

Supplementary Figure Legends

Supplementary Fig. 1. (A) Sequence alignment of RAD51C protein from human, mouse and hamster using clustal W2. The residue that was found mutated in FA-like disorder is shown in orange box and the missense mutations found in breast and ovarian cancers are shown in red boxes. Respective missense mutations are indicated above the box. (B) Sequence alignment of human RAD51C with human RAD51 using PSI-BLAST. The conserved Walker A and B motifs are shown in the boxes. The RAD51C residues that were found mutated in FA-like disorder and breast and ovarian cancers are presented in boxes and the missense mutations are indicated below the sequence.

Supplementary Fig. 2. Germline mutations in RAD51C do not affect proliferation rate of the cells. (A) Respective cells were plated at low density in 100 mm petridish, trypsinized, counted and replated the remaining cells at the interval of 12 h up to 72 h to monitor the growth rate. Experiments were performed in triplicates and error bar indicate the \pm s.d from the mean value. (B) Cell cycle profile of CL-V4B cells expressing wtRAD51C and control empty vector at different time points after releasing from nocodazole arrest (150 ng/ml 12 h) in fresh media.

Supplementary Fig. 3. Sensitivity in CL-V4B cells can be rescued by wt hRAD51C expression similar to V79B parental cells. Cell survival studies in the presence of different DNA damaging agents in V79B, CL-V4B cells transfected with vector or wt hRAD51C. Experiments were performed in triplicates and error bar indicate the \pm s.d from the mean value.

Supplementary Fig. 4. Representative neutral comet images for the indicated cells. Individual cell resembling comet are shown after treatment with 50 ng/ml MMC and recovered at 0 h, 14 h and 24 h.

Supplementary Fig. 5. Role of RAD51C in the S-phase check point control after replication stress. CL-V4B vector cells, and CL-V4B cells rescued with wtRAD51C and its variants were either untreated or treated with CPT (1.5 μ M for 3 h) and recovered in fresh media. Cells were harvested at indicated time point and analyzed by flow cytometry.

