

Supplementary Table S1

Mutation status of TNBC cell lines

| TNBC Cell Lines | Mutation Status                                                                                                   |
|-----------------|-------------------------------------------------------------------------------------------------------------------|
| SUM159          | BRCA (Wild-type), HRAS (Mutant), PIK3CA (Mutant), TP53 (Mutant)                                                   |
| MDA-MB-231      | BRAF (Mutant), BRCA (Wild-type), CDKN2A (Mutant), KRAS (Mutant), PIK3CA (Wild-type), TERT (Mutant), TP53 (Mutant) |
| MDA-MB-468      | BRCA (Wild-type), PTEN (Mutant), RB1 (Mutant), TP53 (Mutant)                                                      |
| BT-549          | BRCA (Wild-type), PTEN (Mutant), RB1 (Mutant), TP53 (Mutant)                                                      |
| T-47D           | BRCA (Wild-type), PIK3CA (Mutant), TP53 (Mutant)                                                                  |

Supplementary Table S2

gRNA sequences for BUB1 knockout

| Guide | Sequence             | Exon |
|-------|----------------------|------|
| 1     | AGCCCACATGCAGAGCTACA | 2    |
| 2     | TTTACTAGAACATTTAATGA | 3    |

Primers for PCR amplification of BUB1-edited section

| Primer  | Sequence              |
|---------|-----------------------|
| Forward | TGACATTGGGGTTCCGTGAG  |
| Reverse | TCACTAGTGGCACAGAAGTCT |

Primer for Sanger sequencing

| Primer  | Sequence             |
|---------|----------------------|
| Forward | TGACATTGGGGTTCCGTGAG |

Supplementary Table S3

List of antibodies used for Western Blotting/Immunohistochemical /Immunofluorescence studies

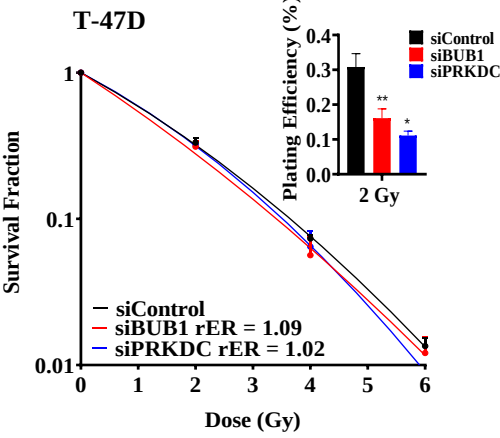
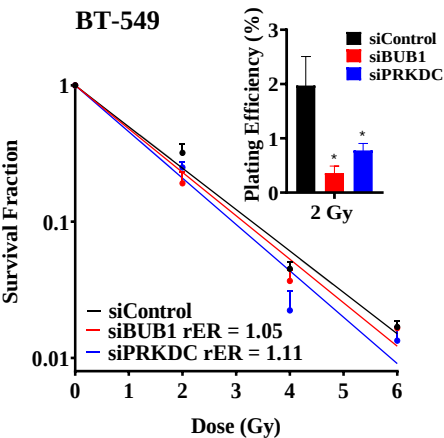
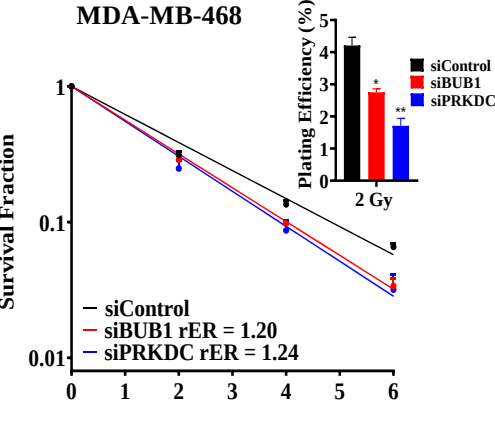
| Antibody                              | Company        | Catalog Number | Dilutions Used |
|---------------------------------------|----------------|----------------|----------------|
| Anti-rabbit IgG, HRP-linked Secondary | Cell Signaling | 7074s          | 1:10,000       |
| Anti-mouse IgG, HRP-linked Secondary  | Cell Signaling | 7076s          | 1:10,000       |
| Anti-Ku70 Rabbit mAb                  | Cell Signaling | 4104S          | 1:1000         |
| Anti-Ku80 Rabbit mAb                  | Cell Signaling | 2180s          | 1:1000         |
| DNA-PKcs Phospho antibody (S2056)     |                |                |                |
| (E9J4G) Rabbit mAb                    | Cell Signaling | 68716          | 1:1000         |
| DNA-PKcs Antibody Rabbit mAb          | Cell Signaling | 4602s          | 1:1000         |
| Phospho-ATM (Ser1981) Rabbit mAb      | Cell Signaling | 13050S         | 1:1000         |
| ATM (D2E2) Rabbit mAb                 | Cell Signaling | 2873S          | 1:1000         |
| Phospho-KAP-1 (Ser824) Rabbit mAb     | Cell Signaling | 4127S          | 1:1000         |
| KAP-1 Antibody Rabbit mAb             | Cell Signaling | 4123S          | 1:1000         |
| Lamin B1 (D4Q4Z) Rabbit mAb           | Cell Signaling | 12586S         | 1:1000         |
| Recombinant anti-BUB1 Rabbit mAb      | Abcam          | ab195268       | 1:1000         |
| B-Actin Mouse mAb (HRP Conjugate)     | Cell Signaling | 12262          | 1:30000        |
| Ki67 antigen (Dako Omnis) Clone MIB-1 |                |                |                |
| Mouse monoclonal anti-human antibody  | Agilent        | GA626          | Ready-to-use   |
| Anti-phospho-Histone H2A.X (Ser139)   | Millipore      | 05-636-I       | 1:2000         |
|                                       | Thermo Fisher  |                |                |
| Goat anti-Mouse, Alexa Fluor 488      | Scientific     | A-11001        | 1:2000         |

