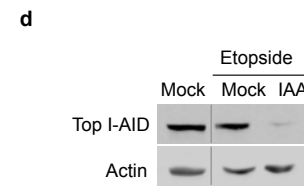
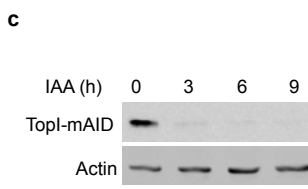
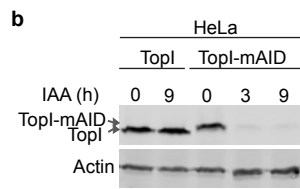
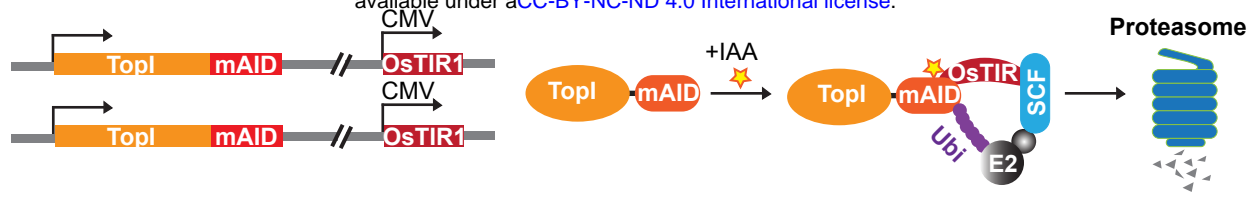
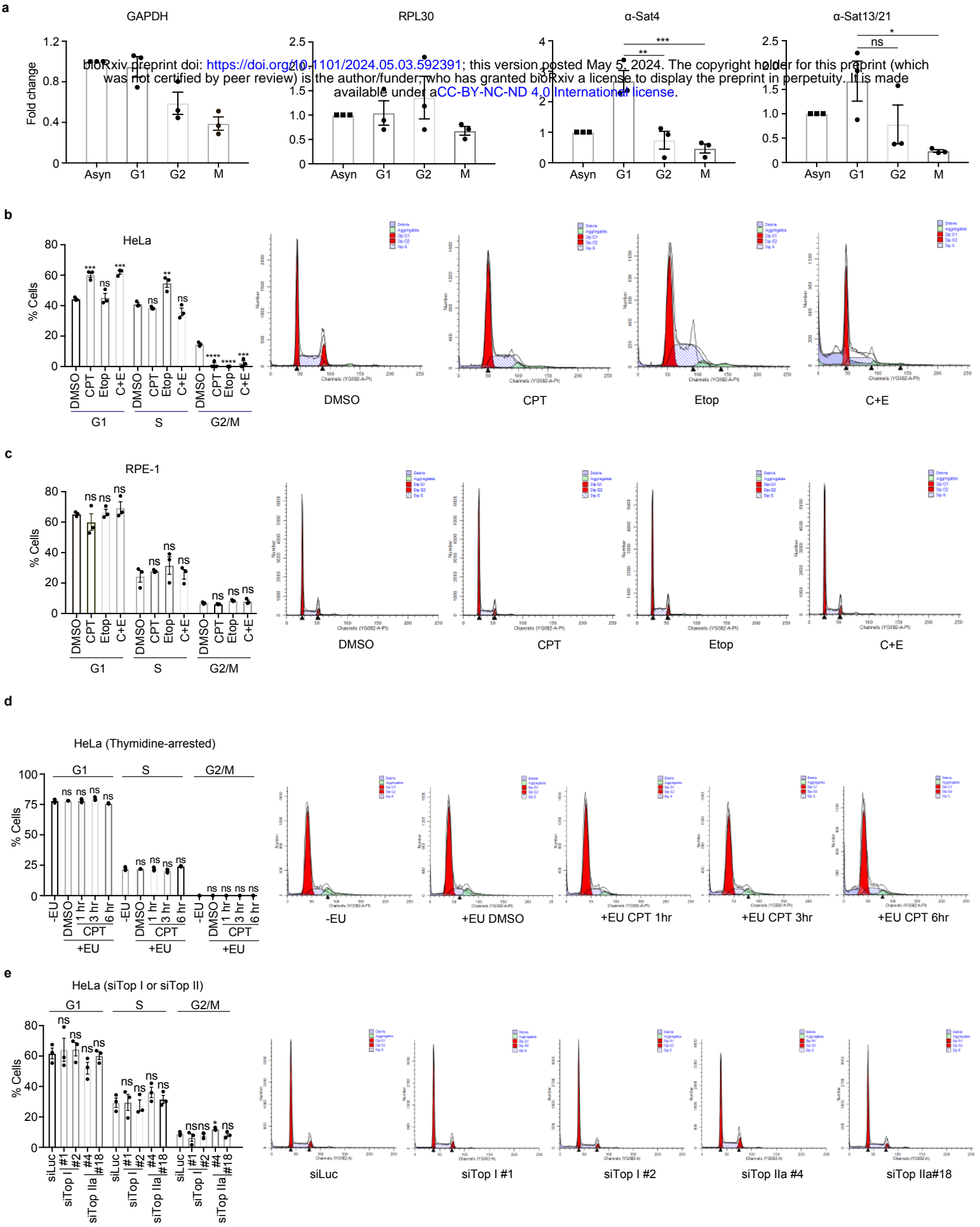


Supplementary Fig. 1

