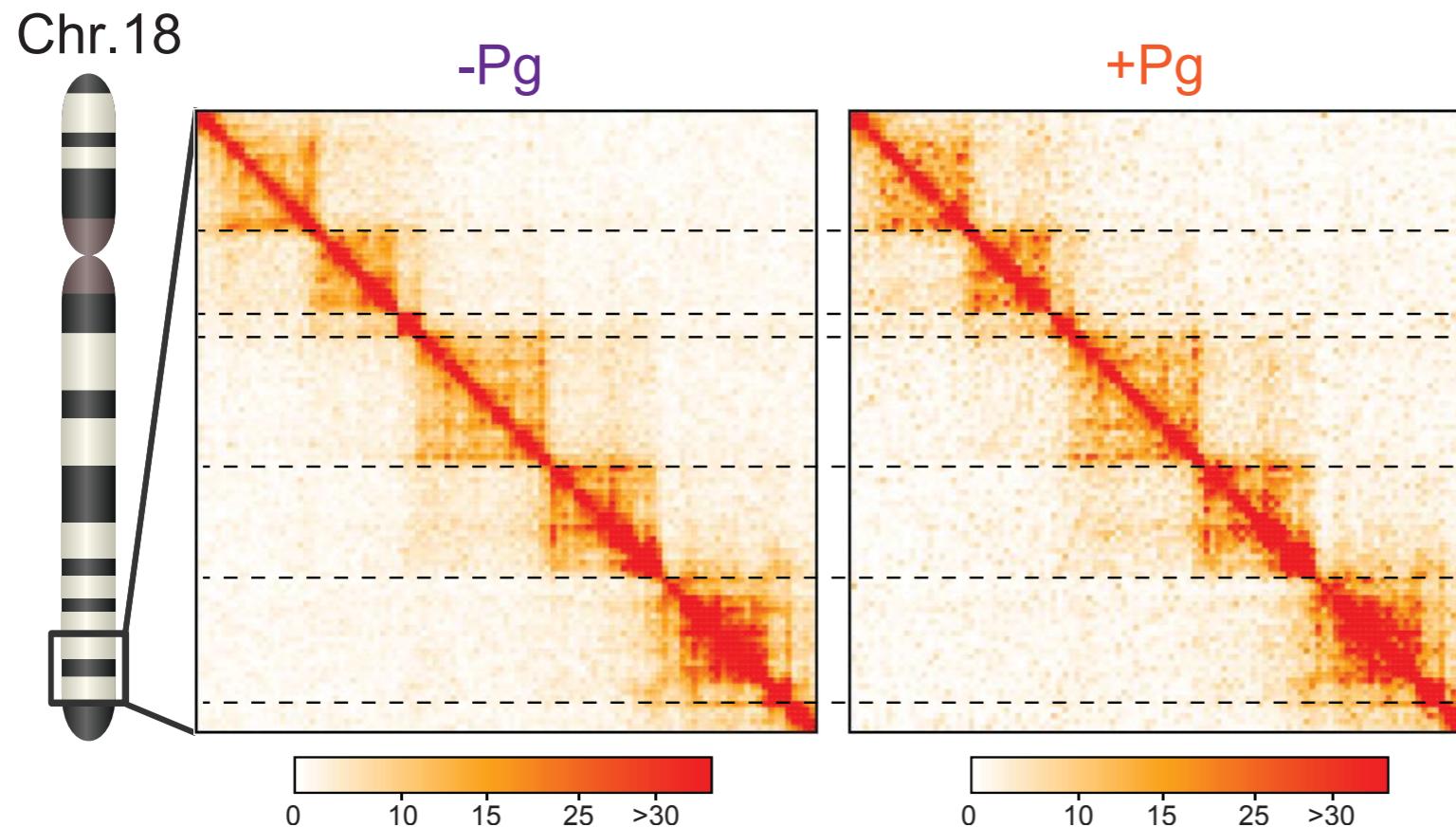
# Experimental design



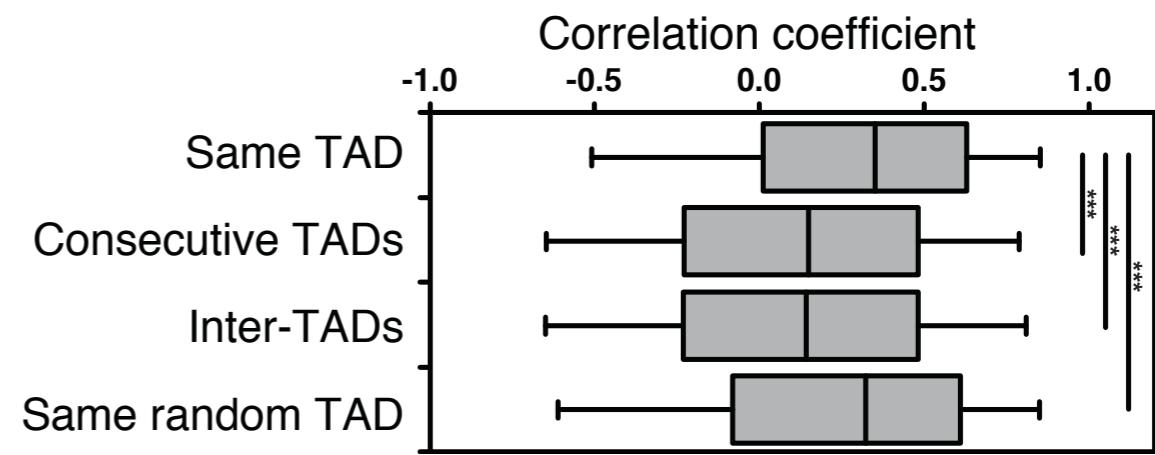