## Supplementary Table S4

### Primer sequences used in quantitative PCR (qPCR) analysis

| Target Gene | Primer  | Sequence (5'-3')        | Tm°  |
|-------------|---------|-------------------------|------|
| GAPDH       | Forward | TCGGAGTCAACGGATTTG      | 62.4 |
|             | Reverse | CAACAATATCCACTTTACCAGAG | 59.1 |
| BUB1        | Forward | GATCGATTACTTTGGGGTTG    | 60.8 |
|             | Reverse | AAAAAGACCTTCAGGCTTAC    | 56.6 |
| BAX         | Forward | TCTGAGCAGATCATGAAGAC    | 58   |
|             | Reverse | TCCATGTTACTGTCCAGTTC    | 57.5 |
| BCL2        | Forward | GATTGTGGCCTTCTTTGAG     | 59.8 |
|             | Reverse | GTTCCACAAAGGCATCC       | 59   |
| PCNA        | Forward | CTGTGTAGTAAAGATGCCTTC   | 55.6 |
|             | Reverse | TCTCTATGGTAACAGCTTCC    | 56   |
| PRKDC       | Forward | GATCTGAAGAGATATGCTGTG   | 56.4 |
|             | Reverse | GTTTCAGAAAGGATTCCAGG    | 60.1 |
| H2AFX       | Forward | AATCCAAGCACCTAGATACC    | 57.2 |
|             | Reverse | CAGAATTCCAGTTCAGAAGC    | 59   |
| XRCC5       | Forward | CAGTGAGAGTCTGAGAAAAC    | 53.8 |
|             | Reverse | TAGGCTGCAATCCTTATAGAC   | 57.6 |
| XRCC6       | Forward | AAGAAGAGTTGGATGACCAG    | 58.3 |
|             | Reverse | GTCATTCTGTATGTGAAGC     | 54.6 |
| CASP3       | Forward | AAAGCACTGGAATGACATC     | 57.6 |
|             | Reverse | CGCATCAATTCCACAATTC     | 62.8 |
| CASP9       | Forward | CTCTACTTTCCCAGGTTTTG    | 57.9 |
|             | Reverse | TTTCACCGAAACAGCATTAG    | 60.3 |

