# Supplementary Information

# Pyruvate Kinase M2 Activates mTORC1 by Phosphorylating AKT1S1

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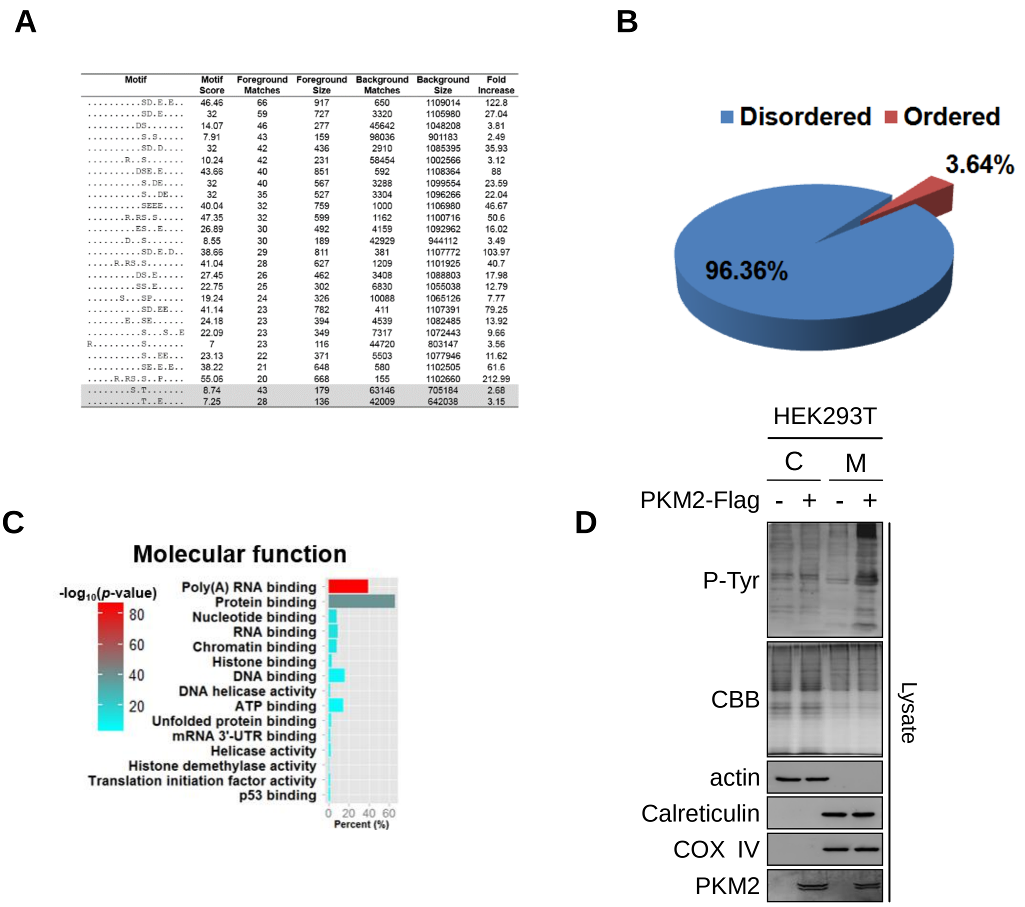
# Supplementary Data

## Supplementary Figures S1-S6

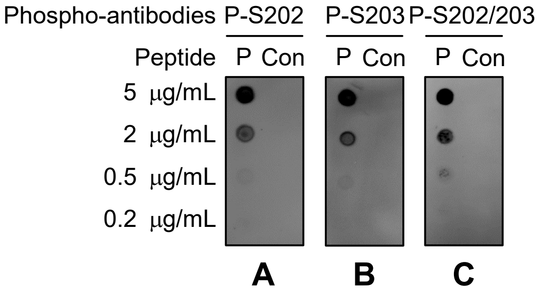
### Figure S1



| Motif | Motif Score | Foreground Matches | Foreground Size | Background Matches | Background Size | Fold Increase |
|---|---|---|---|---|---|---|
| ..........SD.E.E.. | 46.46 | 66 | 917 | 650 | 1109014 | 122.8 |
| ..........SD.E.... | 32 | 59 | 727 | 3320 | 1105980 | 27.04 |
| .........DS....... | 14.07 | 46 | 277 | 45642 | 1048208 | 3.81 |
| ..........S.S..... | 7.91 | 43 | 159 | 98036 | 901183 | 2.49 |
| ..........SD.D.... | 32 | 42 | 436 | 2910 | 1085395 | 35.93 |
| .......R..S....... | 10.24 | 42 | 231 | 58454 | 1002566 | 3.12 |
| .........DSE.E.... | 43.66 | 40 | 851 | 592 | 1108364 | 88 |
| ..........S.DE.... | 32 | 40 | 567 | 3288 | 1099554 | 23.59 |
| ..........S..DE... | 32 | 35 | 527 | 3304 | 1096266 | 22.04 |
| ..........SEEE.... | 40.04 | 32 | 759 | 1000 | 1106980 | 46.67 |
| .......R.RS.S..... | 47.35 | 32 | 599 | 1162 | 1100716 | 50.6 |
| .........ES..E.... | 26.89 | 30 | 492 | 4159 | 1092962 | 16.02 |
| .......D..S....... | 8.55 | 30 | 189 | 42929 | 944112 | 3.49 |
| ..........SD.E.D.. | 38.66 | 29 | 811 | 381 | 1107772 | 103.97 |
| .....R.RS.S....... | 41.04 | 28 | 627 | 1209 | 1101925 | 40.7 |
| .........DS.E..... | 27.45 | 26 | 462 | 3408 | 1088803 | 17.98 |
| .........SS.E..... | 22.75 | 25 | 302 | 6830 | 1055038 | 12.79 |
| ......S...SP...... | 19.24 | 24 | 326 | 10088 | 1065126 | 7.77 |
| ..........SD.EE... | 41.14 | 23 | 782 | 411 | 1107391 | 79.25 |
| .......E..SE...... | 24.18 | 23 | 394 | 4539 | 1082485 | 13.92 |
| ..........S...S..E | 22.09 | 23 | 349 | 7317 | 1072443 | 9.66 |
| R.........S....... | 7 | 23 | 116 | 44720 | 803147 | 3.56 |
| ..........S..EE... | 23.13 | 22 | 371 | 5503 | 1077946 | 11.62 |
| ..........SE.E.E.. | 38.22 | 21 | 648 | 580 | 1102505 | 61.6 |
| .....R.RS.S..P.... | 55.06 | 20 | 668 | 155 | 1102660 | 212.99 |
| ........S.T....... | 8.74 | 43 | 179 | 63146 | 705184 | 2.68 |
| ..........T..E.... | 7.25 | 28 | 136 | 42009 | 642038 | 3.15 |

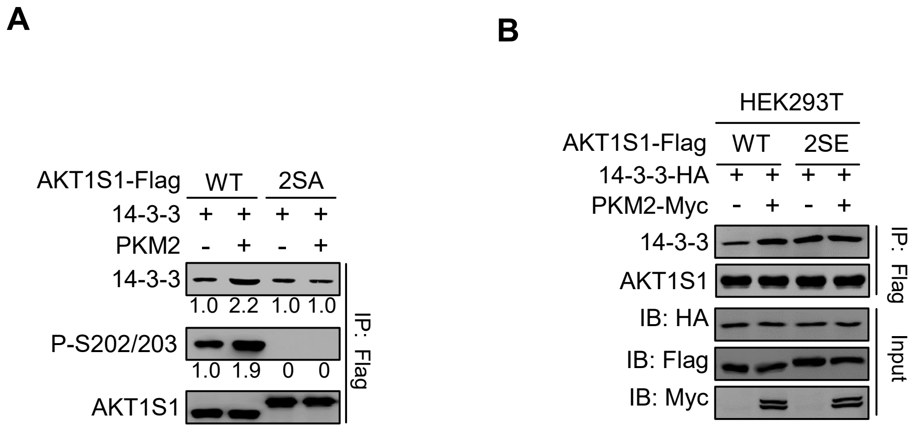
**Supplementary Figure S1, Bioinformatics Analysis of Substrates of PKM2 (Related to Figure 2).** Bioinformatics analysis results are shown. **A**, Motif-x analysis was employed to identify consensus sequences in substrates (S and T) of PKM2. **B**, The distribution of phosphorylation sites of PKM2 in ordered and disordered regions of proteins. **C**, KEGG molecular functions enrichment of substrates of PKM2. **D**, PKM2 increases membrane-bound P-Tyr. Flag-tagged PKM2 was overexpressed in HEK293T cells. The levels of P-Tyr in cytosolic (C) and membrane (M) fractions were determined.

**Figure S2**



**Supplementary Figure S2, Validation of P-202, P-203 and P-202/203 antibodies (Related to Figure 3).** Dot blot assays were carried out to determine the specificities of AKT1S1 P-S202 (**A**), P-S203 (**B**) and P-S202/203 (**C**) antibodies. Anti-sera were used at 1:1000 dilutions. Synthetic phosphor-serine containing peptides (P) that was used in making each antibody and the control peptides (Con) that have the same amino acids sequence but devoid of phosphor-serines were fixed onto nitrocellulose membrane at the concentrations as indicated, the signal of antibodies reactive to each antigen and to each control peptide was detected by chemiluminescence on Typhoon (GE).

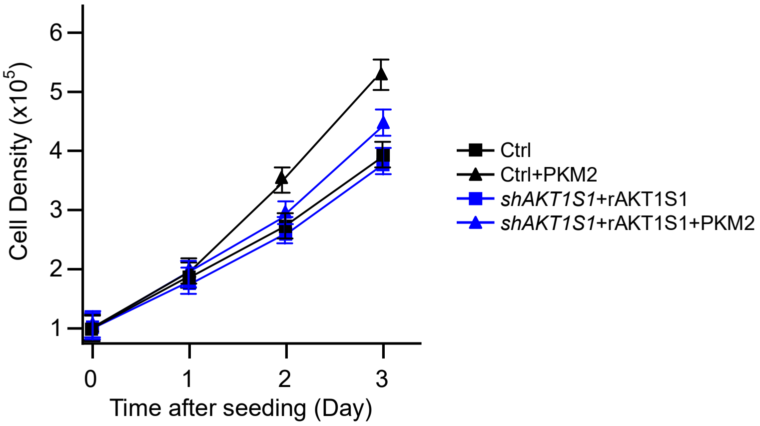
**Figure S3**



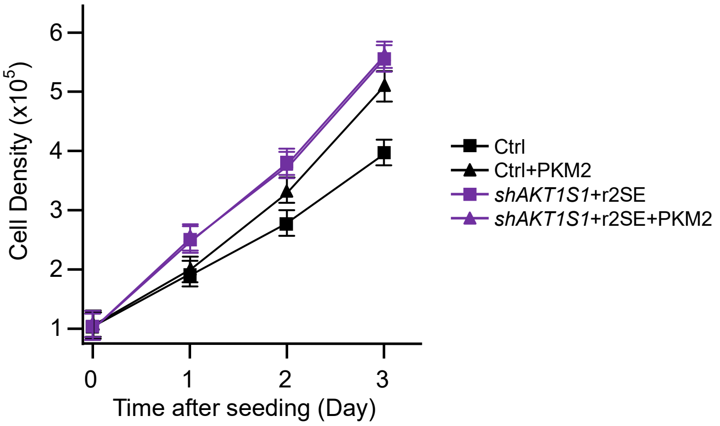
**Supplementary Figure S3, S202/203 phosphorylation increases AKT1S1-14-3-3 interaction (Related to Figure 4). A**, Purified 14-3-3 was incubated with AKT1S1 or 2SA with or without PKM2 *in vitro*. After reaction, the levels of P-S202/203 of Flag beads purified AKT1S1 or 2SA and the amount of 14-3-3 pulled down by purified AKT1S1 or 2SA was determined (western blot) and quantified (numeric). **B**, 14-3-3 was co-expressed with either AKT1S1 or 2SE in HEK293T cells, the amount of 14-3-3 co-immunoprecipitated with either AKT1S1 or 2SE with expressing PKM2 or without expressing PKM2 were determined.

# Figure S4

**A**

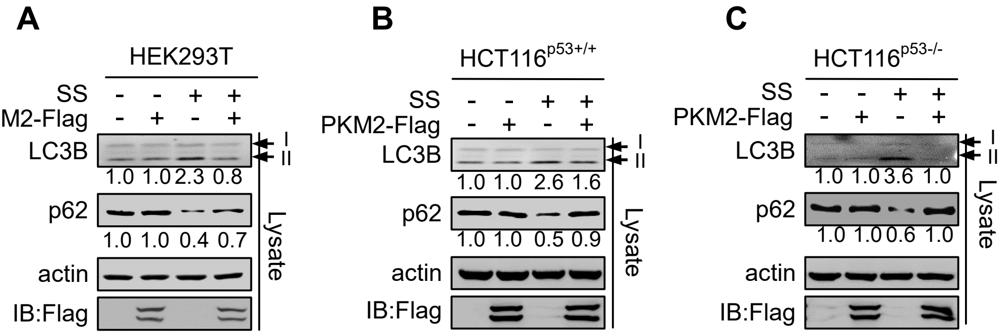


**B**

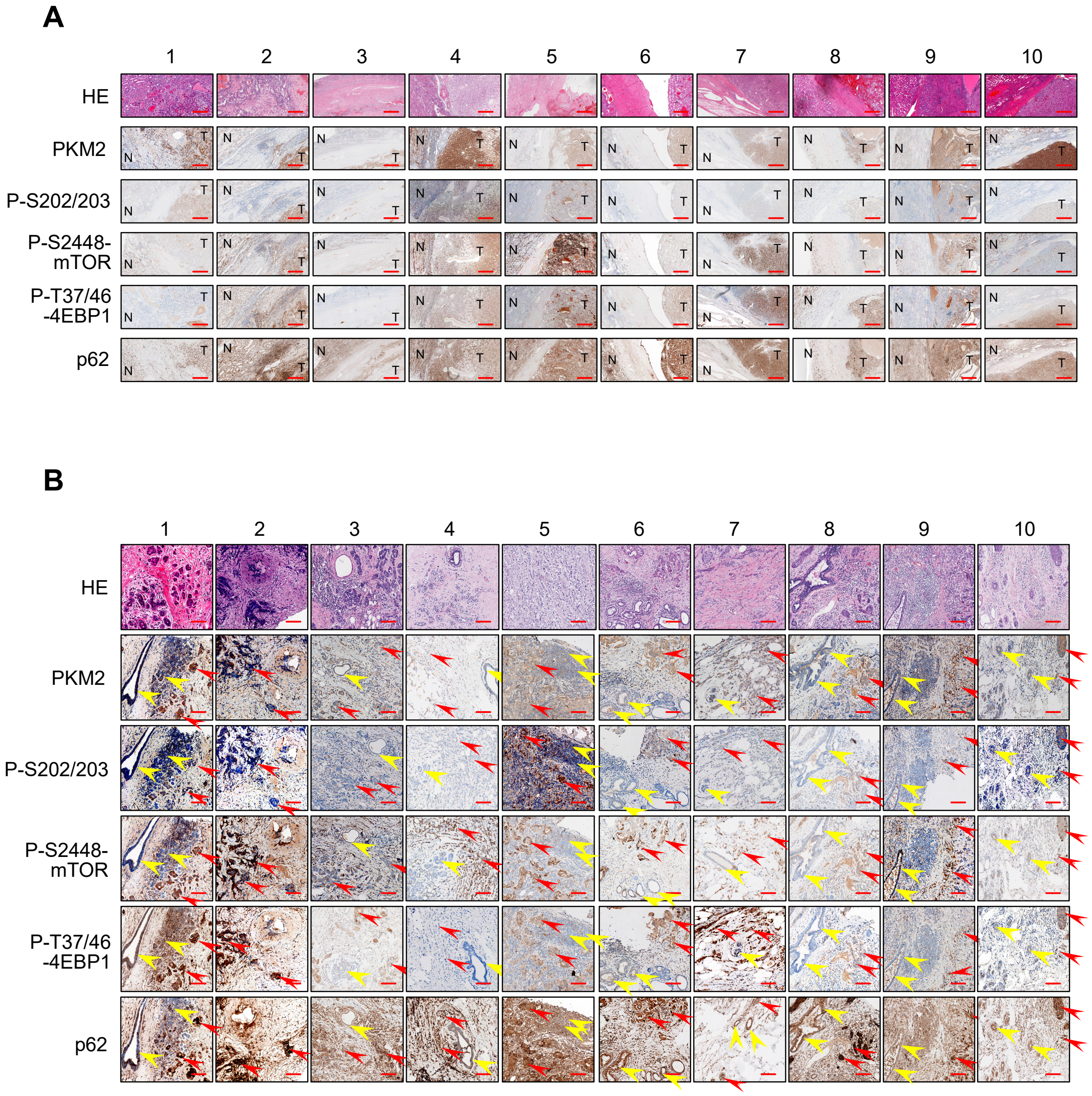


**Supplementary Figure S4, PKM2 activates mTORC1 (Related to Figure 5).** Growth curves of AKT1S1 knockdown HEK293T cells that stably overexpressing *shRNA* resistant AKT1S1 (rAKT1S1) (**A**) or 2SE (r2SE) (**B**) were detected with and without overexpressing PKM2. Growth curves of HEK293T cells with and without overexpressing PKM2 were determined in each experiment as controls.