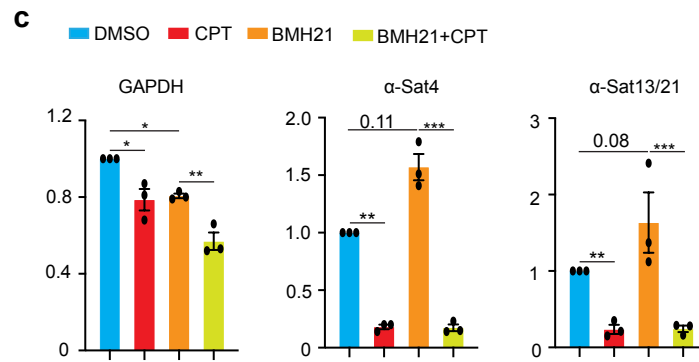
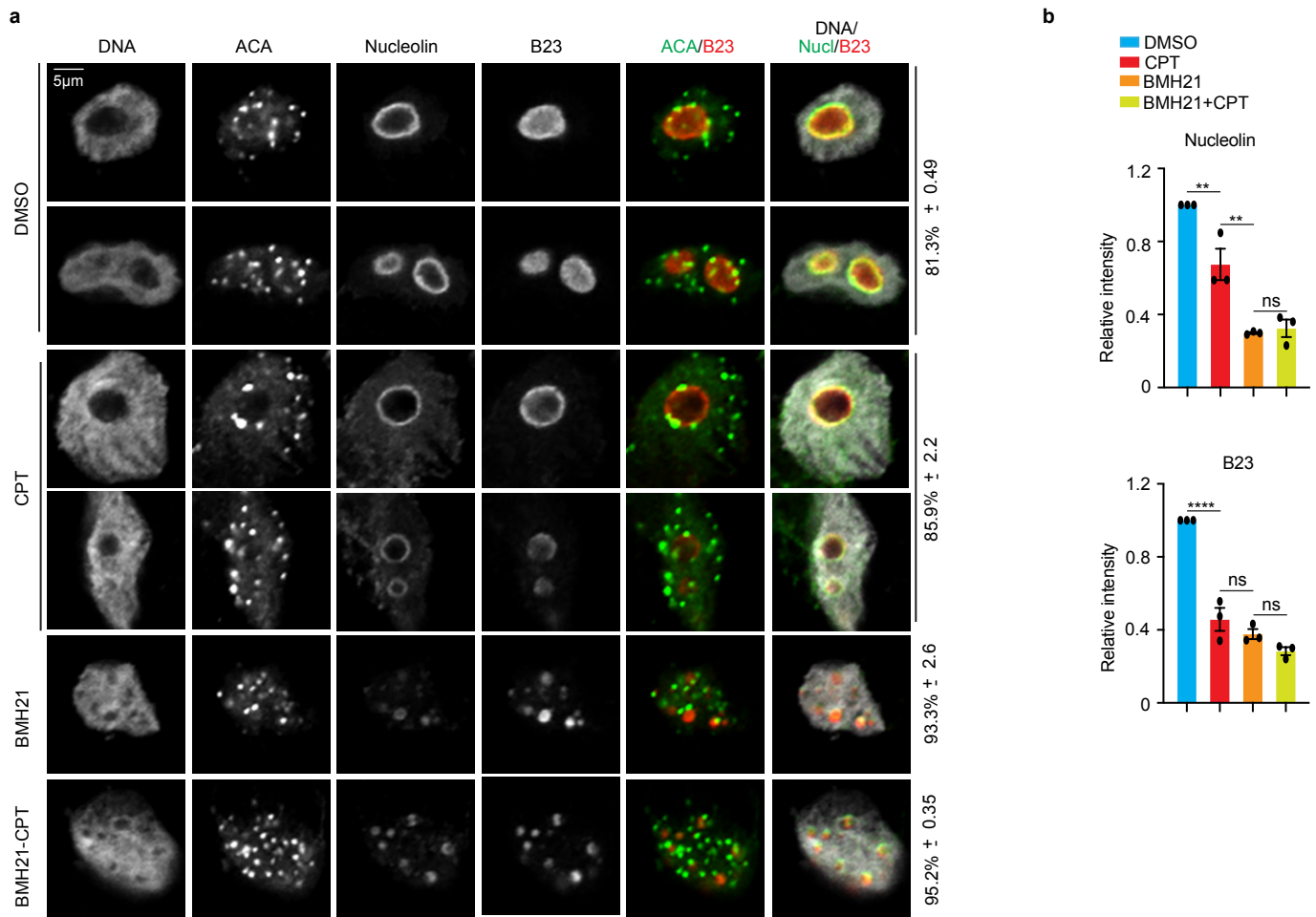


**Supplementary Fig. 2**



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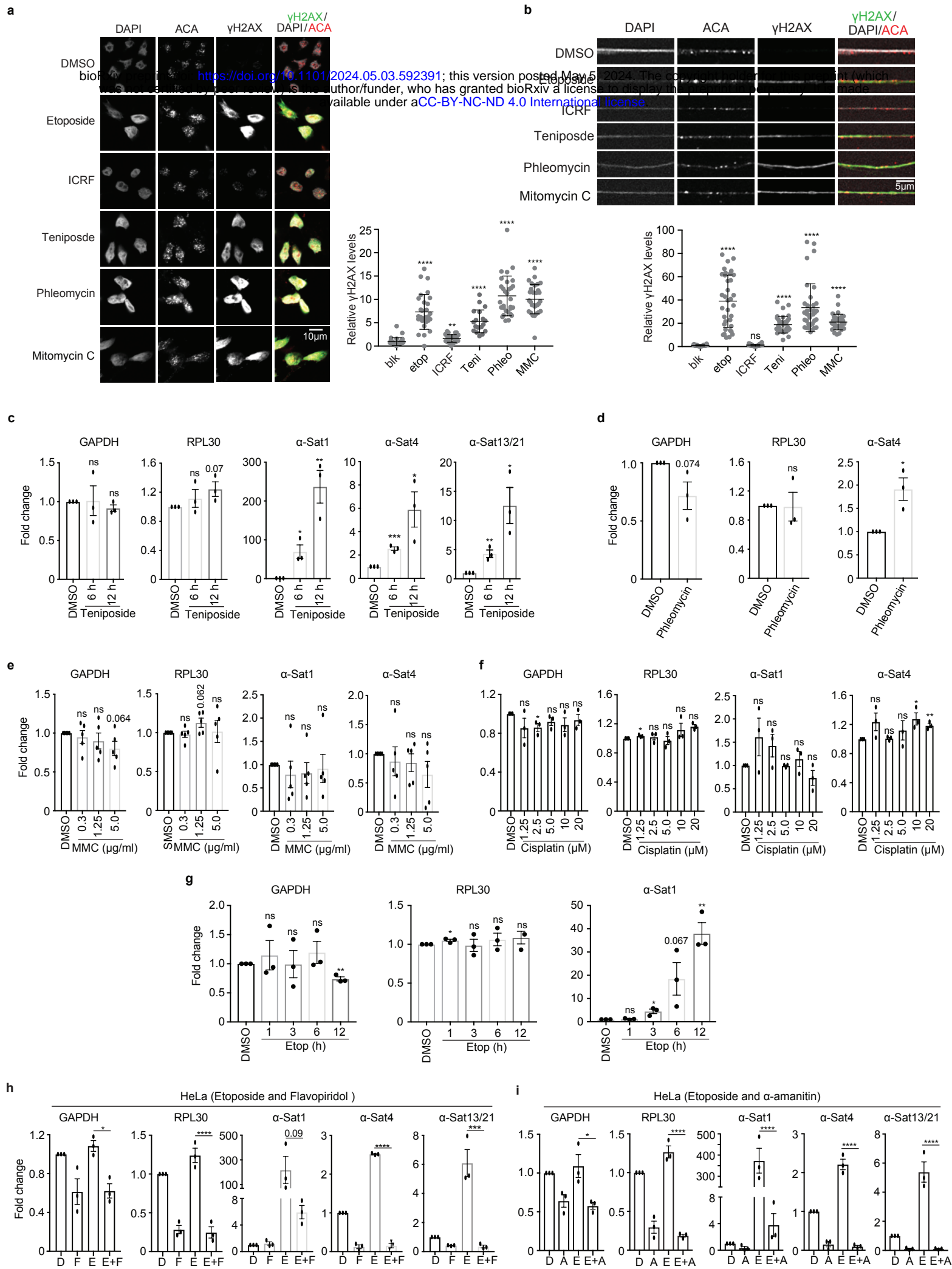
Supplementary Fig. 3