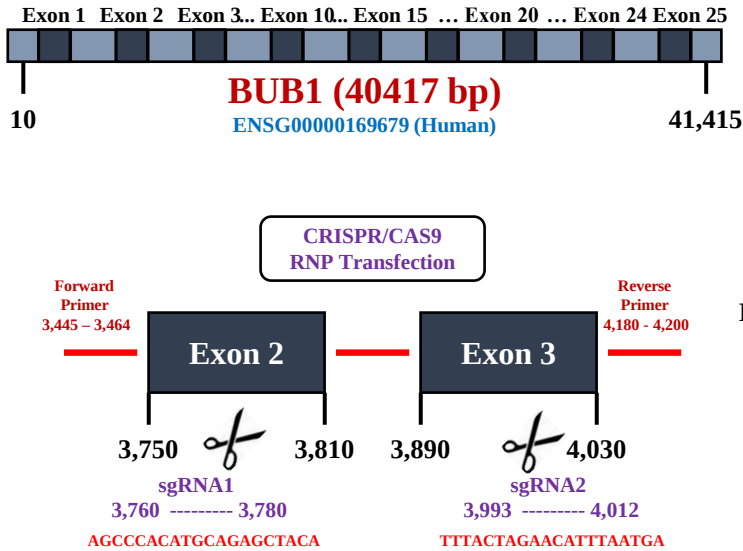
Supplementary Fig. S5



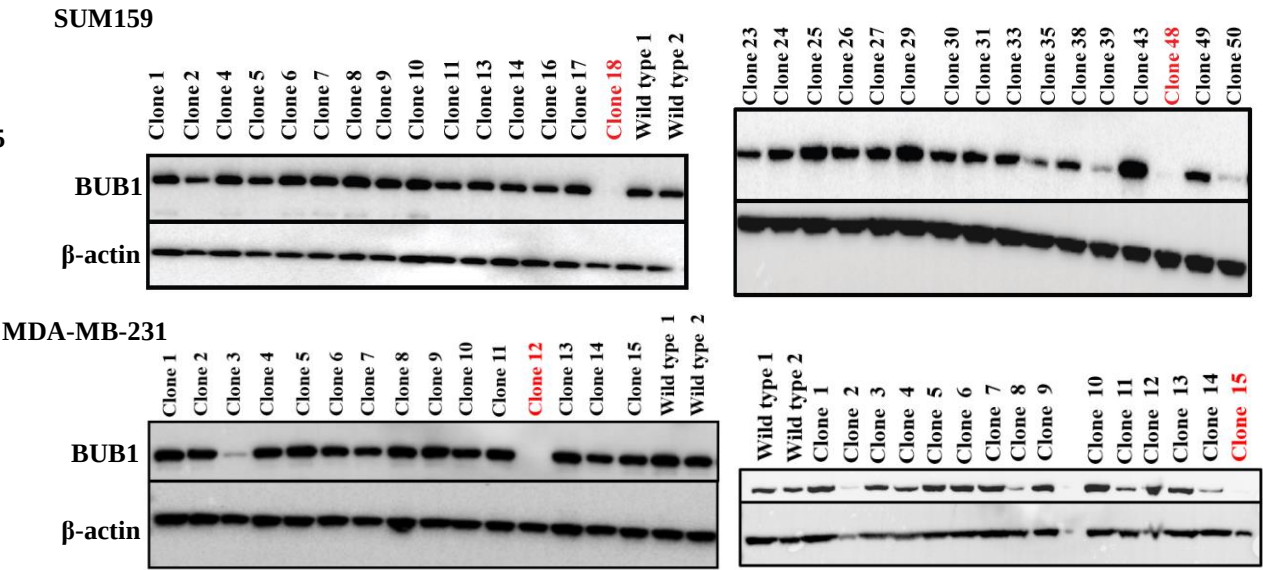
Supplementary Fig. S6

(a)

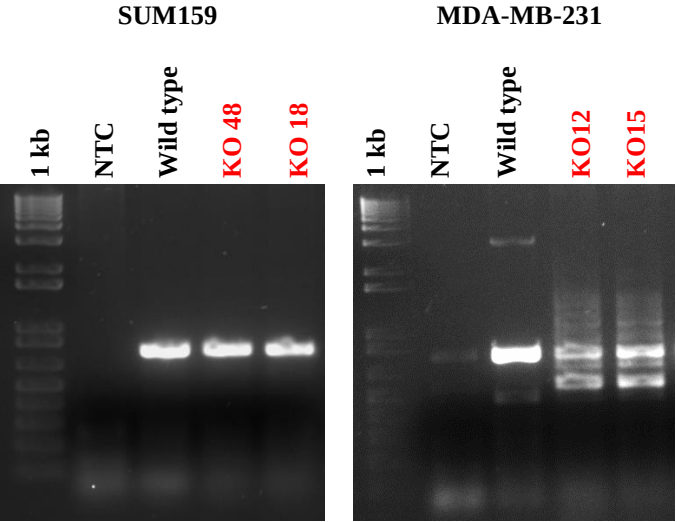
CRISPR-CAS9 RNP Transfection



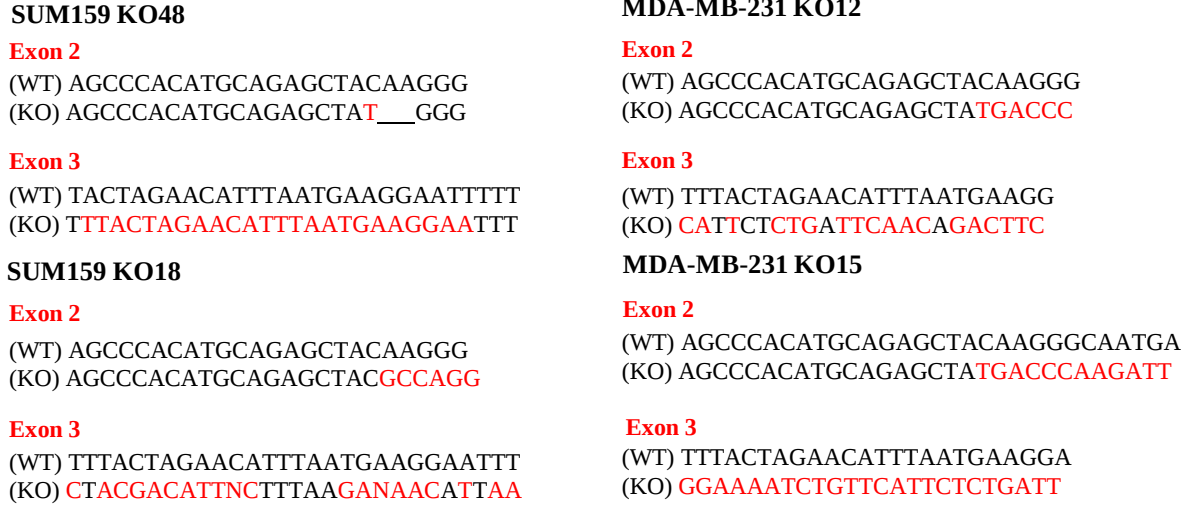
(b)