# Figure S5



**Supplementary Figure S5, PKM2 overexpression prevented serum starvation induced autophagy in HEK293T, HCT116$^{p53+/+}$ and HCT116$^{p53-/-}$ cells (Related to Figure 6).** Cells were cultured under either normal DMEM or serum starvation (SS) conditions. The levels of LC3B and p62 in HEK293T cells and HEK293T cells expressing PKM2 **(A)**, in HCT116$^{P53+/+}$ cells and HCT116$^{P53+/+}$ cells expressing PKM2 **(B)**, in HCT116$^{P53-/-}$ cells and HCT116$^{P53-/-}$ cells expressing PKM2 **(C)**, were determined and quantified.



**Supplementary Figure S6, IHC analysis of RCC and breast cancer samples (Related to Figure 7).** PKM2, P-S202/203, P- S2448-mTOR, p-T37/46-4EBP and p62 levels of the same patient were detected in RCC (A) and breast cancer (B) tissues and adjacent normal tissues. For RCC samples, normal and tumor tissues are marked by N and T, respectively. For breast cancer, tumor and normal tissues are marked by red and yellow arrows, respectively. Pathologic results were confirmed by experienced pathologists. Bar scales were 100 μm.

# Supplemental Table S1

## Table S1: Identified PKM2 Substrates

| | UniProt Acces | Gene name | Position | Code | Peptide Sequence | Fold Change |
|---|---|---|---|---|---|---|
| 1 | O75643 | SNRNP200 | 225 | S | EEGDEDVYGEVREEASDDDMEGDEAVVRCTL | 3166.18 |
| 2 | Q96EV2 | RBM33 | 205 | S | GGMETLELQKDIKEESDEEEEDDEESGRLRP | 2576.20 |
| 3 | O95400 | CD2BP2 | 49 | S | SGGPGSRFKGKHSLDSDEEEDDDDGGSSKYD | 1828.91 |
| 4 | Q8WVC0 | LEO1 | 197 | S | DEKMQNTDDEERPQLSDDERQQLSEEEKANS | 1769.91 |
| 5 | Q96ST2 | IWS1 | 196 | S | QISDSESEEPPRHQASDSENEEPPKPRMSDS | 1769.83 |
| 6 | P25205 | MCM3 | 711 | S | QPDAKDGDSYDPYDFSDTEEEMPQVHTPKTA | 1415.93 |
| 7 | Q96ST2 | IWS1 | 235 | S | QVSDSESEEPPRHQASDSENEELPKPRISDS | 1356.93 |
| 8 | Q96ST2 | IWS1 | 198 | S | SDSESEEPPRHQASDSENEEPPKPRMSDSES | 1317.60 |
| 9 | Q96ST2 | IWS1 | 237 | S | SDSESEEPPRHQASDSENEELPKPRISDSES | 1254.30 |
| 10 | Q12872 | SFSWAP | 870 | S | RSRSRTKSKARSQSVSPSKQAAPRPAAPAAH | 1163.40 |
| 11 | Q13435 | SF3B2 | 436 | S | KKGFEEEHKDSDDDSSDDEQEKKPEAPKLSK | 1144.61 |
| 12 | O60841 | EIF5B | 214 | S | GQKKNQKNKPGPNIESGNEDDDASFKIKTVA | 1140.61 |
| 13 | Q13435 | SF3B2 | 435 | S | KKKGFEEEHKDSDDDSSDDEQEKKPEAPKLS | 1061.95 |
| 14 | Q96ST2 | IWS1 | 248 | S | QASDSENEELPKPRISDSESEDPPRHQASDS | 983.28 |
| 15 | Q4G0J3 | LARP7 | 261 | S | TSISKMKRSRPTSEGSDIESTEPQKQCSKKK | 964.25 |
| 16 | P52701 | MSH6 | 227 | S | TTYVTDKSEEDNEIESEEEVQPKTQGSRRSS | 943.95 |
| 17 | Q9UBB9 | TFIP11 | 98 | S | AGLKKGAAEEAELEDSDDEEKPVKQDDFPKD | 865.29 |
| 18 | Q5C9Z4 | NOM1 | 320 | S | GKRVRFAEDEEKSENSSEDGDITDKSLCGSG | 814.29 |
| 19 | Q9UQ35 | SRRM2 | 1925 | S | RSRSRASPVSRRRSRSRTPPVTRRRSRSRTP | 806.29 |
| 20 | P42166 | TMPO | 66 | S | PPLPAGTNSKGPPDFSSDEEREPTPVLGSGA | 786.95 |
| 21 | Q9H0D6 | XRN2 | 499 | S | GSPSPLGGIKRKAEDSDSEPEPEDNVRLWEA | 786.63 |
| 22 | O95218 | ZRANB2 | 188 | S | EDEDDADLSKYNLDASEEEDSNKKKSNRRSR | 781.63 |
| 23 | Q13428 | TCOF1 | 277 | S | RAKKPEEESESSEEGSESEEEAPAGTRSQVK | 766.96 |
| 24 | P05455 | SSB | 366 | S | GKGKVQFQGKKTKFASDDEHDEHDENGATGP | 747.30 |
| 25 | P48634 | PRRC2A | 350 | S | YTEKLKFSDEEDGRDSDEEGAEGHRDSQSAS | 727.63 |
| 26 | Q5C9Z4 | NOM1 | 317 | S | KRRGKRVRFAEDEEKSENSSEDGDITDKSLC | 707.96 |
| 27 | Q13247 | SRSF6 | 303 | S | DIKSKSRSRSQSRSNSPLPVPPSKARSVSPP | 688.51 |
| 28 | Q9H0G5 | NSRP1 | 248 | S | ILQTDVKVEENPDADSDFDAKSSADDEIEET | 688.30 |
| 29 | Q9HCN4 | GPN1 | 338 | S | ILTRGTLDEEDEEADSDTDDIDHRVTEESHE | 684.34 |
| 30 | O43719 | HTATSF1 | 600 | S | ENVLDKELEENDSENSEFEDDGSEKVLDEEG | 648.97 |
| 31 | O43719 | HTATSF1 | 624 | S | KVLDEEGSEREFDEDSDEKEEEEDTYEKVFD | 629.30 |
| 32 | O43719 | HTATSF1 | 597 | S | ELHENVLDKELEENDSENSEFEDDGSEKVLD | 625.58 |
| 33 | P35659 | DEK | 32 | S | PASEKEPEMPGPREESEEEEDEDDEEEEEEE | 609.64 |
| 34 | Q5VT52 | RPRD2 | 374 | S | PEPVTDNRDVEDMELSDVEDDGSKIIVEDRK | 609.27 |
| 35 | P25205 | MCM3 | 672 | S | VLEKEKKRKKRSEDESETEDEEEKSQEDQEQ | 571.30 |
| 36 | P49756 | RBM25 | 703 | S | KLPVDSVFNKFEDEDSDDVPRKRKLVPLDYG | 570.83 |
| 37 | P51116 | FXR2 | 453 | S | TGGPAYGPSSDVSTASETESEKREEPNRAGP | 570.30 |
| 38 | O60231 | DHX16 | 103 | S | RALLEKNRSYRLLEDSEESSEETVSRAGSSL | 570.16 |
| 39 | P52701 | MSH6 | 261 | S | KKRRVISDSESDIGGSDVEFKPDTKEEGSSD | 550.71 |
| 40 | P14625 | HSP90B1 | 306 | S | EPMEEEEAAKEEKEESDDEAAVEEEEEEKKP | 550.67 |
| 41 | Q9H3N1 | TMX1 | 247 | S | LKKVEEEQEADEEDVSEEEAESKEGTNKDFP | 550.64 |
| 42 | Q8WVC0 | LEO1 | 300 | S | RMKRKNAIASDSEADSDTEVPKDNSGTMDLP | 550.28 |
| 43 | O43719 | HTATSF1 | 642 | S | KEEEEDTYEKVFDDESDEKEDEEYADEKGLE | 530.97 |
| 44 | P51532 | SMARCA4 | 695 | S | PTLPVEEKKKIPDPDSDDVSEVDARHIIENA | 512.30 |
| 45 | Q13435 | SF3B2 | 431 | S | SAAPKKKGFEEEHKDSDDDSSDDEQEKKPEA | 511.75 |
| 46 | O00505 | KPNA3 | 60 | S | LLKKRNVPQEESLEDSDVDADFKAQNVTLEA | 511.31 |
| 47 | P24534 | EEF1B2 | 106 | S | GATDSKDDDDIDLFGSDDEEESEEAKRLREE | 493.24 |
| 48 | P52701 | MSH6 | 274 | S | GGSDVEFKPDTKEEGSSDEISSGVGDSESEG | 491.92 |
| 49 | Q8WVC0 | LEO1 | 294 | S | SEDEVLRMKRKNAIASDSEADSDTEVPKDNS | 491.64 |
| 50 | Q8WVC0 | LEO1 | 296 | S | DEVLRMKRKNAIASDSEADSDTEVPKDNSGT | 491.28 |
| 51 | Q9H0G5 | NSRP1 | 255 | S | VEENPDADSDFDAKSSADDEIEETRVNCRRE | 472.21 |
| 52 | O95218-2 | ZRANB2 | 305 | S | SRSSSSGDRKKRRTRSRSPESQVIGENTKQP | 471.98 |
| 53 | Q6QNY0 | BLOC1S3 | 65 | S | RPTGLRVAGEAAETDSEPEPEPEPTAAPRDL | 471.69 |
| 54 | Q99856 | ARID3A | 88 | S | GHPASPGGSEDGPPGSEEEDAAREGTPGSPG | 471.42 |
| 55 | O95671 | ASMTL | 239 | S | VKHDSIPAADTFEDLSDVEGGGSEPTQRDAG | 462.51 |

