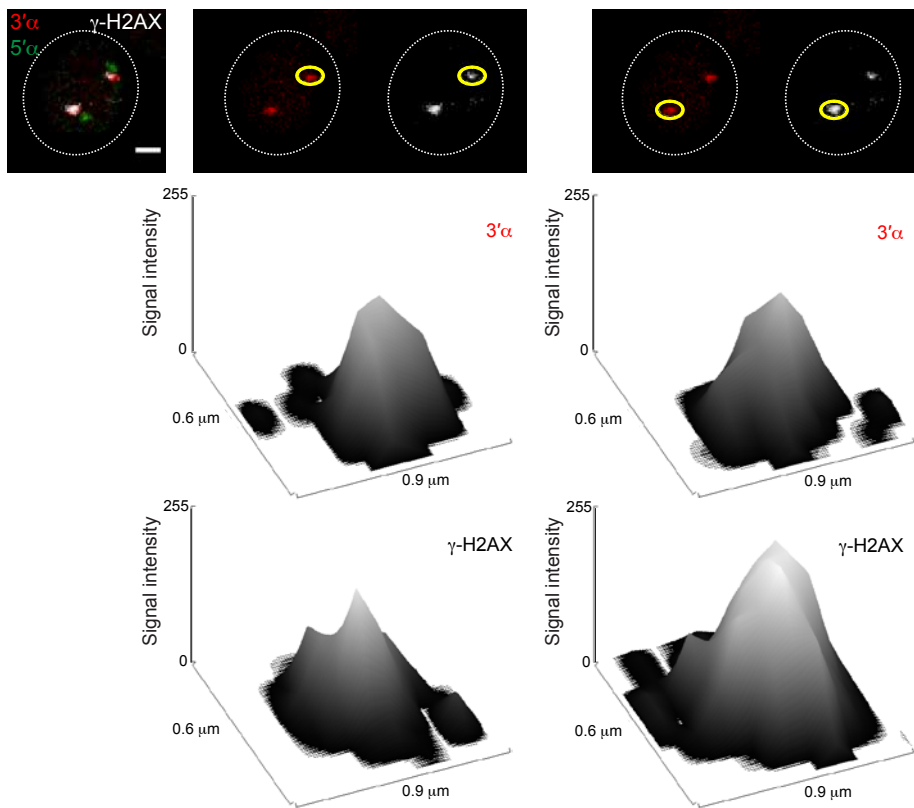
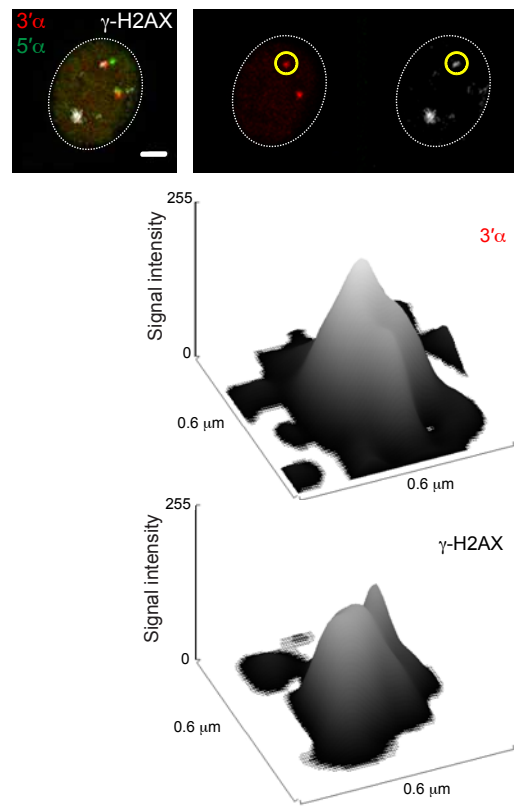


**Figure S1**

**A** Biallelic  $\gamma$ -H2AX association on *Tcra* alleles: Foci with different size and intensity - representative of WT DP cells -