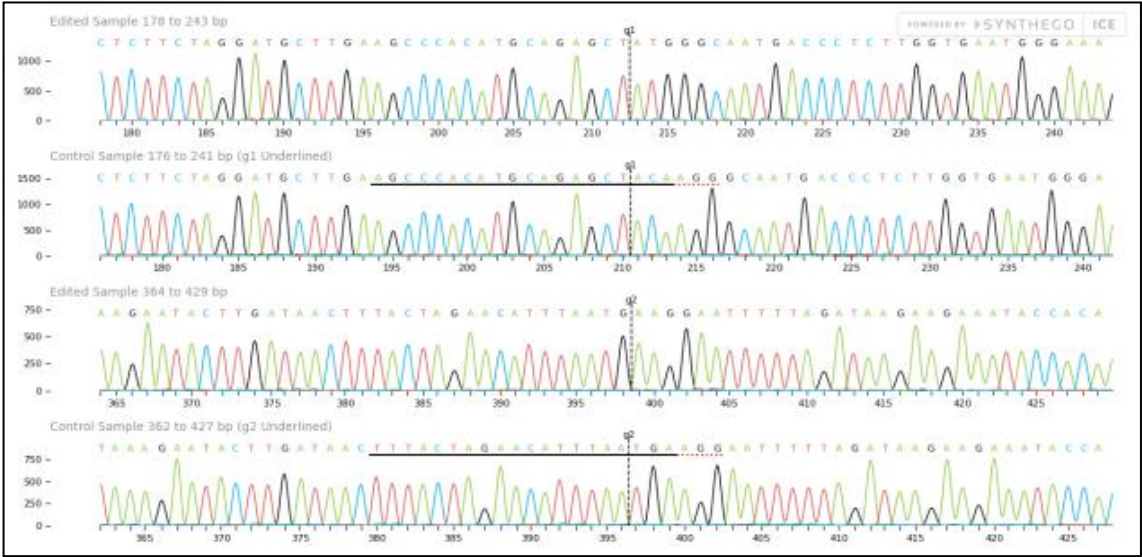
(c)



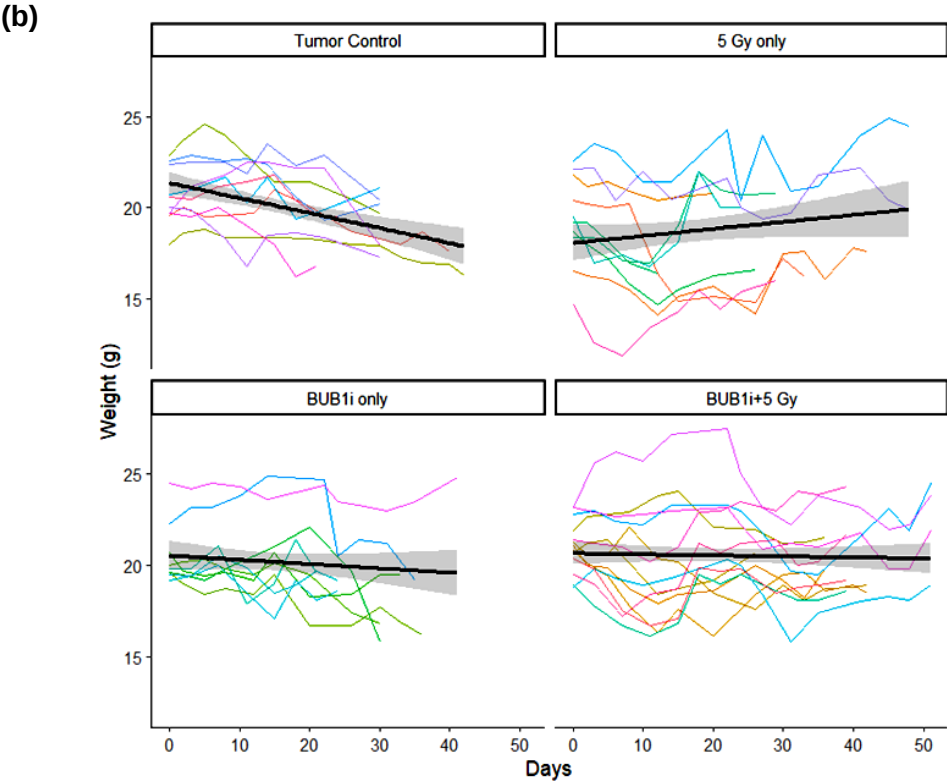
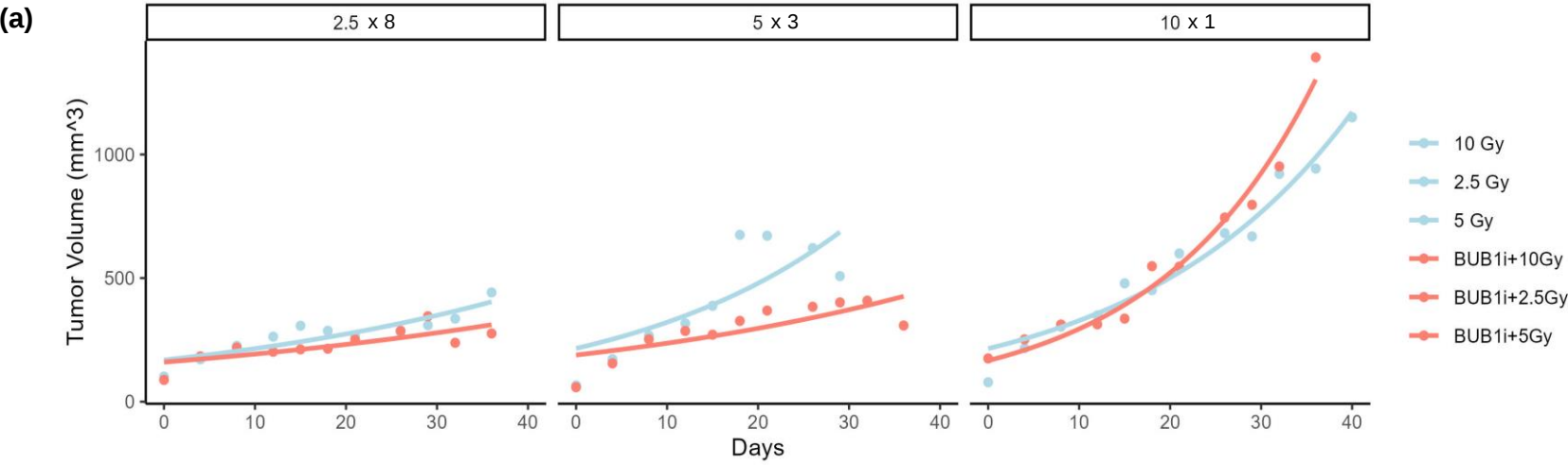
(d)