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|---|---|---|---|---|---|---|
| 56 | P49756 | RBM25 | 583 | S | EAERRRQPQIKQEPESEEEEEEKQEKEEKRE | 453.25 |
| 57 | P55081 | MFAP1 | 116 | S | LARHRKIVEPEVVGESDSEVEGDAWRMERED | 452.72 |
| 58 | Q86UE4 | MTDH | 426 | S | SLLKSQEPIPDDQKVSDDDKEKGEGALPTGK | 452.57 |
| 59 | Q9NTJ3 | SMC4 | 28 | S | RREEGPPPPSPDGASSDAEPEPPSGRTESPA | 452.47 |
| 60 | Q9UEG4 | ZNF629 | 28 | S | QGPEQSPNDAHRGAESENEEESPRQESSGEE | 452.31 |
| 61 | P67809 | YBX1 | 313 | S | QDGKETKAADPPAENSSAPEAEQGGAE**** | 432.83 |
| 62 | Q8NHM5 | KDM2B | 975 | S | RTENSLANENQQPIKSEPESEGEEPKRPPGI | 432.79 |
| 63 | Q96EV2 | RBM33 | 41 | S | AERSWRRRAADEDWDSELEDDLLGEDLLSGK | 432.65 |
| 64 | Q9NTJ3 | SMC4 | 27 | S | RRREEGPPPPSPDGASSDAEPEPPSGRTESP | 432.57 |
| 65 | P13861 | PRKAR2A | 78 | S | PPEPGPDRVADAKGDSESEEDEDLEVPVPSR | 432.14 |
| 66 | P35269 | GTF2F1 | 307 | S | PQQEEGPKGVDEQSDSSEESEEEKPPEEDKE | 431.73 |
| 67 | P52701 | MSH6 | 252 | S | GSRRSSRQIKKRRVISDSESDIGGSDVEFKP | 413.31 |
| 68 | P52701 | MSH6 | 256 | S | SSRQIKKRRVISDSESDIGGSDVEFKPDTKE | 413.14 |
| 69 | P55209 | NAP1L1 | 10 | S | ******MADIDNKEQSELDQDLDDVEEVEEE | 412.98 |
| 70 | Q9BW71 | HIRIP3 | 223 | S | AKKVEGNKGTKSLKESEQESEEEILAQKKEQ | 412.87 |
| 71 | O43719 | HTATSF1 | 616 | S | EFEDDGSEKVLDEEGSEREFDEDSDEKEEEE | 393.82 |
| 72 | O60293 | ZFC3H1 | 28 | S | GLSPKEEGELEDGEISDDDNNSQIRSRSSSS | 393.74 |
| 73 | Q6P6C2 | ALKBH5 | 64 | S | EPYPVSGAKRKYQEDSDPERSDYEEQQLQKE | 393.62 |
| 74 | Q8IWX8 | CHERP | 817 | S | SKSYSPGRRRRSRSRSPTPPSSAGLGSNSAP | 393.58 |
| 75 | Q8N1G4 | LRRC47 | 520 | S | EMKKYTLENKEEGSLSDTEADAVSGQLPDPT | 393.49 |
| 76 | Q9H0G5 | NSRP1 | 254 | S | KVEENPDADSDFDAKSSADDEIEETRVNCRR | 393.31 |
| 77 | Q7KZ85 | SUPT6H | 75 | S | DDDDEDEGEEDEGSDSGDSEDDVGHKKRKRT | 393.28 |
| 78 | P55081 | MFAP1 | 118 | S | RHRKIVEPEVVGESDSEVEGDAWRMEREDSS | 373.81 |
| 79 | O43719 | HTATSF1 | 714 | S | DDDSNEKLFDEEEDSSEKLFDDSDERGTLGG | 373.72 |
| 80 | O76031 | CLPX | 617 | S | YIRAPTKESSEEEYDSGVEEEGWPRQADAAN | 373.67 |
| 81 | P05388 | RPLP0 | 307 | S | AAAPAKVEAKEESEESDEDMGFGLFD***** | 373.65 |
| 82 | Q13428 | TCOF1 | 87 | S | QAKKTRVSDPISTSESSEEEEEAEAETAKAT | 373.58 |
| 83 | Q13442 | PDAP1 | 60 | S | DGAAGDPKKEKKSLDSDESEDEEDDYQQKRK | 373.47 |
| 84 | Q14527 | HLTF | 397 | S | SSRPKRRKTAVQYIESSDSEEIETSELPQKM | 373.39 |
| 85 | Q7KZ85 | SUPT6H | 78 | S | DEDEGEEDEGSDSGDSEDDVGHKKRKRTSFD | 367.15 |
| 86 | Q8IY81 | FTSJ3 | 335 | S | AKKLKEQAKALDISLSSGEEDEGDEEDSTAG | 357.40 |
| 87 | Q8IY81 | FTSJ3 | 336 | S | KKLKEQAKALDISLSSGEEDEGDEEDSTAGT | 354.31 |
| 88 | Q8TDD1 | DDX54 | 782 | S | LYQKWKQKQKIDDRDSDEEGASDRRGPERRG | 354.27 |
| 89 | Q9H6Z4 | RANBP3 | 353 | S | NEVSSDANRENAAAESGSESSSQEATPEKES | 354.16 |
| 90 | Q9UJV9 | DDX41 | 21 | S | PERKRARTDEVPAGGSRSEAEDEDDEDYVPY | 354.14 |
| 91 | Q9UNS1 | TIMELESS | 1173 | S | KEPLKAAPKKRQLLDSDEEQEEDEGRNRAPE | 353.98 |
| 92 | Q9BW71 | HIRIP3 | 227 | S | EGNKGTKSLKESEQESEEEILAQKKEQREEE | 353.94 |
| 93 | Q13428 | TCOF1 | 88 | S | AKKTRVSDPISTSESSEEEEEAEAETAKATP | 353.88 |
| 94 | Q13308 | PTK7 | 1053 | S | RLMQRCWALSPKDRPSFSEIASALGDSTVDS | 353.86 |
| 95 | O43719 | HTATSF1 | 721 | S | LFDEEEDSSEKLFDDSDERGTLGGFGSVEEG | 353.82 |
| 96 | O60841 | EIF5B | 182 | S | DEDNSKKIKERSRINSSGESGDESDEFLQSR | 353.74 |
| 97 | P13861 | PRKAR2A | 80 | S | EPGPDRVADAKGDSESEEDEDLEVPVPSRFN | 353.69 |
| 98 | Q7KZ85 | SUPT6H | 73 | S | INDDDDEDEGEEDEGSDSGDSEDDVGHKKRK | 353.57 |
| 99 | Q8TF01 | PNISR | 290 | S | EGGDGPRLPQRSKFDSDEEEEDTENVEAASS | 353.48 |
| 100 | Q9P2I0 | CPSF2 | 419 | S | EAAKKLEQSKEADIDSSDESDIEEDIDQPSA | 351.21 |
| 101 | Q9UHB7 | AFF4 | 222 | S | HQRSKSPRDPDANWDSPSRVPFSSGQHSTQS | 347.61 |
| 102 | Q9UJV9 | DDX41 | 23 | S | RKRARTDEVPAGGSRSEAEDEDDEDYVPYVP | 335.60 |
| 103 | Q9UQ35 | SRRM2 | 497 | S | GRSRSPATAKRGRSRSRTPTKRGHSRSRSPQ | 334.93 |
| 104 | Q9Y2W1 | THRAP3 | 379 | S | QTNTDKEKIKEKGSFSDTGLGDGKMKSDSFA | 334.84 |
| 105 | O14654 | IRS4 | 775 | S | KAPDTNKEDDSKDNDSESDYMFMAPGAGAIP | 334.78 |
| 106 | O43719 | HTATSF1 | 676 | S | KKAEEGDADEKLFEESDDKEDEDADGKEVED | 334.67 |
| 107 | O60524 | NEMF | 747 | S | QSGRDELNEELIQEESSEDEGEYEEVRKDQD | 334.51 |
| 108 | Q8WXI9 | GATAD2B | 129 | S | PERGRLTPSPDIIVLSDNEASSPRSSSRMEE | 334.47 |
| 109 | Q9BWU0 | SLC4A1AP | 312 | S | KQQQILLEKKMLGEDSDEEEEMDTSERKINA | 334.38 |
| 110 | Q92733 | PRCC | 267 | S | AALQVTKQITQEEDDSDEEVAPENFFSLPEK | 334.37 |
| 111 | Q9UQ35 | SRRM2 | 1729 | S | PETRSRTPPRHRRSPSVSSPEPAEKSRSSRR | 334.36 |
| 112 | O60841 | EIF5B | 186 | S | SKKIKERSRINSSGESGDESDEFLQSRKGQK | 334.32 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 113 | Q8NHM5 | KDM2B | 979 | S | SLANENQQPIKSEPESEGEEPKRPPGICERP | 334.28 |
| 114 | P46821 | MAP1B | 1016 | S | EEDMDEAIEKGEAEQSEEEADEEDKAEDARE | 334.15 |
| 115 | Q13428 | TCOF1 | 769 | S | VKAEKQEDSESSEEESDSEEAAASPAQVKTS | 314.93 |
| 116 | Q5T8D3 | ACBD5 | 196 | S | TPNAKTVNGKAESSDSGAESEEEEAQEEVKG | 314.88 |
| 117 | Q8NAV1 | PRPF38A | 193 | S | EPRVSALEEDMDDVESSEEEEEEDEKLERVP | 314.82 |
| 118 | Q9Y2W2 | WBP11 | 353 | S | AGQEIPEEGREVEEFSEDDDEDDSDDSEAEK | 314.73 |
| 119 | Q9P2I0 | CPSF2 | 423 | S | KLEQSKEADIDSSDESDIEEDIDQPSAHKTK | 314.67 |
| 120 | Q13308 | PTK7 | 1064 | S | KDRPSFSEIASALGDSTVDSKP********* | 314.65 |
| 121 | Q14527 | HLTF | 400 | S | PKRRKTAVQYIESSDSEEIETSELPQKMKGK | 314.63 |
| 122 | P21127 | CDK11B | 47 | S | IKRLKNSDDRDSKRDSLEEGELRDHRMEITI | 314.50 |
| 123 | P22059 | OSBP | 351 | S | VGSGKDQCCSGKGDMSDEDDENEFFDAPEII | 311.40 |
| 124 | P34741 | SDC2 | 115 | S | QTKSPEETDKEKVHLSDSERKMDPAEEDTNV | 298.34 |
| 125 | Q14684 | RRP1B | 452 | S | KALKARVAEPGAEATSSTGEESGSEHPPAVP | 295.25 |
| 126 | Q9H307 | PNN | 347 | S | EEAGEEEEKEIAIVHSDAEKEQEEEEQKQEM | 295.15 |
| 127 | Q9NWV8 | BABAM1 | 49 | S | AEDRAVGAQASVGSRSEGEGEAASADDGSLN | 294.99 |
| 128 | Q9UQ35 | SRRM2 | 1541 | S | KTVARTPLGQRSRSGSSQELDVKPSASPQER | 294.84 |
| 129 | Q9P2I0 | CPSF2 | 420 | S | AAKKLEQSKEADIDSSDESDIEEDIDQPSAH | 294.73 |
| 130 | P35269 | GTF2F1 | 308 | S | QQEEGPKGVDEQSDSSEESEEEKPPEEDKEE | 294.35 |
| 131 | Q8IY81 | FTSJ3 | 599 | S | SPLYQDEAPKGTEASSGTEAATGLEGEEKDG | 287.34 |
| 132 | O95218-2 | ZRANB2 | 307 | S | SSSSGDRKKRRTRSRSPESQVIGENTKQP** | 284.50 |
| 133 | Q14527 | HLTF | 398 | S | SRPKRRKTAVQYIESSDSEEIETSELPQKMK | 275.72 |
| 134 | O60231 | DHX16 | 106 | S | LEKNRSYRLLEDSEESSEETVSRAGSSLQKK | 275.68 |
| 135 | Q13308 | PTK7 | 1055 | S | MQRCWALSPKDRPSFSEIASALGDSTVDSKP | 275.53 |
| 136 | O15541 | RNF113A | 84 | S | KTRDSGKQKAAYGDLSSEEEEENEPESLGVV | 275.47 |
| 137 | P18858 | LIG1 | 66 | S | SPVKRPGRKAARVLGSEGEEEDEALSPAKGQ | 275.32 |
| 138 | P51532 | SMARCA4 | 1627 | S | GRRRPSRGSRAKPVVSDDDSEEEQEEDRSGS | 275.29 |
| 139 | P55081 | MFAP1 | 132 | S | DSEVEGDAWRMEREDSSEEEEEEIDDEEIER | 275.24 |
| 140 | Q13427 | PPIG | 257 | S | KKEKKKRKKSKKSASSESEAENLEAQPQSTV | 268.34 |
| 141 | Q99613 | EIF3C | 11 | S | *****MSRFFTTGSDSESESSLSGEELVTKP | 267.30 |
| 142 | Q9UQ35 | SRRM2 | 625 | S | ARRGRSRSRTPARRRSRTRSPVRRRSRSRSP | 264.83 |
| 143 | Q9Y2W2 | WBP11 | 361 | S | GREVEEFSEDDDEDDSDDSEAEKQSQKQHKE | 264.37 |
| 144 | P55081 | MFAP1 | 133 | S | SEVEGDAWRMEREDSSEEEEEEIDDEEIERR | 264.31 |
| 145 | P49736 | MCM2 | 139 | S | AGRGLGRMRRGLLYDSDEEDEERPARKRRQV | 261.90 |
| 146 | Q13895 | BYSL | 98 | S | RERTTRLGPRMPQDGSDDEDEEWPTLEKAAT | 256.47 |
| 147 | Q6KC79 | NIPBL | 1154 | S | RSSGGGRYRNRSPSDSDMEDYSPPPSLSEVA | 255.79 |
| 148 | Q8TEU7 | RAPGEF6 | 230 | S | VGDVDLTRLPEGPVDSEDDEEEDEEIDRTDP | 255.73 |
| 149 | Q96S55 | WRNIP1 | 92 | S | SSALKQPATPTAAESSEGEGEEGDDGGETES | 255.67 |
| 150 | Q99613 | EIF3C | 9 | S | *******MSRFFTTGSDSESESSLSGEELVT | 255.65 |
| 151 | Q9BW71 | HIRIP3 | 370 | S | LGSTSGEESDLEREVSDSEAGGGPQGERKNR | 255.61 |
| 152 | Q9Y467 | SALL2 | 802 | S | GSESGGEKAISVRGDSEEASGAEEEVGTVAA | 255.59 |
| 153 | O14617 | AP3D1 | 632 | S | VPEGLDLDAWINEPLSDSESEDERPRAVFHE | 255.53 |
| 154 | O15541 | RNF113A | 253 | S | EGRYGVYEDENYEVGSDDEEIPFKCFICRQS | 255.40 |
| 155 | O43823 | AKAP8 | 323 | S | FQLYEEPDTKLARVDSEGDFSENDDAAGDFR | 255.35 |
| 156 | O60341 | KDM1A | 131 | S | AKVEYREMDESLANLSEDEYYSEEERNAKAE | 241.36 |
| 157 | P35659 | DEK | 301 | S | DSSTTKKNQNSSKKESESEDSSDDEPLIKKL | 236.27 |
| 158 | P35659 | DEK | 306 | S | KKNQNSSKKESESEDSSDDEPLIKKLKKPPT | 236.15 |
| 159 | P52756 | RBM5 | 624 | S | ENPLKRGLVAAYSGDSDNEEELVERLESEEE | 235.99 |
| 160 | Q13428 | TCOF1 | 764 | S | PTVTQVKAEKQEDSESSEEESDSEEAAASPA | 235.92 |
| 161 | Q13442 | PDAP1 | 63 | S | AGDPKKEKKSLDSDESEDEEDDYQQKRKGVE | 235.84 |
| 162 | Q14498 | RBM39 | 129 | S | LPHSIKLSRRRSRSKSPFRKDKSPVREPIDN | 235.83 |
| 163 | Q8IWX8 | CHERP | 813 | S | SRSRSKSYSPGRRRRSRSRSPTPPSSAGLGS | 235.80 |
| 164 | Q8N1G4 | LRRC47 | 518 | S | MAEMKKYTLENKEEGSLSDTEADAVSGQLPD | 235.78 |
| 165 | Q8NHQ9 | DDX55 | 544 | S | EKKKKMNEKRKREEGSDIEDEDMEELLNDTR | 235.76 |
| 166 | Q8WVC0 | LEO1 | 171 | S | DEKIQNSDDEERAQGSDEDKLQNSDDDEKMQ | 235.72 |
| 167 | Q99613 | EIF3C | 178 | S | PEQSADEDAEKNEEDSEGSSDEDEDEDGVSA | 218.27 |
| 168 | Q9H501 | ESF1 | 663 | S | KQKALAEEASEEELPSDVDLNDPYFAEEVKQ | 218.12 |
| 169 | Q8NAV1 | PRPF38A | 194 | S | PRVSALEEDMDDVESSEEEEEEDEKLERVPS | 217.62 |

