



Distinct structural transitions of chromatin topological domains correlate with coordinated hormone-induced gene regulation

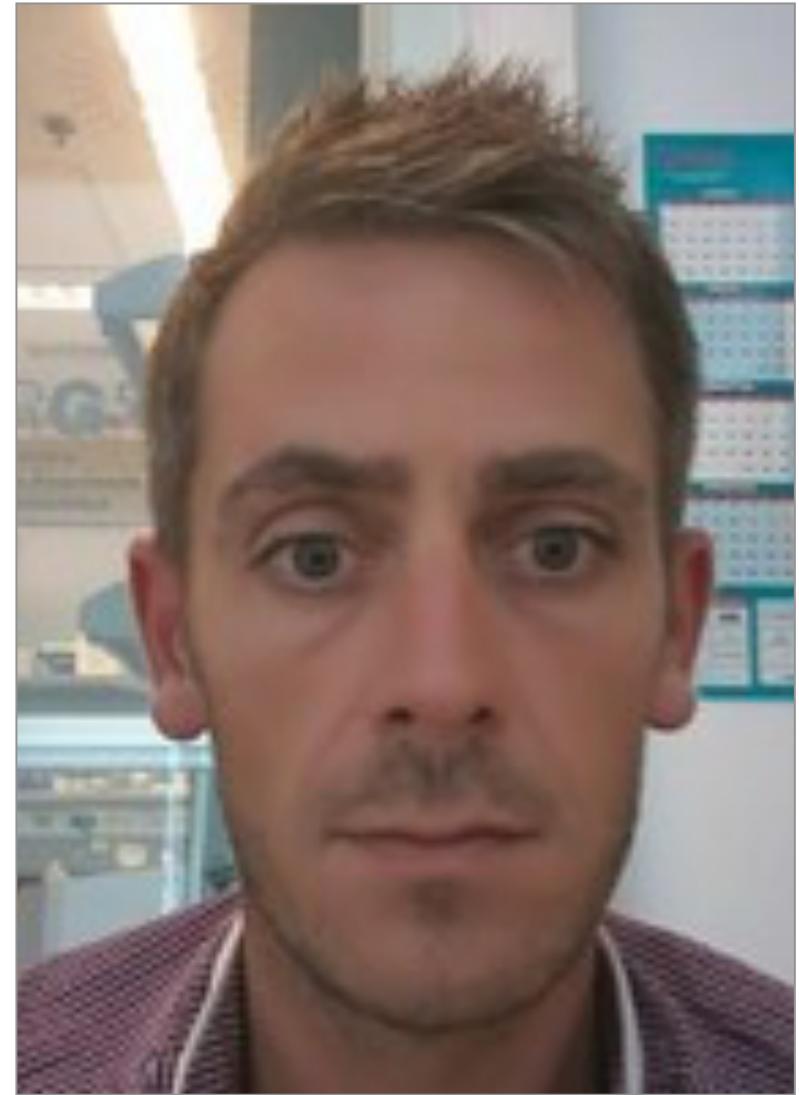
Marc A. Marti-Renom
CNAG-CRG · ICREA

<http://marciuslab.org>
<http://3DGenomes.org>
<http://cnag.crg.eu>

cnag CRG^R ICREA



François Serra
CNAG-CRG

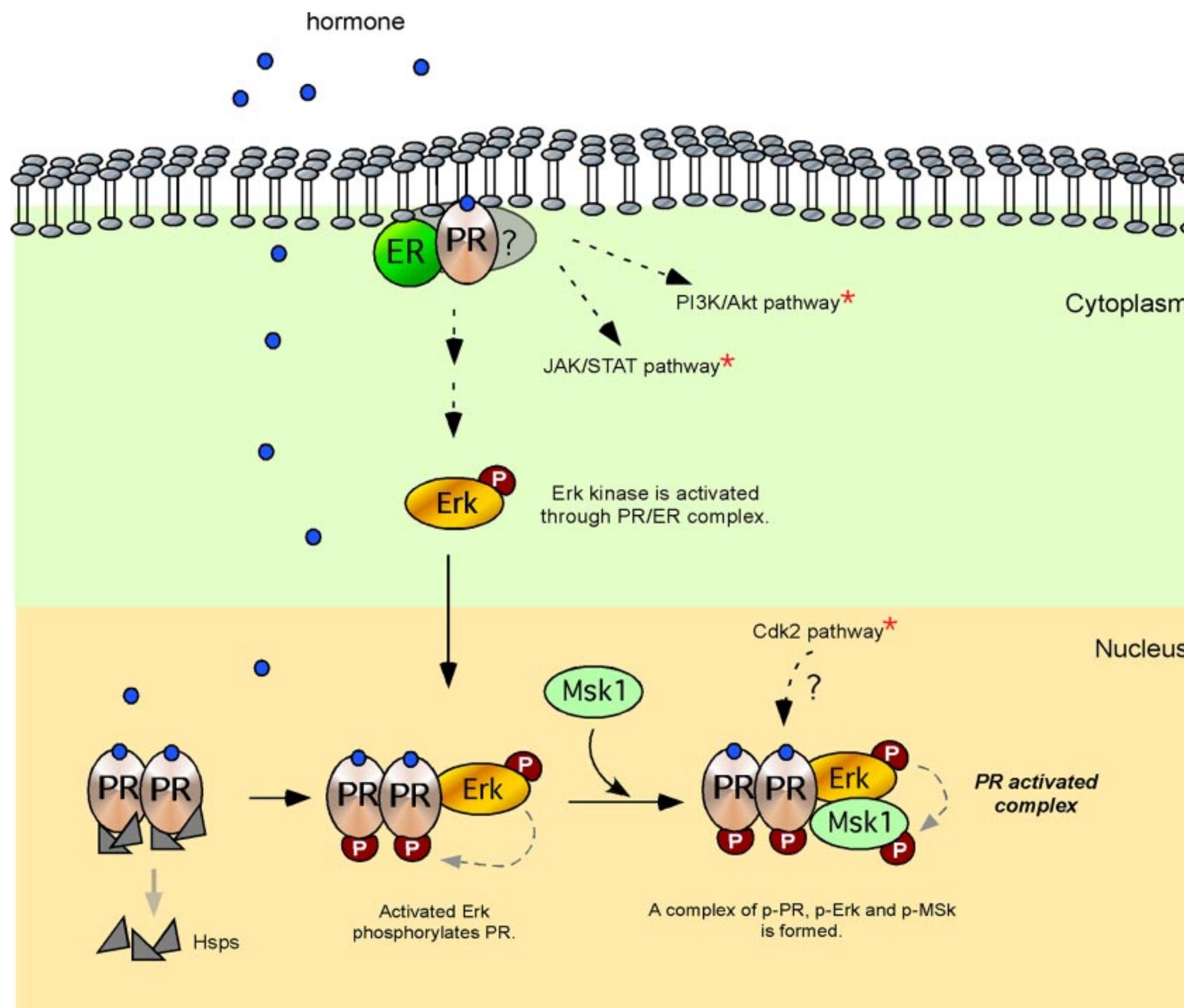


François le Dily
CRG



Miguel Beato
CRG

Progesterone-regulated transcription in breast cancer

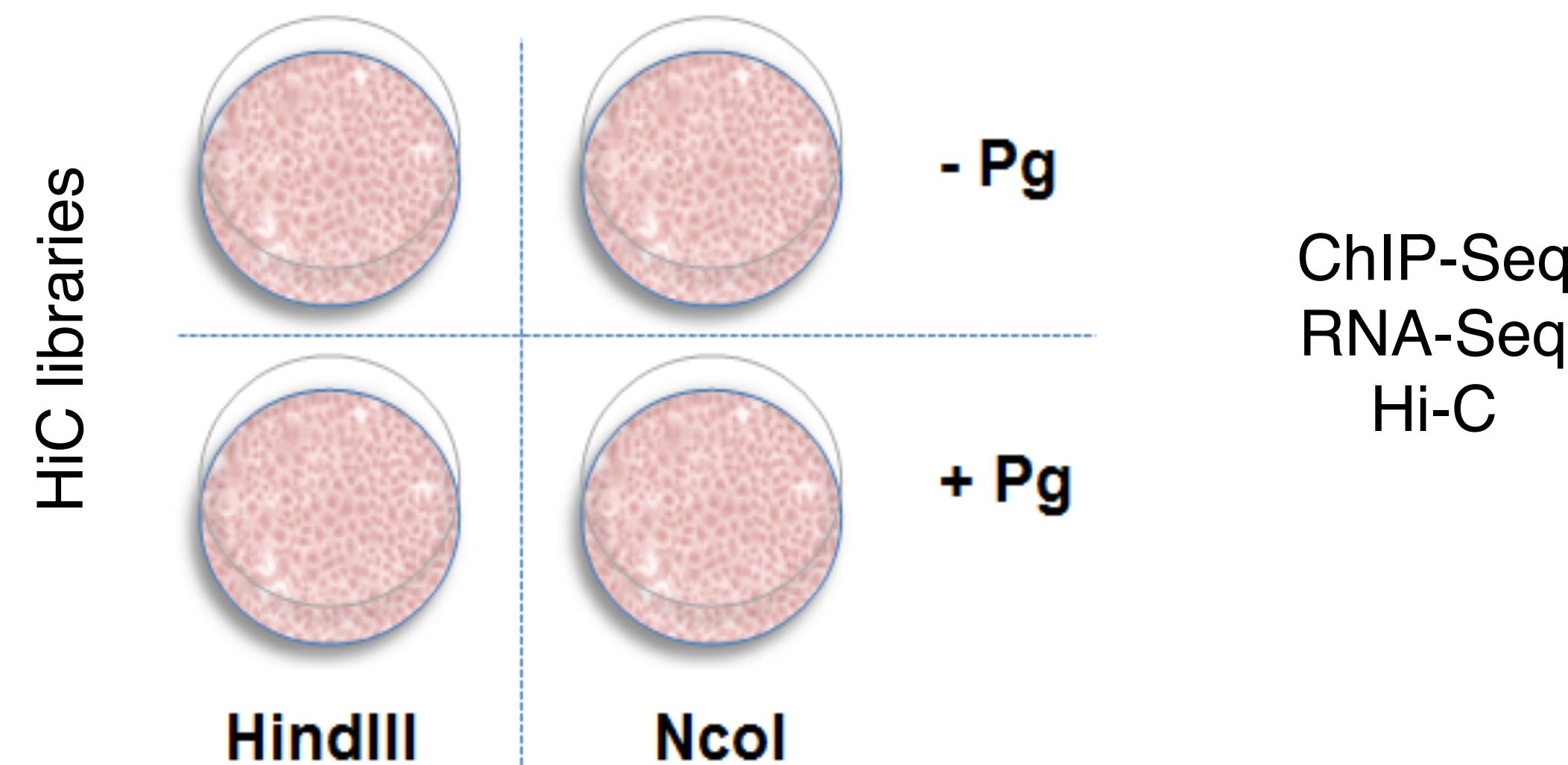


Vicent *et al* 2011, Wright *et al* 2012, Ballare *et al* 2012

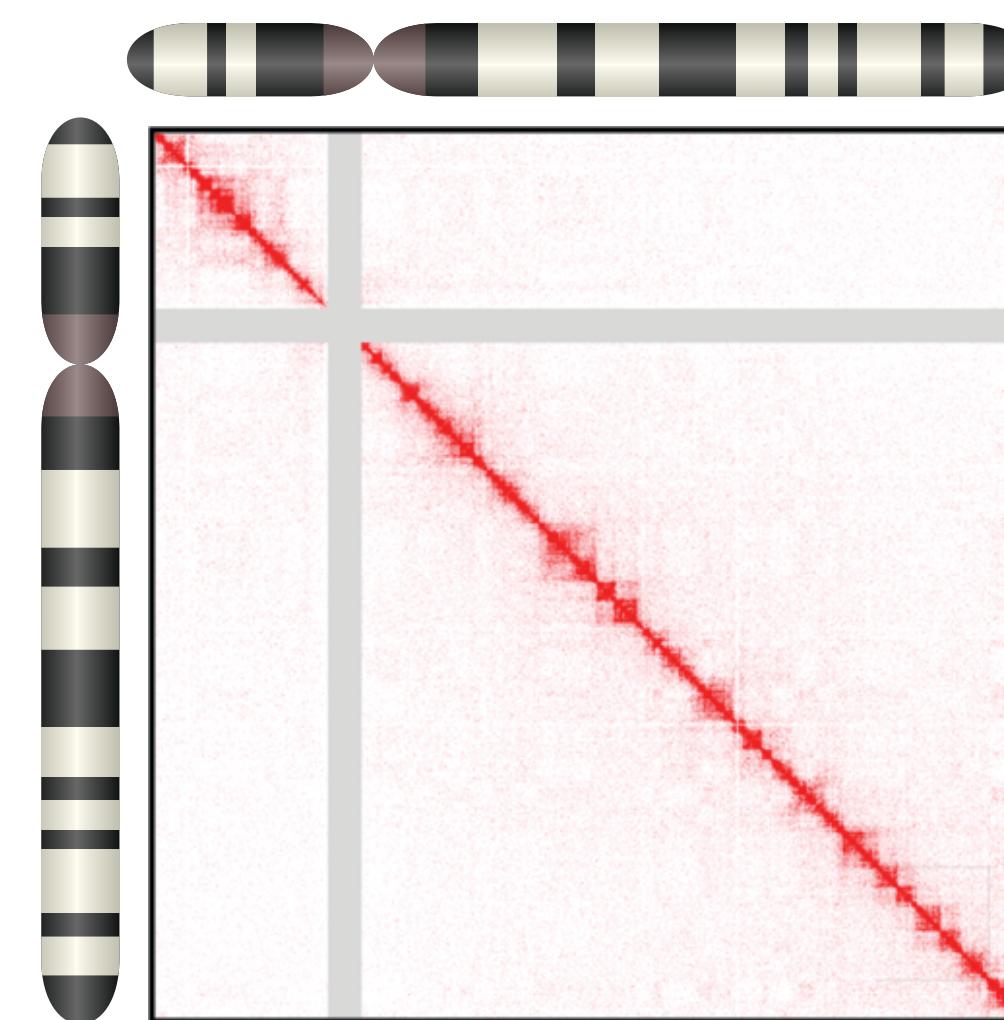
> 2,000 genes Up-regulated
> 2,000 genes Down-regulated

Regulation in 3D?