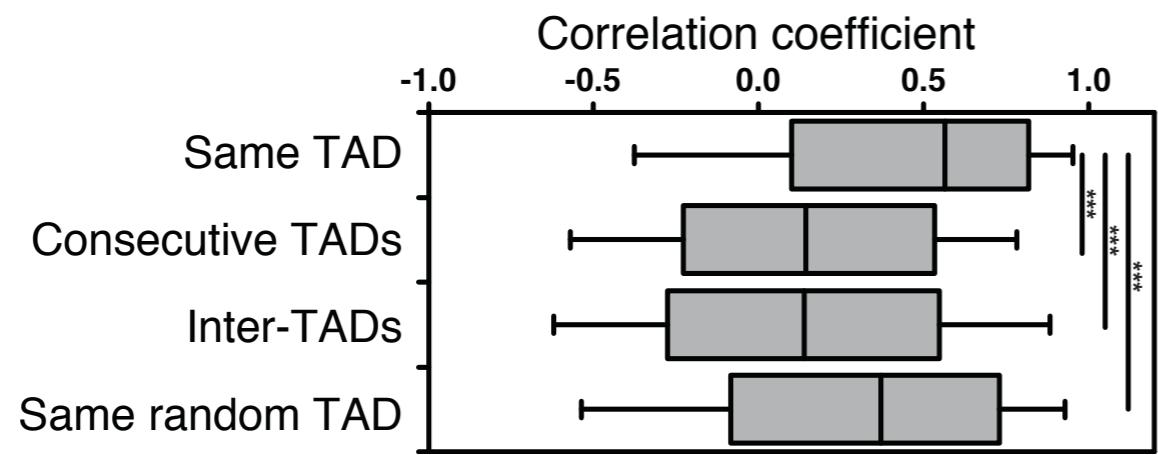
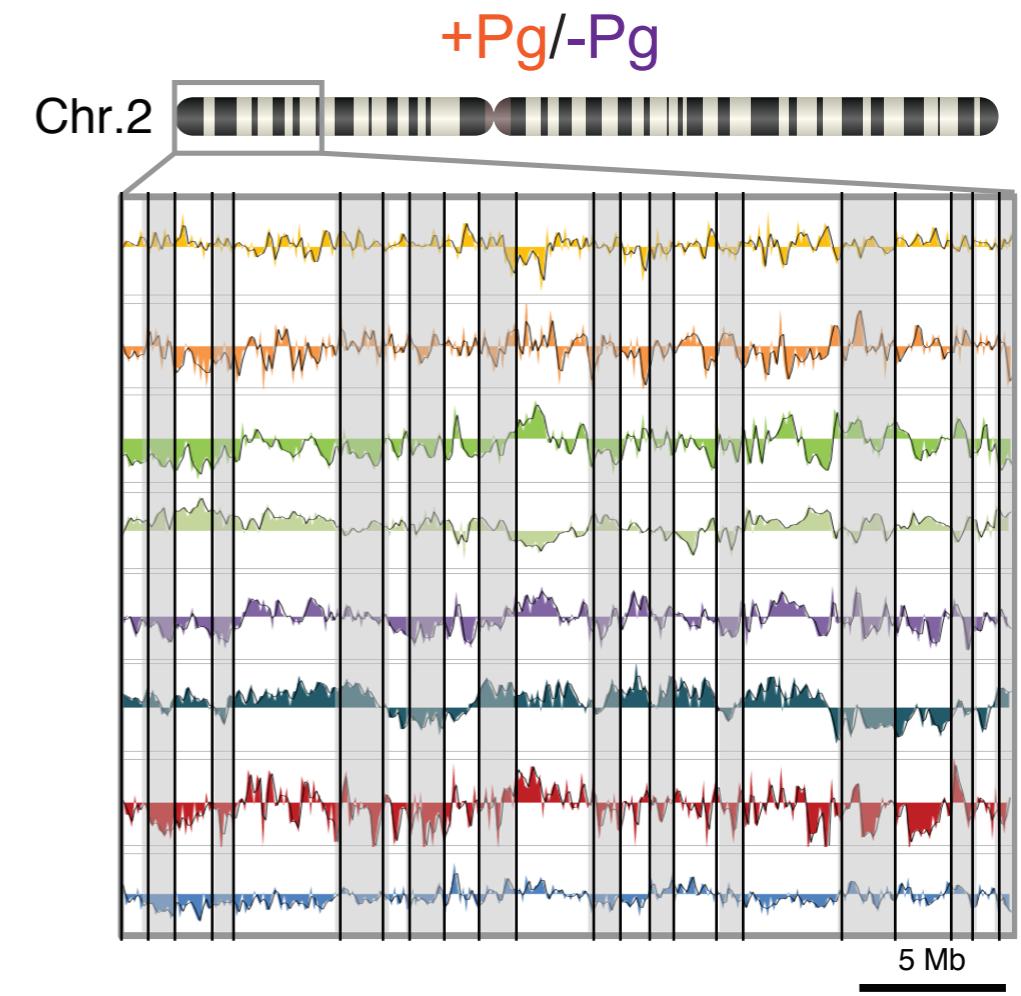