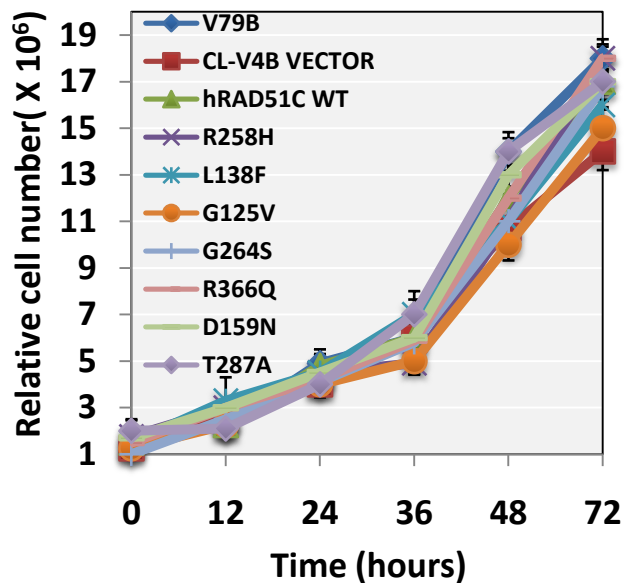
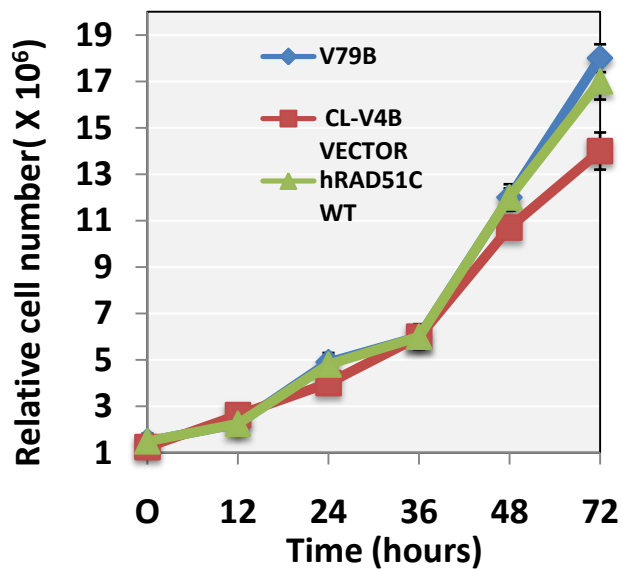
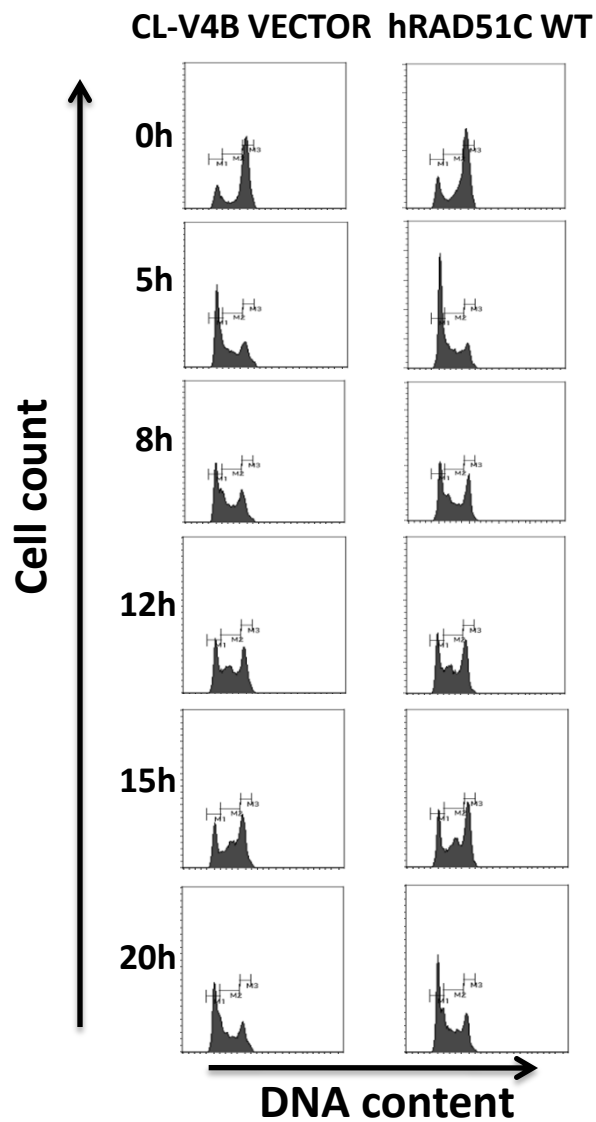
A

Human	1	MQRDLVSPPLSPAVRVKLVSAAGFQTAEELELVKPSSELSKEVGIKAEAELETQIIRRECL
Mouse	1	MQRDELVGYPLSPAVRGKLVAAAGFQTAEDVLEVKPSSELSKEVGISKEEAELETQILRRECL
Hamster	1	MQRDELVSFPLSPPTVRVKLVAAAGFQTAEDVLEVKPSSELSKEVGISKEEAELETQIVRRESL
		V
Human	61	TNKPRYAGTSESHKKCTALELLEQEHTQGFIIITFCALDDILGGGVPLMKTTEICGAPGV
Mouse	61	TNKPRCAGTSPANCKCTALELLEQEHTQGFIIITFCALDNIILGGGIPLMKTTEVCGVPGV
Hamster	61	TDKPRCAGASVAGKKYCTALELLEQEHTQGFIIITFCALDNIILGGGIPLMKTTEVCGVPGV
		F N
Human	121	GKTQLCMQLAVDVQIPECFGGVAGEAVFIDTEGFSMVDRVVDLATAIQHLQLIAEKHKG
Mouse	121	GKTQLCMQLAVDVQIPECFGGVAGEAVFIDTEGFSMVDRVVSLLATAIQHLHLIAGTHTE
Hamster	121	GKTQLCMQLAVDVQIPECFGGVAGEAVFIDTEGFSMVDRVVTLANACIQHLHLIAGTHKD
		H S A
Human	241	HDLDLDSLIRRLNLGLAQQOMISLANNHRLAVILTNQMTTKIDRNQALLVPALGESWGHA
Mouse	241	HDLEDLSLRRLNLGLAQQOMISLANNHRLAVILTNQMTTKIDKNQALLVPALGESWGHA
Hamster	241	HDLDLDSLIRRLNLGLAQQOMISLANNHRLAVILTNQMTTKIDKNQALLVPALGESWGHA
		Q
Human	301	TIRLIHFWDRKQRLATLYKSPSQKECTVLFQIKPQGFRDVTVTSACSLQTEGSLSTRKRS
Mouse	301	TIRLIHFWEQKQRFATLYKSPSQKESTIPFQITPQGFRDAVVT-AASSQTESSLNFRKRS
Hamster	301	TIRLIHFWEQKQRFATLYKSPSQKESTIPFQITPQGFRDAVVT-AASSQTEGSSNLRKRS
Human	361	RDPEEEL
Mouse	360	REPEEEC
Hamster	360	REPEEGC