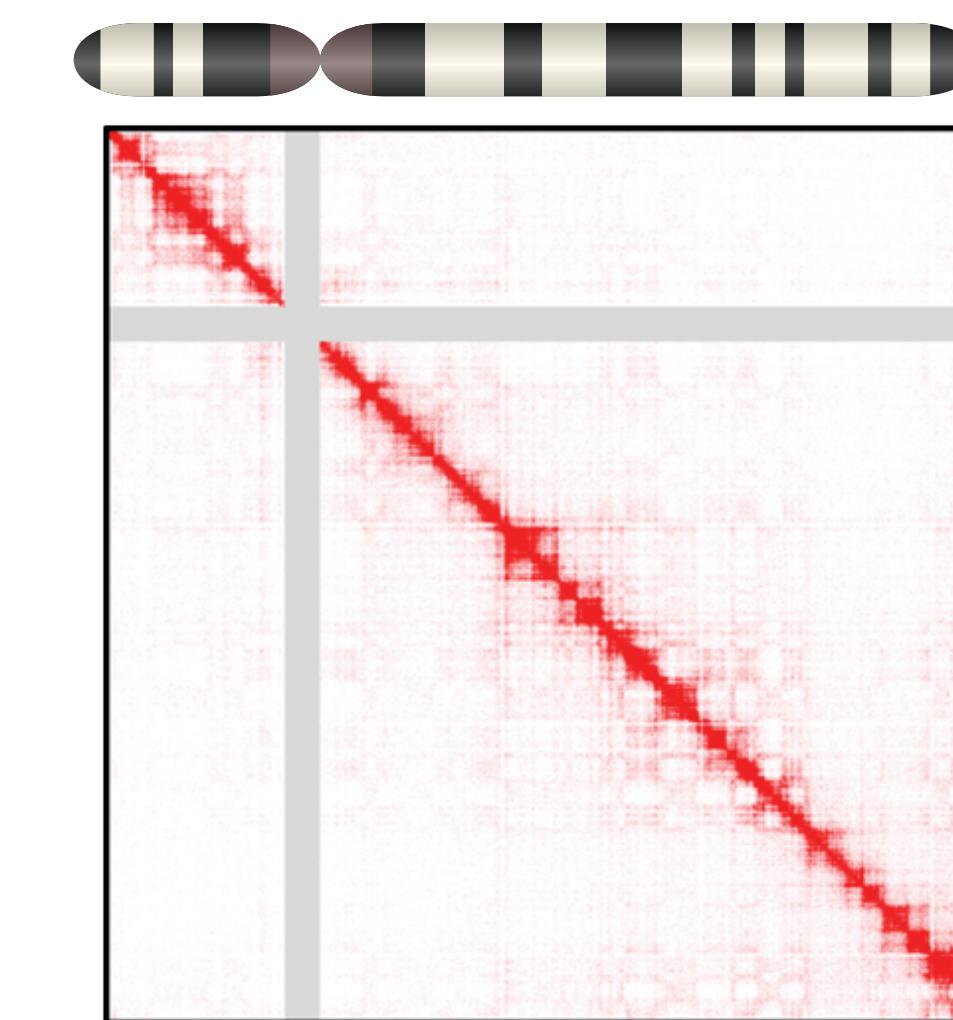
Experimental design



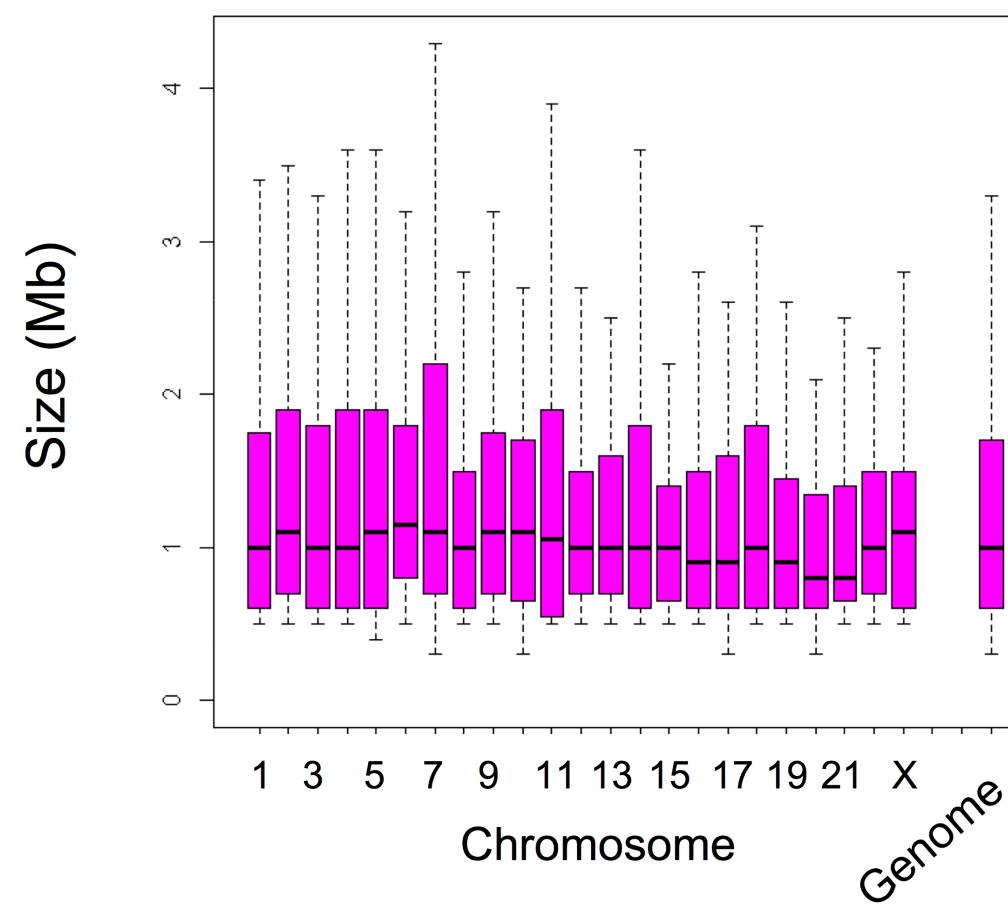
Chr.18 (Hind III)



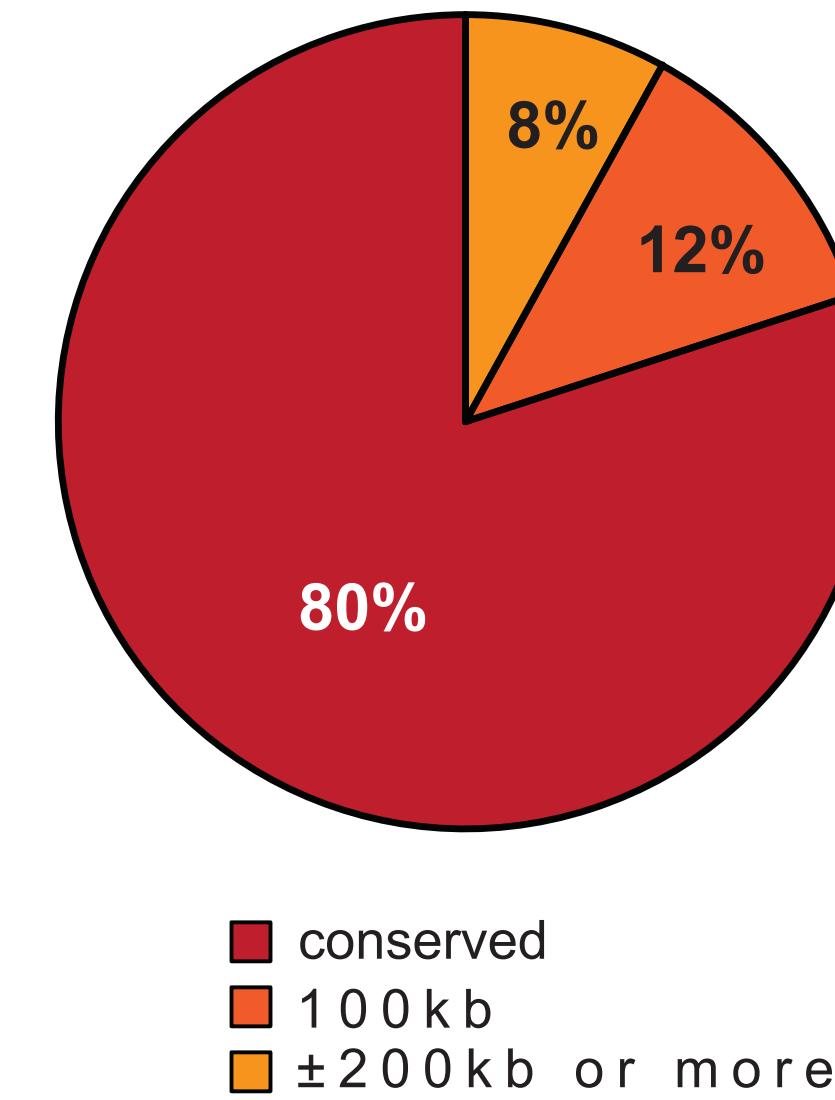
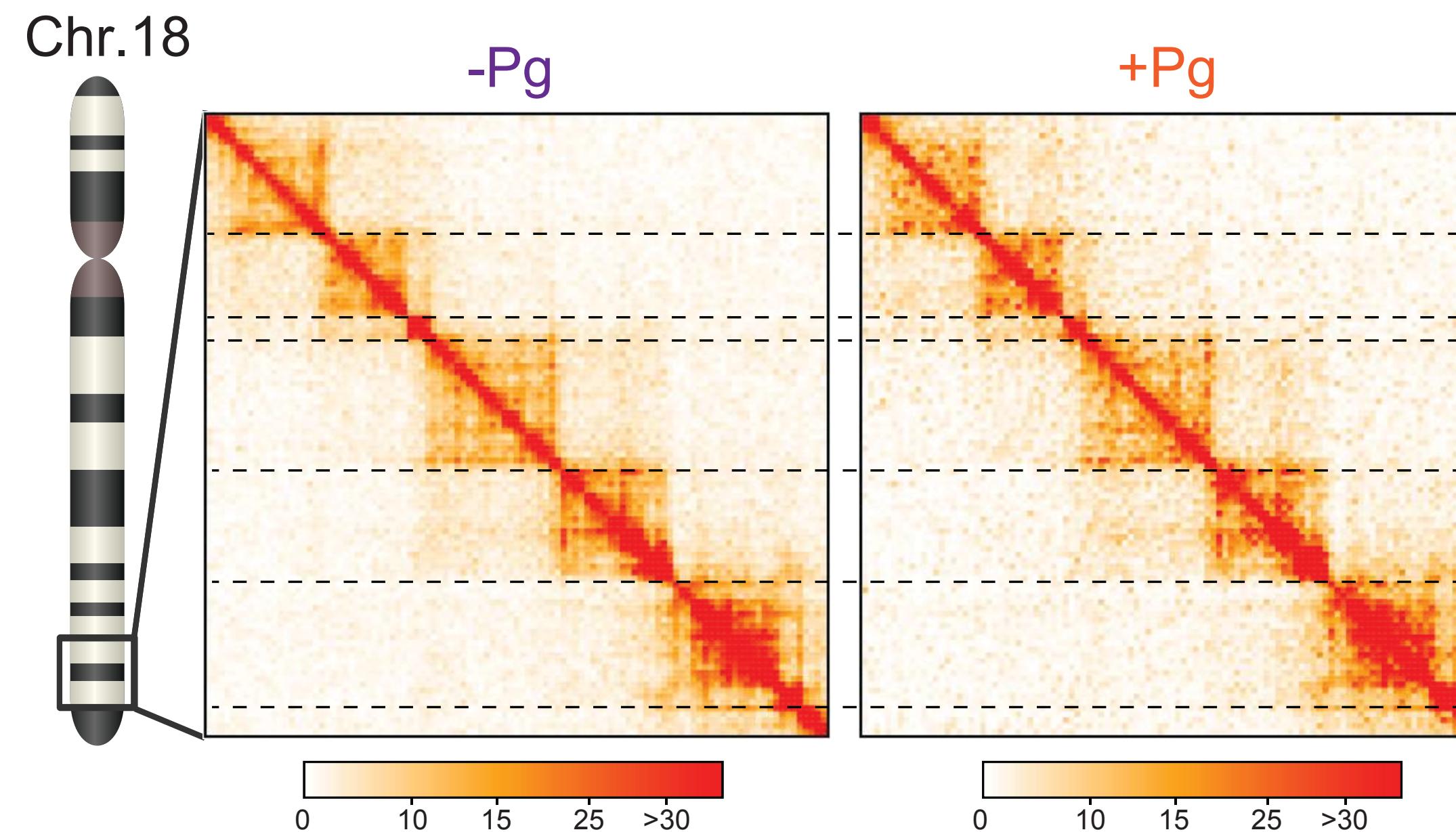
Chr.18 (Ncol)