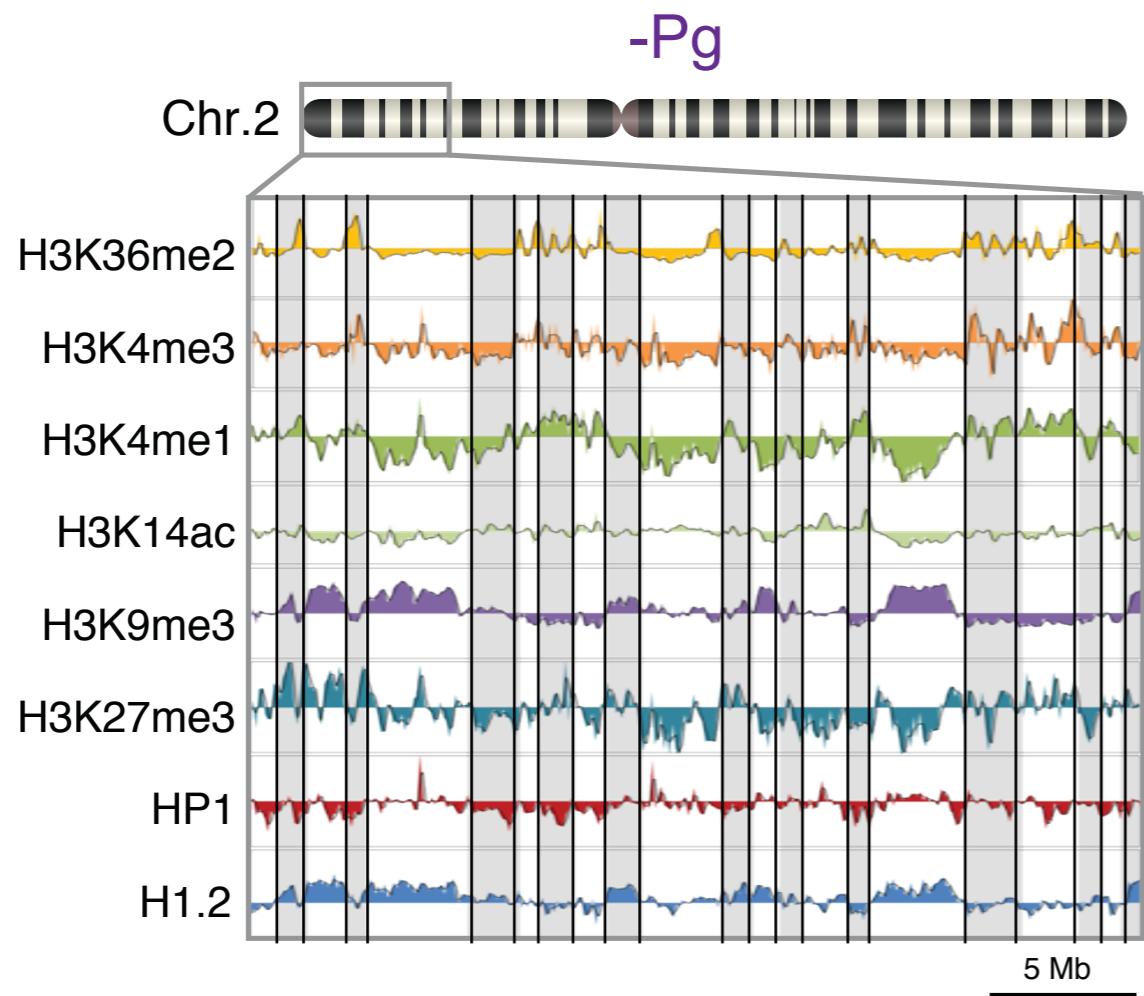
# Are there TADs? how robust?