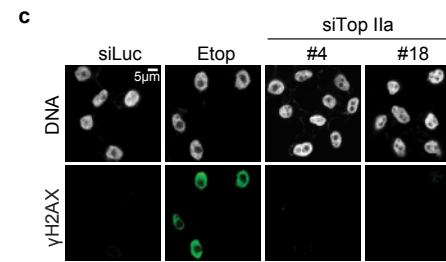
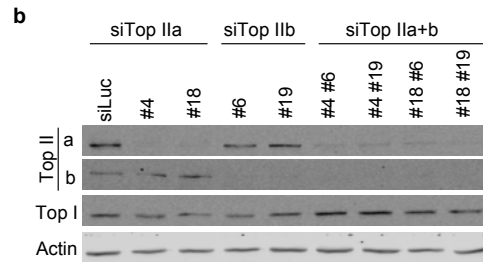
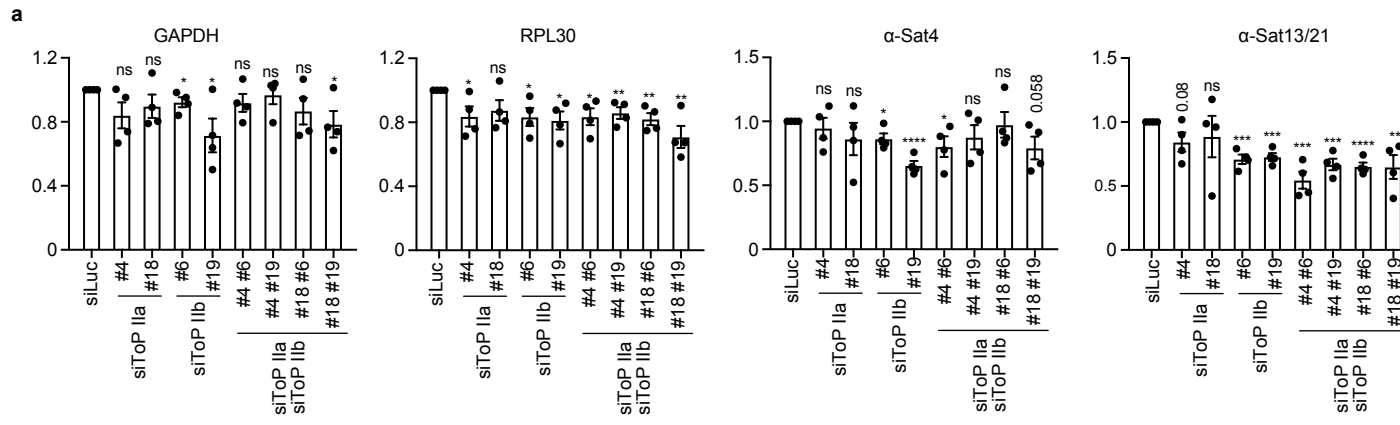
Supplementary Fig. 4

Primers	DMSO	Etop (Fold change)		
GAPDH	1.00	0.93		
RPL30	1.00	0.97		
D1Z5-b	1.00	2.81	← Old	Centromere 1