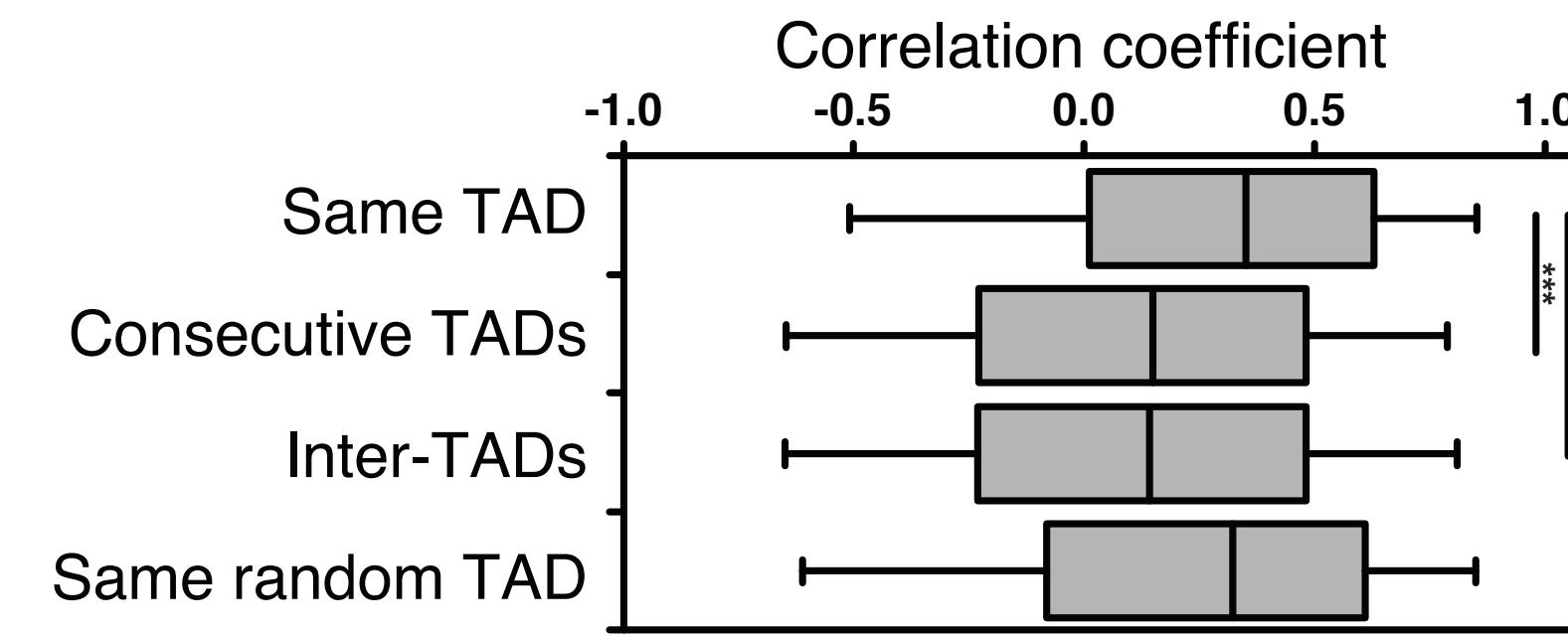
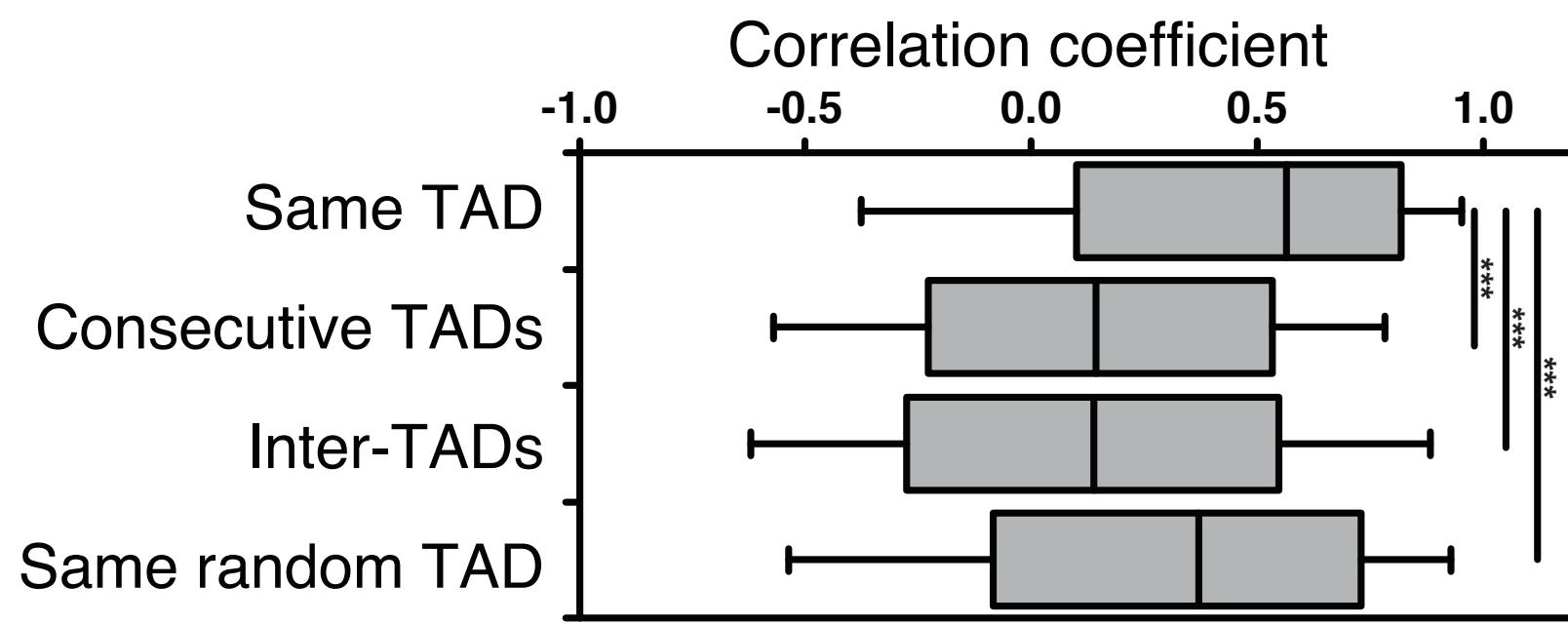
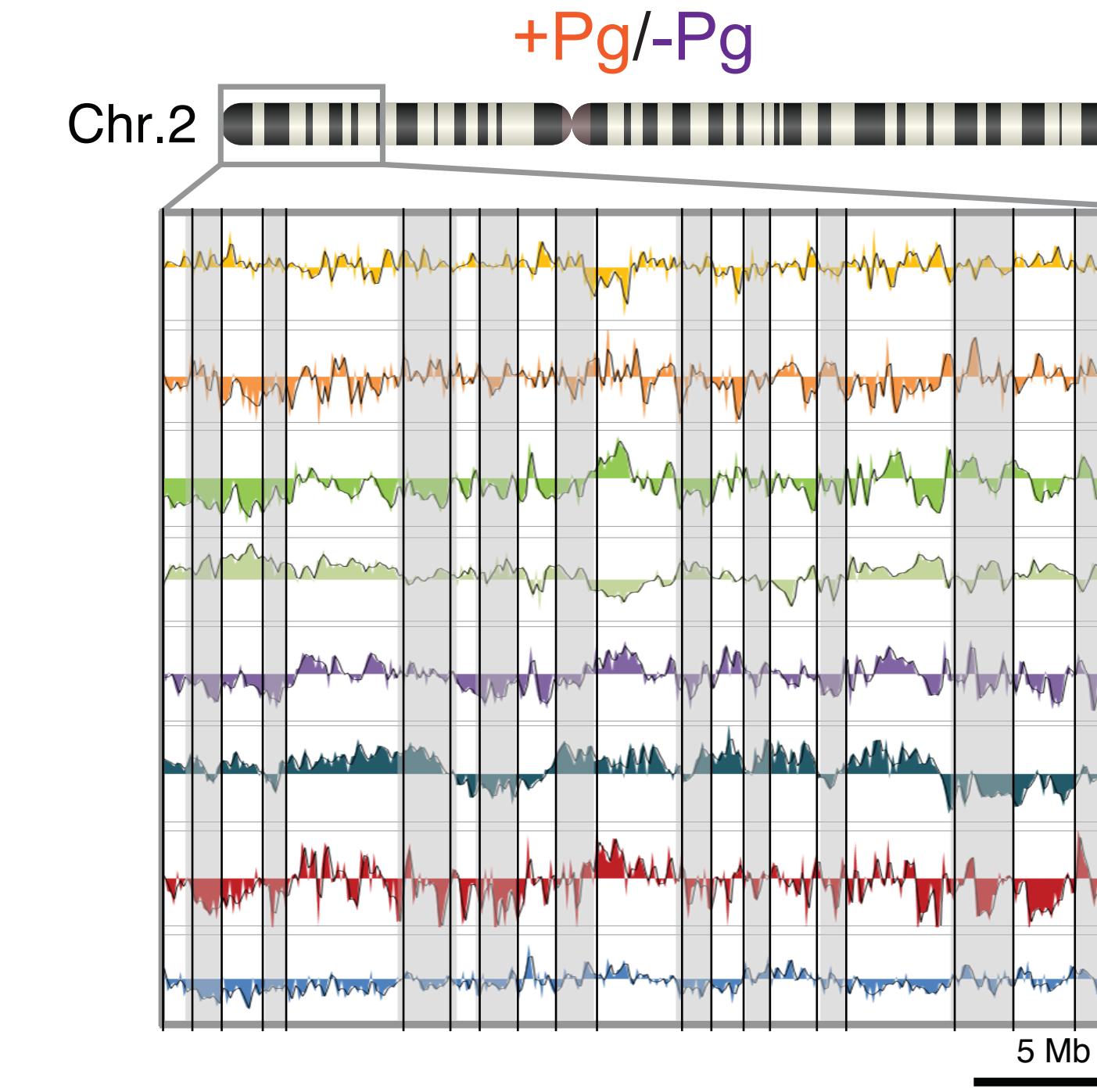
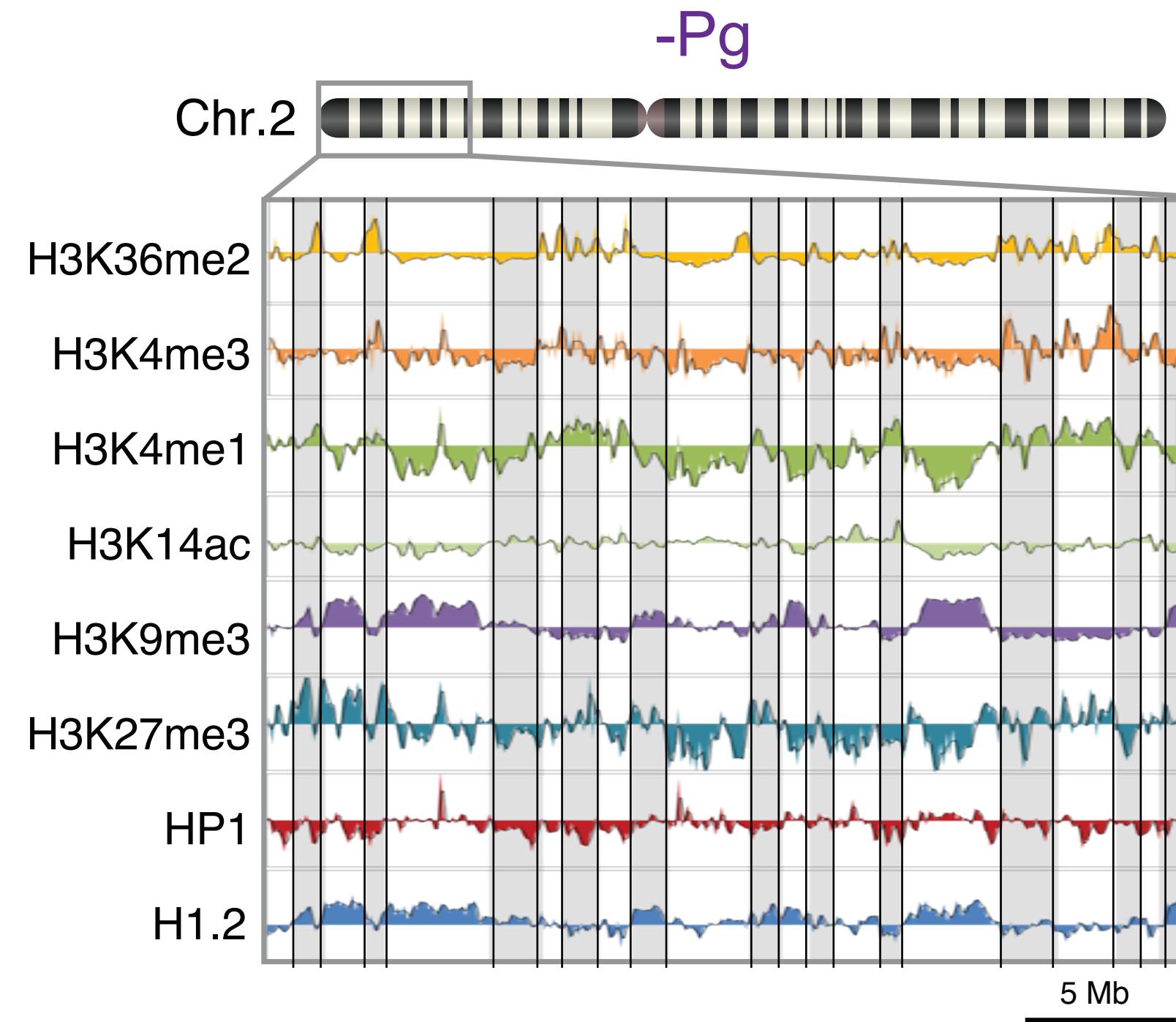
Are there TADs? how robust?