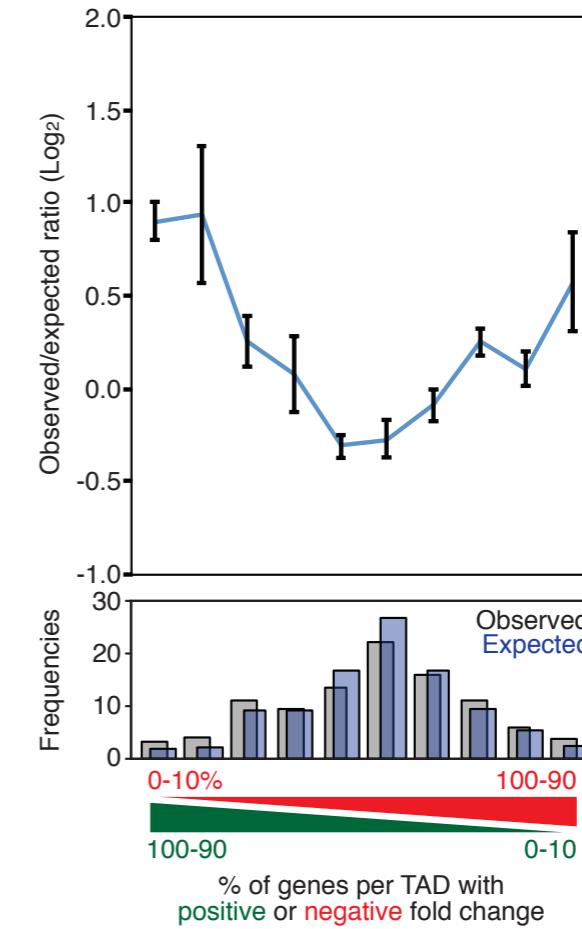
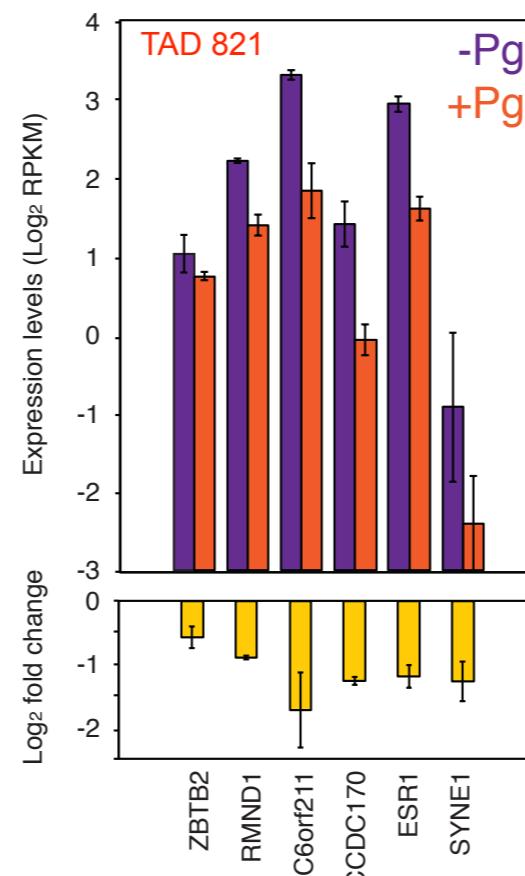
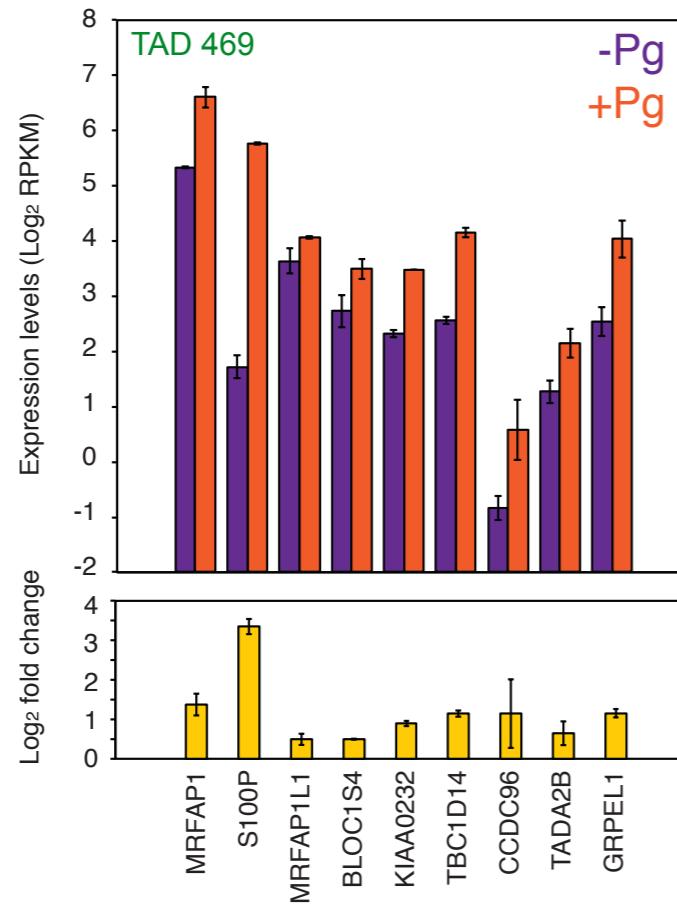
>2,000 detected TADs



