

Table S1. Mutations in *p53* treated with benzo[a]pyrene-7,8-dione (BPQ) in wild type (*yIG397*) yeast

| Colony | Treatment | Codon | Base | Wild type | Mutant | Change | Wild AA | Mut AA |
|---------|-----------|-------|------|-------------|--------------|--------|---------|--------|
| WT 6 | BPQ | 178 | 534 | CCC-CAC-CAT | CCC-CAT*-CAT | C>T | H | H |
| WT 9A | BPQ | 151 | 452 | ACA-CCC-CCG | ACA-CG*C-CCG | C>G | P | R |
| WT 9B | BPQ | 219 | 655 | GTG-CCC-TAT | GTG-T*CC-TAT | C>T | P | S |
| WT 11 | BPQ | 173 | 517 | GTT-GTG-AGG | GTT-C*TG-AGG | G>C | V | L |
| WT 14 | BPQ | 205 | 614 | GAG-TAT-TTG | GAG-TG*T-TTG | A>G | Y | C |
| WT 17 | BPQ | 153 | 457 | CCG-CCC-GGC | CCG-T*CC-GGC | C>T | P | S |
| WT 18A | BPQ | 253 | 758 | CTC-ACC-ATC | CTC-AA*A-ATC | C>A | T | K |
| WT 18 | BPQ | 253 | 759 | CTC-ACC-ATC | CTC-AAA*-ATC | C>A | T | K |
| WT 19 | BPQ | 389 | 1165 | GAA-GGG-CCT | GAA-A*GG-CCT | G>A | G | R |
| WT 25 | BPQ | 75 | 224 | GCC-CCT-GCA | GCC-CG*T-GCA | C>G | P | R |
| WT 1P | BPQ | 276 | 827 | TGT-GCC-TGT | TGT-GT*C-TGT | C>T | A | V |
| WT 2P | BPQ | 236 | 706 | AAC-TAC-ATG | AAC-C*AC-ATG | T>C | Y | H |
| WT 3P | BPQ | 234 | 701 | CAC-TAC-AAC | CAC-TC*C-AAC | A>C | Y | S |
| WT 12P | BPQ | 190 | 569 | GCC-CCT-CCT | GCC-CT*T-CCT | C>T | P | L |
| WT 19P | BPQ | 146 | 438 | CTG-TGG-GTT | CTG-TGA*-GTT | G>A | W | Stop |
| WT 20P | BPQ | 246 | 737 | GGC-ATG-AAC | GGC-AG*G-AAC | T>G | M | R |
| WT 21P | BPQ | 277 | 830 | GCC-TGT-CCT | GCC-TA*T-CCT | G>A | C | Y |
| WT 23P | BPQ | 155 | 464 | GGC-ACC-CGC | GGC-AT*C-CGC | C>T | T | I |
| WT 24AP | BPQ | 219 | 656 | GTG-CCC-TAT | GTG-CA*C-TAT | C>A | P | H |
| WT 24BP | BPQ | 226 | 676 | GTT-GGC-TCT | GTT-A*GC-TCT | G>A | G | S |
| WT 25P | BPQ | 317 | 949 | CCC-CAG-CCA | CCC-T*AG-CCA | C>T | Q | Stop |
| WT 31P | BPQ | 190 | 569 | GCC-CCT-CCT | GCC-CT*T-CCT | C>T | P | L |
| WT 39P | BPQ | 158 | 473 | GTC-CGC-GCC | GTC-CA*C-GCC | G>A | R | H |
| WT 23Z | BPQ | 283 | 847 | CGG-CGC-ACA | CGG-A*GC-ACA | C>A | R | S |
| WT 26Z | BPQ | 156 | 466 | ACC-CGC-GTC | ACC-T*GC-GTC | C>T | R | C |
| WT 27Z | BPQ | 325 | 973 | GAT-GGA-GAA | GAT-T*GA-GAA | G>T | G | Stop |
| WT 28Z | BPQ | 271 | 813 | TTT-GAG-GTG | TTT-GAT*-GTG | G>T | E | D |
| WT 30Z | BPQ | 182 | 546 | CGC-TGC-TCA | CGC-TGA*-TCA | C>A | C | Stop |
| WT 33Z | BPQ | 326 | 973 | GGA-GAA-TAT | GGA-T*AA-TAT | G>T | E | Stop |
| WT 35Z | BPQ | 202 | 605 | TTG-CGT-GTG | TTG-CC*T-GTG | G>C | R | P |
| WT 36Z | BPQ | 177 | 529 | TGC-CCC-CAC | TGC-A*CC-CAC | C>A | P | T |
| WT 38Z | BPQ | 276 | 826 | TGT-GCC-TGT | TGT-T*CC-TGT | G>T | A | S |
| WT 39Z | BPQ | 151 | 452 | ACA-CCC-CCG | ACA-CA*C-CCG | C>A | P | H |
| WT 41Z | BPQ | 276 | 827 | TGT-GCC-TGT | TGC-GG*C-TGT | C>G | A | G |
| WT 42Z | BPQ | 191 | 572 | CCT-CCT-CAG | CCT-CA*T-CAG | C>A | P | S |
| WT 43Z | BPQ | 317 | 949 | CCC-CAG-CCA | CCC-T*AG-CCA | C>T | Q | Stop |
| WT 45Z | BPQ | 170 | 509 | ATG-ACG-GAG | ATG-AT*G-GAG | C>T | T | M |
| WT 47Z | BPQ | 170 | 509 | ATG-ACG-GAG | ATG-AT*G-GAG | C>T | T | M |
| WT 50Z | BPQ | 216 | 647 | AGT-GTG-GTG | AGT-GA*G-GTG | T>A | V | E |
| WT 61Z | BPQ | 283 | 847 | CGG-CGC-ACA | CGG-A*GC-ACA | C>A | R | S |
| WT 62Z | BPQ | 180 | 538 | CAT-GAG-CGC | CAT-T*AG-CGC | G>T | E | stop |
| WT 63Z | BPQ | 250 | 749 | AGG-CCC-ATC | AGG-CT*C-ATC | C>T | P | L |
| WT 64Z | BPQ | 213 | 638 | TTT-CGA-CAT | TTT-CT*A-CAT | G>T | R | L |

| Colony | Treatment | Codon | Base | Wild type | Mutant | Change | Wild AA | Mut AA |
|---------|-----------|-------|------|-------------|--------------|--------|---------|--------|
| WT 65Z | BPQ | 283 | 847 | CGG-CGC-ACA | CGG-T*GC-ACA | C>T | R | C |
| WT 67ZA | BPQ | 241 | 722 | AGT-TCC-TCG | AGT-TA*C-TCG | C>A | S | Y |
| WT 67ZB | BPQ | 314 | 941 | AGC-TCC-TCT | AGC-TT*C-TCT | C>T | S | F |
| WT 68Z | BPQ | 105 | 314 | CAG-GGC-AGC | CAG-GT*C-AGC | G>T | G | V |
| WT 73Z | BPQ | 143 | 428 | CCT-GTG-CAG | CCT-GC*G-CAG | T>C | V | A |
| WT 74Z | BPQ | 158 | 472 | GTC-CGC-GCC | GTC-T*GC-GCC | C>T | R | C |
| WT 75Z | BPQ | 267 | 799 | GGA-CGG-AAC | GGA-T*GG-ACC | C>T | R | W |