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|---|---|---|---|---|---|---|
| 170 | Q5T8D3 | ACBD5 | 200 | S | KTVNGKAESSDSGAESEEEEAQEEVKGAEQS | 217.58 |
| 171 | O43524 | FOXO3 | 280 | S | GRAAKKKAALQTAPESADDSPSQLSKWPGSP | 217.53 |
| 172 | O43823 | AKAP8 | 328 | S | EPDTKLARVDSEGDFSENDDAAGDFRSGDEE | 217.32 |
| 173 | O60841 | EIF5B | 190 | S | KERSRINSSGESGDESDEFLQSRKGQKKNQK | 217.19 |
| 174 | Q00341 | HDLBP | 31 | S | RSGLVPQQIKVATLNSEEESDPPTYKDAFPP | 216.93 |
| 175 | Q12872 | SFSWAP | 283 | S | LAENKSDEKKKSGVSSDNEDDDDEEDGNYLH | 216.78 |
| 176 | Q5VZL5 | ZMYM4 | 122 | S | TDDSLEVERRVTQHESDNENEIQIQNKLKKD | 216.64 |
| 177 | Q7Z417 | NUFIP2 | 112 | S | LNGNAGEREISLKNLSSDEATNPISRVLNGN | 216.62 |
| 178 | Q7Z4V5 | HDGFRP2 | 240 | S | KKKAPSASDSDSKADSDGAKPEPVAMARSAS | 216.59 |
| 179 | Q86VM9 | ZC3H18 | 83 | S | DEEDRASEPKSQDQDSEVNELSRGPTSSPCE | 216.49 |
| 180 | Q8N7H5 | PAF1 | 456 | S | EDEARAARDKEEIFGSDADSEDDADSDDEDR | 216.47 |
| 181 | Q93009 | USP7 | 18 | S | HQQQQQQKAGEQQLSEPEDMEMEAGDTDDP | 216.36 |
| 182 | Q99543 | DNAJC2 | 63 | S | ASFQELEDKKELSEESEDEELQLEEFPMLKT | 216.32 |
| 183 | Q9H501 | ESF1 | 657 | S | KKRLKRKQKALAEEASEEELPSDVDLNDPYF | 199.25 |
| 184 | Q9UKJ3 | GPATCH8 | 890 | S | DASSDQSCYSRQRSYSDDSYSDYSDRSRRHS | 198.53 |
| 185 | Q9UKY1 | ZHX1 | 47 | S | PPVLTPVENTRAESISSDEEVHESVDSDNQQ | 198.34 |
| 186 | Q9UPT8 | ZC3H4 | 808 | S | QDRENEEGDTGNWYSSDEDEGGSSVTSILKT | 197.66 |
| 187 | Q9UQ35 | SRRM2 | 416 | S | RDRSPPKSPEKLPQSSSSESSPPSPQPTKVS | 197.38 |
| 188 | Q7Z4V5 | HDGFRP2 | 370 | S | ERADRGEAERGSGGSSGDELREDDEPVKKRG | 197.35 |
| 189 | P51532 | SMARCA4 | 1631 | S | PSRGSRAKPVVSDDDSEEEQEEDRSGSGSEE | 197.29 |
| 190 | O60841 | EIF5B | 183 | S | EDNSKKIKERSRINSSGESGDESDEFLQSRK | 197.15 |
| 191 | Q99613 | EIF3C | 182 | S | ADEDAEKNEEDSEGSSDEDEDEDGVSAATFL | 196.83 |
| 192 | O00267 | SUPT5H | 19 | S | SEDSNFSEEEDSERSSDGEEAEVDEERRSAA | 196.81 |
| 193 | O75475 | PSIP1 | 106 | S | KFSSQQAATKQSNASSDVEVEEKETSVSKED | 196.76 |
| 194 | O95831 | AIFM1 | 118 | S | GLTPEQKQKKAALSASEGEEVPQDKAPSHVP | 196.72 |
| 195 | P52701 | MSH6 | 275 | S | GSDVEFKPDTKEEGSSDEISSGVGDSESEGL | 196.67 |
| 196 | Q13428 | TCOF1 | 272 | S | LPPAKRAKKPEEESESSEEGSESEEEAPAGT | 196.66 |
| 197 | Q4G0J3 | LARP7 | 258 | S | TSNTSISKMKRSRPTSEGSDIESTEPQKQCS | 196.59 |
| 198 | Q5C9Z4 | NOM1 | 280 | S | GDVEKEKKAQEAEAQSEDDDEDTEEEQGEEK | 196.53 |
| 199 | Q5VTR2 | RNF20 | 136 | S | LTERKALVVPEPEPDSDSNQERKDDRERGEG | 196.48 |
| 200 | Q8N5F7 | NKAP | 157 | S | APEVWGLSPKNPEPDSDEHTPVEDEEPKKST | 196.38 |
| 201 | Q96B36 | AKT1S1 | 202 | S | SVPVWGFKEKRTEARSSDEENGPPSSPDLDR | 196.27 |
| 202 | Q96DR7 | ARHGEF26 | 392 | S | AVLYQNYKEKALDIDSDEESEPKEQKSDEKI | 195.75 |
| 203 | Q9BW71 | HIRIP3 | 196 | S | APGKASVSRKQAREESEESEAEPVQRTAKKV | 194.25 |
| 204 | Q9NYF8 | BCLAF1 | 385 | S | RAEGEWEDQEALDYFSDKESGKQKFNDSEGD | 187.34 |
| 205 | Q9P1Y6 | PHRF1 | 915 | S | SAMSKLRGAVAAEGASDTEREEPTESQGLAA | 186.24 |
| 206 | Q9ULX3 | NOB1 | 201 | S | EEEEEENGFEDRKDDSDDDGGGWITPSNIKQ | 179.34 |
| 207 | Q9UQ35 | SRRM2 | 1102 | S | QSKSQTSPKGGRSRSSSPVTELASRSPIRQD | 177.36 |
| 208 | Q9BQG0 | MYBBP1A | 738 | S | SEEGEDNRSSESEEESEGEESEEEERDGDVD | 177.26 |
| 209 | Q7Z4V5 | HDGFRP2 | 396 | S | VKKRGRKGRGRGPPSSSDSEPEAELEREAKK | 177.12 |
| 210 | Q7Z4V5 | HDGFRP2 | 236 | S | GGRKKKKAPSASDSDSKADSDGAKPEPVAMA | 176.99 |
| 211 | Q9UQ35 | SRRM2 | 1923 | S | RRRSRSRASPVSRRRSRSRTPPVTRRRSRSR | 176.97 |
| 212 | Q8WVC0 | LEO1 | 279 | S | EEEQDHKSESARGSDSEDEVLRMKRKNAIAS | 176.96 |
| 213 | Q9UKY1 | ZHX1 | 48 | S | PVLTPVENTRAESISSDEEVHESVDSDNQQN | 176.93 |
| 214 | Q92733 | PRCC | 159 | S | PVKIAAPELHKGDSDSEEDEPTKKKTILQGS | 176.86 |
| 215 | Q9UQ35 | SRRM2 | 1382 | S | PSLDMKEQSTRSSGHSSSELSPDAVEKAGMS | 176.81 |
| 216 | Q9UPT8 | ZC3H4 | 807 | S | KQDRENEEGDTGNWYSSDEDEGGSSVTSILK | 176.79 |
| 217 | Q8N7H5 | PAF1 | 460 | S | RAARDKEEIFGSDADSEDDADSDDEDRGQAQ | 176.73 |
| 218 | Q9BQG0 | MYBBP1A | 734 | S | AEDKSEEGEDNRSSESEEESEGEESEEEERD | 176.56 |
| 219 | Q7Z4V5 | HDGFRP2 | 395 | S | PVKKRGRKGRGRGPPSSSDSEPEAELEREAK | 176.55 |
| 220 | Q8WVC0 | LEO1 | 220 | S | SEEEKANSDDERPVASDNDDEKQNSDDEEQP | 176.24 |
| 221 | Q13428 | TCOF1 | 762 | S | TGPTVTQVKAEKQEDSESSEEESDSEEAAAS | 176.17 |
| 222 | Q99613 | EIF3C | 181 | S | SADEDAEKNEEDSEGSSDEDEDEDGVSAATF | 175.68 |
| 223 | Q13428 | TCOF1 | 765 | S | TVTQVKAEKQEDSESSEEESDSEEAAASPAQ | 175.49 |
| 224 | Q9H501 | ESF1 | 313 | S | SGPDLARGKGNIETSSEDEDDTADLFPEESG | 174.91 |
| 225 | Q8WVC0 | LEO1 | 179 | S | DEERAQGSDEDKLQNSDDDEKMQNTDDEERP | 174.85 |
| 226 | Q7Z4V5 | HDGFRP2 | 399 | S | RGRKGRGRGPPSSSDSEPEAELEREAKKSAK | 172.54 |

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|---|---|---|---|---|---|---|
| 227 | Q8N7H5 | PAF1 | 466 | S | EEIFGSDADSEDDADSDDEDRGQAQGGSDND | 171.30 |
| 228 | O15541 | RNF113A | 85 | S | TRDSGKQKAAYGDLSSEEEEENEPESLGVVY | 168.63 |
| 229 | O60841 | EIF5B | 137 | S | KSKKTAKPKVEMYSGSDDDDDFNKLPKKAKG | 168.34 |
| 230 | Q13610 | PWP1 | 50 | S | LIAEAKEKLQEEGGGSDEEETGSPSEDGMQS | 167.39 |
| 231 | Q7Z4V5 | HDGFRP2 | 232 | S | RGPLGGRKKKKAPSASDSDSKADSDGAKPEP | 167.35 |
| 232 | Q9UQ35 | SRRM2 | 1499 | S | PEPKALPQTPRPRSRSPSSPELNNKCLTPQR | 166.53 |
| 233 | Q8WVC0 | LEO1 | 277 | S | DDEEEQDHKSESARGSDSEDEVLRMKRKNAI | 165.39 |
| 234 | Q9BQG0 | MYBBP1A | 732 | S | KGAEDKSEEGEDNRSSESEEESEGEESEEEE | 165.37 |
| 235 | Q9BVG4 | PBDC1 | 197 | S | GEEENTKNGGEKGADSGEEKEEGINREDKTD | 165.34 |
| 236 | Q9NYF8 | BCLAF1 | 397 | S | DYFSDKESGKQKFNDSEGDDTEETEDYRQFR | 164.69 |
| 237 | Q9UKV3 | ACIN1 | 838 | S | KISVVSATKGVPAGNSDTEGGQPGRKRRWGA | 164.54 |
| 238 | Q6P6C2 | ALKBH5 | 69 | S | SGAKRKYQEDSDPERSDYEEQQLQKEEEARK | 164.35 |
| 239 | O14617 | AP3D1 | 634 | S | EGLDLDAWINEPLSDSESEDERPRAVFHEEE | 164.30 |
| 240 | Q7Z4V5 | HDGFRP2 | 234 | S | PLGGRKKKKAPSASDSDSKADSDGAKPEPVA | 164.20 |
| 241 | Q7Z4V5 | HDGFRP2 | 397 | S | KKRGRKGRGRGPPSSSDSEPEAELEREAKKS | 163.42 |
| 242 | P35659 | DEK | 307 | S | KNQNSSKKESESEDSSDDEPLIKKLKKPPTD | 162.48 |
| 243 | Q13428 | TCOF1 | 279 | S | KKPEEESESSEEGSESEEEAPAGTRSQVKAS | 159.42 |
| 244 | Q7Z4V5 | HDGFRP2 | 366 | S | ERRRERADRGEAERGSGGSSGDELREDDEPV | 159.37 |
| 245 | Q8IWA0 | WDR75 | 782 | S | IPEDVDMEEEKESEDSDEENDFTEKVQDTSN | 158.97 |
| 246 | Q99613 | EIF3C | 166 | S | DFESHITSYKQNPEQSADEDAEKNEEDSEGS | 158.75 |
| 247 | Q9Y5B6 | PAXBP1 | 154 | S | YKEDLEKSKIKTELNSSAESEQPLDKTGHVK | 158.64 |
| 248 | Q8WVC0 | LEO1 | 212 | S | SDDERQQLSEEEKANSDDERPVASDNDDEKQ | 157.88 |
| 249 | Q96B36 | AKT1S1 | 203 | S | VPVWGFKEKRTEARSSDEENGPPSSPDLDRI | 157.82 |
| 250 | Q9BTC0 | DIDO1 | 809 | S | PRQEAIPDLEDSPPVSDSEEQQESARAVPEK | 157.73 |
| 251 | Q9H307 | PNN | 417 | S | DQEVMETNRVESVEPSENEASKELEPEMEFE | 157.69 |
| 252 | Q9Y2U8 | LEMD3 | 259 | S | VNGSRLVPYSCRENYSDSEEEDDDDVASSRQ | 157.66 |
| 253 | Q9Y6E2 | BZW2 | 414 | S | KKFVEWLQNAEEESESEGEEN********** | 157.52 |
| 254 | O60524 | NEMF | 748 | S | SGRDELNEELIQEESSEDEGEYEEVRKDQDS | 157.47 |
| 255 | Q7Z4V5 | HDGFRP2 | 369 | S | RERADRGEAERGSGGSSGDELREDDEPVKKR | 157.34 |
| 256 | Q9BW71 | HIRIP3 | 199 | S | KASVSRKQAREESEESEAEPVQRTAKKVEGN | 157.33 |
| 257 | O14617 | AP3D1 | 636 | S | LDLDAWINEPLSDSESEDERPRAVFHEEEQR | 156.47 |
| 258 | Q9UQ35 | SRRM2 | 2702 | S | DSRSLSYSPVERRRPSPQPSPRDQQSSSSER | 154.31 |
| 259 | O15357 | INPPL1 | 132 | S | VEGEREPDPPDDRDASDGEDEKPPLPPRSGS | 148.32 |
| 260 | Q13428 | TCOF1 | 270 | S | GALPPAKRAKKPEEESESSEEGSESEEEAPA | 147.65 |
| 261 | O75683 | SURF6 | 206 | S | EPREPPGLIFNKVEVSEDEPASKAQRRKEKR | 145.13 |
| 262 | P52701 | MSH6 | 279 | S | EFKPDTKEEGSSDEISSGVGDSESEGLNSPV | 139.79 |
| 263 | Q12872 | SFSWAP | 604 | S | DLLPLEKNRVKLDDDSDDDEESKEGQESSSS | 139.66 |
| 264 | O95400 | CD2BP2 | 194 | S | GARGGGKGRKGPGQPSSPQRLDRLSGLADQM | 138.89 |
| 265 | O95232 | LUC7L3 | 425 | S | SDTKNEVNGTSEDIKSEGDTQSN******** | 137.91 |
| 266 | P45973 | CBX5 | 13 | S | ***MGKKTKRTADSSSSEDEEEYVVEKVLDR | 137.83 |
| 267 | P78316 | NOP14 | 146 | S | GQSLADIEKHNDIVDSDSDAEDRGTLSAELT | 137.77 |
| 268 | Q03468 | ERCC6 | 1142 | S | GECSNSSGTGKTSMPSGDESIDEKLGLSYKR | 137.68 |
| 269 | Q5VTL8 | PRPF38B | 529 | S | DSKDQSDKHDRRRSQSIEQESQEKQHKNKDE | 137.63 |
| 270 | Q8IYB3 | SRRM1 | 551 | S | RQKETSPRGRRRRSPSPPPTRRRRSPSPAPP | 137.55 |
| 271 | Q8NC51 | SERBP1 | 25 | S | GCVVTNRFDQLFDDESDPFEVLKAAENKKKE | 137.48 |
| 272 | Q8NFC6 | BOD1L1 | 2986 | S | QKSVSDPVEDKKEQESDEEEEEEEEDEPSGA | 134.20 |
| 273 | P35269 | GTF2F1 | 311 | S | EGPKGVDEQSDSSEESEEEKPPEEDKEEEEE | 133.85 |
| 274 | Q6PD62 | CTR9 | 970 | S | RKKKKRRRHPKGEEGSDDDETENGPKPKKRR | 132.61 |
| 275 | Q8WVC0 | LEO1 | 630 | S | EEDKAQRLLKAKKLTSDEEGEPSGKRKAEDD | 131.25 |
| 276 | Q99459 | CDC5L | 303 | S | FTKKRSKLVLPAPQISDAELQEVVKVGQASE | 129.34 |
| 277 | Q9UQ35 | SRRM2 | 1501 | S | PKALPQTPRPRSRSPSSPELNNKCLTPQRER | 128.34 |
| 278 | Q9Y467 | SALL2 | 806 | S | GGEKAISVRGDSEEASGAEEEVGTVAAAATA | 128.26 |
| 279 | P11717 | IGF2R | 2409 | S | KSVKALSSLHGDDQDSEDEVLTIPEVKVHSG | 127.99 |
| 280 | P21127 | CDK11B | 277 | S | PAQLKEEKMEERDLLSDLQDISDSERKTSSA | 127.96 |
| 281 | P35611 | ADD1 | 358 | S | LLNPEKYKAKSRSPGSPVGEGTGSPPKWQIG | 126.93 |
| 282 | P51532 | SMARCA4 | 1570 | S | SVFTSVRQKIEKEDDSEGEESEEEEEGEEEG | 126.83 |
| 283 | Q9BW71 | HIRIP3 | 291 | S | CKQKSQAKRLLGDSDSEEEQKEAASSGDDSG | 126.14 |