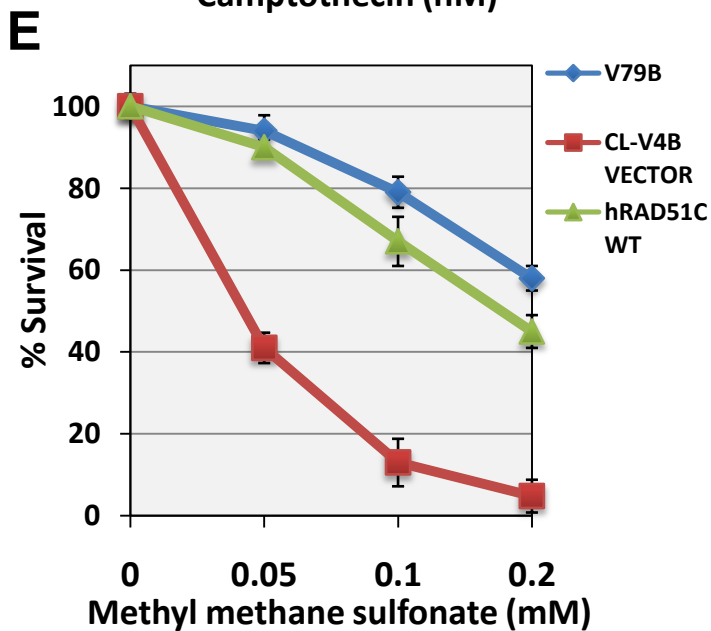
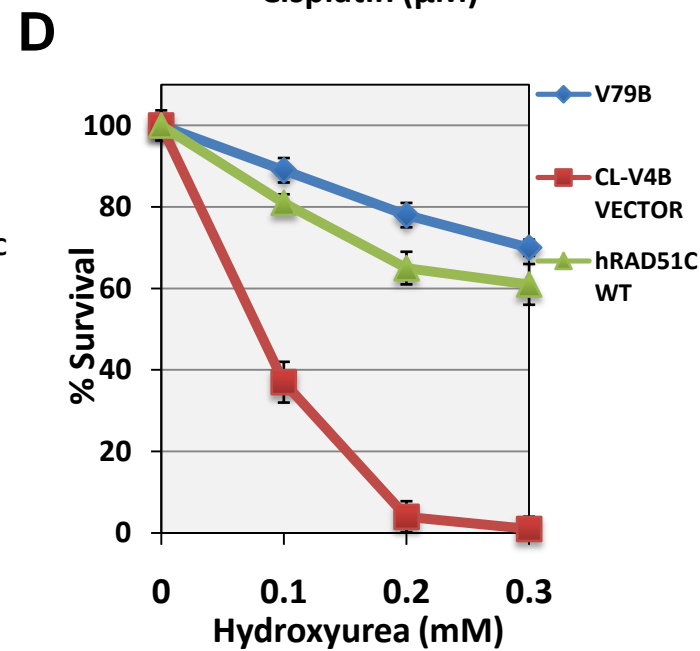
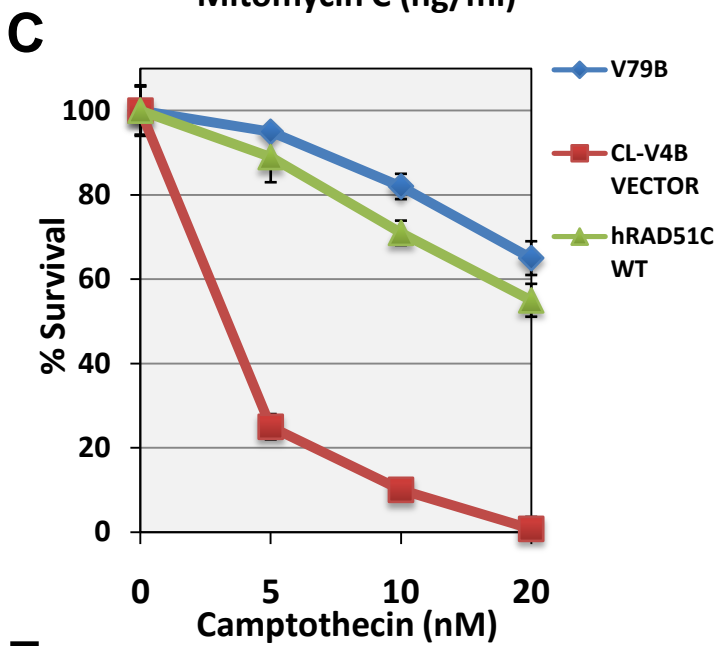