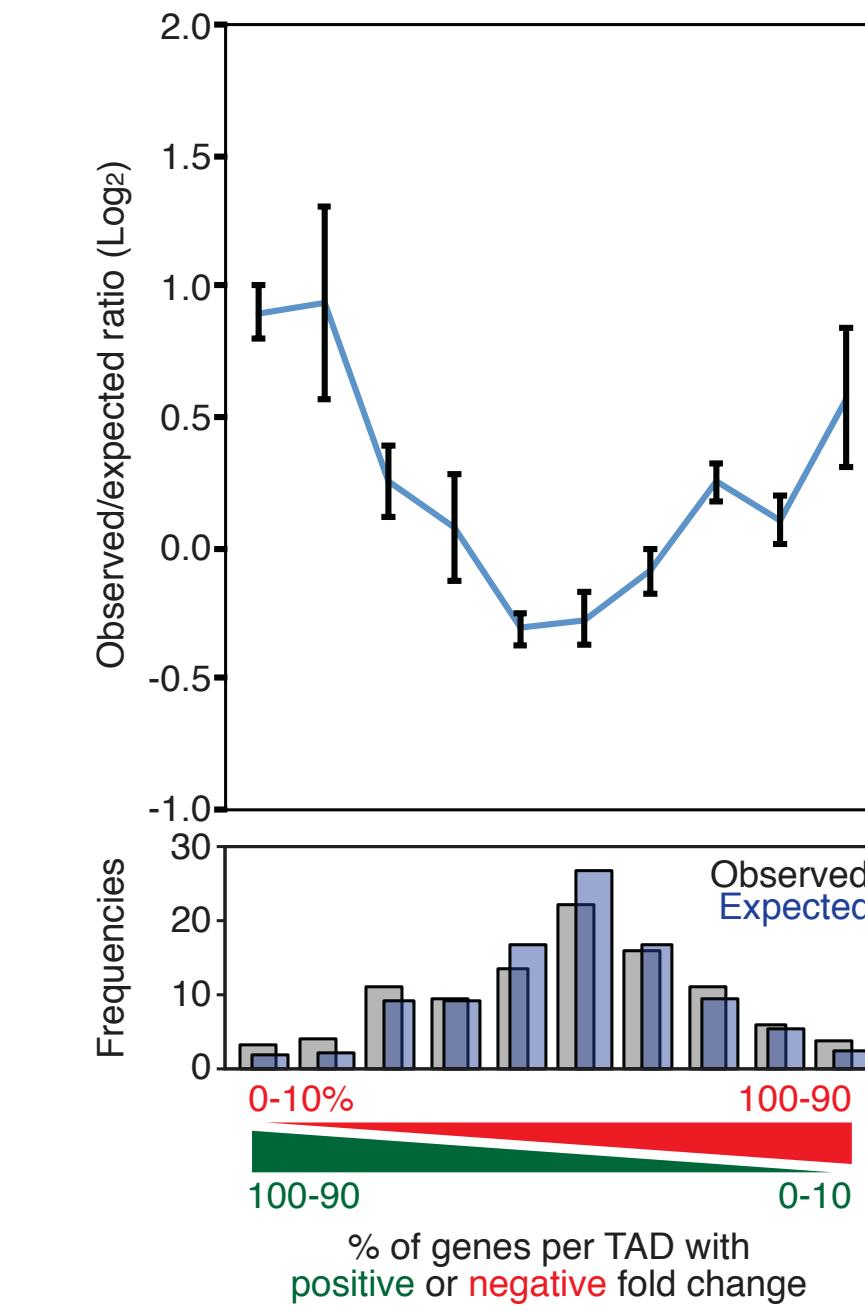
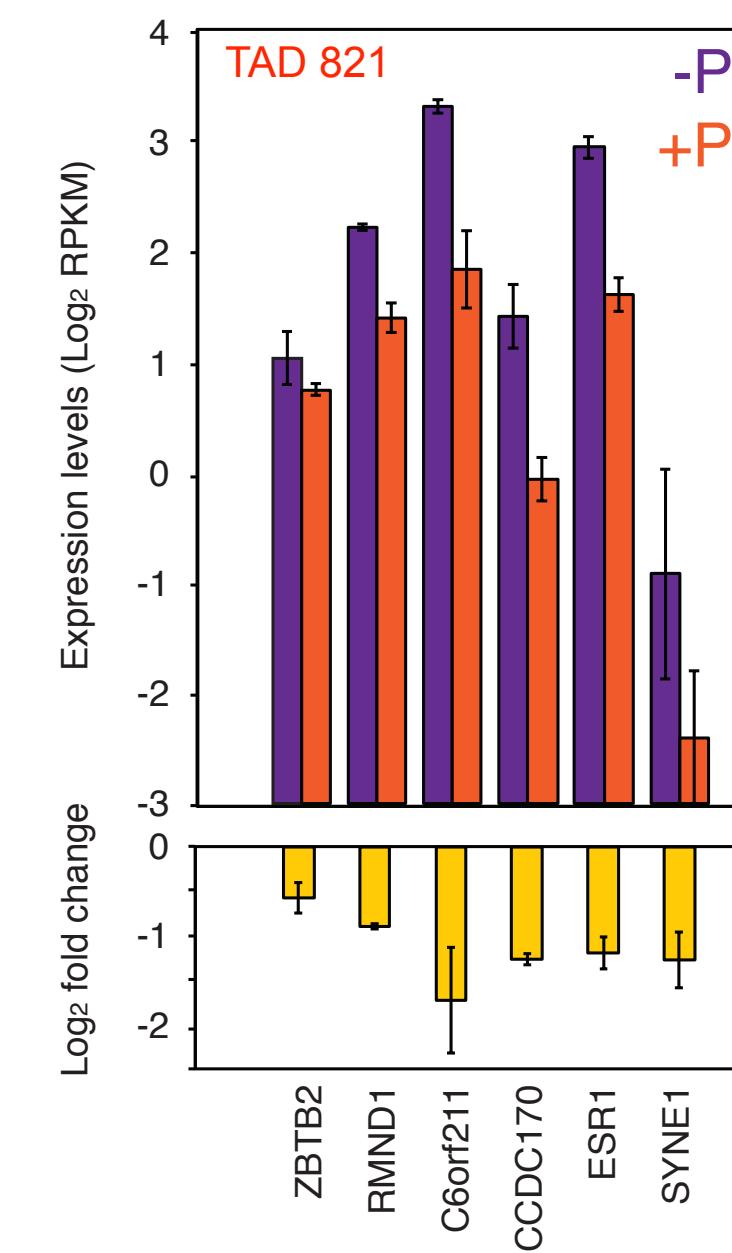
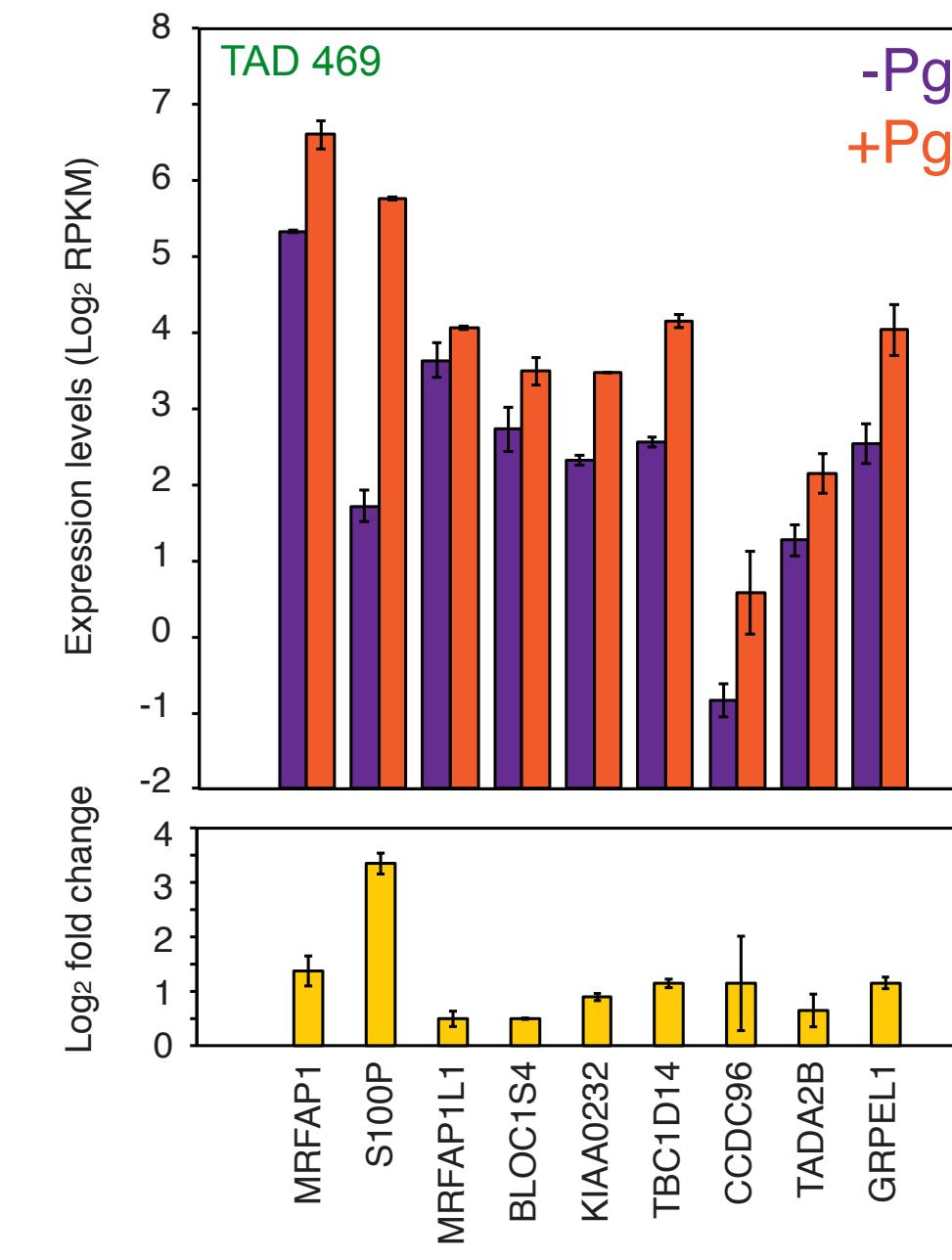
>2,000 detected TADs