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|---|---|---|---|---|---|---|
| 284 | Q9BXJ9 | NAA15 | 855 | S | PPGYEEDMKITVNGDSSAEAEELANEI**** | 119.67 |
| 285 | Q9H6S0 | YTHDC2 | 1090 | S | QEPSSFRVDGIPNDSSDSEMEDKTTANLAAL | 119.47 |
| 286 | Q9H1E3 | NUCKS1 | 132 | S | QEEEDEAPFQEKDSGSDEDFLMEDDDDSDYG | 118.59 |
| 287 | Q9H501 | ESF1 | 312 | S | DSGPDLARGKGNIETSSEDEDDTADLFPEES | 118.51 |
| 288 | Q9NXG2 | THUMPD1 | 88 | S | YGPEKFTDKDQQPSGSEGEDDDAEAALKKEV | 118.41 |
| 289 | Q9UQE7 | SMC3 | 1067 | S | KATLVMKKGDVEGSQSQDEGEGSGESERGSG | 118.27 |
| 290 | P78316 | NOP14 | 148 | S | SLADIEKHNDIVDSDSDAEDRGTLSAELTAA | 118.15 |
| 291 | P17812 | CTPS1 | 574 | S | CRLSPRDTYSDRSGSSSPDSEITELKFPSIN | 117.98 |
| 292 | P35251 | RFC1 | 69 | S | FKQKQPSKKKRIIYDSDSESEETLQVKNAKK | 117.95 |
| 293 | P51116 | FXR2 | 410 | S | PGSGRGSGGSDKAGYSTDESSSSSLHATRTY | 117.88 |
| 294 | Q03701 | CEBPZ | 629 | S | KAKPGLRSQLDDHPESDDEENFIDANDDEDM | 117.77 |
| 295 | Q08AD1 | CAMSAP2 | 1148 | S | PPEKADVPVEKYDGESDKEQFDDDQKVCCGF | 116.92 |
| 296 | Q13428 | TCOF1 | 273 | S | PPAKRAKKPEEESESSEEGSESEEEAPAGTR | 116.87 |
| 297 | Q13428 | TCOF1 | 347 | S | AGKPEEDSESSSEESSDSEEETPAAKALLQA | 116.63 |
| 298 | Q3YEC7 | RABL6 | 471 | S | PLPAGPVPSQDITLSSEEEAEVAAPTKGPAP | 116.59 |
| 299 | Q4G0J3 | LARP7 | 337 | S | KEASEASKENRDIEISTEEEKDTGDLKDSSI | 116.38 |
| 300 | Q8N1G2 | CMTR1 | 55 | S | SHGAKASTTSLSGSDSETEGKQHSSDSFDDA | 116.17 |
| 301 | Q96G74 | OTUD5 | 177 | S | GGGSPEREEVGAGYNSEDEYEAAAARIEAMD | 115.99 |
| 302 | Q96ST2 | IWS1 | 157 | S | HASDSENEDVGKHPASDSEIEELQKSPASDS | 115.93 |
| 303 | Q9BW71 | HIRIP3 | 330 | S | RKSEDRTQLKGGKRLSGSSEDEEDSGKGEPT | 115.88 |
| 304 | Q9NW75 | GPATCH2 | 115 | S | SKDYRENHNNNKKDHSDSDDQMLVAKRRPSS | 115.83 |
| 305 | Q9NZ63 | C9orf78 | 15 | S | *MPVVRKIFRRRRGDSESEEDEQDSEEVRLK | 115.79 |
| 306 | Q9UQ35 | SRRM2 | 510 | S | SRSRTPTKRGHSRSRSPQWRRSRSAQRWGRS | 115.71 |
| 307 | Q9Y2U8 | LEMD3 | 140 | S | ASAAPAAGSKVLLGFSSDESDVEASPRDQAG | 115.62 |
| 308 | P51532 | SMARCA4 | 1586 | S | EGEESEEEEEGEEEGSESESRSVKVKIKLGR | 109.22 |
| 309 | Q13442 | PDAP1 | 57 | S | EGGDGAAGDPKKEKKSLDSDESEDEEDDYQQ | 106.27 |
| 310 | P51532 | SMARCA4 | 1575 | S | VRQKIEKEDDSEGEESEEEEEGEEEGSESES | 106.14 |
| 311 | O75475 | PSIP1 | 273 | S | ESKRKNLAKTGVTSTSDSEEEGDDQEGEKKR | 105.88 |
| 312 | Q9BW71 | HIRIP3 | 332 | S | SEDRTQLKGGKRLSGSSEDEEDSGKGEPTAK | 105.73 |
| 313 | Q13427 | PPIG | 744 | S | ENDHVHEKNKKFDHESSPGTDEDKSG***** | 105.32 |
| 314 | O43847 | NRD1 | 86 | S | DLGENSRVARLGADESEEEGRRGSLSNAGDP | 104.58 |
| 315 | P18858 | LIG1 | 201 | S | KPLKTSKAETPTESVSEPEVATKQELQEEEE | 104.54 |
| 316 | Q03468 | ERCC6 | 429 | S | QKKVPVQEIDDDFFPSSGEEAEAASVGEGGG | 104.34 |
| 317 | P35269 | GTF2F1 | 305 | S | KAPQQEEGPKGVDEQSDSSEESEEEKPPEED | 103.38 |
| 318 | P51116 | FXR2 | 533 | S | PYSLLDTSEPEPPVDSEPGEPPPASARRRRS | 103.36 |
| 319 | Q8IY81 | FTSJ3 | 458 | S | ADTFLSDLPRDDIYVSDVEDDGDDTSLDSDI | 102.85 |
| 320 | Q8WVC0 | LEO1 | 608 | S | RYKGGIREERARIYSSDSDEGSEEDKAQRLI | 101.68 |
| 321 | P35659 | DEK | 303 | S | STTKKNQNSSKKESESEDSSDDEPLIKKLKK | 101.37 |
| 322 | Q6P158 | DHX57 | 127 | S | KALLRDLQEQDADAGSERGLSGEEEDDEPDC | 101.19 |
| 323 | Q03468 | ERCC6 | 430 | S | KKVPVQEIDDDFFPSSGEEAEAASVGEGGGG | 99.18 |
| 324 | P52701 | MSH6 | 285 | S | KEEGSSDEISSGVGDSESEGLNSPVKVARKR | 98.95 |
| 325 | Q9Y2U8 | LEMD3 | 261 | S | GSRLVPYSCRENYSDSEEEDDDDVASSRQVI | 98.83 |
| 326 | P16383 | GCFC2 | 19 | S | RPKRTFRQRAADSSDSDGAEESPAEPGAPRE | 98.63 |
| 327 | P05388 | RPLP0 | 304 | S | PAAAAAPAKVEAKEESEESDEDMGFGLFD** | 98.56 |
| 328 | P27824 | CANX | 564 | S | EEKQKSDAEEDGGTVSQEEEDRKPKAEEDEI | 98.39 |
| 329 | P55884 | EIF3B | 125 | S | EQARDERSDSRAQAVSEDAGGNEGRAAEAEP | 98.35 |
| 330 | Q08945 | SSRP1 | 444 | S | GLKEGMNPSYDEYADSDEDQHDAYLERMKEE | 98.33 |
| 331 | Q13435 | SF3B2 | 309 | S | EEMETDARSSLGQSASETEEDTVSVSKKEKN | 98.31 |
| 332 | Q14839 | CHD4 | 103 | S | EGPEFVEEEEEVALRSDSEGSDYTPGKKKKK | 98.25 |
| 333 | Q7Z4V5 | HDGFRP2 | 664 | S | RPGSDRQERERARGDSEALDEES******** | 98.14 |
| 334 | Q86VM9 | ZC3H18 | 34 | S | QPQGLSDDDILRDSGSDQDLDGAGVRASDLE | 97.57 |
| 335 | Q86X53 | ERICH1 | 254 | S | EEDLTRARQEEGADASEEDPTPAGEEDVKDA | 94.60 |
| 336 | Q8NAF0 | ZNF579 | 194 | S | PSTLAAPTSAAEPRESESEEAEAGAAELRAE | 94.35 |
| 337 | Q8NE71 | ABCF1 | 105 | S | DDGEEKELMERLKKLSVPTSDEEDEVPAPKP | 94.34 |
| 338 | Q8WVC0 | LEO1 | 229 | S | DERPVASDNDDEKQNSDDEEQPQLSDEEKMQ | 93.54 |
| 339 | Q92538 | GBF1 | 1298 | S | LQATARADAPDAGAQSDSELPSYHQNDVSLD | 86.34 |
| 340 | Q92733 | PRCC | 157 | S | KEPVKIAAPELHKGDSDSEEDEPTKKKTILQ | 84.39 |

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|---|---|---|---|---|---|---|
| 341 | Q92917 | GPKOW | 35 | S | SFGFTRTSARRRLADSGDGAGPSPEEKDFLK | 83.54 |
| 342 | Q99613 | EIF3C | 18 | S | RFFTTGSDSESESSLSGEELVTKPVGGNYGK | 82.39 |
| 343 | Q9UQ35 | SRRM2 | 1652 | S | RSGSSSKGRGPSPEGSSSTESSPEHPPKSRT | 81.77 |
| 344 | Q96ST2 | IWS1 | 159 | S | SDSENEDVGKHPASDSEIEELQKSPASDSET | 81.74 |
| 345 | Q9BW71 | HIRIP3 | 333 | S | EDRTQLKGGKRLSGSSEDEEDSGKGEPTAKG | 81.71 |
| 346 | Q9UQ35 | SRRM2 | 1653 | S | SGSSSKGRGPSPEGSSSTESSPEHPPKSRTA | 81.68 |
| 347 | P35251 | RFC1 | 71 | S | QKQPSKKKRIIYDSDSESEETLQVKNAKKPP | 80.66 |
| 348 | Q9NW75 | GPATCH2 | 117 | S | DYRENHNNNKKDHSDSDDQMLVAKRRPSSNL | 80.64 |
| 349 | Q9UQ35 | SRRM2 | 418 | S | RSPPKSPEKLPQSSSSESSPPSPQPTKVSRH | 80.62 |
| 350 | Q08945 | SSRP1 | 667 | S | SSRQLSESFKSKEFVSSDESSSGENKSKKKR | 80.59 |
| 351 | Q9UQ35 | SRRM2 | 1762 | S | SASSPRTKTTSRRGRSPSPKPRGLQRSRSRS | 80.57 |
| 352 | Q9UQ35 | SRRM2 | 1542 | S | TVARTPLGQRSRSGSSQELDVKPSASPQERS | 80.49 |
| 353 | Q9BW71 | HIRIP3 | 555 | S | PDWSHMRGIISSDGESN************** | 79.42 |
| 354 | Q9GZR7 | DDX24 | 82 | S | SLFSKEAPKRKAQAVSEEEEEEEGKSSSPKK | 79.37 |
| 355 | O94979 | SEC31A | 527 | S | DGANVALKDSDQVAQSDGEESPAAEEQLLGE | 79.37 |
| 356 | Q9H0D6 | XRN2 | 501 | S | PSPLGGIKRKAEDSDSEPEPEDNVRLWEAGW | 79.29 |
| 357 | P19338 | NCL | 34 | S | PPPKEVEEDSEDEEMSEDEEDDSSGEEVVIP | 79.29 |
| 358 | Q9HAW4 | CLSPN | 65 | S | IFVSKKLKNRKVLQDSDSETEDTNASPEKTT | 79.25 |
| 359 | Q9NQ55 | PPAN | 359 | S | RKKSLEGMKKARVGGSDEEASGIPSRTASLE | 79.15 |
| 360 | Q9P289 | MST4 | 304 | S | DRFKRWKAEGHSDDESDSEGSDSESTSRENN | 78.93 |
| 361 | Q9UQ35 | SRRM2 | 415 | S | TRDRSPPKSPEKLPQSSSSESSPPSPQPTKV | 78.91 |
| 362 | Q9Y5T5 | USP16 | 415 | S | NDKNLKKTVEDEDQDSEEEKDNDSYIKERSD | 78.90 |
| 363 | Q9Y6R4 | MAP3K4 | 66 | S | RQEGTLGDSACKSPESDLEDFSDETNTENLY | 78.89 |
| 364 | Q9UQ35 | SRRM2 | 1764 | S | SSPRTKTTSRRGRSPSPKPRGLQRSRSRSRR | 78.85 |
| 365 | Q9Y2U8 | LEMD3 | 144 | S | PAAGSKVLLGFSSDESDVEASPRDQAGGGGR | 78.84 |
| 366 | Q9UQ35 | SRRM2 | 1379 | S | ETDPSLDMKEQSTRSSGHSSSELSPDAVEKA | 78.82 |
| 367 | Q8WVC0 | LEO1 | 238 | S | DDEKQNSDDEEQPQLSDEEKMQNSDDERPQA | 78.73 |
| 368 | Q9UQ35 | SRRM2 | 1657 | S | SKGRGPSPEGSSSTESSPEHPPKSRTARRGS | 78.69 |
| 369 | Q8NE71 | ABCF1 | 109 | S | EKELMERLKKLSVPTSDEEDEVPAPKPRGGK | 78.67 |
| 370 | Q9HAW4 | CLSPN | 67 | S | VSKKLKNRKVLQDSDSETEDTNASPEKTTYD | 78.65 |
| 371 | Q9UQ35 | SRRM2 | 1378 | S | LETDPSLDMKEQSTRSSGHSSSELSPDAVEK | 78.63 |
| 372 | Q9Y2U8 | LEMD3 | 141 | S | SAAPAAGSKVLLGFSSDESDVEASPRDQAGG | 78.61 |
| 373 | O60841 | EIF5B | 595 | S | DKKPSKEMSSDSEYDSDDDRTKEERAYDKAK | 78.60 |
| 374 | Q3YEC7 | RABL6 | 470 | S | PPLPAGPVPSQDITLSSEEEAEVAAPTKGPA | 78.58 |
| 375 | Q8WVC0 | LEO1 | 273 | S | HRHSDDEEEQDHKSESARGSDSEDEVLRMKR | 78.53 |
| 376 | Q1KMD3 | HNRNPUL2 | 161 | S | EQGLGKREEDEPEERSGDETPGSEVPGDKAA | 78.44 |
| 377 | O75400 | PRPF40A | 938 | S | TGKDSGNWDTSGSELSEGELEKRRRTLLEQL | 78.38 |
| 378 | P16383 | GCFC2 | 17 | S | AHRPKRTFRQRAADSSDSDGAEESPAEPGAP | 78.35 |
| 379 | P17812 | CTPS1 | 575 | S | RLSPRDTYSDRSGSSSPDSEITELKFPSINH | 78.33 |
| 380 | P25205 | MCM3 | 668 | S | YFKKVLEKEKKRKKRSEDESETEDEEEKSQE | 78.25 |
| 381 | P52701 | MSH6 | 254 | S | RRSSRQIKKRRVISDSESDIGGSDVEFKPDT | 78.18 |
| 382 | Q07666 | KHDRBS1 | 20 | S | DDPAARMSRSSGRSGSMDPSGAHPSVRQTPS | 78.14 |
| 383 | Q5C9Z4 | NOM1 | 321 | S | KRVRFAEDEEKSENSSEDGDITDKSLCGSGE | 77.72 |
| 384 | Q6WKZ4 | RAB11FIP1 | 202 | S | DTASAIIPSTTPSVDSDDESVVKDKKKKSKI | 77.66 |
| 385 | Q86VM9 | ZC3H18 | 46 | S | DSGSDQDLDGAGVRASDLEDEESAARGPSQE | 77.65 |
| 386 | Q8N1G2 | CMTR1 | 53 | S | SVSHGAKASTTSLSGSDSETEGKQHSSDSFD | 77.50 |
| 387 | Q8NAF0 | ZNF579 | 196 | S | TLAAPTSAAEPRESESEEAEAGAAELRAELA | 76.59 |
| 388 | Q8NFC6 | BOD1L1 | 266 | S | RTSEDMADKEKSTADSGGEGLETAPKSEEFS | 76.35 |
| 389 | Q8WVC0 | LEO1 | 607 | S | NRYKGGIREERARIYSSDSDEGSEEDKAQRL | 76.34 |
| 390 | Q96E09 | FAM122A | 37 | S | EGGGSGGGGGLRRSNSAPLIHGLSDTSPVFQ | 74.36 |
| 391 | Q96NB3 | ZNF830 | 351 | S | LTIKELQKKEEENADSDDEGELQDLLSQDWR | 73.59 |
| 392 | Q99613 | EIF3C | 13 | S | ***MSRFFTTGSDSESESSLSGEELVTKPVG | 72.31 |
| 393 | Q9BRS2 | RIOK1 | 21 | S | LLMSRVVPGQFDDADSSDSENRDLKTVKEKD | 72.11 |
| 394 | Q9BTC0 | DIDO1 | 811 | S | QEAIPDLEDSPPVSDSEEQQESARAVPEKST | 67.34 |
| 395 | Q9BXJ9 | NAA15 | 856 | S | PGYEEDMKITVNGDSSAEAEELANEI***** | 65.47 |
| 396 | Q9H6Z4 | RANBP3 | 355 | S | VSSDANRENAAAESGSESSSQEATPEKESLA | 65.38 |
| 397 | Q9NXG2 | THUMPD1 | 86 | S | DMYGPEKFTDKDQQPSGSEGEDDDAEAALKK | 64.55 |