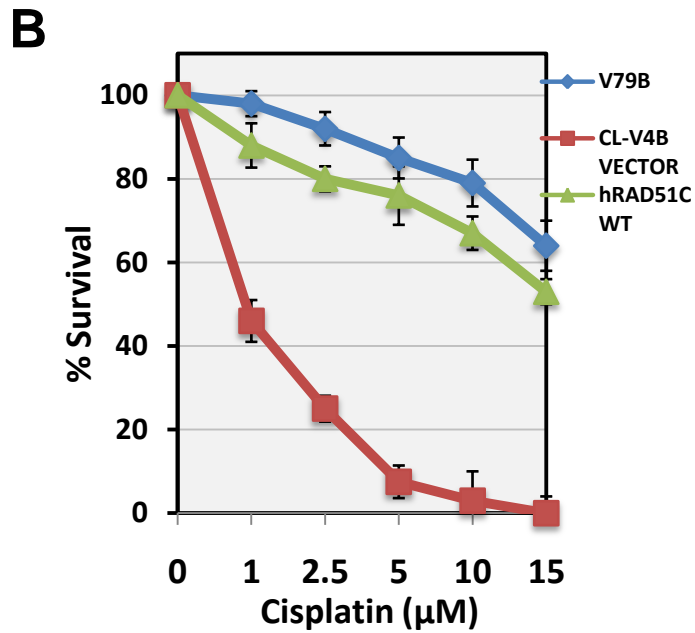
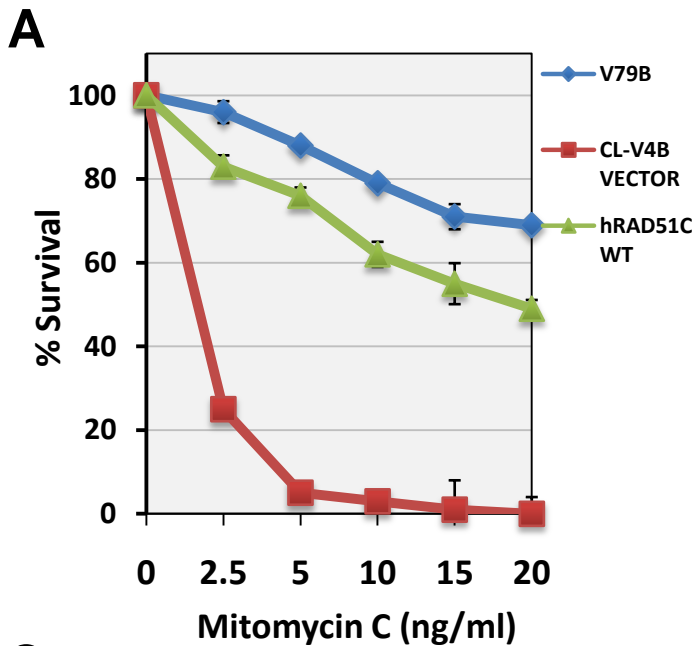
B

