

Supplementary Table 1 Analysis of specific nonsynonymous mutations in U2OS cells

| Gene           | Transcript <sup>a</sup> | Exons             | Description | Expected consequence <sup>b</sup> | Mutated allele frequency | Function             |
|----------------|-------------------------|-------------------|-------------|-----------------------------------|--------------------------|----------------------|
| <i>AURKA</i>   | NM_003600               | Ex3 Ex4 Ex5       | c.169T>C    | p.I57V                            | 84.82%                   | Nonsynonymous        |
| <i>BARD1</i>   | NM_001282543            | Ex5 Ex6           | c.1462C>T   | p.V488M                           | 37.83%                   | Nonsynonymous        |
|                | NM_001282543            | Ex3 Ex4           | c.1077C>G   | p.R359S                           | 54.87%                   | Nonsynonymous        |
|                | NM_000465               | Ex1               | c.70G>A     | p.P24S                            | 43.77%                   | Nonsynonymous        |
| <i>BRCA1</i>   | NM_007297               | Ex14 Ex15 Ex16    | c.4696T>C   | p.S1566G                          | 34.96%                   | Nonsynonymous        |
|                | NM_007297               | Ex9 Ex10          | c.3407T>C   | p.K1136R                          | 34.90%                   | Nonsynonymous        |
|                | NM_007297               | Ex9 Ex10          | c.2972T>C   | p.E991G                           | 34.29%                   | Nonsynonymous        |
|                | NM_007297               | Ex9 Ex10          | c.2471G>A   | p.P824L                           | 41.00%                   | Nonsynonymous        |
| <i>BRCA2</i>   | NM_000059               | Ex14              | c.7397T>C   | p.V2466A                          | 99.37%                   | Nonsynonymous        |
| <i>BRIP1</i>   | NM_032043               | Ex19              | c.2755A>G   | p.S919P                           | 59.72%                   | Nonsynonymous        |
| <i>CHEK1</i>   | NM_001244846            | Ex12 Ex13         | c.1309A>G   | p.I437V                           | 97.26%                   | Nonsynonymous        |
| <i>ERCC2</i>   | NM_000400               | Ex23              | c.2251T>G   | p.K751Q                           | 33.08%                   | Nonsynonymous        |
|                | NM_001130867            | Ex9 Ex10          | c.862C>T    | p.D288N                           | 37.88%                   | Nonsynonymous        |
| <i>FANCD2</i>  | NM_001018115            | Ex15              | c.1214A>G   | p.N405S                           | 42.01%                   | Nonsynonymous        |
| <i>FANCI</i>   | NM_001113378            | Ex4               | c.257C>T    | p.A86V                            | 35.69%                   | Nonsynonymous        |
| <i>FANCM</i>   | NM_001308133            | Ex13 Ex14         | c.2554G>T   | p.V852L                           | 15.68%                   | Nonsynonymous        |
|                | NM_001308133            | Ex15 Ex16         | c.4300A>G   | p.I1434V                          | 12.00%                   | Nonsynonymous        |
|                | NM_001308133            | Ex20 Ex21         | c.5356C>G   | p.P1786A                          | 11.58%                   | Nonsynonymous        |
| <i>NBN</i>     | NM_002485               | Ex5 Ex6           | c.553C>G    | p.E185Q                           | 34.53%                   | Nonsynonymous        |
| <i>PIK3R2</i>  | NM_005027               | Ex6               | c.700A>C    | p.S234R                           | 89.61%                   | Nonsynonymous        |
|                | NM_005027               | Ex8               | c.937T>C    | p.S313P                           | 95.01%                   | Nonsynonymous        |
| <i>RAD51D</i>  | NM_133629               | Ex3 Ex6           | c.158C>T    | p.R53Q                            | 15.93%                   | Nonsynonymous        |
| <i>RNF168</i>  | NM_152617               | Ex6               | c.1202G>T   | p.P401Q                           | 54.05%                   | Nonsynonymous        |
| <i>SMARCA2</i> | NM_001289398            | Ex6 Ex7 Ex32 Ex33 | c.612C>G    | p.D204E                           | 16.82%                   | Nonsynonymous        |
| <i>TDG</i>     | NM_003211               | Ex3               | c.287dupA   | p.E96fs                           | 44.89%                   | Frameshift insertion |
|                | NM_001363612            | Ex9               | c.670G>A    | p.V224M                           | 10.81%                   | Nonsynonymous        |
| <i>TOPBP1</i>  | NM_001363889            | Ex14              | c.2435G>A   | p.S812L                           | 14.11%                   | Nonsynonymous        |
|                | NM_001363889            | Ex10              | c.1354T>G   | p.K452Q                           | 71.59%                   | Nonsynonymous        |
| <i>UIMC1</i>   | NM_001199298            | Ex8 Ex9           | c.1304G>A   | p.P435L                           | 14.25%                   | Nonsynonymous        |
| <i>XRCC3</i>   | NM_001100118            | Ex7 Ex8           | c.722G>A    | p.T241M                           | 30.75%                   | Nonsynonymous        |

<sup>a</sup> Mutation nomenclature per HGVS recommendations.

<sup>b</sup> Expected consequence on protein level.