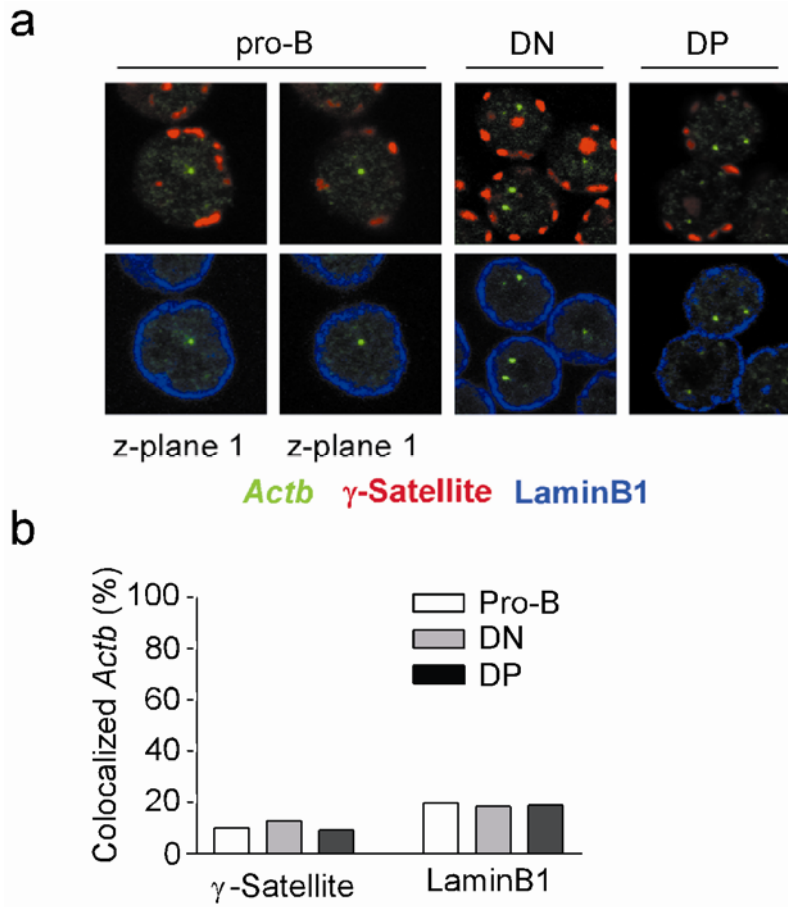
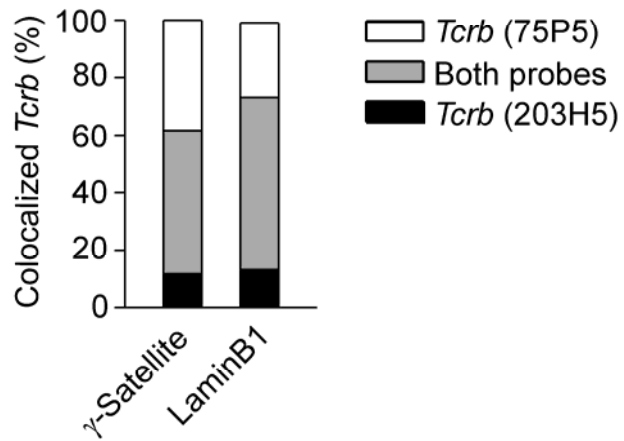


Supplementary material

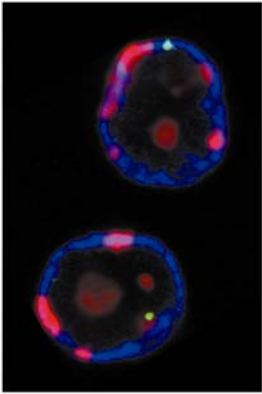


Supplementary Figure 1 Subnuclear localization of *Actb* alleles in *Rag2*^{-/-} pro-B cells, *Rag2*^{-/-} DN thymocytes, and sorted wild-type DP thymocytes. (a) 3D Immuno-FISH, showing both *Actb* alleles in representative nuclei of the three cell types. *Actb* (97O1, green), peri-centromeric heterochromatin (γ -satellite, red, upper panels), nuclear lamina (laminB1, blue, lower panels). (b) Colocalization of *Actb* alleles with either γ -satellite repeats or laminB1. Data are from 246 pro-B, 232 DN and 162 pre-B nuclei (one slide each).