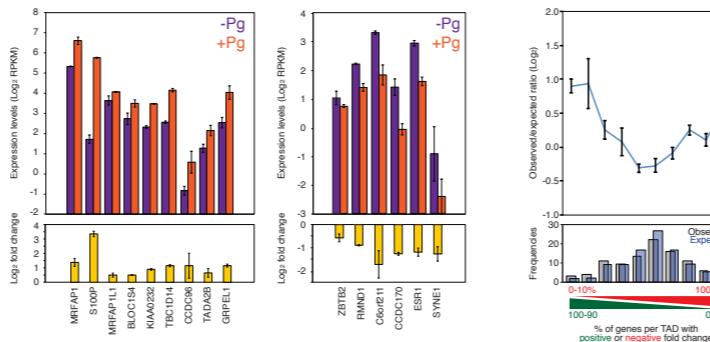
# Are TADs homogeneous?



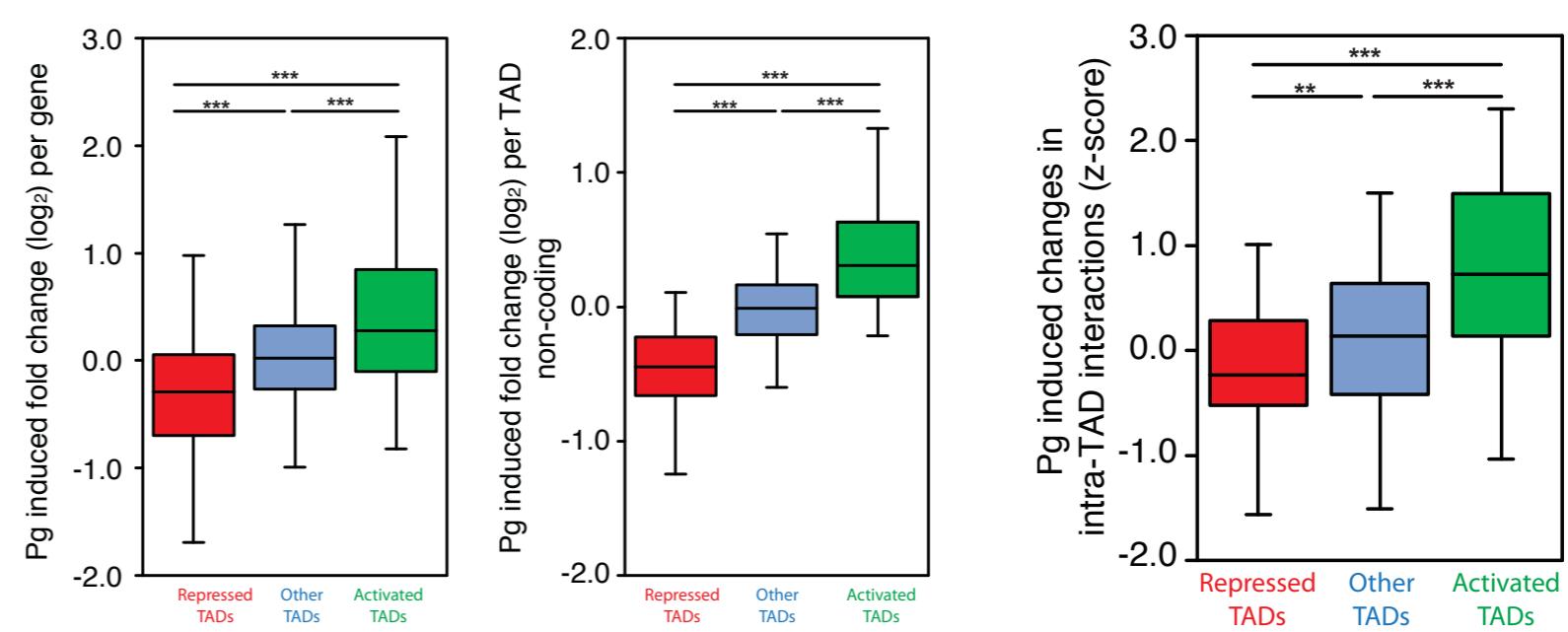
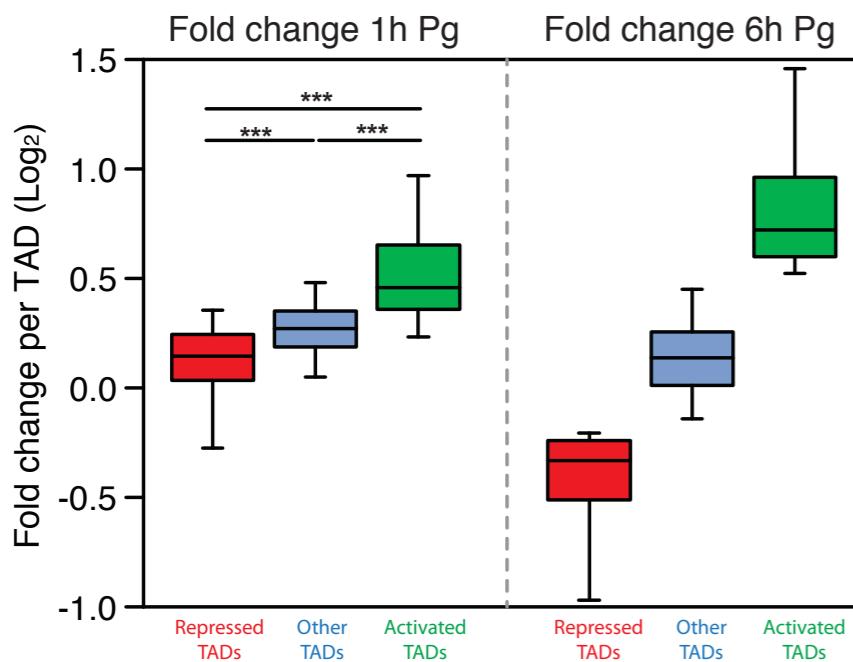
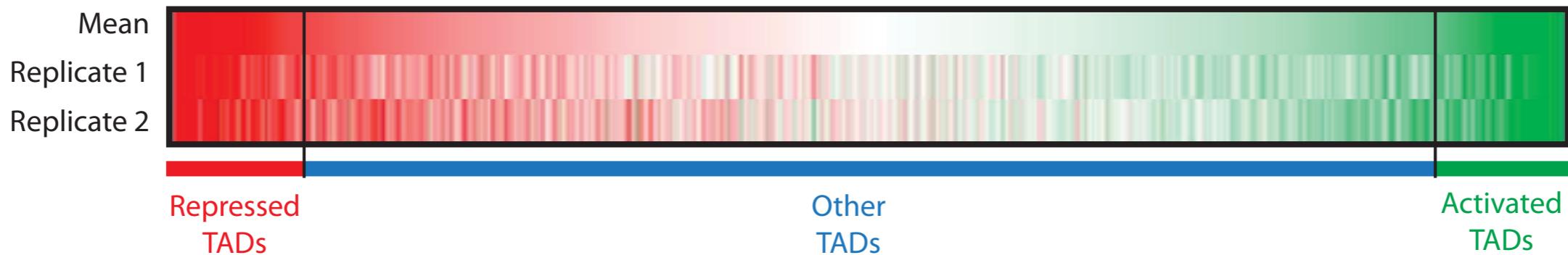
# Do TADs respond differently to Pg