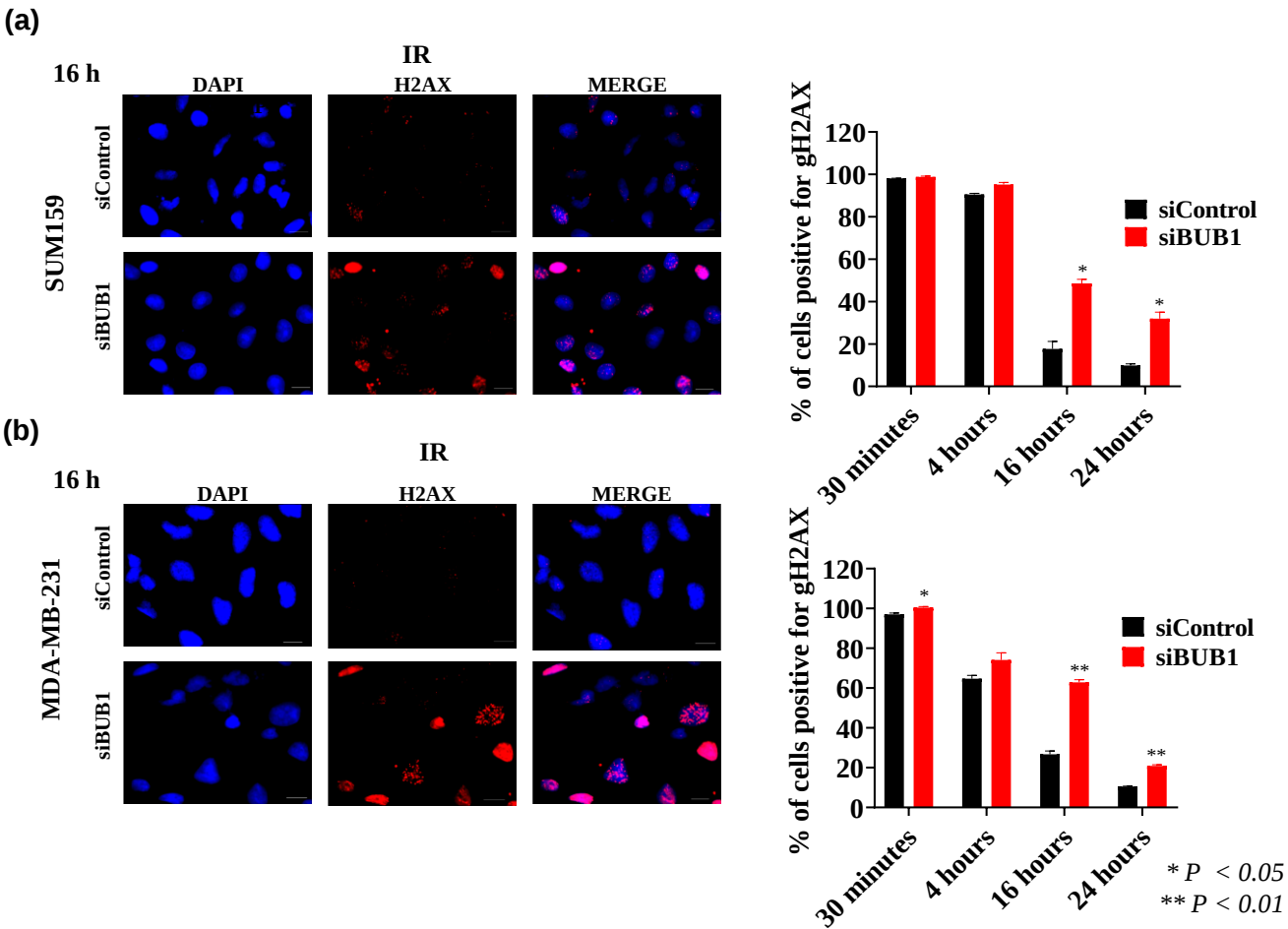
**SUM159 K048**



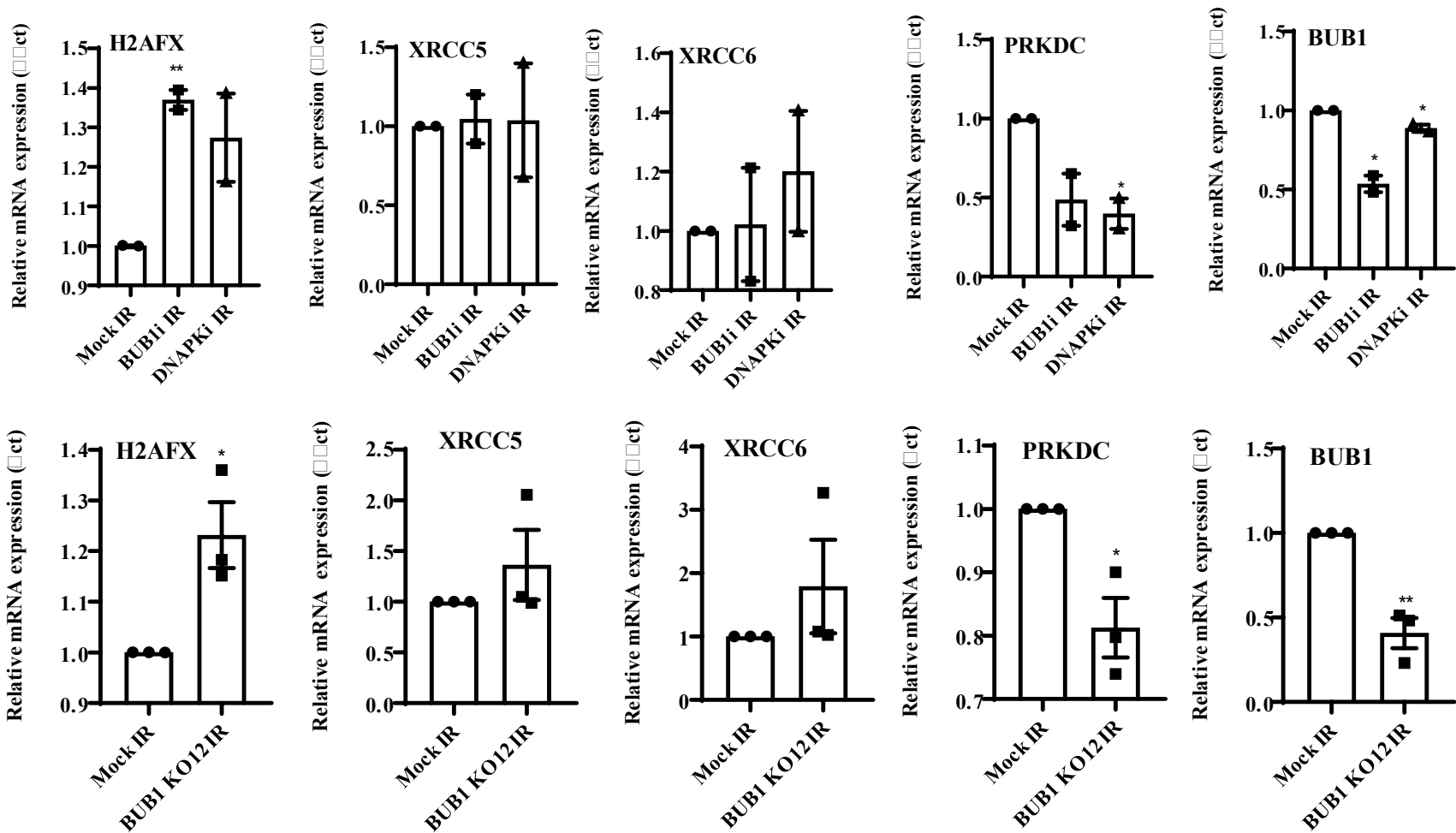