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|---|---|---|---|---|---|---|
| 398 | Q9UKV3 | ACIN1 | 898 | S | GQEAVVDLHADDSRISEDETERNGDDGTHDK | 64.49 |
| 399 | O60841 | EIF5B | 589 | S | DSGKTLDKKPSKEMSSDSEYDSDDDRTKEER | 64.38 |
| 400 | Q5VVJ2 | MYSM1 | 218 | S | GRADPNLNAVKIEKLSDDEEVDITDEVDELS | 64.35 |
| 401 | P19338 | NCL | 41 | S | EDSEDEEMSEDEEDDSSGEEVVIPQKKGKKA | 64.30 |
| 402 | Q9UQ35 | SRRM2 | 1497 | S | SSPEPKALPQTPRPRSRSPSSPELNNKCLTP | 64.25 |
| 403 | Q8IWX8 | CHERP | 815 | S | SRSKSYSPGRRRRSRSRSPTPPSSAGLGSNS | 64.18 |
| 404 | Q9BW71 | HIRIP3 | 372 | S | STSGEESDLEREVSDSEAGGGPQGERKNRSS | 63.41 |
| 405 | Q9UQ35 | SRRM2 | 1539 | S | DQKTVARTPLGQRSRSGSSQELDVKPSASPQ | 63.34 |
| 406 | Q8WVC0 | LEO1 | 610 | S | KGGIREERARIYSSDSDEGSEEDKAQRLLKA | 62.38 |
| 407 | Q13428 | TCOF1 | 771 | S | AEKQEDSESSEEESDSEEAAASPAQVKTSVK | 62.31 |
| 408 | Q9UQ35 | SRRM2 | 2046 | S | RSRTPLLPRKRSRSRSPLAIRRRSRSRTPRT | 61.97 |
| 409 | Q9UQ35 | SRRM2 | 1654 | S | GSSSKGRGPSPEGSSSTESSPEHPPKSRTAR | 61.88 |
| 410 | Q14839 | CHD4 | 105 | S | PEFVEEEEEVALRSDSEGSDYTPGKKKKKKL | 61.82 |
| 411 | Q9UQ35 | SRRM2 | 1552 | S | SRSGSSQELDVKPSASPQERSESDSSPDSKA | 61.34 |
| 412 | Q8WVX3-2 | C4orf3 | 7 | S | *********MTSLINSPINRRPLQNVEGNNR | 60.81 |
| 413 | O14974 | PPP1R12A | 509 | S | LAYVAPTIPRRLASTSDIEEKENRDSSSLRT | 60.67 |
| 414 | P16383 | GCFC2 | 16 | S | MAHRPKRTFRQRAADSSDSDGAEESPAEPGA | 60.54 |
| 415 | P18858 | LIG1 | 141 | S | KQLPKRTIQEVLEEQSEDEDREAKRKKEEEE | 60.37 |
| 416 | P45973 | CBX5 | 14 | S | **MGKKTKRTADSSSSEDEEEYVVEKVLDRR | 60.28 |
| 417 | O75822 | EIF3J | 127 | S | EQLADKLRLKKLQEESDLELAKETFGVNNAV | 59.57 |
| 418 | P27815-7 | PDE4A | 18 | S | RSRSALSVAGTGDERSRETPESDRANMLGAD | 59.36 |
| 419 | P48634 | PRRC2A | 342 | S | AGAHEEVDYTEKLKFSDEEDGRDSDEEGAEG | 59.18 |
| 420 | P51116 | FXR2 | 447 | S | RGRGRRTGGPAYGPSSDVSTASETESEKREE | 59.15 |
| 421 | Q13185 | CBX3 | 95 | S | QKAGKEKDGTKRKSLSDSESDDSKSKKKRDA | 59.14 |
| 422 | Q13427 | PPIG | 254 | S | RKHKKEKKKRKKSKKSASSESEAENLEAQPQ | 59.09 |
| 423 | Q13428 | TCOF1 | 85 | S | ALQAKKTRVSDPISTSESSEEEEEAEAETAK | 59.05 |
| 424 | Q13435 | SF3B2 | 307 | S | EEEEMETDARSSLGQSASETEEDTVSVSKKE | 59.04 |
| 425 | Q14137 | BOP1 | 127 | S | EMASARIGDEYAEDSSDEEDIRNTVGNVPLE | 58.97 |
| 426 | Q15054 | POLD3 | 307 | S | KVLQKEKKRGKRVALSDDETKETENMRKKRR | 58.96 |
| 427 | Q3YEC7 | RABL6 | 464 | S | DQPRGSPPLPAGPVPSQDITLSSEEEAEVAA | 58.94 |
| 428 | Q5JRA6 | MIA3 | 288 | S | LDLKTKFGSTADALVSDDETTRLVTSLEDDF | 58.93 |
| 429 | Q5T200 | ZC3H13 | 1465 | S | AHSLGSGAGEGYEPISDDELDEILAGDAEKR | 58.88 |
| 430 | Q6IN85 | SMEK1 | 117 | S | GKDPSVDITQDLVDESEEERFDDMSSPGLEL | 58.67 |
| 431 | Q6NSI8-2 | KIAA1841 | 697 | S | PRDGTVSKSNRKSGLSSVLLMTVLLC***** | 58.64 |
| 432 | Q6WKZ4 | RAB11FIP1 | 206 | S | AIIPSTTPSVDSDDESVVKDKKKKSKIKTLL | 58.61 |
| 433 | Q86V59 | PNMAL1 | 335 | S | QDARAEAESPGGASESDQDGGHESPPKKKAV | 58.59 |
| 434 | Q8IY81 | FTSJ3 | 471 | S | YVSDVEDDGDDTSLDSDLDPEELAGVRGHQG | 58.46 |
| 435 | Q8TEA8 | DTD1 | 197 | S | SKERNTPRKEDRSASSGAEGDVSSEREP*** | 58.34 |
| 436 | Q8WVC0 | LEO1 | 271 | S | EEHRHSDDEEEQDHKSESARGSDSEDEVLRM | 57.94 |
| 437 | Q92538 | GBF1 | 1300 | S | ATARADAPDAGAQSDSELPSYHQNDVSLDRG | 57.83 |
| 438 | Q96MU7 | YTHDC1 | 308 | S | GSDEKKKERKRARGISPIVFDRSGSSASESY | 57.75 |
| 439 | Q96ST2 | IWS1 | 183 | S | PASDSETEDALKPQISDSESEEPPRHQASDS | 57.68 |
| 440 | Q99613 | EIF3C | 16 | S | MSRFFTTGSDSESESSLSGEELVTKPVGGNY | 57.64 |
| 441 | Q9BQ52 | ELAC2 | 212 | S | WQSPERPLSRLSPERSSDSESNENEPHLPHG | 57.63 |
| 442 | Q9H7L9 | SUDS3 | 45 | S | LESAEDDERSCRGRESDEDTEDASETDLAKH | 57.39 |
| 443 | Q9NR30 | DDX21 | 13 | S | ***MPGKLRSDAGLESDTAMKKGETLRKQTE | 57.34 |
| 444 | Q9NXX6 | NSMCE4A | 30 | S | RGRDPHRDRTRSRSRSRSPLSPRSRRGSARE | 56.91 |
| 445 | Q9NYF8 | BCLAF1 | 389 | S | EWEDQEALDYFSDKESGKQKFNDSEGDDTEE | 56.65 |
| 446 | Q9UBB9 | TFIP11 | 210 | S | SERTTQSMQDFPVVDSEEEAEEEFQKELSQW | 56.41 |
| 447 | Q9UH62 | ARMCX3 | 61 | S | VDDAGDCSGARYNDWSDDDDDSNESKSIVWY | 56.34 |
| 448 | Q9UKD2 | MRTO4 | 235 | S | DDLPESASESTEESDSEDDD*********** | 54.12 |
| 449 | Q9ULX3 | NOB1 | 184 | S | HELQELLIDRGEDVPSEEEEEEEENGFEDRKD | 52.38 |
| 450 | Q9UQ35 | SRRM2 | 1103 | S | SKSQTSPKGGRSRSSSPVTELASRSPIRQDR | 51.42 |
| 451 | Q9Y5B6 | PAXBP1 | 155 | S | KEDLEKSKIKTELNSSAESEQPLDKTGHVKD | 51.29 |
| 452 | Q9UQ35 | SRRM2 | 1550 | S | QRSRSGSSQELDVKPSASPQERSESDSSPDS | 49.56 |
| 453 | Q9UQ35 | SRRM2 | 2044 | S | RSRSRTPLLPRKRSRSRSPLAIRRRSRSRTP | 46.29 |
| 454 | Q5JSH3 | WDR44 | 403 | S | IMRRTKEYVSNDAAQSDDEEKLQSQPTDTDG | 46.25 |