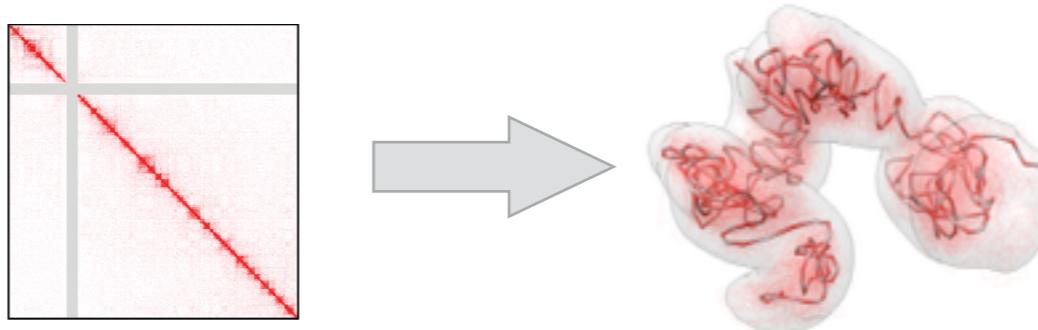
# Do TADs respond differently to Pg



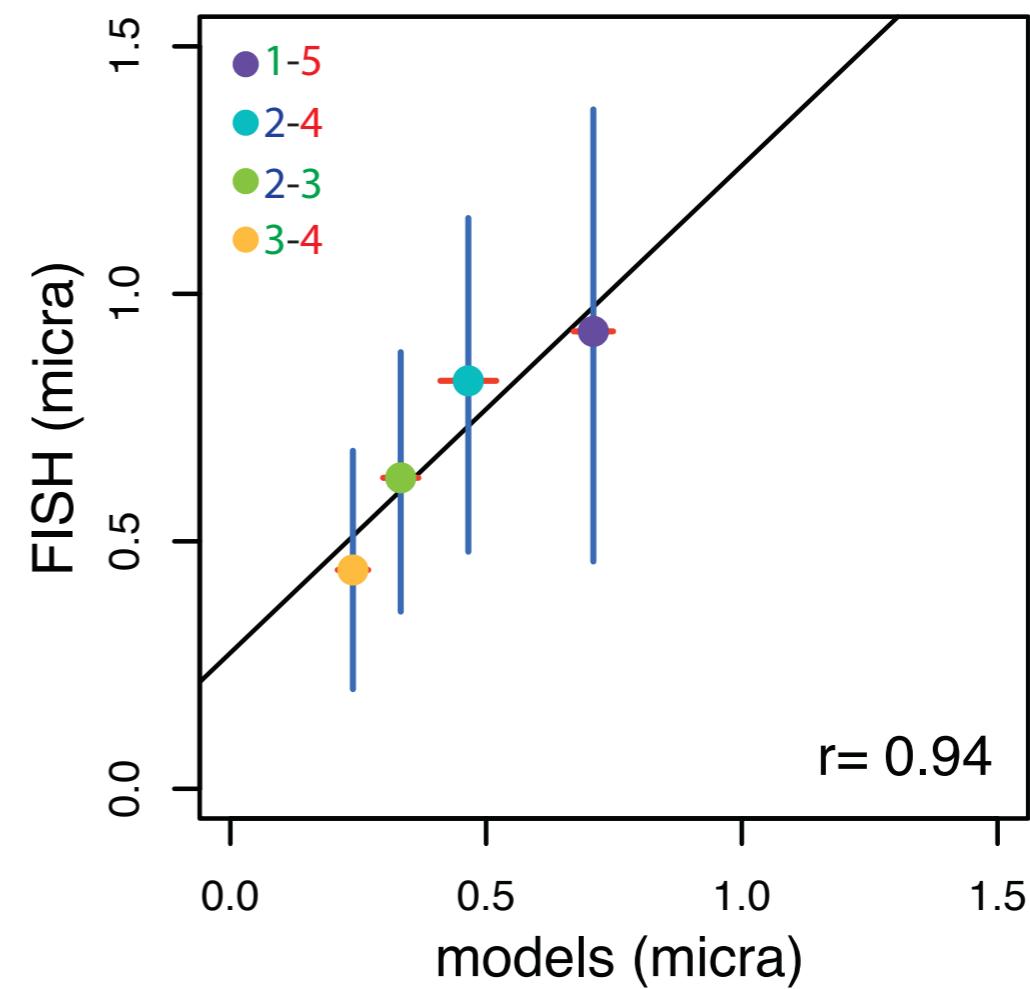
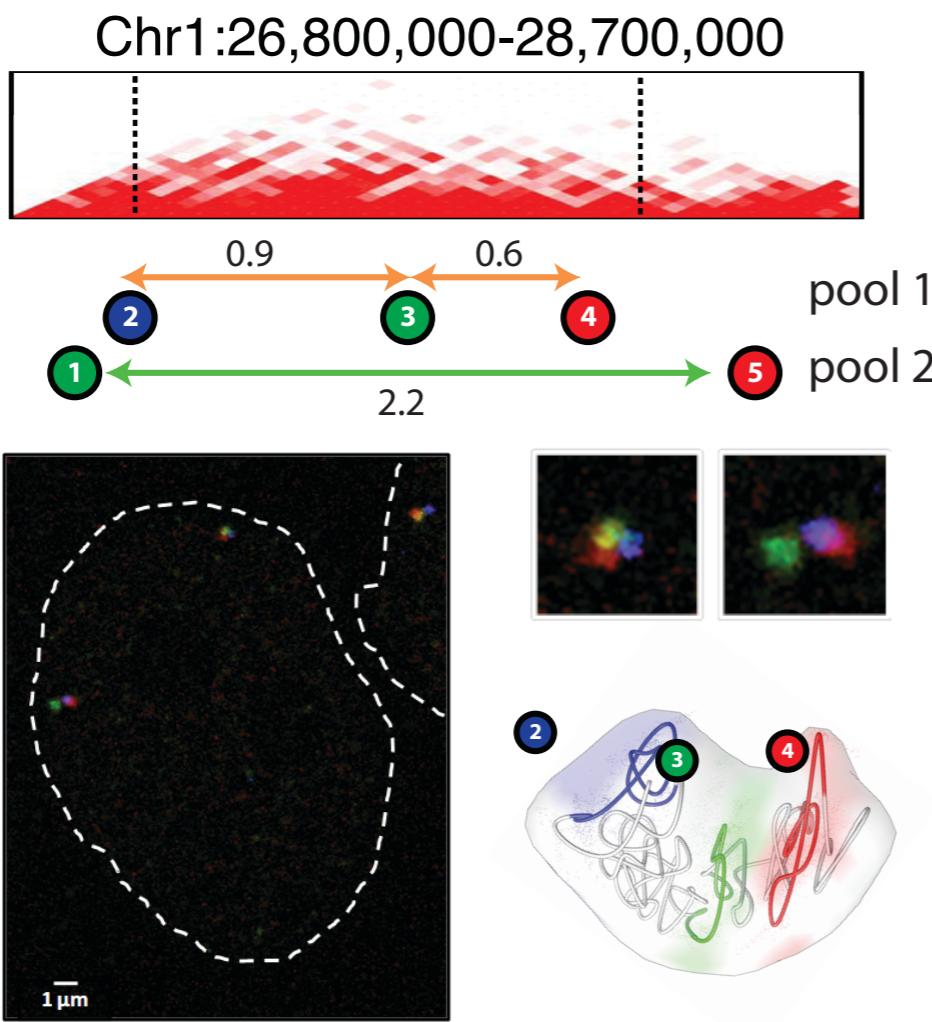
Pg induced fold change per TAD (6h)