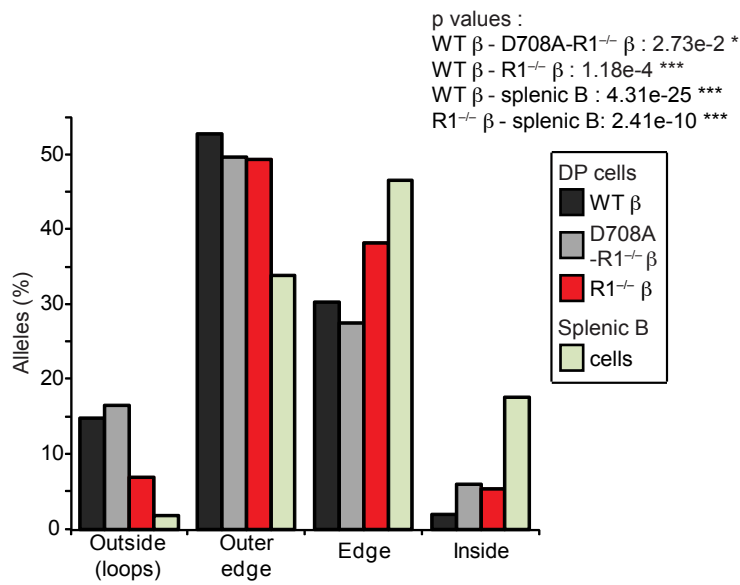


**B** Small  $\gamma$ -H2AX focus on one *Tcra* allele - representative of R1<sup>-/-</sup> β DP cells -

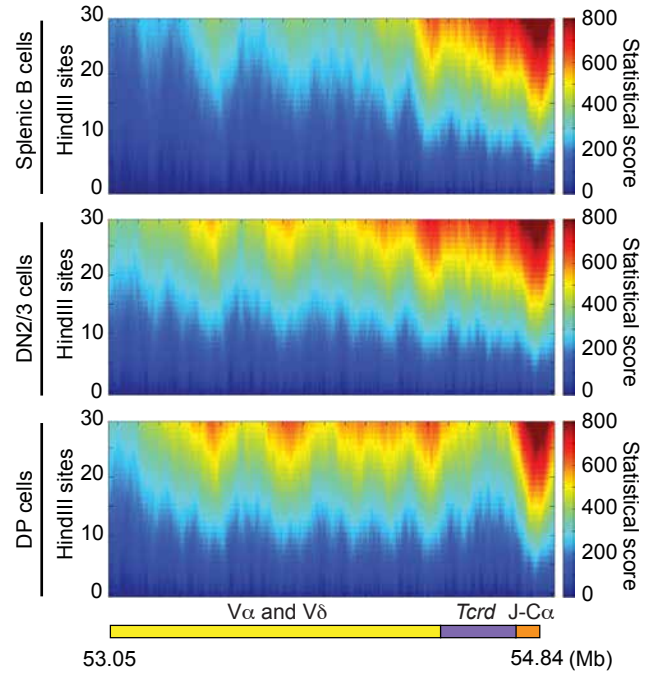


**Figure S2**

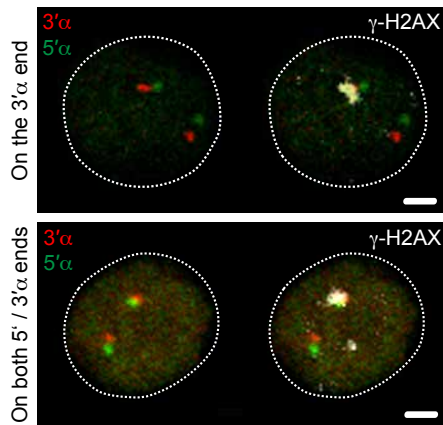
**A** Location of *Tcra* alleles relative to the chromosome 14 territory



**B** Domainograms of the *Tcra/d* locus

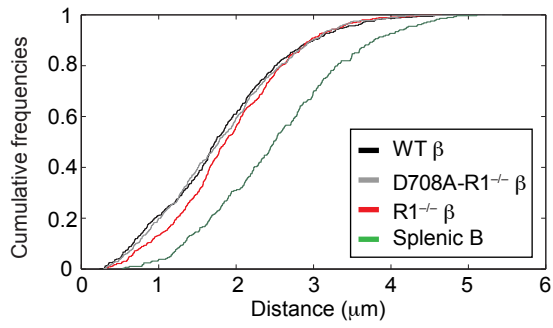


**C** Monoallelic  $\gamma$ -H2AX association on *Tcra* in DP cells



### Figure S3

#### A Separation of *Tcra* alleles in WT, RAG1-mutant DP and splenic B cells



p values (entire distributions):