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|---|---|---|---|---|---|---|
| 455 | Q6NSI8-2 | KIAA1841 | 698 | S | RDGTVSKSNRKSGLSSVLLMTVLLC****** | 42.77 |
| 456 | Q9NXX6 | NSMCE4A | 32 | S | RDPHRDRTRSRSRSRSPLSPRSRRGSARERR | 40.99 |
| 457 | Q9UQ35 | SRRM2 | 2042 | S | RRRSRSRTPLLPRKRSRSRSPLAIRRRSRSR | 40.94 |
| 458 | O94806 | PRKD3 | 30 | S | LPTAIPAVLPAASPCSSPKTGLSARLSNGSP | 40.93 |
| 459 | Q5T0N5 | FNBP1L | 295 | S | DFPFEDYSQHIYRTISDGTISASKQESGKMD | 40.91 |
| 460 | P12694 | BCKDHA | 347 | S | RIGHHSTSDDSSAYRSVDEVNYWDKQDHPIS | 40.88 |
| 461 | O15027 | SEC16A | 1172 | S | HRDPYGEEVDRRSVHSEHSARSLHSAHSLAS | 40.84 |
| 462 | P05386 | RPLP1 | 101 | S | AAPAEEKKVEAKKEESEESDDDMGFGLFD** | 39.85 |
| 463 | Q9UQ35 | SRRM2 | 2032 | S | RSRSRTPPAIRRRSRSRTPLLPRKRSRSRSP | 39.83 |
| 464 | O15027 | SEC16A | 1169 | S | PDPHRDPYGEEVDRRSVHSEHSARSLHSAHS | 39.76 |
| 465 | O43719 | HTATSF1 | 702 | S | KEVEDADEKLFEDDDSNEKLFDEEEDSSEKL | 39.74 |
| 466 | P18583 | SON | 1780 | S | RSAASPVVSSMPERASESSSEEKDDYEIFVK | 39.72 |
| 467 | P51532 | SMARCA4 | 655 | S | EAWLEMNPGYEVAPRSDSEESGSEEEEEEEE | 39.71 |
| 468 | Q15019 | SEPT2 | 218 | S | IEEHNIKIYHLPDAESDEDEDFKEQTRLLKA | 39.69 |
| 469 | Q14498 | RBM39 | 136 | S | SRRRSRSKSPFRKDKSPVREPIDNLTPEERD | 39.67 |
| 470 | Q7Z4V5 | HDGFRP2 | 264 | S | AMARSASSSSSSSSSDSDVSVKKPPRGRKP | 39.65 |
| 471 | P08238 | HSP90AB1 | 226 | S | YPITLYLEKEREKEISDDEAEEEKGEKEEED | 39.51 |
| 472 | Q9Y4P1 | ATG4B | 383 | S | SLDSSDVERLERFFDSEDEDFEILSL***** | 39.48 |
| 473 | O60284 | ST18 | 690 | S | THGKTEEEKEKDPVSSLENLEEKKFPGEASI | 39.44 |
| 474 | P07900 | HSP90AA1 | 263 | S | EEKESEDKPEIEDVGSDEEEEKKDGDKKKKK | 39.40 |
| 475 | Q9H1E3 | NUCKS1 | 144 | S | DSGSDEDFLMEDDDDSDYGSSKKKNKKMVKK | 39.39 |
| 476 | Q9UQ35 | SRRM2 | 2020 | S | RSRSRTSPVTRRRSRSRTPPAIRRRSRSRTP | 39.35 |
| 477 | O43719 | HTATSF1 | 713 | S | EDDDSNEKLFDEEEDSSEKLFDDSDERGTLG | 39.34 |
| 478 | Q9Y2W1 | THRAP3 | 53 | S | SRSRKRRLSSRSRSRSYSPAHNRERNHPRVY | 39.33 |
| 479 | P07900 | HSP90AA1 | 231 | S | YPITLFVEKERDKEVSDDEAEEKEDKEEEKE | 39.27 |
| 480 | Q08945 | SSRP1 | 668 | S | SRQLSESFKSKEFVSSDESSSGENKSKKKRR | 39.22 |
| 481 | P35269 | GTF2F1 | 217 | S | ASELRIHDLEDDLEMSSDASDASGEEGGRVP | 39.18 |
| 482 | Q9UJX6 | ANAPC2 | 218 | S | LDSRYARRRYYRLLQSPLCAGCSSDKQQCWC | 39.17 |
| 483 | Q7Z5K2 | WAPAL | 77 | S | PKVEEESTGDPFGFDSDDESLPVSSKNLAQV | 39.15 |
| 484 | Q8N5F7 | NKAP | 27 | S | REASGSGGRRRSSSKSPKPSKSARSPRGRRS | 39.13 |
| 485 | Q16629 | SRSF7 | 202 | S | SRYFQSPSRSRSRSRSISRPRSSRSKSRSPS | 38.64 |
| 486 | O75400 | PRPF40A | 933 | S | SPKKKTGKDSGNWDTSGSELSEGELEKRRRT | 38.63 |
| 487 | O75494 | SRSF10 | 133 | S | RSRSRSYERRRSRSRSFDYNYRRSYSPRNSR | 38.58 |
| 488 | O60284 | ST18 | 689 | S | KTHGKTEEEKEKDPVSSLENLEEKKFPGEAS | 38.57 |
| 489 | O95218 | ZRANB2 | 120 | S | GFNERENVEYIEREESDGEYDEFGRKKKKYR | 38.53 |
| 490 | P51532 | SMARCA4 | 657 | S | WLEMNPGYEVAPRSDSEESGSEEEEEEEEEE | 38.52 |
| 491 | P24534 | EEF1B2 | 140 | S | QYESKKAKKPALVAKSSILLDVKPWDDETDM | 37.56 |
| 492 | Q5H9R7 | PPP6R3 | 617 | S | EACCKERIQQFDDGGSDEEDIWEEKHIAFTP | 37.38 |
| 493 | Q5F1R6 | DNAJC21 | 423 | S | EGVKVDPEDTNLNQDSAKELEDSPQENVSVT | 37.37 |
| 494 | Q9H7J1 | PPP1R3E | 81 | S | SAPAGGGGARAPRSRSPDTRKRVRFADALGL | 37.36 |
| 495 | Q8IYB3 | SRRM1 | 389 | S | PPKRTSSPPRKTRRLSPSASPPRRRHRPSPP | 37.33 |
| 496 | P51531 | SMARCA2 | 1572 | S | RPNRGKAKPVVSDFDSDEEQDEREQSEGSGT | 36.38 |
| 497 | Q9BYW2 | SETD2 | 1988 | S | PINEETPSQDEEEGVSDVESERSQEQPDKTV | 36.35 |
| 498 | Q9Y2W1 | THRAP3 | 51 | S | SLSRSRKRRLSSRSRSRSYSPAHNRERNHPR | 36.34 |
| 499 | Q9UN86 | G3BP2 | 141 | S | VHNDMFRYEDEVFGDSEPELDEESEDEVEEE | 36.33 |
| 500 | Q8NDI1 | EHBP1 | 171 | S | CIFLREGKATDEDMQSLASLMSMKQADIGNL | 35.69 |
| 501 | O96007 | MOCS2 | 3 | S | *************MSSLEISSSCFSLETKLP | 35.33 |
| 502 | P19338 | NCL | 28 | S | DPKKMAPPPKEVEEDSEDEEMSEDEEDDSSG | 34.52 |
| 503 | O75475 | PSIP1 | 275 | S | KRKNLAKTGVTSTSDSEEEGDDQEGEKKRKG | 31.30 |
| 504 | P49321 | NASP | 503 | S | DKTEEMPNDSVLENKSLQENEEEEIGNLELA | 31.29 |
| 505 | Q8TDD1 | DDX54 | 75 | S | GPGRPLPTFPTSECTSDVEPDTREMVRAQNK | 31.28 |
| 506 | O75400 | PRPF40A | 935 | S | KKKTGKDSGNWDTSGSELSEGELEKRRRTLI | 30.33 |
| 507 | P08238 | HSP90AB1 | 255 | S | EDKDDEEKPKIEDVGSDEEDDSGKDKKKKTK | 30.32 |
| 508 | P05386 | RPLP1 | 104 | S | AEEKKVEAKKEESEESDDDMGFGLFD***** | 30.31 |
| 509 | O96007 | MOCS2 | 2 | S | **************MSSLEISSSCFSLETKL | 30.26 |
| 510 | Q9NW75 | GPATCH2 | 284 | S | GLFTNDEGRQGDDEQSDWFYEKESGGACGIT | 30.25 |
| 511 | O94913 | PCF11 | 509 | S | SPKRRDRRSPKRRQRSMSPTSTPKAGKIRQS | 30.24 |

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|---|---|---|---|---|---|---|
| 512 | O15027 | SEC16A | 1175 | S | PYGEEVDRRSVHSEHSARSLHSAHSLASRRS | 29.54 |
| 513 | P35269 | GTF2F1 | 218 | S | SELRIHDLEDDLEMSSDASDASGEEGGRVPK | 28.51 |
| 514 | P67809 | YBX1 | 176 | S | NYQNSESGEKNEGSESAPEGQAQQRRPYRRR | 27.34 |
| 515 | Q96HR8 | NAF1 | 315 | S | SWKNDQEPPPEALDFSDDEKEKEAKQRKKSQ | 26.48 |
| 516 | Q13428 | TCOF1 | 935 | S | GPSAAQAGKQDDSGSSSEESDSDGEAPAAVT | 26.47 |
| 517 | Q96B97 | SH3KBP1 | 230 | S | FGDIFKDKPIKLRPRSIEVENDFLPVEKTIG | 18.00 |
| 518 | P24534 | EEF1B2 | 141 | S | YESKKAKKPALVAKSSILLDVKPWDDETDMA | 13.88 |
| 519 | Q96IZ7 | RSRC1 | 121 | S | RRSRSRPRLRSHSRSSERSSHRRTRSRSRDR | 13.56 |
| 520 | Q92934 | BAD | 118 | S | NLWAAQRYGRELRRMSDEFVDSFKKGLPRPK | 13.49 |
| 521 | Q9NRW4 | DUSP22 | 58 | S | PMLEGVKYLCIPAADSPSQNLTRHFKESIKF | 12.40 |
| 522 | Q8N108 | MIER1 | 160 | S | QEIIRPRRCKYFDTNSEVEEESEEDEDYIPS | 11.25 |
| 523 | Q9H6Z4 | RANBP3 | 96 | S | PEAQLPPFPRELAGRSAGGSSPEGGEDSDRE | 10.18 |
| 524 | Q04656 | ATP7A | 1473 | S | NYSRASINSLLSDKRSLNSVVTSEPDKHSLL | 9.63 |
| 525 | Q12872 | SFSWAP | 866 | S | KKKRRSRSRTKSKARSQSVSPSKQAAPRPAA | 8.94 |
| 526 | Q5SW79 | CEP170 | 1112 | S | PTRTSLLRRARLGEASDSELADADKASVASE | 8.69 |
| 527 | Q9BRS2 | RIOK1 | 22 | S | LMSRVVPGQFDDADSSDSENRDLKTVKEKDD | 8.65 |
| 528 | Q8NC51 | SERBP1 | 394 | S | GGRPNRGSRTDKSSASAPDVDDPEAFPALA* | 8.63 |
| 529 | P49792 | RANBP2 | 2900 | S | VGTQSAGKVGEDEDGSDEEVVHNEDIHFEPI | 8.11 |
| 530 | P98175 | RBM10 | 60 | S | PREYGSQEGKHDYDDSSEEQSAEDSYEASPG | 7.71 |
| 531 | Q5THJ4 | VPS13D | 1042 | S | SFDIPTGSLRDSRAQSPVSGPNVAHLTDGAT | 7.49 |
| 532 | Q96IZ7 | RSRC1 | 120 | S | TRRSRSRPRLRSHSRSSERSSHRRTRSRSRD | 7.47 |
| 533 | Q9UKJ3 | GPATCH8 | 352 | S | KSSDQGLQKVGDSDGSSNLDGKKEDEDPQDG | 7.45 |
| 534 | P67809 | YBX1 | 174 | S | QQNYQNSESGEKNEGSESAPEGQAQQRRPYR | 7.42 |
| 535 | Q9H7J1 | PPP1R3E | 79 | S | ARSAPAGGGGARAPRSRSPDTRKRVRFADAL | 7.38 |
| 536 | Q9UQ35 | SRRM2 | 250 | S | KSKRKSKDKKRKRSRSTTPAPKSRRAHRSTS | 7.37 |
| 537 | Q9UQ35 | SRRM2 | 957 | S | TSRTTPRRSRSVSPCSNVESRLLPRYSHSGS | 7.23 |
| 538 | Q9Y6X9 | MORC2 | 743 | S | KLSPATPSRKRSVAVSDEEEVEEEAERRKER | 7.19 |
| 539 | Q92576 | PHF3 | 1133 | S | CKICIGRMAPPVDDLSPKKVKVVVGVARKHS | 7.01 |
| 540 | P06748 | NPM1 | 112 | S | PVVLRLKCGSGPVHISGQHLVAVEEDAESED | 6.97 |
| 541 | P51858 | HDGF | 132 | S | EAAEGDGDKKGNAEGSSDEEGKLVIDEPAKE | 6.90 |
| 542 | Q8IXT5 | RBM12B | 280 | S | RKRSHSKSPRRTRSRSPLGFYVHLKNLSLSI | 6.74 |
| 543 | P23588 | EIF4B | 409 | S | PKLERRPRERHPSWRSEETQERERSRTGSES | 6.67 |
| 544 | O15541 | RNF113A | 47 | S | KRPACDPEPGESGSSSDEGCTVVRPEKKRVT | 6.54 |
| 545 | O95382 | MAP3K6 | 916 | S | LGDPFLQPGKRSRSPSSPRHAPRPSDAPSAS | 6.51 |
| 546 | Q12789 | GTF3C1 | 1068 | S | VRCPRVRKNSSTDQGSDEEGSLQKEQESAMD | 6.48 |
| 547 | Q8IYB3 | SRRM1 | 530 | S | GEVGRRRRHSPSRSASPSPRKRQKETSPRGR | 6.40 |
| 548 | Q8N5F7 | NKAP | 24 | S | SPDREASGSGGRRRSSSKSPKPSKSARSPRG | 6.39 |
| 549 | Q9H1E3 | NUCKS1 | 130 | S | EEQEEEDEAPFQEKDSGSDEDFLMEDDDDSD | 6.36 |
| 550 | Q96ST2 | IWS1 | 438 | S | DAVSDKSGKREKTIASDSEEEAGKELSDKKN | 6.34 |
| 551 | Q13185 | CBX3 | 176 | S | PQIVIAFYEERLTWHSCPEDEAQ******** | 6.32 |
| 552 | Q8N9T8 | KRI1 | 93 | S | PRIYQKDATFYNRTASSSDSEEDPEALEKQK | 6.31 |
| 553 | Q8N9T8 | KRI1 | 94 | S | RIYQKDATFYNRTASSSDSEEDPEALEKQKK | 6.24 |
| 554 | Q9UQ35 | SRRM2 | 741 | S | SSSERKNKSRTSQRRSRSNSSPEMKKSRISS | 6.23 |
| 555 | Q96ST2 | IWS1 | 400 | S | EEEKVAKRKAAVLSDSEDEEKASAKKSRVVS | 6.16 |
| 556 | Q9C073 | FAM117A | 213 | S | PSGSPVLRLSPCLHRSLEGLNQELEEVFVKE | 6.14 |
| 557 | P45973 | CBX5 | 12 | S | ****MGKKTKRTADSSSSEDEEEYVVEKVLD | 6.12 |
| 558 | P19338 | NCL | 42 | S | DSEDEEMSEDEEDDSSGEEVVIPQKKGKKAA | 6.10 |
| 559 | P45973 | CBX5 | 11 | S | *****MGKKTKRTADSSSSEDEEEYVVEKVL | 6.03 |
| 560 | Q96ST2 | IWS1 | 415 | S | SEDEEKASAKKSRVVSDADDSDSDAVSDKSG | 5.79 |
| 561 | P26373 | RPL13 | 139 | S | LILFPRKPSAPKKGDSSAEELKLATQLTGPV | 5.72 |
| 562 | Q12872 | SFSWAP | 868 | S | KRRSRSRTKSKARSQSVSPSKQAAPRPAAPA | 5.57 |
| 563 | Q5BKY9 | FAM133B | 196 | S | RKMYSEDKPLSSESLSESEYIEEVRAKKKKS | 5.54 |
| 564 | Q5BKY9 | FAM133B | 194 | S | KKRKMYSEDKPLSSESLSESEYIEEVRAKKK | 5.44 |
| 565 | Q6PD62 | CTR9 | 1037 | S | DEDKLKIADEGHPRNSNSNSDSDEDEQRKKC | 5.43 |
| 566 | Q8N108 | MIER1 | 166 | S | RRCKYFDTNSEVEEESEEDEDYIPSEDWKKE | 5.34 |
| 567 | Q92769 | HDAC2 | 422 | S | SIRASDKRIACDEEFSDSEDEGEGGRRNVAD | 5.02 |
| 568 | P98175 | RBM10 | 736 | S | RPSPPRGLVAAYSGESDSEEEQERGGPEREE | 4.92 |

