**Table 2. Highly enriched top-shared pathways were obtained from the three databases (DAVID, Enrichr, and WebGestalt).**

| **Database** | **ID** | **Pathways** | **Associated Genes** | | | **All Associated Genes** | **Ref.** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **DAVID** | **Enrichr** | **WebGestalt** |
| **KEGG** | hsa04110 | Cell cycle | CDC20; CDC45; MCM7; CDK1; BUB1B | CDC20; CDC45; MCM7; CDK1; BUB1B | CDK1; CDC20; BUB1B; CDC45; MCM7 | CDC20; CDC45; MCM7; CDK1; BUB1B | [41, 45] |
| hsa03030 | DNA replication | FEN1; MCM7 | FEN1; MCM7 | - | FEN1; MCM7 | [37, 41] |
| **Reactome** | R-HSA-1640170 | Cell Cycle | TOP2A; CDC20; FEN1; CDC45; MCM7; CDK1; BUB1B; KIF23; BRCA1 | TOP2A; CDC20; FEN1; CDC45; MCM7; CDK1; BUB1B; KIF23; BRCA1 | CDK1; TOP2A; BRCA1; CDC20; FEN1; BUB1B; CDC45; KIF23; MCM7 | TOP2A; CDC20; FEN1; CDC45; MCM7; CDK1; BUB1B; KIF23; BRCA1 | [41, 49] |
| R-HSA-69620 | Cell Cycle Checkpoints | CDC20; CDC45; MCM7; CDK1; BUB1B; BRCA1 | CDC20; CDC45; MCM7; CDK1; BUB1B; BRCA1 | CDK1; BRCA1; CDC20; BUB1B; CDC45; MCM7 | CDC20; CDC45; MCM7; CDK1; BUB1B; BRCA1 | [41, 49] |
| R-HSA-453279 | Mitotic G1 phase and G1/S transition | TOP2A; CDC45; MCM7; CDK1 | TOP2A; CDC45; MCM7; CDK1 | CDK1; TOP2A; CDC45; MCM7 | TOP2A; CDC45; MCM7; CDK1 | [41, 51] |
| R-HSA-176187 | Activation of ATR in response to replication stress | CDC45; MCM7 | CDC45; MCM7 | CDC45; MCM7 | CDC45; MCM7 | [18, 49] |
| R-HSA-69278 | Cell Cycle, Mitotic | TOP2A; CDC20; FEN1; CDC45; MCM7; CDK1; BUB1B; KIF23 | TOP2A; CDC20; FEN1; CDC45; MCM7; CDK1; BUB1B; KIF23 | CDK1; TOP2A; CDC20; FEN1; BUB1B; CDC45; KIF23; MCM7 | TOP2A; CDC20; FEN1; CDC45; MCM7; CDK1; BUB1B; KIF23 | [41, 49] |
| **WikiPathways** | WP179 | Cell cycle | CDC20; CDC45; MCM7; CDK1 | CDC20; CDC45; MCM7; CDK1 | CDK1; CDC20; CDC45; MCM7 | CDC20; CDC45; MCM7; CDK1 | [41, 52] |
| WP45 | G1 to S cell cycle control | CDC45; MCM7; CDK1 | CDC45; MCM7; CDK1 | CDK1; CDC45; MCM7 | CDC45; MCM7; CDK1 | [41, 52] |
| WP4016 | DNA IR damage and cellular response via ATR | FEN1; CDC45; CDK1; BRCA1 | FEN1; CDC45; CDK1; BRCA1 | CDK1; BRCA1; FEN1; CDC45 | FEN1; CDC45; CDK1; BRCA1 | [41] |
| WP466 | DNA replication | CDC45; MCM7 | CDC45; MCM7 | - | CDC45; MCM7 | [49, 53] |
| WP2446 | Retinoblastoma gene in cancer | TOP2A; CDC45; MCM7; CDK1 | TOP2A; CDC45; MCM7; CDK1 | CDK1; TOP2A; CDC45; MCM7 | TOP2A; CDC45; MCM7; CDK1 | [41, 52] |