Extended Data Table 1. Genes included in the p53 panel

|  |  |  |
| --- | --- | --- |
| **Gene** | **Gene name** | **Transcript ID** |
| *CLTC* | [clathrin heavy chain](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:2092) | NM\_001101.2 |
| *GAPDH* | [glyceraldehyde-3-phosphate dehydrogenase](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:4141) | NM\_001916.3 |
| *GUSB* | [glucuronidase beta](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:4696) | NM\_002046.3 |
| *HPRT1* | [hypoxanthine phosphoribosyltransferase 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:5157) | NM\_000194.1 |
| *PGK1* | [phosphoglycerate kinase 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:8896) | NM\_000291.2 |
| *TUBB* | [tubulin beta class I](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:20778) | NM\_006086.2 |
| *ABCB1* | [ATP binding cassette subfamily B member 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:40) | NM\_001111.3 |
| *ACTA2* | [actin, alpha 2, smooth muscle, aorta](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:130) | NM\_001033049.1 |
| *AKT1S1* | [AKT1 substrate 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:28426) | NM\_018702.3 |
| *APAF1* | [apoptotic peptidase activating factor 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:576) | NR\_110620.1 |
| *ATF3* | [activating transcription factor 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:785) | NM\_181869.1 |
| *ATM* | [ATM serine/threonine kinase](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:795) | NM\_001644.3 |
| *ATR* | [ATR serine/threonine kinase](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:882) | NM\_004707.2 |
| *ADGRB1* | [adhesion G protein-coupled receptor B1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:943) | NM\_138292.3 |
| *BAX* | [BCL2 associated X](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:959) | NM\_004993.5 |
| *BBC3* | [BCL2 binding component 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:17868) | NM\_004322.3 |
| *BCL2* | [BCL2, apoptosis regulator](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:990) | NM\_001184900.1 |
| *BCL6* | [B-cell CLL/lymphoma 6](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1001) | NM\_199141.1 |
| *BID* | [BH3 interacting domain death agonist](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1050) | NM\_032977.3 |
| *BRCA1* | BRCA1, DNA repair associated | NM\_032992.2 |
| *BTG2* | [BTG anti-proliferation factor 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1131) | NM\_001228.4 |
| *CASP2* | [caspase 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1503) | NM\_012115.2 |
| *CASP3* | [caspase 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1504) | NM\_001229.2 |
| *CASP8* | [caspase 8](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1509) | NM\_012117.1 |
| *CASP9* | [caspase 9](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1511) | NM\_018237.3 |
| *CCND1* | [cyclin D1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1582) | NM\_001259.6 |
| *CCNE1* | [cyclin E1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1589) | NM\_001127183.1 |
| *CDK1* | [cyclin dependent kinase 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1722) | NM\_000492.3 |
| *CDK2* | [cyclin dependent kinase 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1771) | NM\_001908.3 |
| *CDK4* | [cyclin dependent kinase 4](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1773) | NM\_018947.4 |
| *CDK6* | [cyclin dependent kinase 6](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1777) | NM\_001349.2 |
| *CDKN1A* | [cyclin dependent kinase inhibitor 1A](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1784) | NM\_014314.3 |
| *CDKN2A* | [cyclin dependent kinase inhibitor 2A](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1787) | NM\_001304794.1 |
| *CHEK1* | [checkpoint kinase 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:1925) | NM\_080876.3 |
| *CHEK2* | [checkpoint kinase 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:16627) | NM\_013302.3 |
| *COL18A1* | collagen type XVIII alpha 1 chain | NM\_004094.4 |
| *CPB2* | [carboxypeptidase B2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:2300) | NM\_001568.2 |
| *CRY1* | [cryptochrome circadian clock 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:2384) | NM\_001214903.1 |
| *CSNK1A1* | [casein kinase 1 alpha 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:2451) | NM\_003824.2 |
| *CSNK1D* | [casein kinase 1 delta](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:2452) | NM\_198549.1 |
| *DDB2* | [damage specific DNA binding protein 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:2718) | NM\_004960.2 |
| *E2F1* | [E2F transcription factor 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:3113) | NM\_001161706.1 |
| *E2F3* | [E2F transcription factor 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:3115) | NM\_001516.4 |
| *FAS* | [Fas cell surface death receptor](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:11920) | NM\_020771.2 |
| *FHL2* | [four and a half LIM domains 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:3703) | NM\_006044.2 |
| *GADD45A* | [growth arrest and DNA damage inducible alpha](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:4095) | NM\_016299.2 |
| *GAK* | [cyclin G associated kinase](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:4113) | NM\_001548.3 |
| *GAL3ST3* | [galactose-3-O-sulfotransferase 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:24144) | NM\_001031683.2 |
| *GDF15* | [growth differentiation factor 15](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:30142) | NM\_000629.2 |
| *GTSE1* | [growth differentiation factor 15](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:30142) | NM\_000874.3 |
| *HDAC1* | [histone deacetylase 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:4852) | NM\_016123.1 |
| *HIC1* | [HIC ZBTB transcriptional repressor 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:4909) | NM\_001145805.1 |
| *HIF1A* | [hypoxia inducible factor 1 alpha subunit](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:4910) | NM\_139068.2 |
| *HRAS* | [HRas proto-oncogene, GTPase](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:5173) | NM\_020746.3 |
| *HSPA4L* | [heat shock protein family A (Hsp70) member 4 like](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:17041) | NM\_006617.1 |