WT  $\beta$ -R1<sup>-/-</sup>  $\beta$  : 3.17e-2 \*

WT  $\beta$ -D708A-R1<sup>-/-</sup>  $\beta$  : 8.60e-1 ns

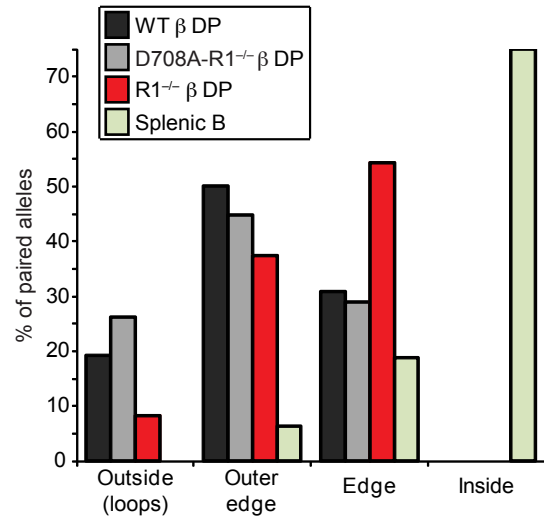
WT  $\beta$ -splenic B : 1.03e-17 \*\*\*

R1<sup>-/-</sup>  $\beta$ -D708A-R1<sup>-/-</sup>  $\beta$  : 1.13e-2 \*

R1<sup>-/-</sup>  $\beta$ -splenic B : 1.36e-13 \*\*\*

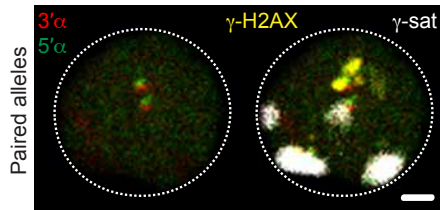
#### B

Location of paired *Tcra* alleles relative to the chromosome 14 territory

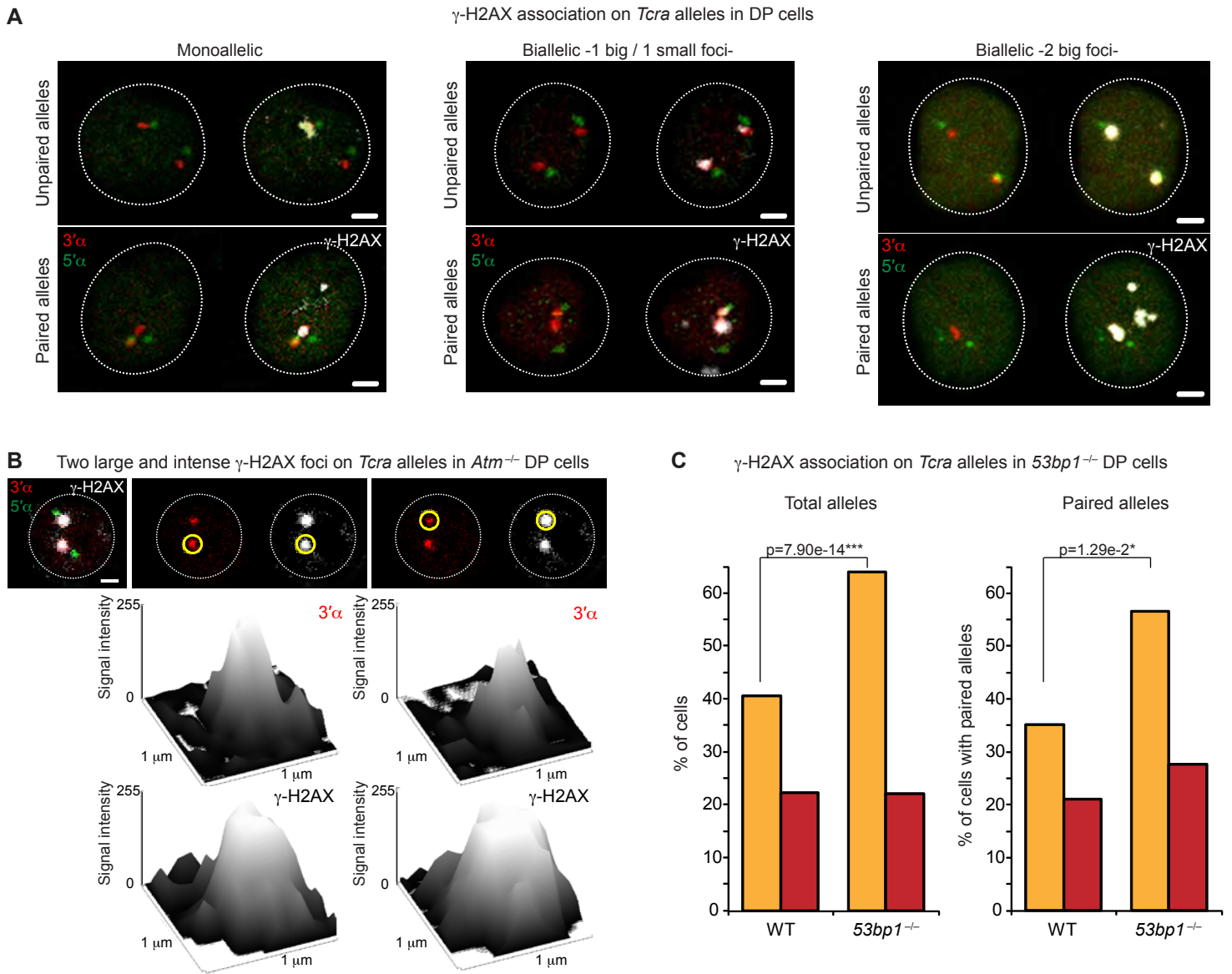


#### C

Nuclear location of paired *Tcra* alleles with the uncleaved allele at PCH (DP cells)