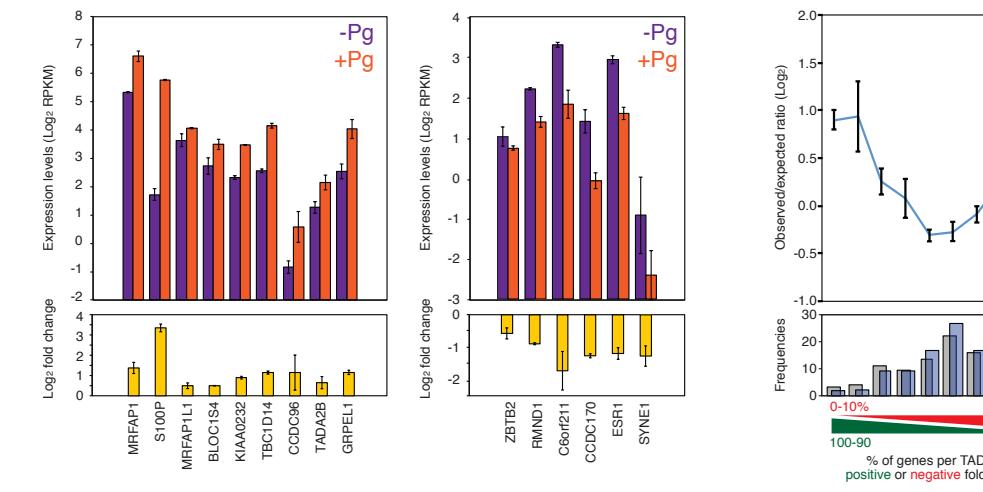
Are TADs homogeneous?



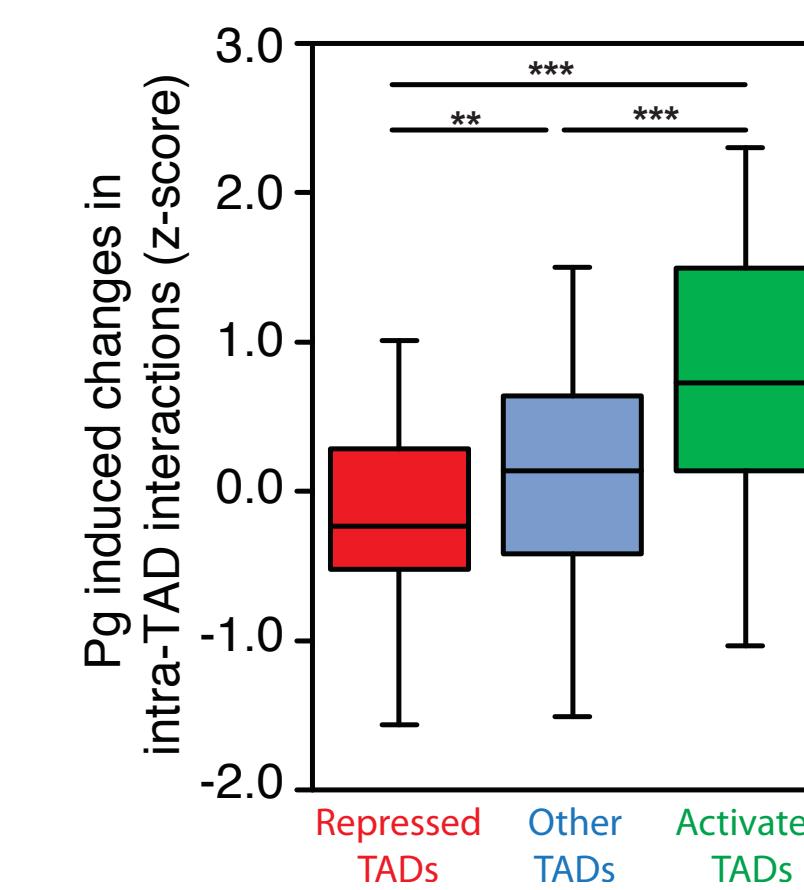
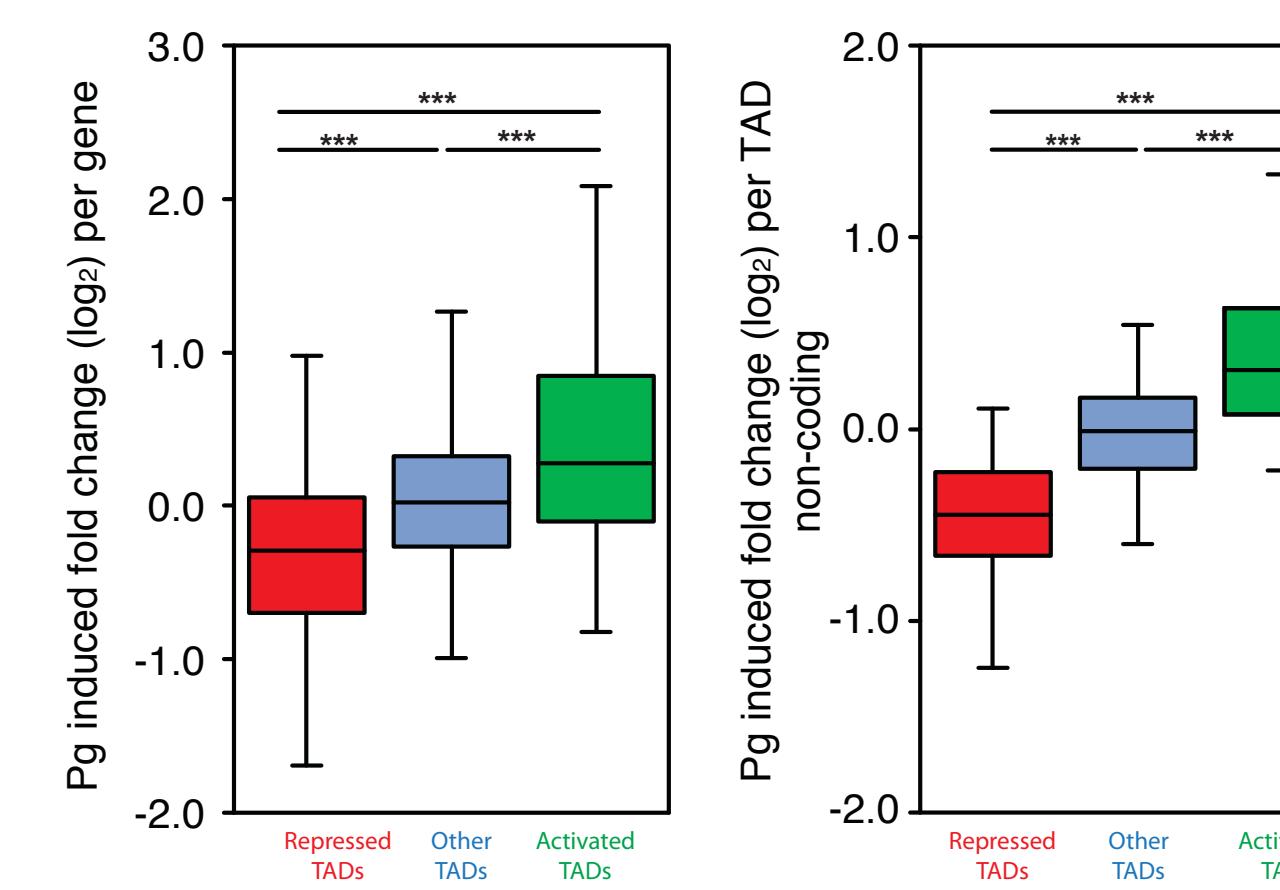
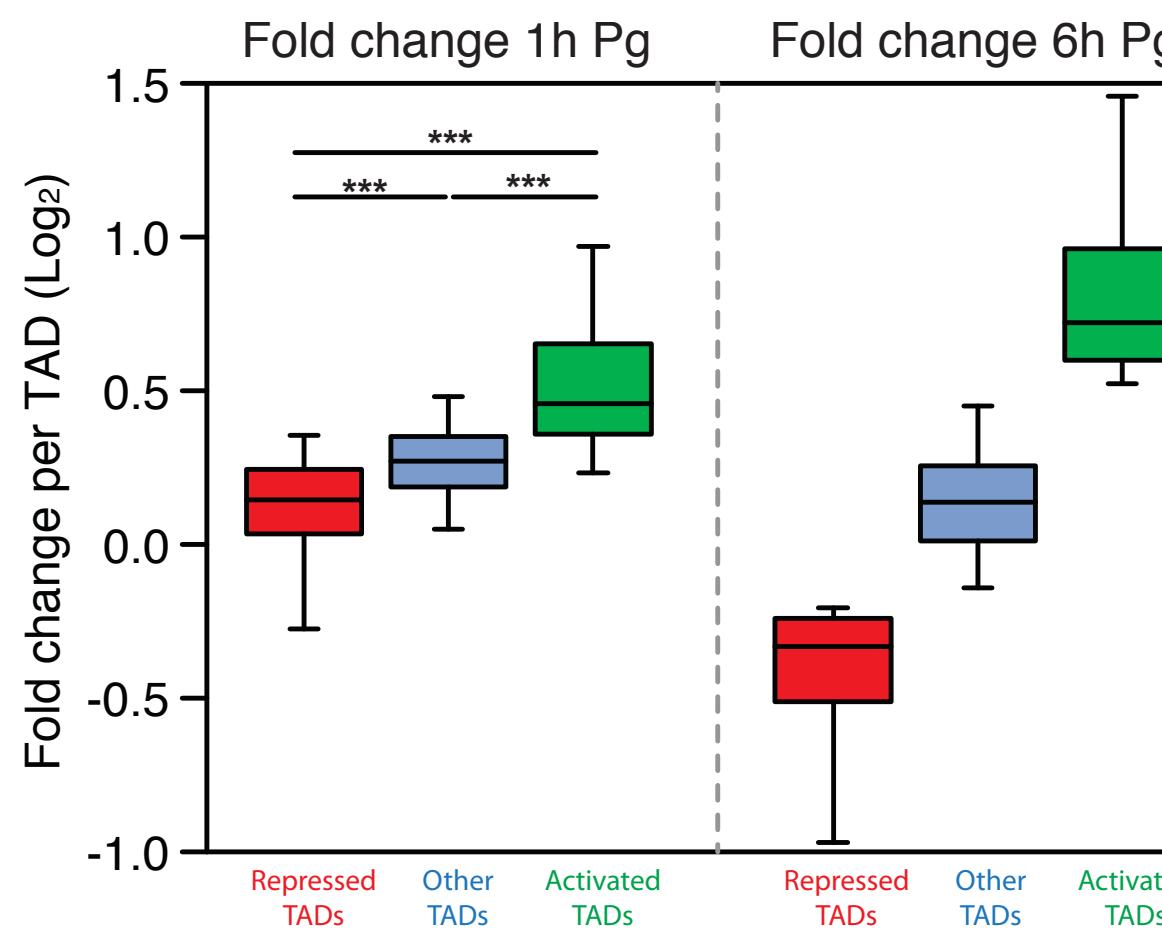
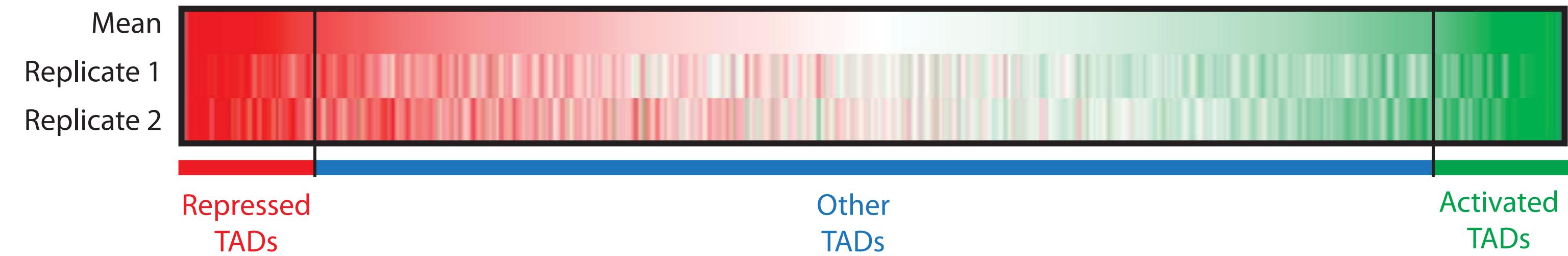
Do TADs respond differently to Pg treatment?