| *IER3* | [immediate early response 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:5392) | NM\_014932.2 |
| *IGFBP1* | [insulin like growth factor binding protein 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:5469) | NM\_007363.4 |
| *IGFBP3* | [insulin like growth factor binding protein 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:5472) | NM\_001105250.1 |
| *IGFBP4* | [insulin like growth factor binding protein 4](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:5473) | NM\_020401.2 |
| *ITSN1* | [intersectin 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:6183) | NM\_001032409.1 |
| *KAT2B* | [lysine acetyltransferase 2B](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:8638) | NM\_001008211.1 |
| *LRDD* | [p53-induced death domain protein 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:16491) | NM\_013232.2 |
| *MAPK8* | [mitogen-activated protein kinase 8](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:6881) | NM\_138575.3 |
| *MDM2* | [MDM2 proto-oncogene](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:6973) | NM\_002675.3 |
| *MRAS* | [muscle RAS oncogene homolog](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:7227) | NM\_014330.2 |
| *NFKBIB* | [NFKB inhibitor beta](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:7798) | NM\_032833.3 |
| *NQO1* | [NAD(P)H quinone dehydrogenase 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:2874) | NM\_002719.3 |
| *PCNA* | [proliferating cell nuclear antigen](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:8729) | NM\_004157.2 |
| *PERP* | [PERP, TP53 apoptosis effector](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:17637) | NM\_002794.3 |
| *PIGS* | [phosphatidylinositol glycan anchor biosynthesis class S](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:14937) | NM\_174871.2 |
| *PLK3* | [polo like kinase 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:2154) | NM\_014455.3 |
| *PMAIP1* | [phorbol-12-myristate-13-acetate-induced protein 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:9108) | NM\_005785.2 |
| *PPM1D* | [protein phosphatase, Mg2+/Mn2+ dependent 1D](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:9277) | NM\_080657.4 |
| *PRKAB1* | [protein kinase AMP-activated non-catalytic subunit beta 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:9378) | NM\_012426.3 |
| *PTEN* | [phosphatase and tensin homolog](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:9588) | NM\_005066.2 |
| *PTK2* | [protein tyrosine kinase 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:9611) | NM\_006938.2 |
| *RB1* | [RB transcriptional corepressor 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:9884) | NM\_007315.2 |
| *RCHY1* | [ring finger and CHY zinc finger domain containing 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:17479) | NM\_007375.3 |
| *RDBP* | [negative elongation factor complex member E](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:13974) | NM\_001146213.1 |
| *RFWD2* | [ring finger and WD repeat domain 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:17440) | NM\_148910.2 |
| *RPRM* | [reprimo, TP53 dependent G2 arrest mediator homolog](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:24201) | NM\_003264.3 |
| *RRM2B* | [ribonucleotide reductase regulatory TP53 inducible subunit M2B](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:17296) | NM\_003265.2 |
| *SERPINB2* | [serpin family B member 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:8584) | NM\_003844.2 |
| *SERPINB5* | [serpin family B member 5](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:8949) | NM\_001204344.1 |
| *SERPINE1* | [serpin family E member 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:8583) | NM\_012470.2 |
| *SESN1* | [sestrin 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:21595) | NM\_001128917.1 |
| *SESN2* | [sestrin 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:20746) | NM\_000546.2 |
| *SESN3* | [sestrin 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:23060) | NM\_139075.3 |
| *SFN* | [stratifin](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:10773) | NM\_145803.1 |
| *SHISA5* | [shisa family member 5](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:30376) | NM\_001007278.1 |
| *SIAH1* | [siah E3 ubiquitin protein ligase 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:10857) | NM\_017672.2 |
| *SIAH2* | [siah E3 ubiquitin protein ligase 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:10858) | NM\_018955.2 |
| *SIAH3* | [siah E3 ubiquitin protein ligase family member 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:30553) | NM\_001035247.2 |
| *SIRT1* | [sirtuin 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:14929) | NM\_152586.3 |
| *ST13* | [ST13, Hsp70 interacting protein](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:11343) | NM\_001204401.1 |
| *STEAP3* | [STEAP3 metalloreductase](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:24592) | NM\_015269.2 |
| *THBS1* | [thrombospondin 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:11785) | NM\_014413.2 |
| *TIMP3* | [TIMP metallopeptidase inhibitor 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:11822) | NM\_002759.1 |
| *TNFRSF10B* | [TNF receptor superfamily member 10b](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:11905) | NM\_004836.3 |
| *TP53* | [tumor protein p53](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:11998) | NM\_001013703.2 |
| *TP63* | [tumor protein p63](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:15979) | NM\_001198801.1 |
| *TP73* | [tumor protein p73](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:12003) | NM\_002140.3 |
| *TSC2* | [tuberous sclerosis 2](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:12363) | NM\_000548.3:95 |
| *UQCRFS1* | [ubiquinol-cytochrome c reductase, Rieske iron-sulfur polypeptide 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:12587) | NM\_006003.2:854 |
| *VCAN* | [versican](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:2464) | NM\_004385.3:9915 |
| *HSPA1A* | [heat shock protein family A (Hsp70) member 1A](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:5232) | NR\_028272.1 |
| *HSP90AA1* | [heat shock protein 90 alpha family class A member 1](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:5253) | NR\_131012.1 |
| *ZMAT3* | [zinc finger matrin-type 3](http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=HGNC:29983) | NM\_022470.2 |