D1Z5-c	1.00	10.74	← Old	
D1Z7	1.00	71.12	← Young	
D2Z1	1.00	206.58		
D3Z1	1.00	20.77		
D4Z1	1.00	162.11		
D5Z1	1.00	139.47		
D6Z1	1.00	196.75		
D7Z1	1.00	63.20	← Young	Centromere 7
D7Z2	1.00	407.75	← Old	
D8Z2	1.00	24.88		
D9Z4	1.00	27.50		
D10Z1	1.00	33.83		
D11Z1	1.00	261.85		
D12Z3	1.00	31.82		
D13Z1	1.00	1.17		
D13Z2	1.00	99.61		
D13Z3	1.00	6.11		
D13Z6	1.00	1.27		
D13Z7	1.00	18.18		
D13Z8	1.00	2.72		
D13Z9	1.00	8.28		
D14Z1	1.00	36.74		
D14Z2	1.00	55.56		
D14Z3	1.00	35.30		
D15Z3	1.00	22.18		
D16Z2	1.00	87.87		
D17Z1	1.00	128.83	← Young	Centromere 17
D17Z1-b	1.00	29.20	← Old	
D18Z1	1.00	30.23		
D18Z2	1.00	12.10		
D19Z4	1.00	1.71		
D19Z5	1.00	0.55		
D20Z2	1.00	51.70		
D21Z1	1.00	1.15		