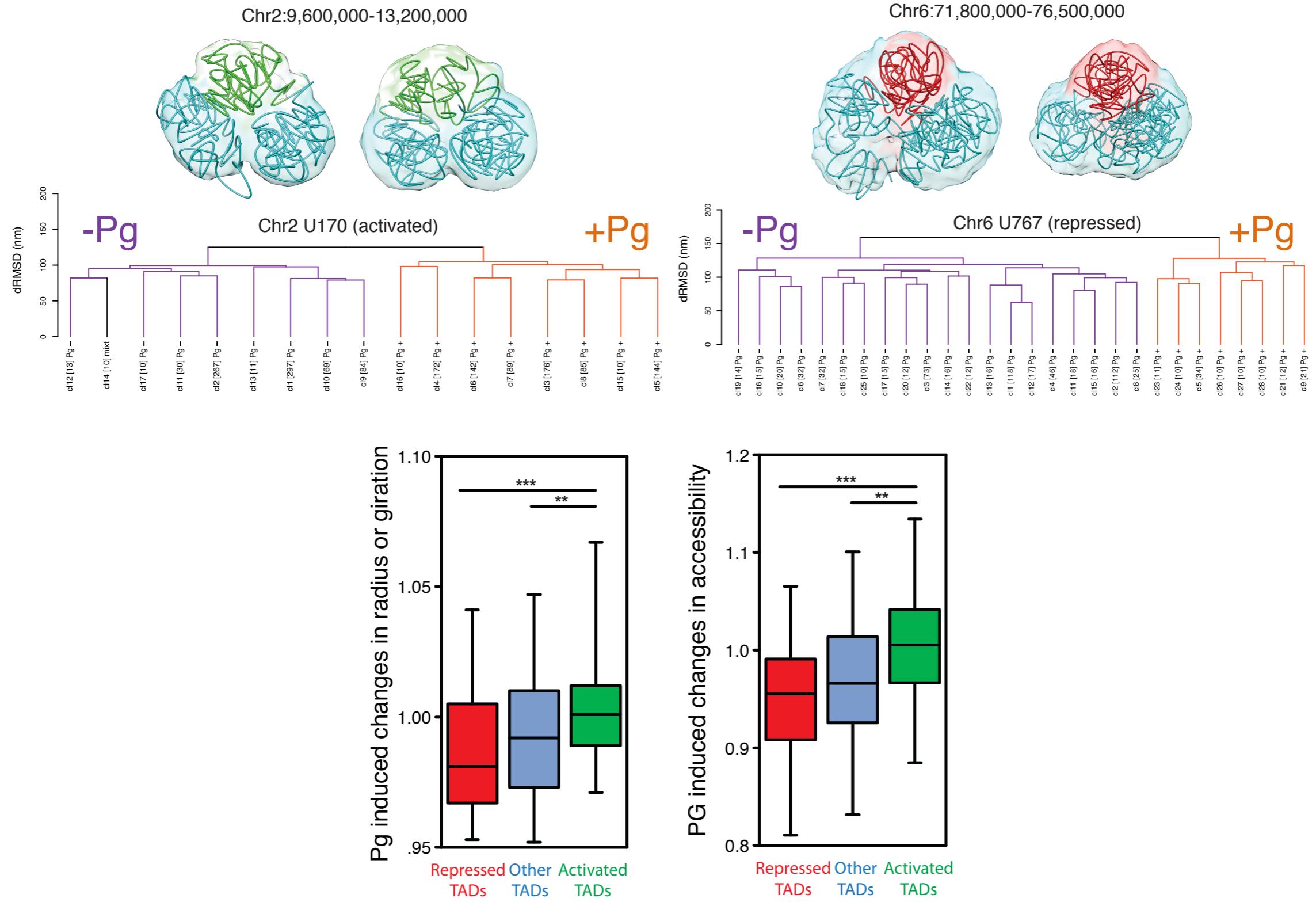
# Modeling 3D TADs



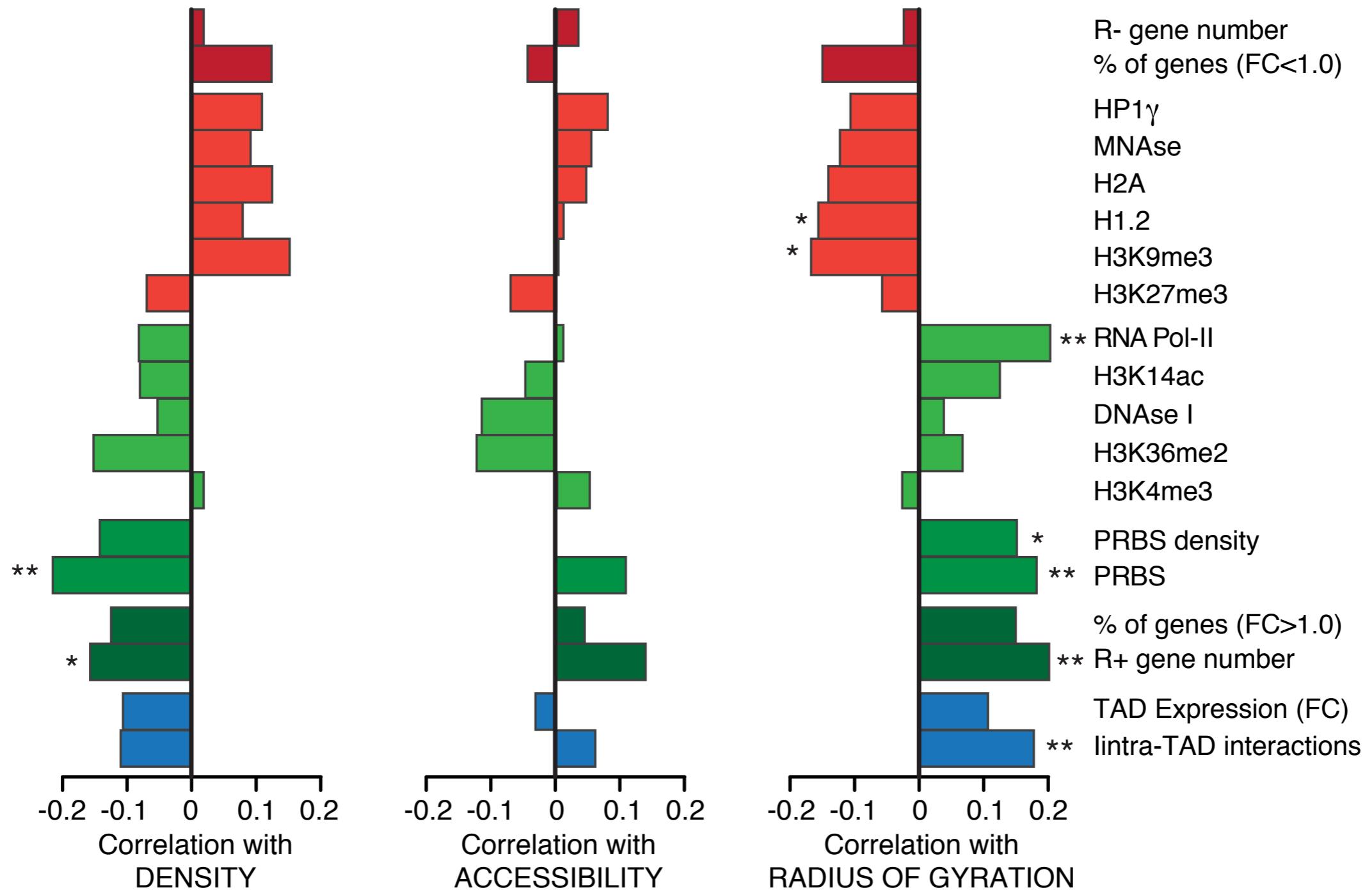
61 genomic regions containing 209 TADs covering 267Mb