hRAD51	40	KLEEAGFHTVEAVAYAPKKELINIKGISEAKADKILA----	EAALKVPMGFTTATEFHQR	95	
hRAD51C	26	KLVSAAGFQTAEELELVKPSSELSKEVGIKAEAELETQIIRRECLTNKPR-	YAGTSESHKK	84	
			Walker A		
hRAD51	96	RS--EIIQ-----	ITTGSKELDKLLQGGIETGSITEMFEEFRTGKTQICHTLAVTCQL	146	
hRAD51C	85	CTALELLEQEHTQGFIIITFCALDDILGGGVPLMKTTEIC	EAPGVGKTDLCMQLAVDVQI	144	
			G125V L138F		
hRAD51	147	PIDRGGGEGKAMYIDTEGTFRPERLL-----	AVAERY-----	GLSGSDV	185
hRAD51C	145	PECFGGVAGEAVFIDTEGFSMVDRVVDLATAIQHLQLIAEKHKGEEHKALEDFTLDNI		204	
		D159N	Walker B		
hRAD51	186	LDNVAYARAFN-TDHQTQLLYQASAMMVESRYALLIVDSATALYRTDYSGRGELSARDMH		244	
hRAD51C	205	LSHIYYFRCDYTELLAQVYLLPDFLSEHSKVRLLVIVDGIAPFFRHDLD---	DLSLRIRL	261	
			R258H		
hRAD51	245	LARFLRMLRLRLADEFGVAVVITNQVVAQVDGAAMFAADPKKPIGGNIIAHASTTTRYLRK		304	
hRAD51C	262	LNGLAQOMISLANNHRLAVILTNQMTTKIDRNQALLV----	PALGESWGHAATIRLIHFW	317	
		G264S T287A			
hRAD51	305	GRGETRICKIYDSPCLPEAEAMFAINADGVGDAKD		339	
hRAD51C	318	DRKQ-RLATLYKSPSQKECTVLFQIKPQGFRDVTVTSACSLQTEGSLSTRKRSRDP	PEEEL	376	
			R366Q		

