**Table 1. Highly enriched top-shared GO -terms were obtained from the three databases (DAVID, Enrichr, and WebGestalt).**

| **Category** | **GO ID** | **Go Terms** | **Associated Genes** | | | **All Associated Genes** | **Ref.** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **DAVID** | **Enrichr** | **WebGestalt** |
| Biological Processes | GO:0006260 | DNA replication | FEN1; MCM7; CDK1 | FEN1; MCM7; CDK1 | CDK1; BRCA1; FEN1; CDC45; MCM7 | CDC45; MCM7; FEN1; CDK1; BRCA1 | [36, 37] |
| GO:0006302 | double-strand break repair | FEN1; BRCA1 | FEN1; BRCA1 | BRCA1; FEN1; CDC45; MCM7 | FEN1; BRCA1; CDC45; MCM7 | [38, 39] |
| GO:0006974 | DNA damage response | TOP2A; MCM7; CDK1; BRCA1 | TOP2A; FEN1; MCM7; CDK1; BRCA1 | - | TOP2A; MCM7; CDK1; BRCA1; FEN1 | [40, 41] |
| GO:0000727 | double-strand break repair via break-induced replication | CDC45; MCM7 | MCM7 | - | CDC45; MCM7 | [37, 39] |
| GO:0006310 | DNA recombination | - | BRCA1 | TOP2A; BRCA1; FEN1; CDC45; MCM7 | TOP2A; BRCA1; FEN1; CDC45; MCM7 | [38, 42] |
| Cellular Components | GO:0005819 | spindle | CDC20; BUB1B; KIF23; KIF11 | CDC20; CDK1; BUB1B; KIF23; KIF11 | CDK1; CDC20; BUB1B; KIF23; KIF11 | CDK1; CDC20; BUB1B; KIF23; KIF11 | [41, 43] |
| GO:0072686 | mitotic spindle | CDK1; KIF23; KIF11 | CDK1; KIF23; KIF11 | - | CDK1; KIF23; KIF11 | [43, 44] |
| GO:0005876 | spindle microtubule | CDK1; KIF11 | CDK1; KIF11 | - | CDK1; KIF11 | [43, 45] |
| GO:0005634 | nucleus | TOP2A; FEN1; CDC45; MCM7; CDK1; BUB1B; KIF23; BRCA1; KIF11 | TOP2A; FEN1; CDC45; MCM7; CDK1; KIF23; BRCA1; KIF11 | - | TOP2A; FEN1; CDC45; MCM7; CDK1; BUB1B; KIF23; BRCA1; KIF11 | [43, 45] |
| GO:0000228 | nuclear chromosome | - | TOP2A; CDC45; MCM7 | TOP2A; BRCA1; CDC45; MCM7 | TOP2A; BRCA1; CDC45; MCM7 | [44, 46] |
| Molecular Functions | GO:0003684 | damaged DNA binding | FEN1; BRCA1 | FEN1 | BRCA1; FEN1 | BRCA1; FEN1 | [47, 48] |
| GO:0015631 | Tubulin Binding | - | KIF23; BRCA1 | BRCA1; KIF23; KIF11 | BRCA1; KIF23; KIF11 | [38, 44] |
| GO:0003697 | single-stranded DNA binding | - | CDC45; MCM7 | CDC45; MCM7 | CDC45; MCM7 | [47, 49] |
| GO:0003677 | DNA binding | TOP2A; FEN1; MCM7; BRCA1 | TOP2A; FEN1; CDC45; MCM7; BRCA1 | - | TOP2A; FEN1; CDC45; MCM7; BRCA1 | [45, 50] |
| GO:0000287 | Magnesium Ion Binding | - | TOP2A; FEN1 | TOP2A; FEN1 | TOP2A; FEN1 | [47, 48] |