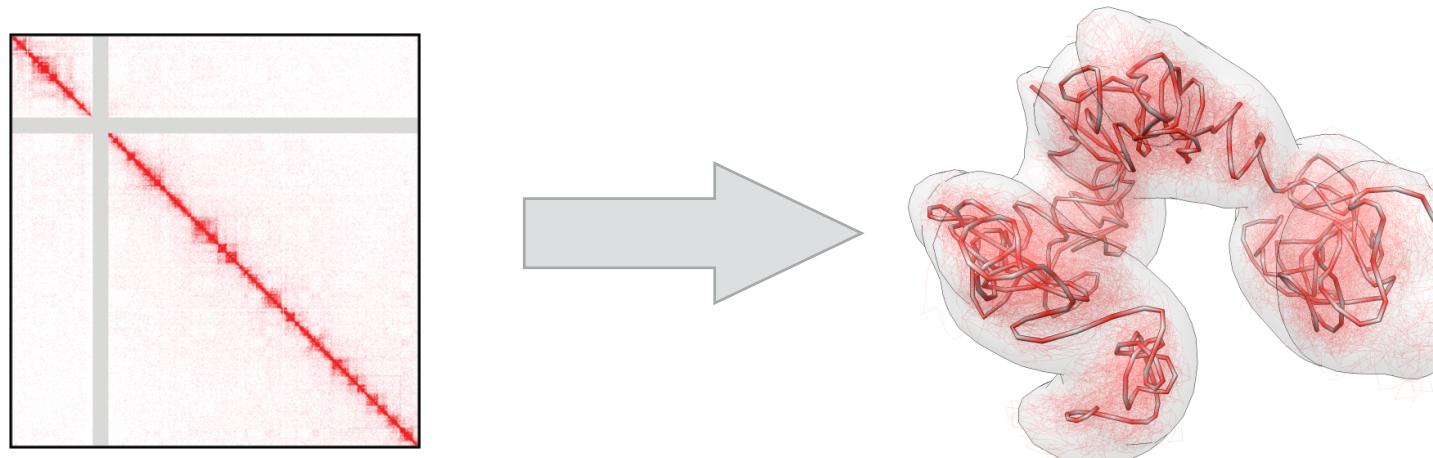
Do TADs respond differently to Pg treatment?



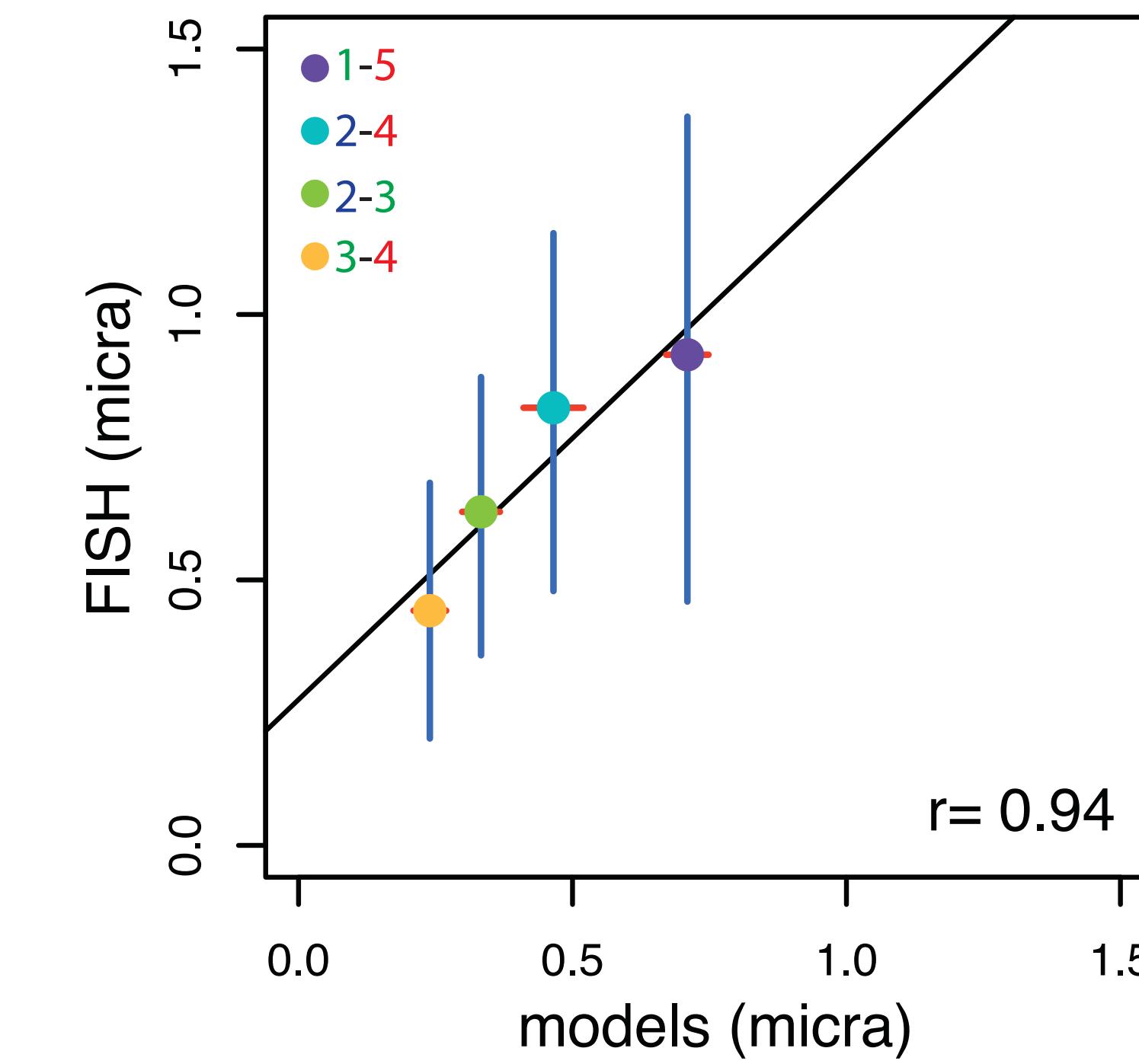
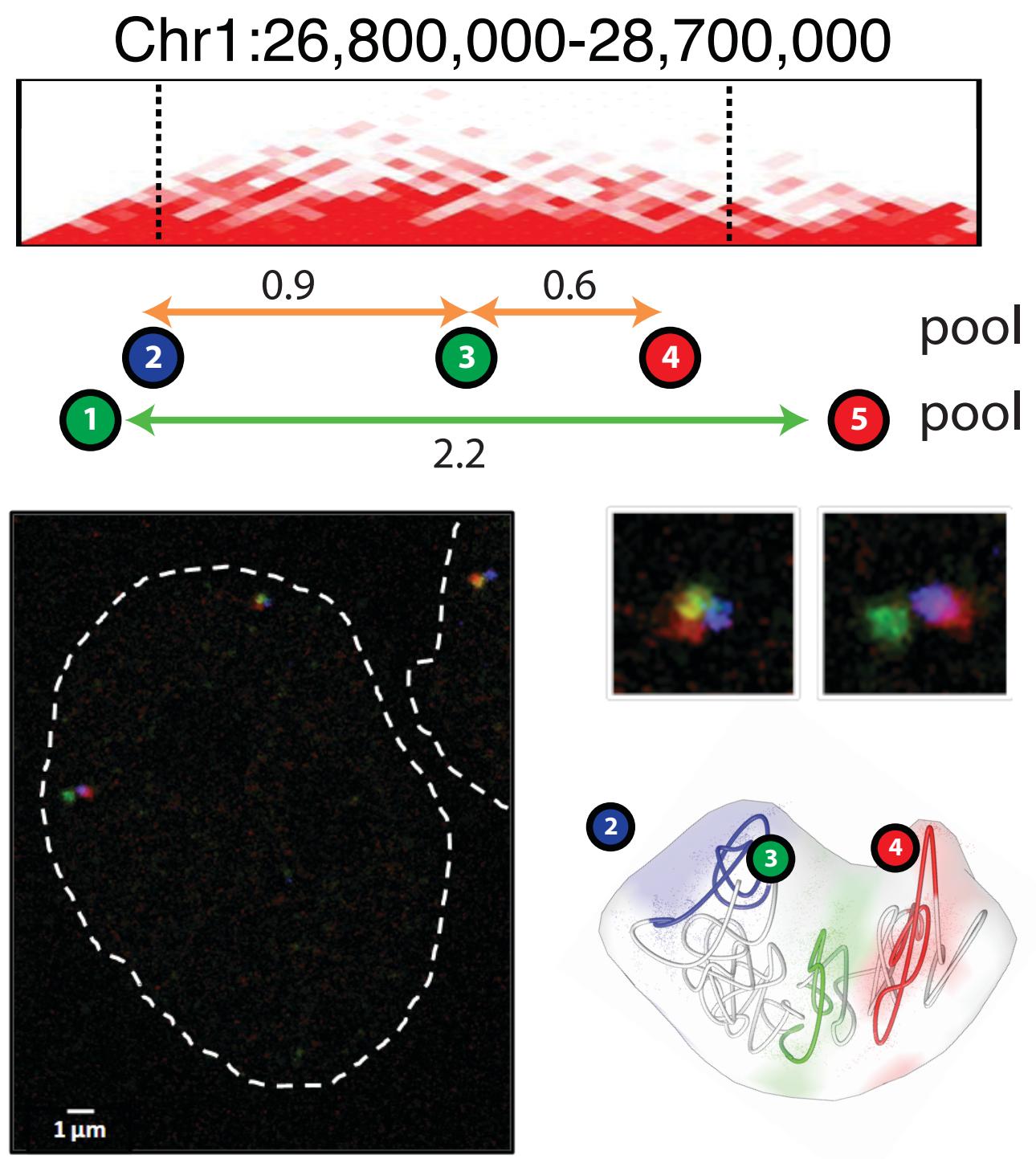
Pg induced fold change per TAD (6h)