Supplementary Fig. S7



Supplementary Fig. S8

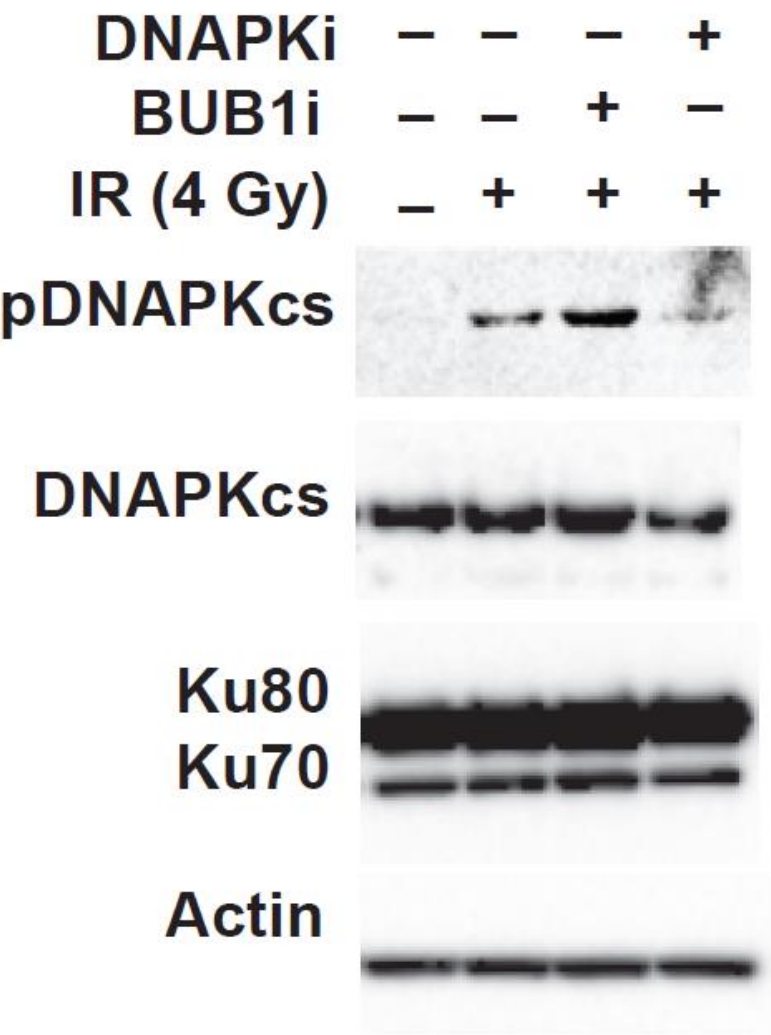


Supplementary Fig. S9