D22Z4-1	1.00	95.65		
D22Z4-2	1.00	2.80		
D22Z5	1.00	10.83		
DXZ1	1.00	33.14		

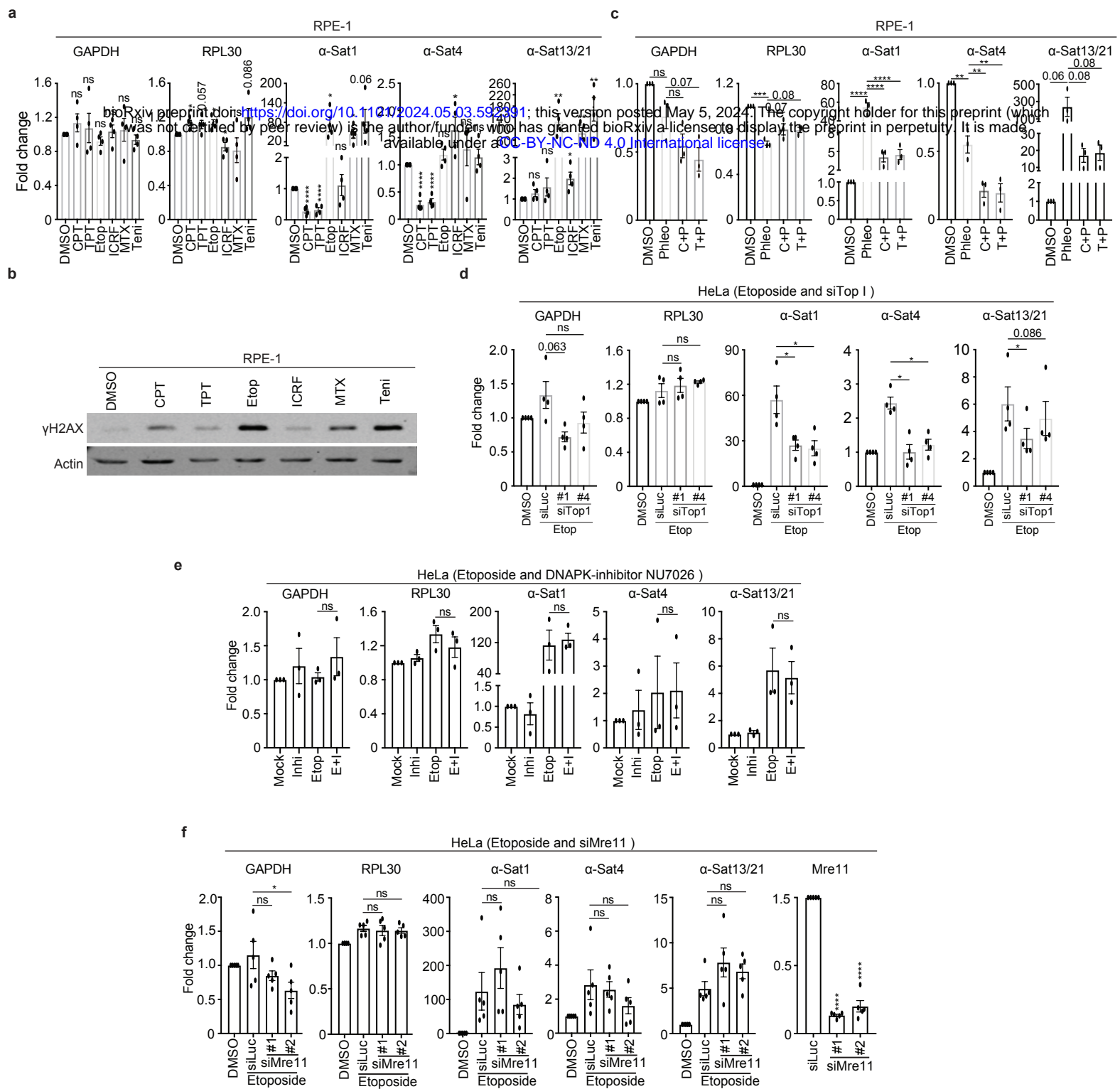
**Supplementary Fig. 5**



Supplementary Fig. 6

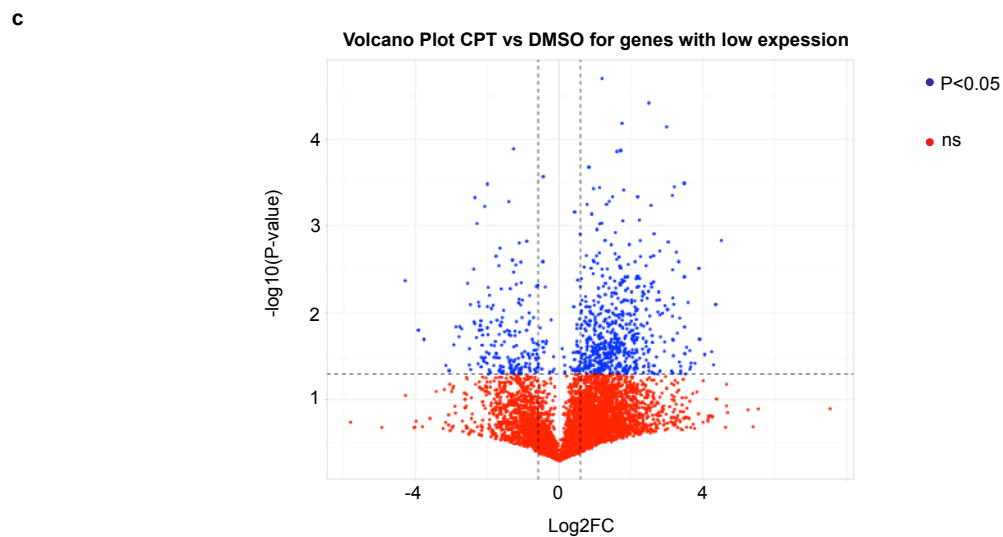
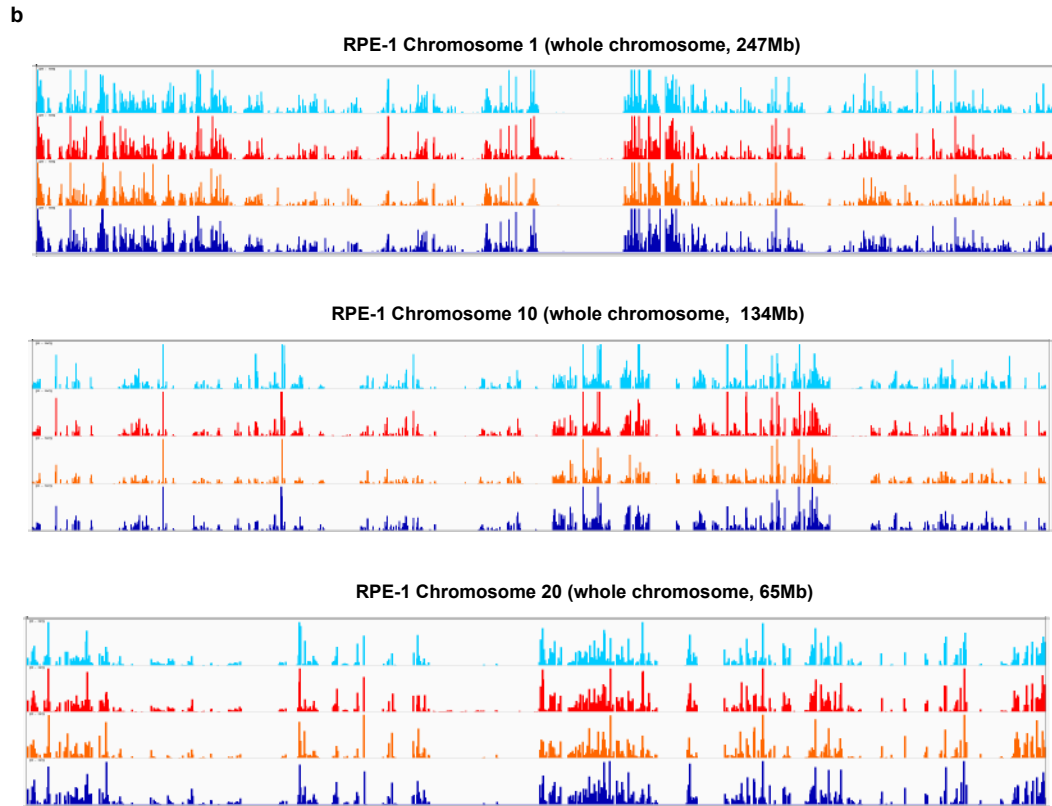