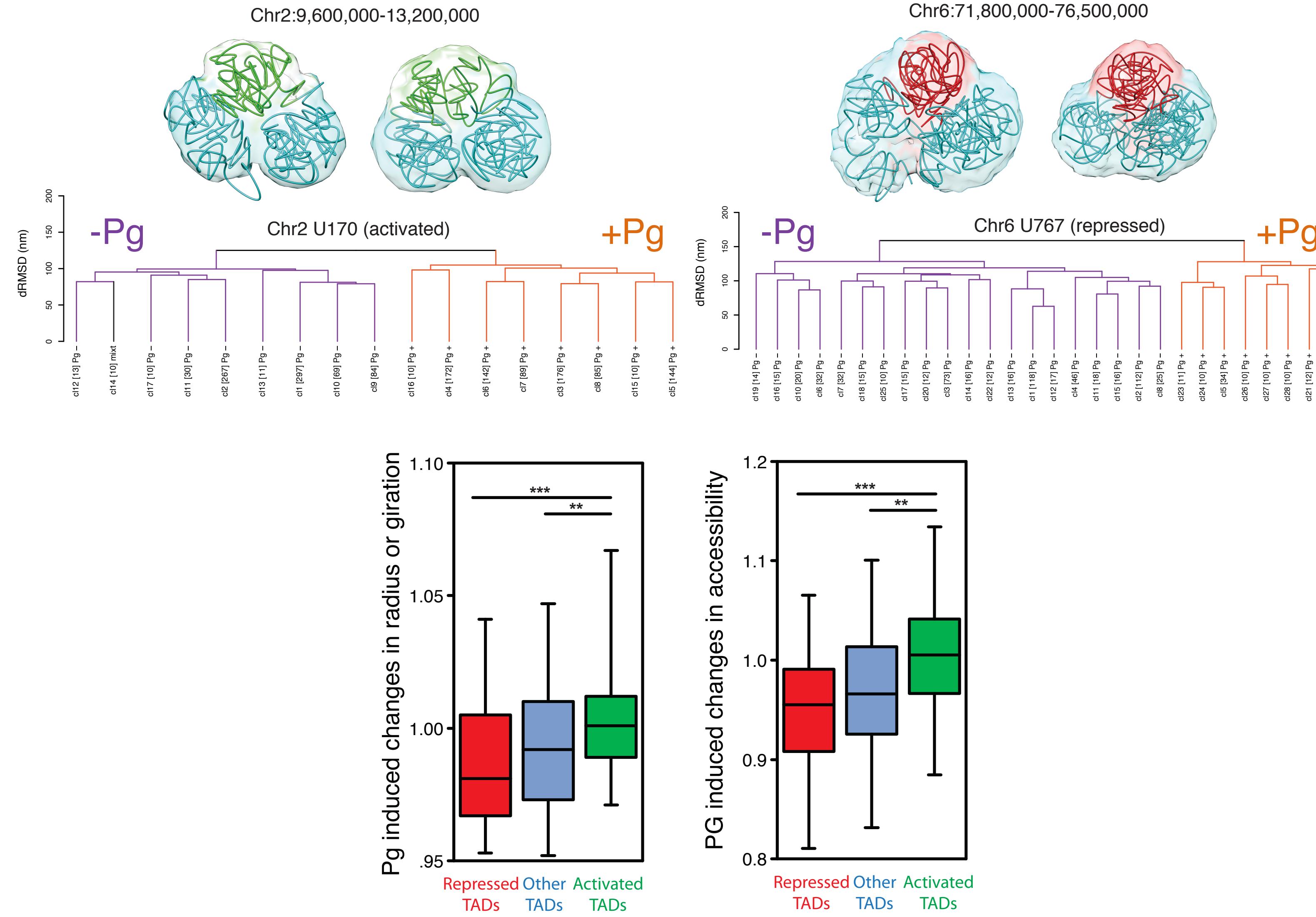
Modeling 3D TADs



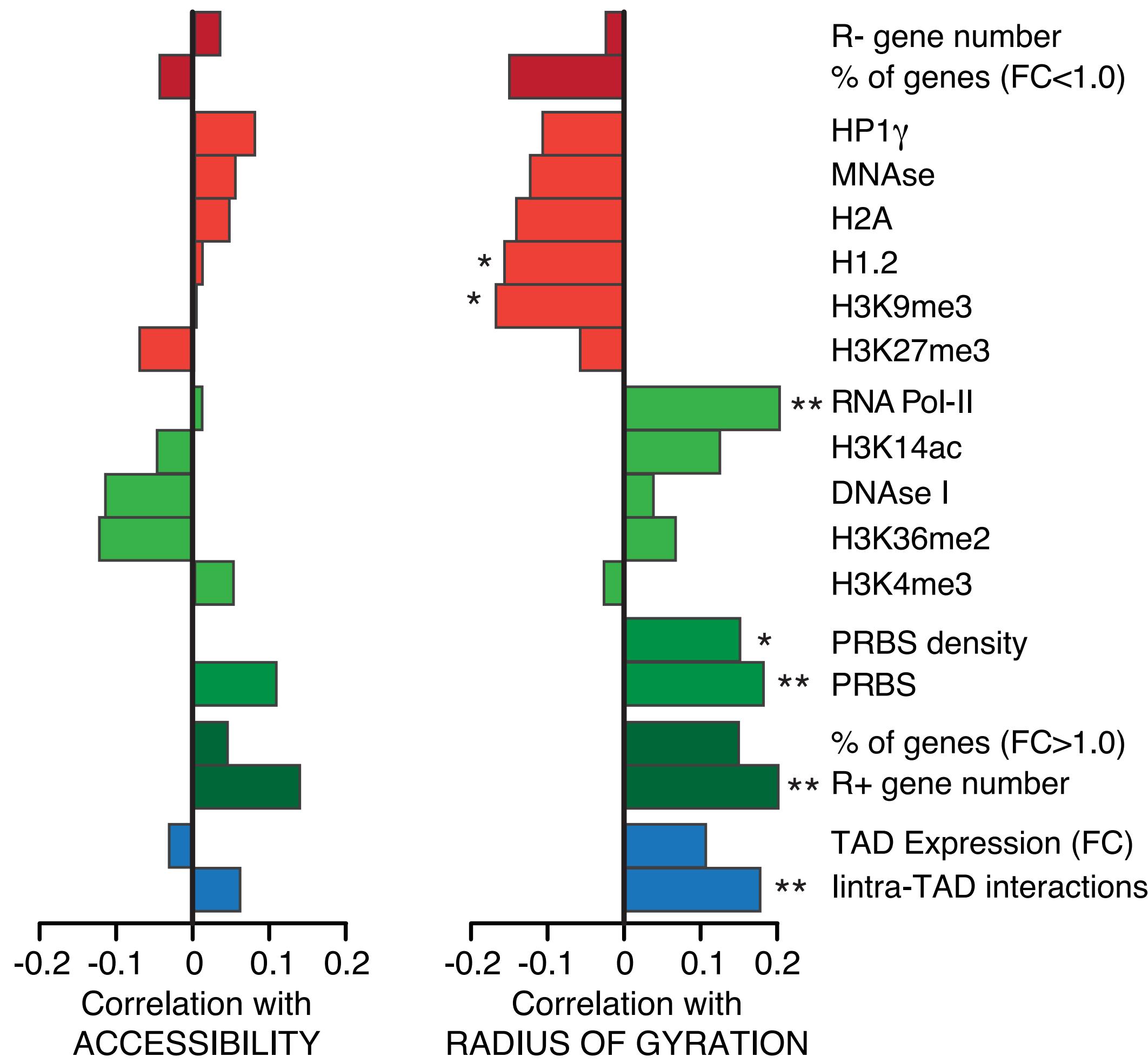
61 genomic regions containing 209 TADs covering 267Mb

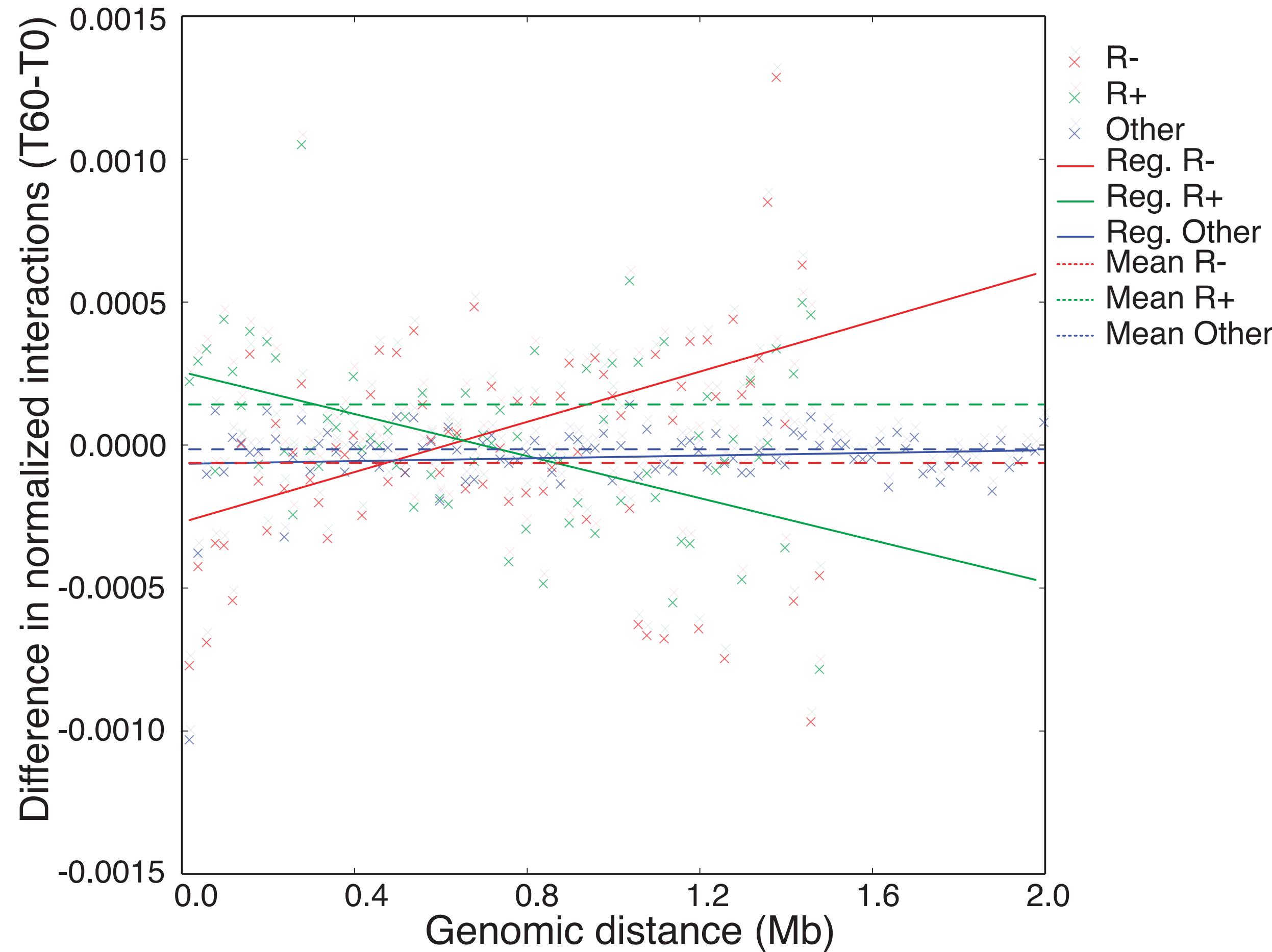
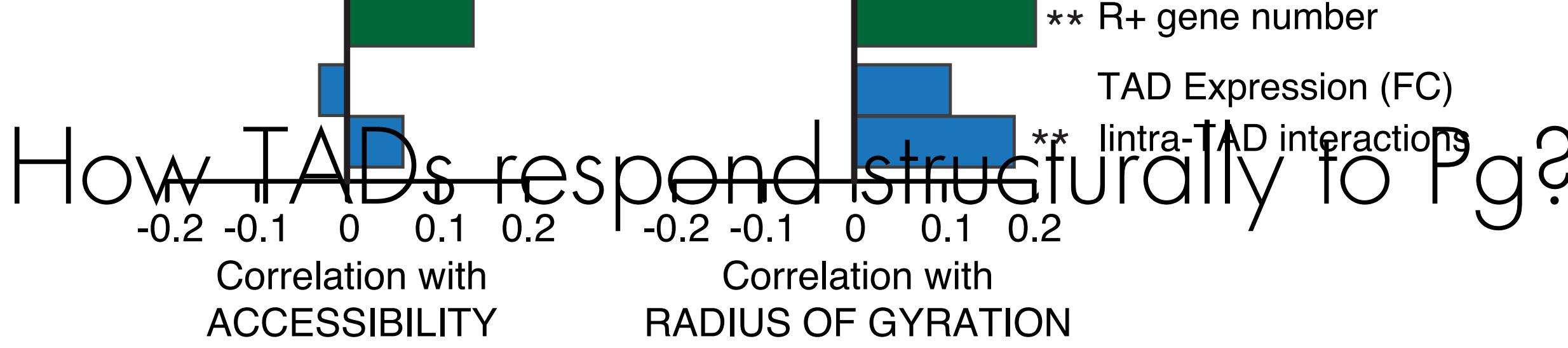


How TADs respond structurally to Pg?