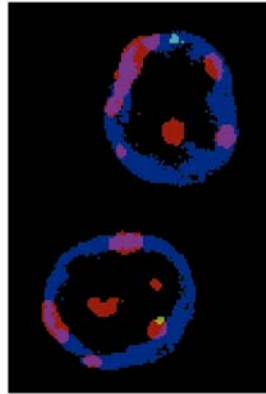


Supplementary Figure 2 *Tcrb* locus orientation relative to pericentromeric heterochromatin and the nuclear lamina. Colocalization of the distal (75P5) only, proximal (203H5) only or both probes with γ -satellite or laminB1 is indicated. γ -satellite data were from 54 nuclei (one slide); laminB1 data were from 53 nuclei (one slide).

Unsegmented image



Segmented image



Supplementary Figure 3 Example of image segmentation performed prior to scoring colocalization of alleles with γ -satellite or lamin B1.

Supplementary Table 1 Independent segregation of *Tcrb* alleles with laminB1 or γ -satellite in recombinase-sufficient DN thymocytes

				Experimental distribution of nuclei (%)			Theoretical distribution of nuclei (%)		
Cell Type	Nuclear compartment	Number of nuclei	Allelic association rate (%)	Neither allele	One allele	Both alleles	Neither allele	One allele	Both alleles
			p				$(1-p)^2$	$2p(1-p)$	p^2
<i>Lat</i> ^{-/-} DN	laminB1	299	69.2	10.0	41.5	48.5	9.5	42.6	47.9
	γ -satellite	71	37.3	38.0	49.3	12.7	39.3	46.8	13.9

Supplementary Table 2 Independent segregation of *Actb* alleles with laminB1 or γ -satellite

				Experimental distribution of nuclei (%)			Theoretical distribution of nuclei (%)		
Nuclear compartment	Cell type	Number of nuclei	Allelic association rate (%)	Neither allele	One allele	Both alleles	Neither allele	One allele	Both alleles
			p				$(1-p)^2$	$2p(1-p)$	p^2
laminB1	pro-B	123	19.9	65.0	30.1	4.9	64.1	31.9	4.0
	DN	116	18.5	65.5	31.9	2.6	66.4	30.2	3.4
	DP	81	19.1	71.6	18.5	9.9	65.4	30.9	3.7
γ -satellite	pro-B	123	10.2	80.5	18.7	0.8	80.7	18.3	1.0
	DN	116	12.9	78.4	17.2	4.3	75.8	22.5	1.7
	DP	81	9.3	85.2	11.1	3.7	82.3	16.8	0.9

Supplementary Table 3 Independent segregation of *Tcra* alleles with laminB1 or γ -satellite

				Experimental distribution of nuclei (%)			Theoretical distribution of nuclei (%)		
Nuclear compartment	Cell type	Number of nuclei	Allelic association rate (%)	Neither allele	One allele	Both alleles	Neither allele	One allele	Both alleles
			p				$(1-p)^2$	$2p(1-p)$	p^2
laminB1	pro-B	151	64.6	13.2	44.4	42.4	12.6	45.8	41.7
	DN	26	19.2	73.1	15.4	11.5	65.2	31.1	3.7
	DP	89	28.1	53.9	36.0	10.1	51.7	40.4	7.9
γ -satellite	pro-B	151	31.5	49.0	39.1	11.9	47.0	43.1	9.9
	DN	26	9.6	84.6	11.5	3.8	81.7	17.4	0.9
	DP	89	11.8	82.0	12.4	5.6	77.8	20.8	1.4