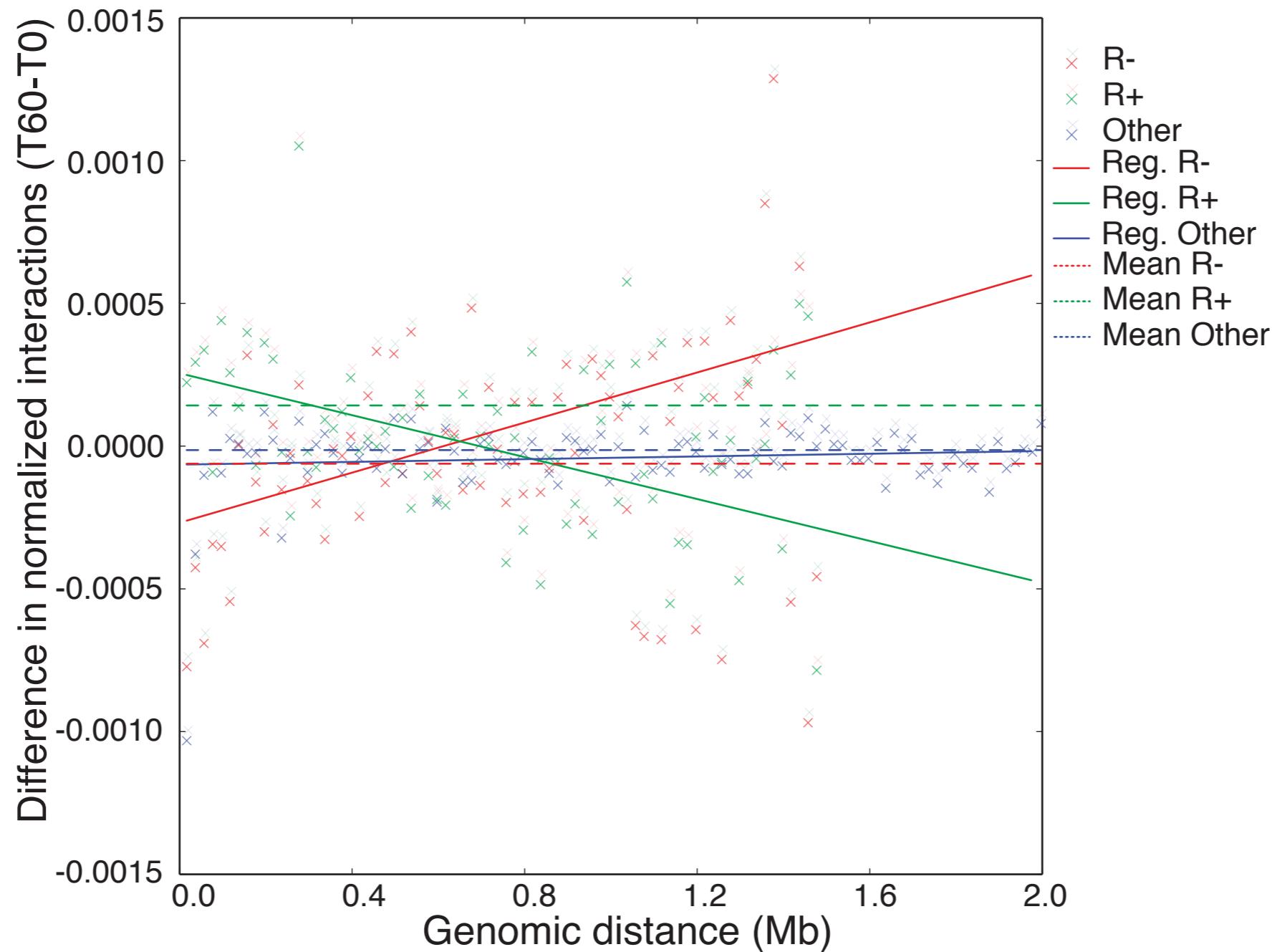
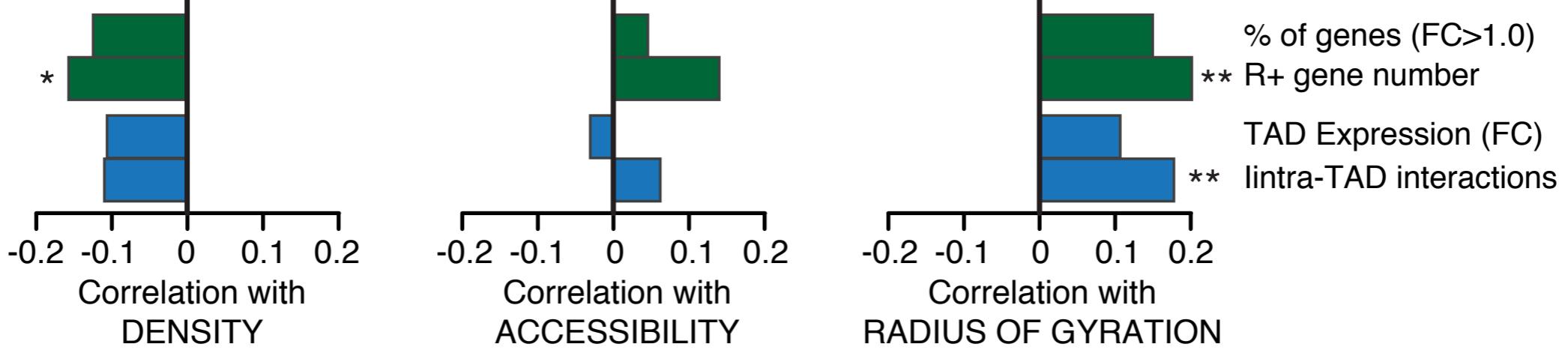


# How TADs respond structurally to Pg?



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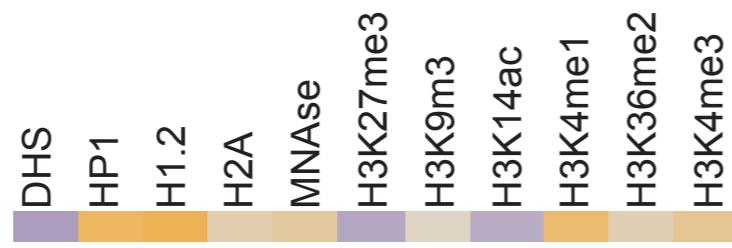
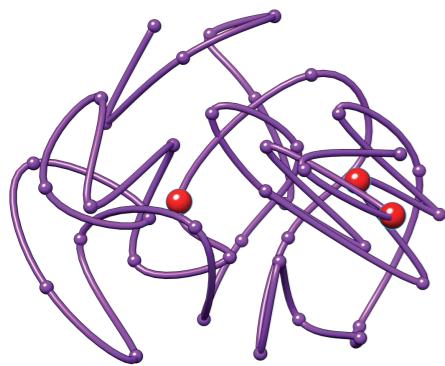




# Model for TAD regulation

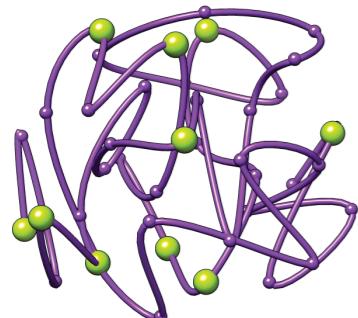
## Repressed TAD

chr1 U41



## Activated TAD

chr2 U207



Structural transition

+Pg