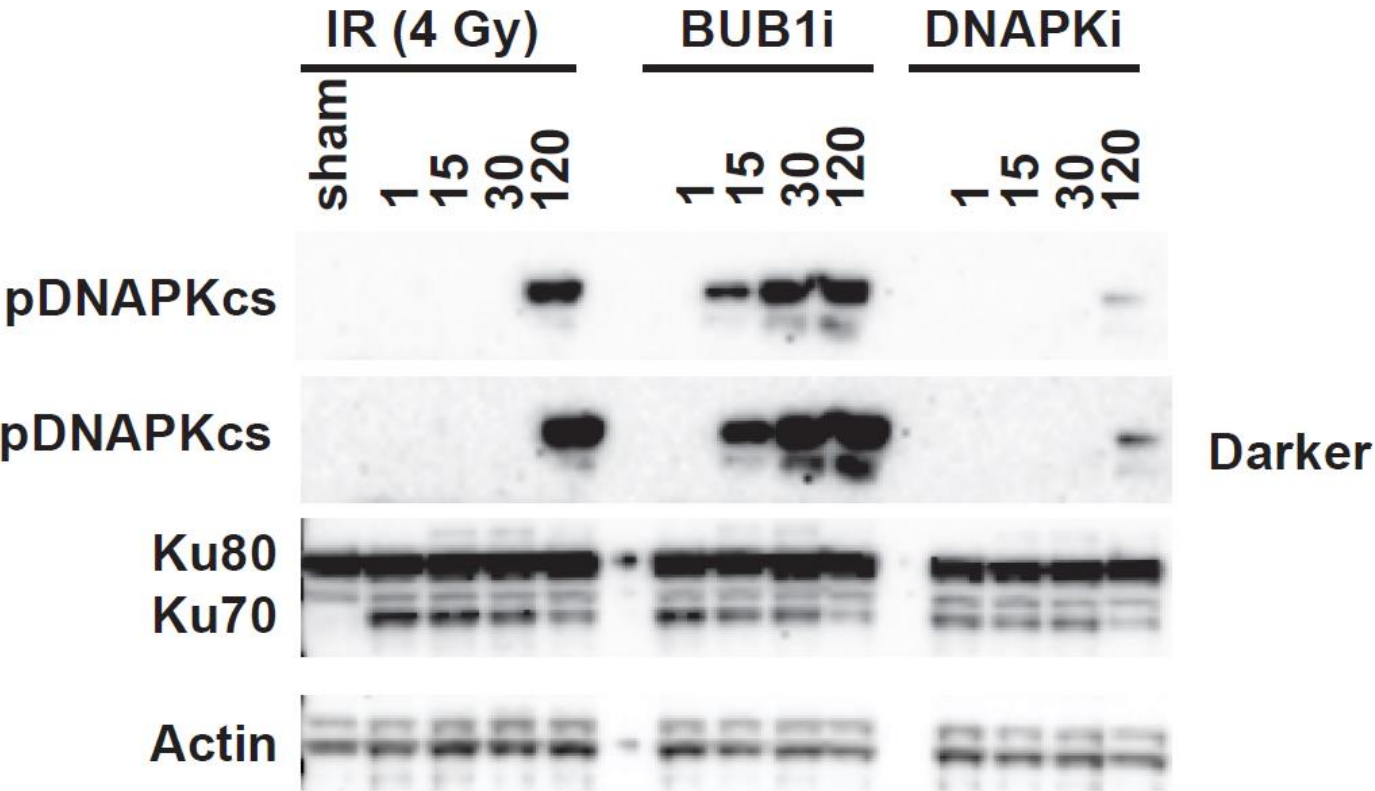


Supplementary Fig. S10

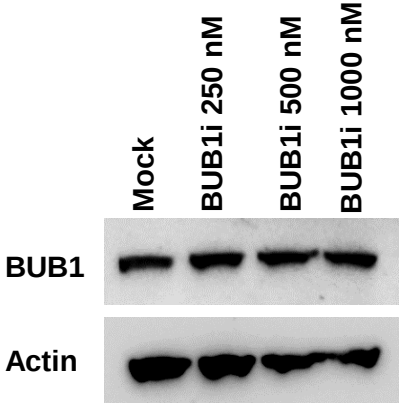
(a)



