

Suppl Table 1: Human TOP2A expression constructs used/ generated in this study.

Plasmid name	Starting plasmid	Epitope tag	Human TOP2A residues	TOP2A residues mutated	TOP2A residues deleted	Fusion protein	Theor. MW fusion protein (KDa.)	Novel junction sequence(s)
1. Flag-tagged series								
pFlag: TOP2A (FT) (Farr et al 2014)	pcDNA3	N-ter 3xFlag	1-1531	WT		-	178	FLAG-(novel)-TOP2A MDYKDHDGDY KDKDIDYKDDD GILQISTVTMEVS PLQP...
pFT-11xKR	pFlag: TOP2A			K→R 1141, 1204, 1228, 1240, 1264, 1267, 1370, 1422, 1442, 1492, 1520			178	
pFT-4xKR	pFlag: TOP2A			K→R 1228 1240 1264 1267			178	
pFT-K1240R	pFlag: TOP2A			K→R 1240			178	
pFT-K662R	pFlag: TOP2A			K→R 662			178	
pFST	pFlag: TOP2A			WT		SUMO2	189	FLAG-(novel)-SUMO2-(novel)-TOP2A MDYKDHDGDY KDHDIDYKDDD GILQIEKPKEGVK ENNDHINLKVA QDGSVVQFKIKR HTPLSKLMKAYC ERQGLSMRQIRF RFDGQPINETDT PALLEMEDEDTI DVFQQQTISTVT MEVSPLQP...
pFTΔ2	pFlag: TOP2A		1-1173::14 47-1531	-	1174-1446	-	148	TOP2AΔ DLAT :: LNSGV
pFTΔ3	pFlag: TOP2A		1-1320::14 47-1531	-	1321-1446	-	165	TOP2AΔ PRRA :: LNSGV
pFTΔ5	pFlag: TOP2A		1-1211::14 47-1531	-	1212-1446	-	152	TOP2AΔ QMAEV :: LNSGV

pFlag- CTR-WT	pFlag: TOP2A	971-1531	WT CTR	1-970	-	67	FLAG-(novel)- TOP2A MDYKDHDGDY KDKDIDYKDDD GLQISKMTEEKL
pFT- CTR- 11xKR	pFlag- CTR-WT	971-1531	K→R	1-970		67	
			1141, 1204, 1228, 1240, 1264, 1267, 1370, 1422, 1442, 1492, 1520				
pFT- CTR- 4xKR	pFlag- CTR-WT		K→R			67	
			1228 1240 1264 1267				
pFT- CTR- 3xKR	pFlag- CTR-WT		K→R			67	
			1240 1264 1267				
pFT- CTR- 2xKR	pFlag- CTR-WT		K→R			67	
			1228 1240				
pFT- CTR- 1xKR	pFlag- CTR-WT		K→R			67	
			1240				
pFT- CTR- T1244A	pFlag- CTR-WT		T→A			67	
			1244				
pFT- CTR- S1247A	p3xFlag- CTR-WT		S→A			67	
			1247				
pFT- CTR- TA/SA dm	pFlag- CTR-WT		T→A			67	
			1244 S→A 1247				
pFT- CTR- TD/SD dm	pFlag- CTR-WT		T→D			67	
			1244 S→D 1247				

2. GFP-tagged series

pGFP: TOP2A [43]	pEGFP- C1	N-ter EGFP	1-1531	WT		207	GFP-(novel)- TOP2A MVSKGEEL....G MDELYKSGLRSR SRSIVLERFLSPFT TVTMEVSPLQPVDEDDL*F*
pGT- K1240R	pGFP: TOP2A			K→R		207	
				1240			
pGT- S1213A	pGFP: TOP2A			S→A		207	
				1213			
pGT- S12147A	pGFP: TOP2A			S→A		207	
				1247			

pGT-S1213D	pGFP:TOP2A	S→D 1213			207	
pGT-K662R	pGFP:TOP2A	K→R 662			207	
pGT:SUMO2	pGFP:TOP2A	WT	SUMO2	218		GFP-(novel)-TOP2A-(novel)-SUMO2 MVSKGEEL....G MDELYKSGLRSR SRSIVLERFLSPFT TVTMEVSPLQPVDEDDLFLSDE KPKEGVKTENN D....QQQT*
pG:SUMO2:T	pGFP:TOP2A	WT	SUMO2	218		GFP-SUMO2-(novel)-TOP2A MVSKGEEL....G MDELYKADEKP KEGVKTENNNDHDVFQQTISTVT MEVSPLQ....DED DLF*

In all constructs the selection cassette present confers puromycin-resistance.