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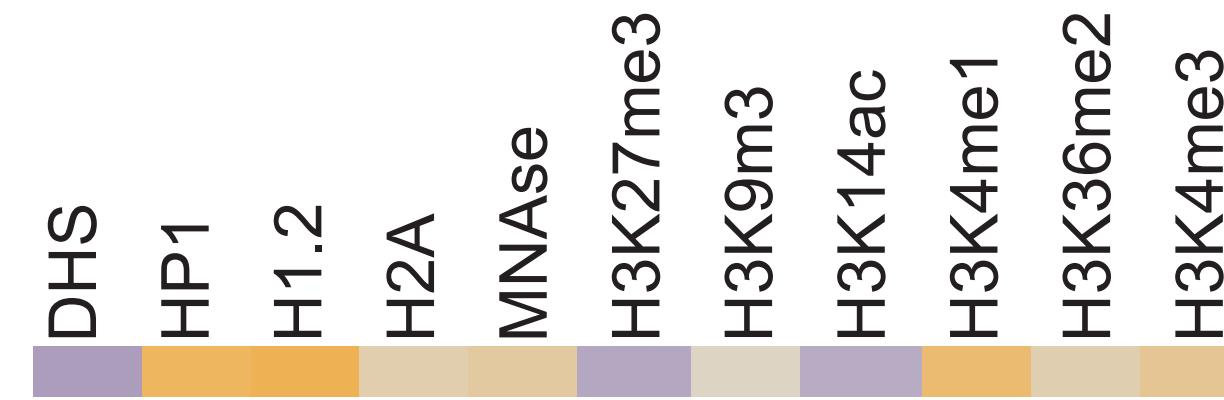
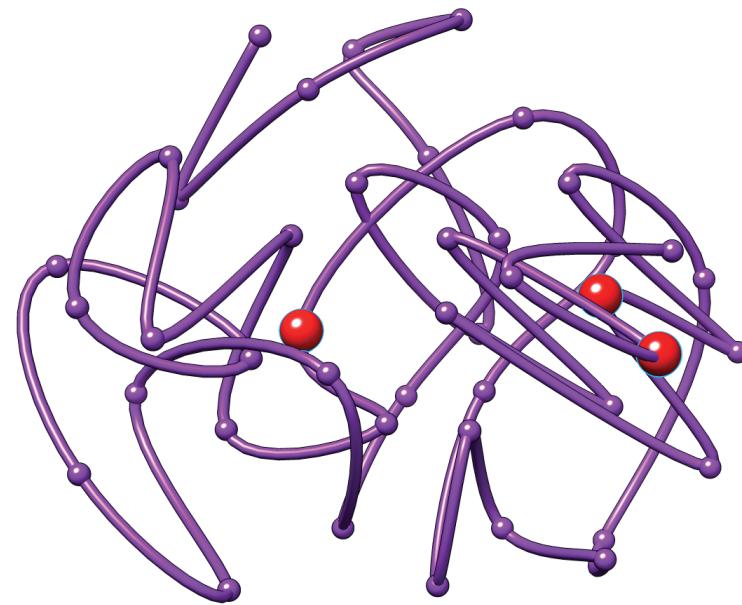




Model for TAD regulation

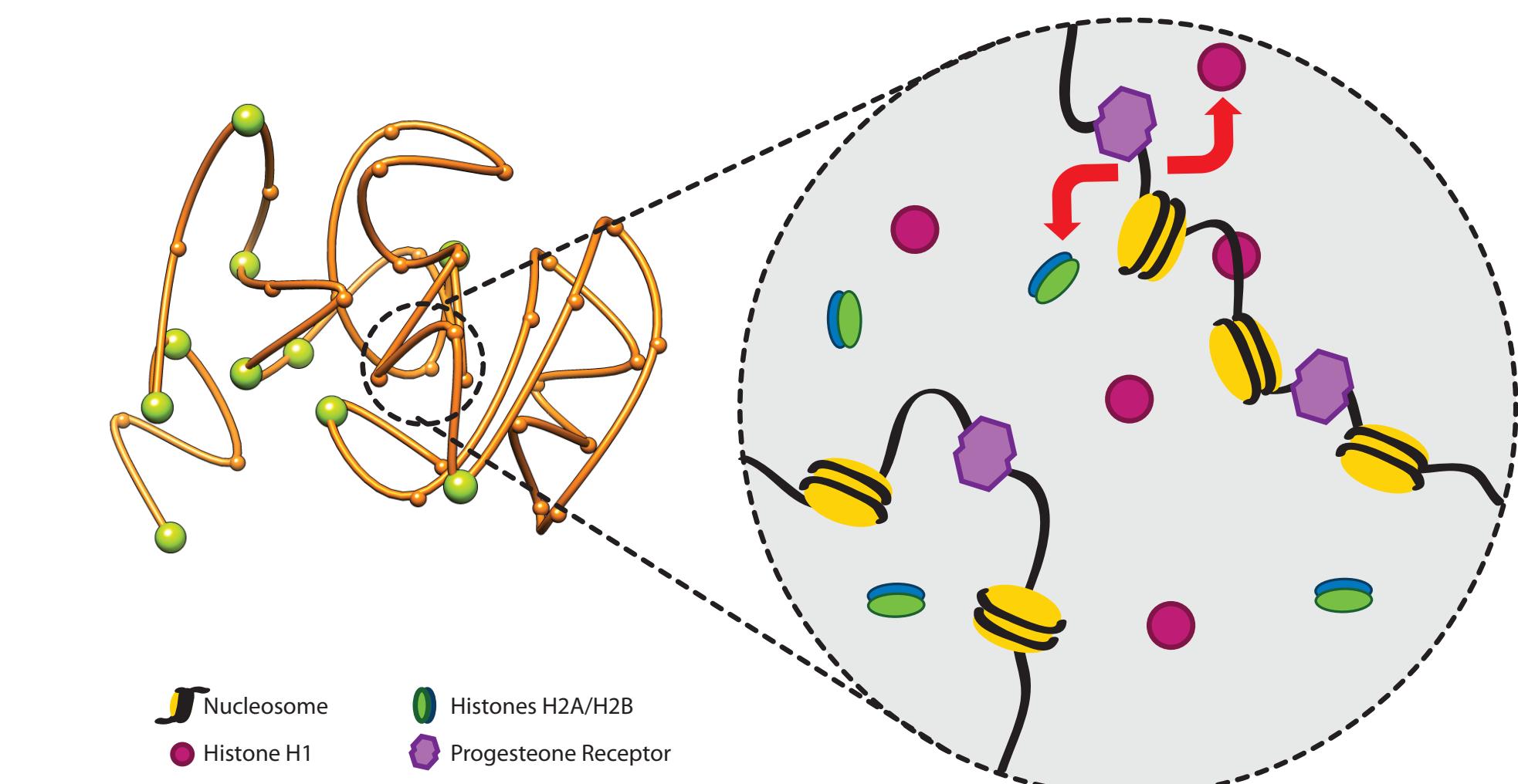
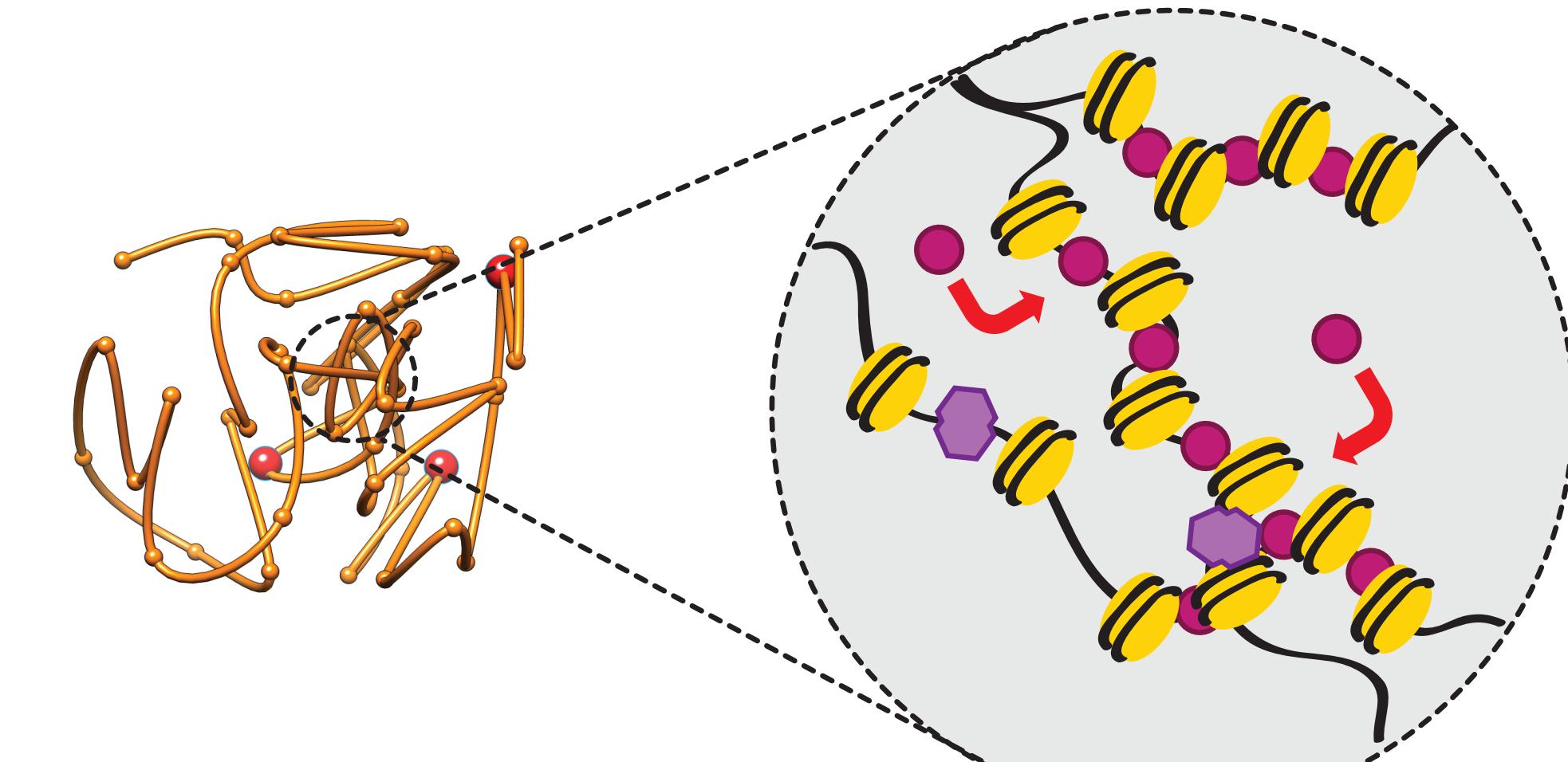
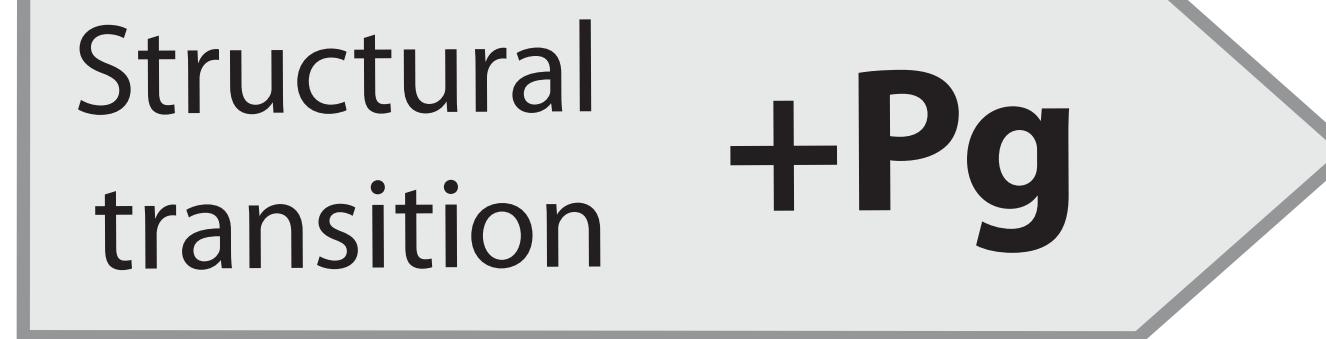
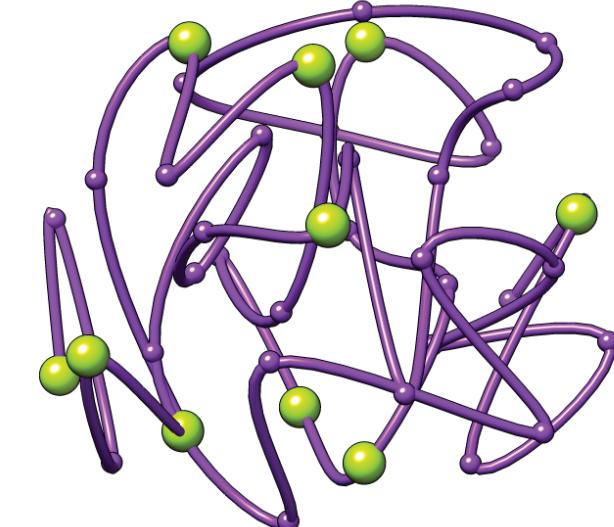
Repressed TAD

chr1 U41



Activated TAD

chr2 U207



Nucleosome
Histones H2A/H2B
Histone H1
Progesterone Receptor