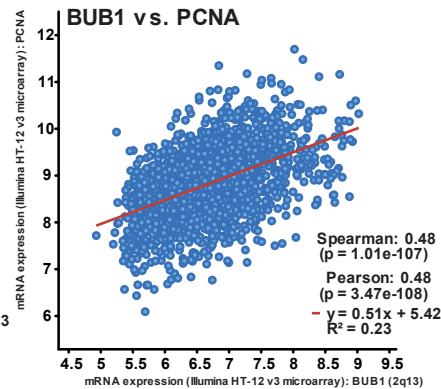
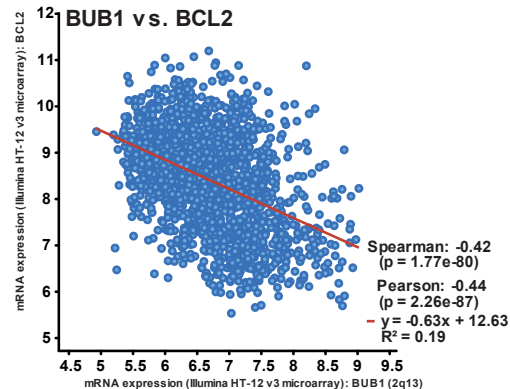
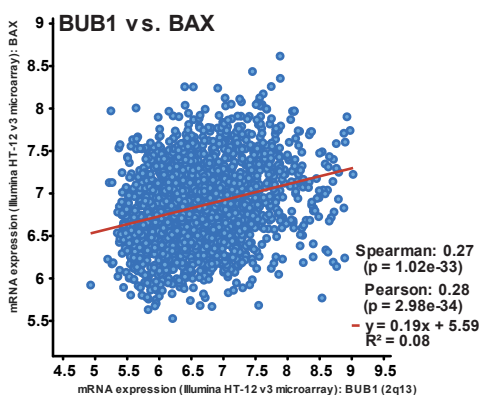
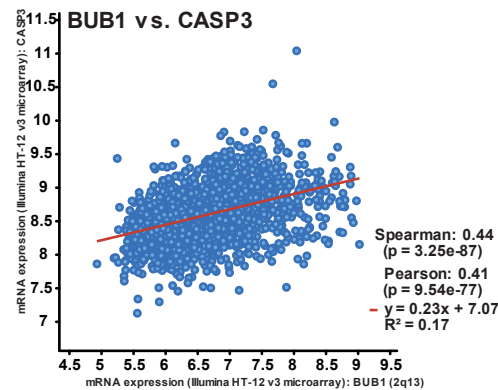
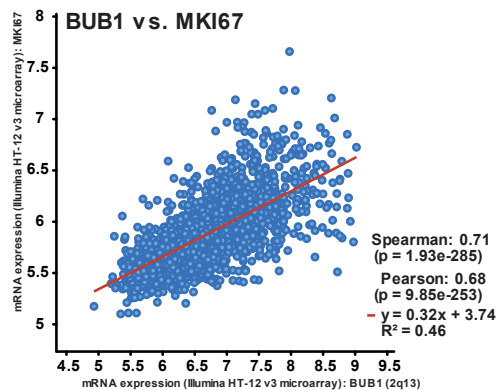
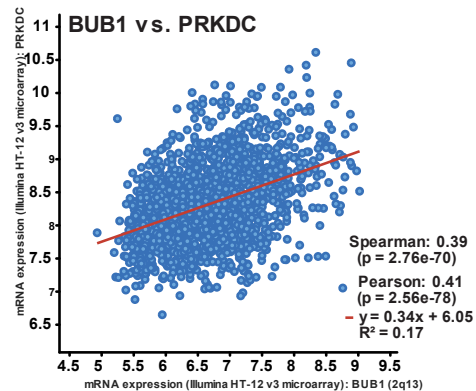
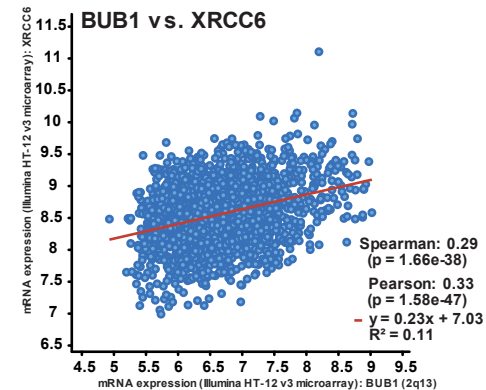
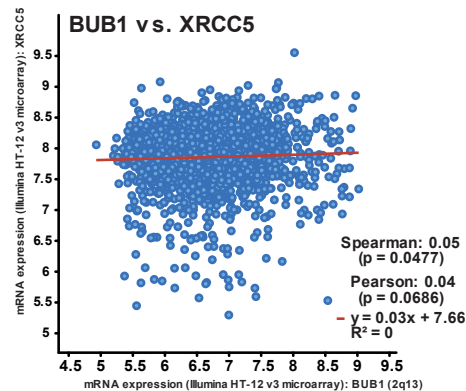
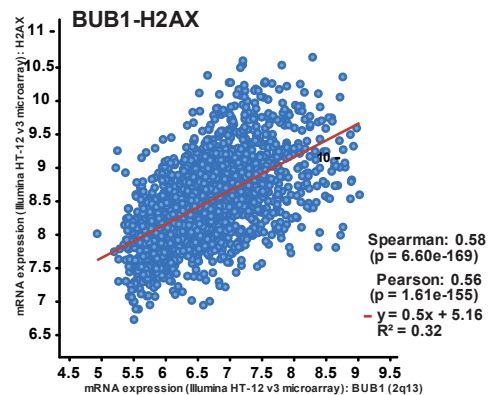
(b)



Supplementary Fig. S11



Supplementary Fig. S12



Supplementary Fig. S13