**Figure S4**



**Figure S5**

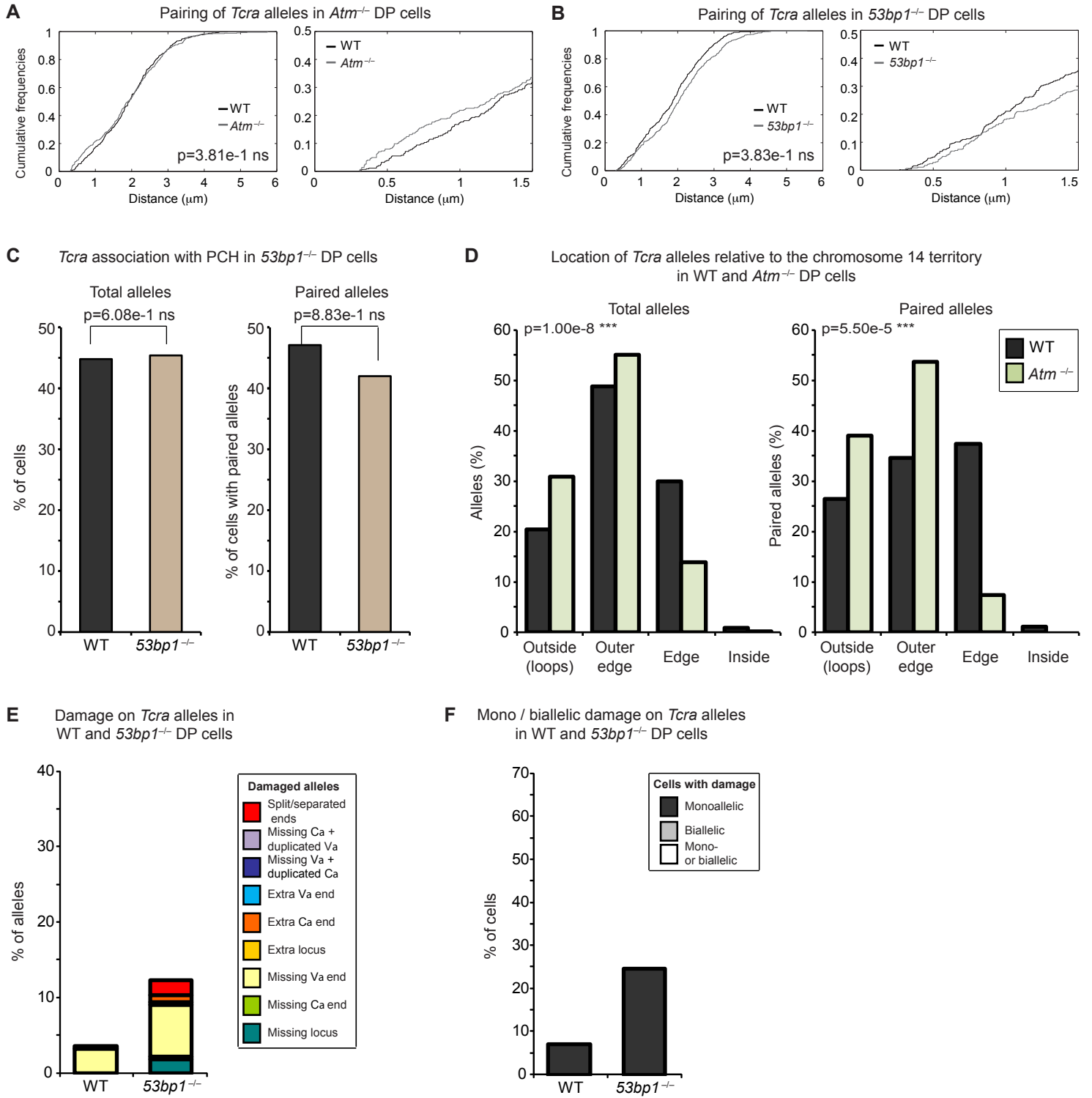


Figure S6