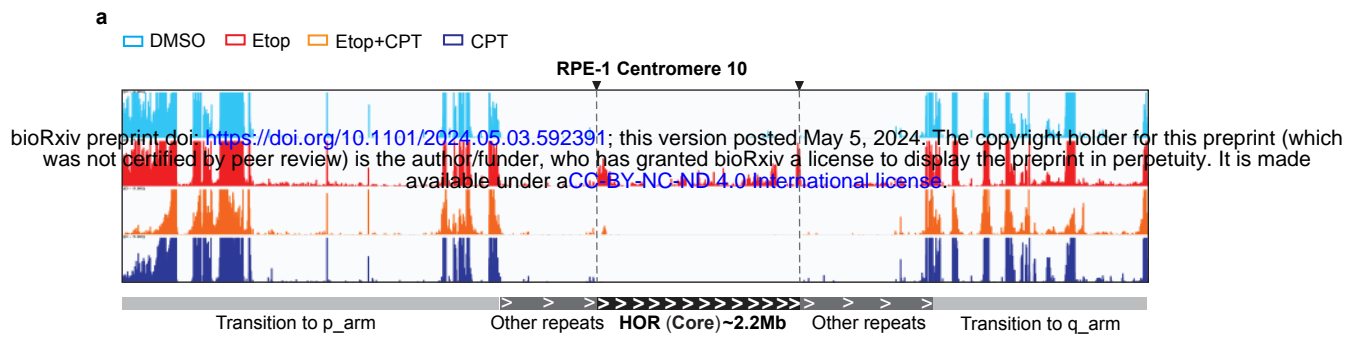


Supplementary Fig. 7

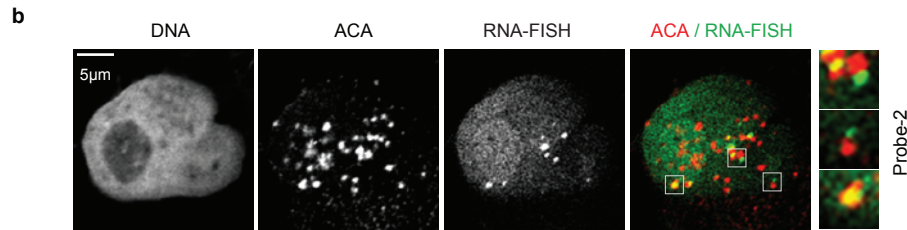
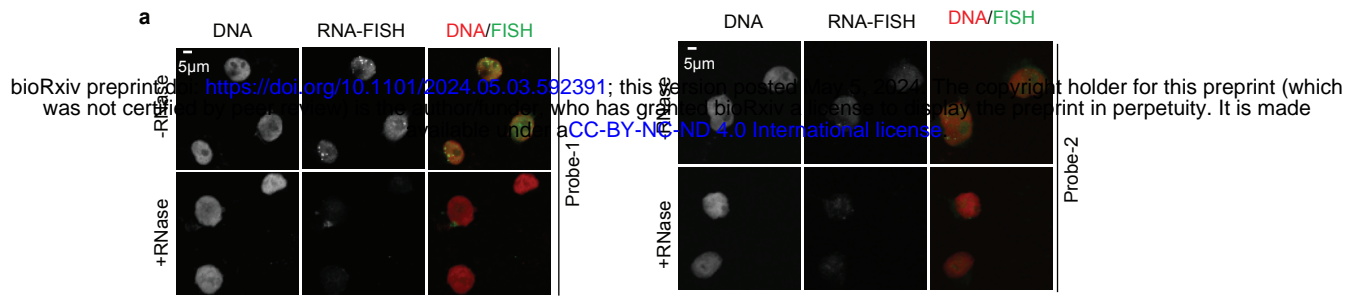


**Supplementary Fig. 8**





**Supplementary Fig. 9**



Supplementary Fig. 10