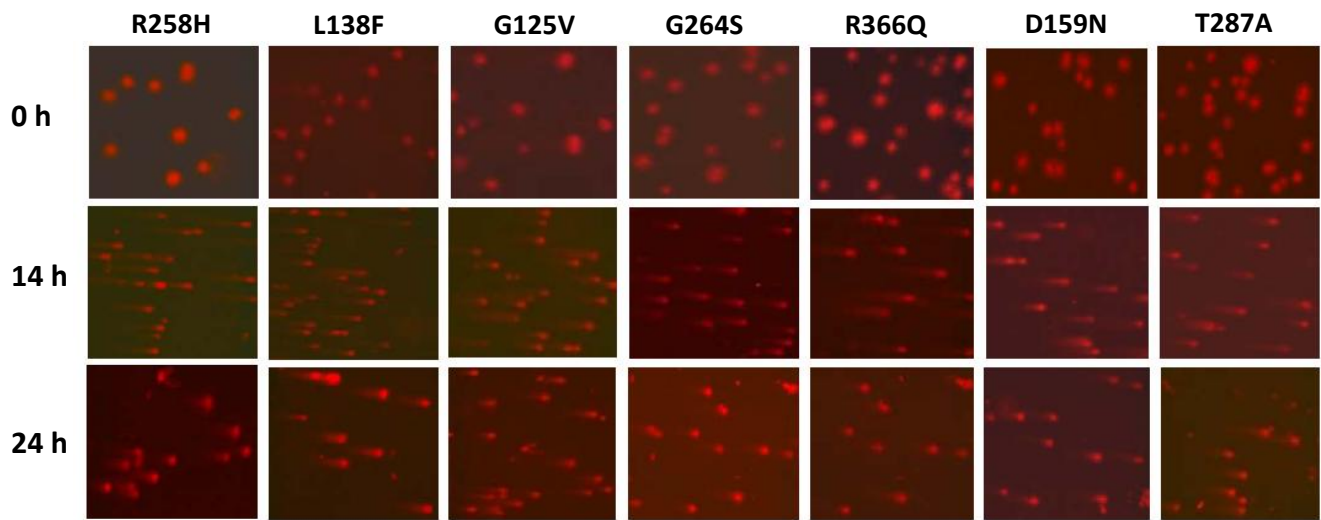
Supplementary Figure 1

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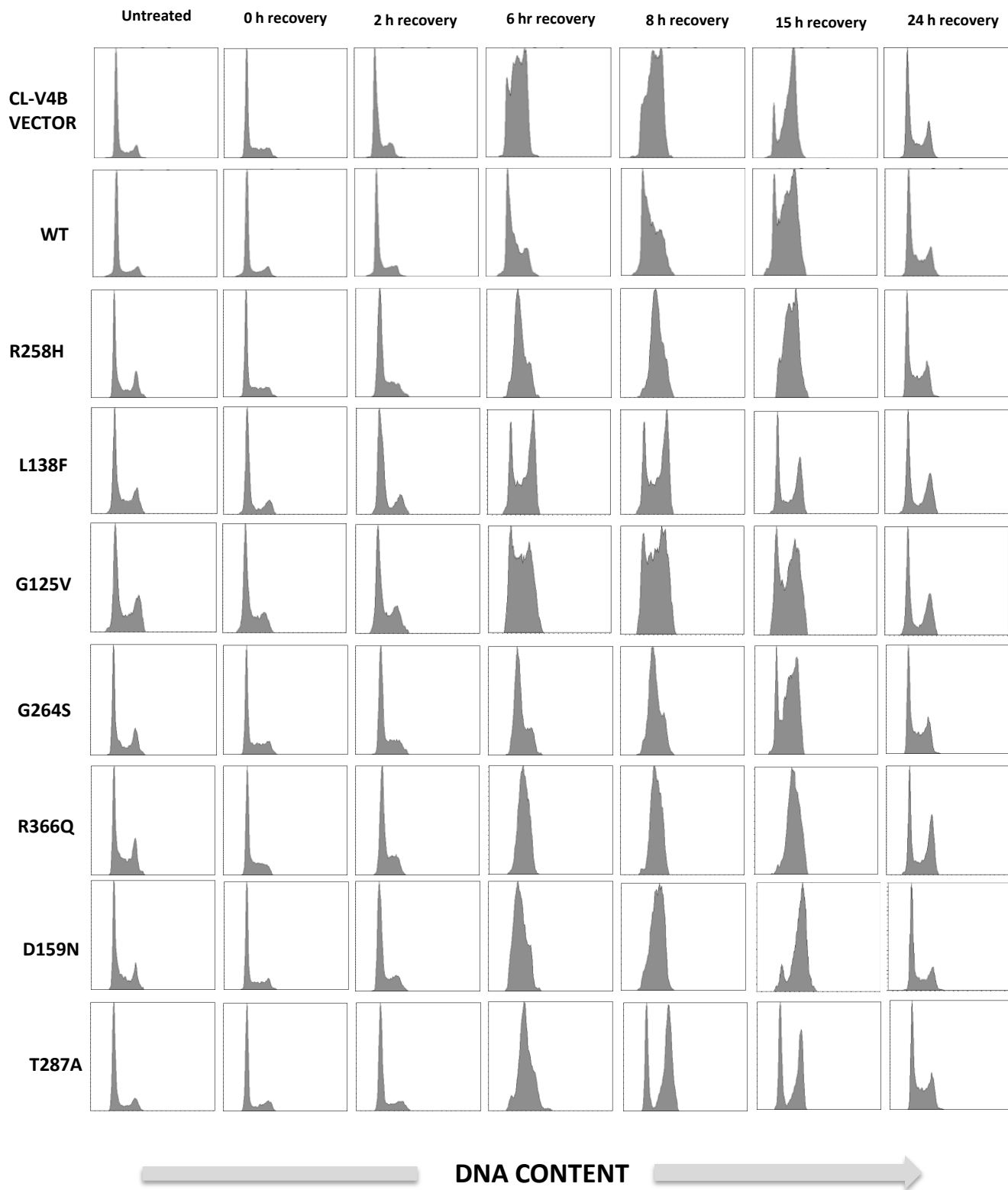
Supplementary Figure 2



Supplementary Figure 3



Supplementary Figure 4



Supplementary Figure 5