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|---|---|---|---|---|---|---|
| 569 | Q5SNT6 | FAM21B | 451 | S | NLKPSSETKTQKGLFSDEEDSEDLFSSQSAS | 4.88 |
| 570 | Q8IYB3 | SRRM1 | 463 | S | RESPSPAPKPRKVELSESEEDKGGKMAAADS | 4.74 |
| 571 | Q13428 | TCOF1 | 349 | S | KPEEDSESSSEESSDSEEETPAAKALLQAKA | 4.69 |
| 572 | P46937 | YAP1 | 61 | S | QAPPAGHQIVHVRGDSETDLEALFNAVMNPK | 4.68 |
| 573 | Q06265 | EXOSC9 | 306 | S | QRITAFKMEKAPIDTSDVEEKAEEIIAEAEP | 4.67 |
| 574 | Q8IYB3 | SRRM1 | 532 | S | VGRRRRHSPSRSASPSPRKRQKETSPRGRRR | 4.61 |
| 575 | Q9BW71 | HIRIP3 | 357 | S | GEPTAKGSRKMARLGSTSGEESDLEREVSDS | 4.56 |
| 576 | Q9NYF8 | BCLAF1 | 198 | S | SQEEPKDTFEHDPSESIDEFNKSSATSGDIW | 4.46 |
| 577 | O15027 | SEC16A | 164 | S | HRPASALVNPLARGDSPENRTHHPLGAGAGS | 4.43 |
| 578 | Q9UQ35 | SRRM2 | 782 | S | SKAKSRLSLRRSLSGSSPCPKQKSQTPPRRS | 4.42 |
| 579 | Q15185 | PTGES3 | 148 | S | DEDVDLPEVDGADDDSQDSDDEKMPDLE*** | 4.41 |
| 580 | Q6ZMG9 | CERS6 | 346 | S | SRGKVSKDDRSDIESSSDEEDSEPPGKNPHT | 4.35 |
| 581 | Q96IZ7 | RSRC1 | 118 | S | SRTRRSRSRPRLRSHSRSSERSSHRRTRSRS | 4.29 |
| 582 | Q9BW71 | HIRIP3 | 87 | S | KLDLTKKGKRPPTPCSDPERKRFRFNSESES | 4.28 |
| 583 | Q9UKJ3 | GPATCH8 | 349 | S | PDEKSSDQGLQKVGDSDGSSNLDGKKEDEDP | 4.27 |
| 584 | Q13428 | TCOF1 | 934 | S | TGPSAAQAGKQDDSGSSSEESDSDGEAPAAV | 4.25 |
| 585 | Q96ST2 | IWS1 | 440 | S | VSDKSGKREKTIASDSEEEAGKELSDKKNEE | 4.15 |
| 586 | Q9BWU0 | SLC4A1AP | 466 | S | RKRKAKNWEDEDFYDSDDDTFLDRTGLIEKK | 4.12 |
| 587 | Q9C0C2 | TNKS1BP1 | 1620 | S | HLFQDSTEPRASRVPSSDEEVVEEPQSRRTR | 4.01 |
| 588 | P43487 | RANBP1 | 60 | S | EEELFKMRAKLFRFASENDLPEWKERGTGDV | 3.92 |
| 589 | Q8IYB3 | SRRM1 | 528 | S | KNGEVGRRRRHSPSRSASPSPRKRQKETSPR | 3.92 |
| 590 | Q13428 | TCOF1 | 346 | S | KAGKPEEDSESSSEESSDSEEETPAAKALLQ | 3.88 |
| 591 | Q92769 | HDAC2 | 394 | S | GVQMQAIPEDAVHEDSGDEDGEDPDKRISIR | 3.84 |
| 592 | O15042 | U2SURP | 800 | S | HEESEEEENQNQEEESEDEEDTQSSKSEEHH | 3.83 |
| 593 | P49959 | MRE11A | 689 | S | IMSQSQVSKGVDFESSEDDDDDPFMNTSSLR | 3.82 |
| 594 | Q99590 | SCAF11 | 830 | S | QSPSPRRETGKESRKSQSPSPKNESARGRKK | 3.81 |
| 595 | Q9UQ35 | SRRM2 | 248 | S | TPKSKRKSKDKKRKRSRSTTPAPKSRRAHRS | 3.80 |
| 596 | O95382 | MAP3K6 | 912 | S | AQTLLGDPFLQPGKRSRSPSSPRHAPRPSDA | 3.78 |
| 597 | P07910 | HNRNPC | 260 | S | DETNVKMESEGGADDSAEEGDLLDDDDNEDR | 3.75 |
| 598 | Q96ST2 | IWS1 | 398 | S | EGEEEKVAKRKAAVLSDSEDEEKASAKKSRV | 3.74 |
| 599 | Q9UQL6 | HDAC5 | 611 | S | EEEEDCIQVKDEEGESGAEEGPDLEEPGAGY | 3.73 |
| 600 | Q9UQ35 | SRRM2 | 745 | S | RKNKSRTSQRRSRSNSSPEMKKSRISSRRSR | 3.71 |
| 601 | Q9Y5S9 | RBM8A | 168 | S | GPPKGKRRGGRRRSRSPDRRRR********* | 3.69 |
| 602 | P35269 | GTF2F1 | 221 | S | RIHDLEDDLEMSSDASDASGEEGGRVPKAKK | 3.68 |
| 603 | P78317 | RNF4 | 95 | S | ARRLPQDHADSCVVSSDDEELSRDRDVYVTI | 3.67 |
| 604 | Q92625 | ANKS1A | 661 | S | ESLSNCSIGKKRLEKSPSFASEWDEIEKIMS | 3.66 |
| 605 | Q99590 | SCAF11 | 834 | S | PRRETGKESRKSQSPSPKNESARGRKKSRSQ | 3.65 |
| 606 | Q9UKN8 | GTF3C4 | 19 | S | ADQARVGPADDGPAPSGEEEGEGGGEAGGKE | 3.64 |
| 607 | Q9UQ35 | SRRM2 | 715 | S | GRSRSRSLVRRGRSHSRTPQRRGRSGSSSER | 3.63 |
| 608 | P35579 | MYH9 | 1943 | S | FVVPRRMARKGAGDGSDEEVDGKADGAEAKP | 3.62 |
| 609 | P42166 | TMPO | 67 | S | PLPAGTNSKGPPDFSSDEEREPTPVLGSGAA | 3.61 |
| 610 | Q08945 | SSRP1 | 672 | S | SESFKSKEFVSSDESSSGENKSKKKRRRSED | 3.60 |
| 611 | Q15459 | SF3A1 | 359 | S | SQLDQDTQVQDMDEGSDDEEEGQKVPPPPET | 3.60 |
| 612 | Q66PJ3 | ARL6IP4 | 332 | S | QVEALPGPSLDQWHRSAGEEEDGPVLTDEQK | 3.59 |
| 613 | Q86US8 | SMG6 | 1196 | S | DVVIEDFEEDSEAEGSGGEDDIRELRAKKLA | 3.58 |
| 614 | Q8TDR0-2 | TRAF3IP1 | 359 | S | TSKRRSKNSVEGDSTSDAEGDAGPAGQDKSE | 3.57 |
| 615 | Q96JC9 | EAF1 | 165 | S | KPPVGPKTSPLKDNPSPEPQLDDIKRELRAE | 3.56 |
| 616 | Q9H792 | PEAK1 | 730 | S | RGQSSPQRSYSSSHSSPAKIQRATQEPVAKI | 3.55 |
| 617 | O15021 | MAST4 | 1831 | S | PQASKTELPSPESAQSPSPSGDVRASVPPVL | 3.54 |
| 618 | Q9H0E3 | SAP130 | 300 | S | IPPAVVATVSATRAQSPVITTTAAHATDSAL | 3.54 |
| 619 | Q9Y2X3 | NOP58 | 502 | S | KKKRGKKKHIKEEPLSEEEPCTSTAIASPEK | 3.53 |
| 620 | P08621 | SNRNP70 | 320 | S | RKEELRGGGGDMAEPSEAGDAPPDDGPPGEL | 3.53 |
| 621 | Q9NXX6 | NSMCE4A | 35 | S | HRDRTRSRSRSRSPLSPRSRRGSARERREAP | 3.52 |
| 622 | Q58EX2 | SDK2 | 2026 | S | YTRSPPRPSPGSLHYSDEDVTKYNDLIPAES | 3.52 |
| 623 | P18583 | SON | 1782 | S | AASPVVSSMPERASESSSEEKDDYEIFVKVK | 3.52 |
| 624 | P19338 | NCL | 145 | S | PAKGAKNGKNAKKEDSDEEEDDDSEEDEEDD | 3.52 |
| 625 | Q9UQ35 | SRRM2 | 454 | S | ESPKPAPAPGSHREISSSPTSKNRSHGRAKR | 3.51 |

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|---|---|---|---|---|---|---|
| 626 | P19338 | NCL | 153 | S | KNAKKEDSDEEEDDDSEEDEEDDEDEDEDED | 3.50 |
| 627 | Q9UKJ3 | GPATCH8 | 491 | S | PGSKAEAKKALGGDVSDQSLESHSQKVSETQ | 3.49 |
| 628 | P85037 | FOXK1 | 249 | S | LRSMVSPVPSPTGTISVPNSCPASPRGAGSS | 3.48 |
| 629 | P98175 | RBM10 | 738 | S | SPPRGLVAAYSGESDSEEEQERGGPEREEKL | 3.47 |
| 630 | Q9UPP1 | PHF8 | 854 | S | DSLGACFKDAEYIYPSLESDDDDPALKSRPK | 3.46 |
| 631 | Q9UQ35 | SRRM2 | 952 | S | SPSRVTSRTTPRRSRSVSPCSNVESRLLPRY | 3.46 |
| 632 | Q15154 | PCM1 | 65 | S | KKFGVESDKRVTNDISPESSPGVGRRRTKTP | 3.45 |
| 633 | Q13428 | TCOF1 | 583 | S | QEKSLGNILQAKPTSSPAKGPPQKAGPVAVQ | 3.44 |
| 634 | Q14677 | CLINT1 | 234 | S | FRRKDREDSPERCSDSDEEKKARRGRSPKGE | 3.44 |
| 635 | Q96ST2 | IWS1 | 289 | S | SDSESEDPPRNQASDSENEELPKPRVSDSES | 3.43 |
| 636 | Q9UQ35 | SRRM2 | 746 | S | KNKSRTSQRRSRSNSSPEMKKSRISSRRSRS | 3.42 |
| 637 | P51003 | PAPOLA | 24 | S | GSQQTQPPQKHYGITSPISLAAPKETDCVLT | 3.42 |
| 638 | P98174 | FGD1 | 48 | S | SDPGASEPGLLARRGSGSALGGPLDPQFVGP | 3.42 |
| 639 | O43432-3 | EIF4G3 | 232 | S | KQEEKPKPDPVLKSPSPVLRLVLSGEKKEQE | 3.41 |
| 640 | O15541 | RNF113A | 46 | S | RKRPACDPEPGESGSSSDEGCTVVRPEKKRV | 3.40 |
| 641 | Q14684 | RRP1B | 458 | S | VAEPGAEATSSTGEESGSEHPPAVPMHNKRK | 3.39 |
| 642 | P36507 | MAP2K2 | 293 | S | IFGRPVVDGEEGEPHSISPRPRPPGRPVSGH | 3.37 |
| 643 | Q9P219 | CCDC88C | 227 | S | DLTQERDYLQAQHPPSPIKSSSADSTPSPTS | 3.36 |
| 644 | Q6AWC2 | WWC2 | 1022 | S | PGERNQYICRLNRSDSDSSTLAKKSLFVRNS | 3.33 |
| 645 | Q9BVV6 | KIAA0586 | 376 | S | RGNVRLLEQILNNNDSLTRKSESSNTTSLTR | 3.29 |
| 646 | P46937 | YAP1 | 164 | S | SGPAATPTAQHLRQSSFEIPDDVPLPAGWEM | 3.29 |
| 647 | P85037 | FOXK1 | 243 | S | HIPEPDLRSMVSPVPSPTGTISVPNSCPASP | 3.28 |
| 648 | P46100 | ATRX | 1352 | S | RHRLLRHKLTVSDGESGEEKKTKPKEHKEVK | 3.27 |
| 649 | Q7L4I2 | RSRC2 | 222 | S | IEKPRRFSRSLSRTPSPPPFRGRNTAMDAQE | 3.26 |
| 650 | O95218 | ZRANB2 | 153 | S | AVGPASILKEVEDKESEGEEEDEDEDLSKYK | 3.25 |
| 651 | Q01831 | XPC | 884 | S | SEAAAPHTDAGGGLSSDEEEGTSSQAEAARI | 3.25 |
| 652 | Q13428 | TCOF1 | 1153 | S | KAPESSDDSEDSSDSSSGSEEDGEGPQGAKS | 3.25 |
| 653 | Q8IYB3 | SRRM1 | 874 | S | QEEPVAAPEPKKETESEAEDNLDDLEKHLRE | 3.25 |
| 654 | Q9UQ35 | SRRM2 | 743 | S | SERKNKSRTSQRRSRSNSSPEMKKSRISSRR | 3.25 |
| 655 | P29692 | EEF1D | 162 | S | TPAEDDEDDDIDLFGSDNEEEDKEAAQLREE | 3.25 |
| 656 | Q86US8 | SMG6 | 1191 | S | EDEEEDVVIEDFEEDSEAEGSGGEDDIRELR | 3.24 |
| 657 | Q8N5S9 | CAMKK1 | 458 | S | SWTTVILVKSMLRKRSFGNPFEPQARREERS | 3.24 |
| 658 | Q92882 | OSTF1 | 213 | S | VRTLSNAEDYLDDEDSD************** | 3.23 |
| 659 | Q5BKY9 | FAM133B | 191 | S | GLSKKRKMYSEDKPLSSESLSESEYIEEVRA | 3.22 |
| 660 | Q6UN15 | FIP1L1 | 89 | S | PKPKVTETEDDSDSDSDDDEDDVHVTIGDIK | 3.21 |
| 661 | Q96ST2 | IWS1 | 315 | S | SDSESEGPQKGPASDSETEDASRHKQKPESD | 3.21 |
| 662 | O00567 | NOP56 | 520 | S | KPKKKKSFSKEELMSSDLEETAGSTSIPKRK | 3.20 |
| 663 | O94842 | TOX4 | 178 | S | LPPAQSPEDRLSTTPSPTSSLHEDGVEDFRR | 3.20 |
| 664 | P53999 | SUB1 | 17 | S | PKSKELVSSSSSGSDSDSEVDKKLKRKKQVA | 3.19 |
| 665 | P67809 | YBX1 | 314 | S | DGKETKAADPPAENSSAPEAEQGGAE***** | 3.19 |
| 666 | P78317 | RNF4 | 94 | S | NARRLPQDHADSCVVSSDDEELSRDRDVYVT | 3.19 |
| 667 | Q16629 | SRSF7 | 204 | S | YFQSPSRSRSRSRSISRPRSSRSKSRSPSPK | 3.19 |
| 668 | Q5BKY9 | FAM133B | 82 | S | ENWKKELEKHREKLLSGSESSSKKRQRKKKE | 3.19 |
| 669 | Q9UQ35 | SRRM2 | 566 | S | RGRSRSARRGRSHSRSPATRGRSRSRTPARR | 3.18 |
| 670 | Q96ST2 | IWS1 | 313 | S | RVSDSESEGPQKGPASDSETEDASRHKQKPE | 3.18 |
| 671 | Q9UQ35 | SRRM2 | 573 | S | RRGRSHSRSPATRGRSRSRTPARRGRSRSRT | 3.18 |
| 672 | Q5UIP0 | RIF1 | 1454 | S | QKKERRKEEEKPLQKSPLHIKDDVLPKQKLI | 3.17 |
| 673 | Q86X95 | CIR1 | 202 | S | GRNLTANDPSQEYVASEGEEDPEVEFLKSLT | 3.16 |
| 674 | O14654 | IRS4 | 1231 | S | PPRSRRVPRPPEREDSDNDDDTHVRMDFARR | 3.15 |
| 675 | P51825 | AFF1 | 206 | S | DSAPERELSPLISLPSPVPPLSPIHSNQQTL | 3.15 |
| 676 | Q13428 | TCOF1 | 967 | S | AQVIKPPLIFVDPNRSPAGPAATPAQAQAAS | 3.15 |
| 677 | Q9BW71 | HIRIP3 | 159 | S | DEERQRDLPAQRGEESSEEEEKGYKGKTRKK | 3.15 |
| 678 | Q9UDT6 | CLIP2 | 294 | S | FAPIHKVIRIGFPSTSPAKAKKTKRMAMGVS | 3.15 |
| 679 | Q9UGP8 | SEC63 | 576 | S | AVKEDEEEVSDKGSDSEEEETNRDSQSEKDD | 3.15 |
| 680 | P23588 | EIF4B | 424 | S | SEETQERERSRTGSESSQTGTSTTSSRNARR | 3.15 |
| 681 | Q9UKM9 | RALY | 135 | S | RDDFYDRLFDYRGRLSPVPVPRAVPVKRPRV | 3.15 |
| 682 | P25788 | PSMA3 | 250 | S | EAEKYAKESLKEEDESDDDNM********** | 3.14 |

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|---|---|---|---|---|---|---|
| 683 | Q01130 | SRSF2 | 189 | S | SSVSRSRSRSRSRSRSRSPPPVSKRESKSRS | 3.14 |
| 684 | Q08945 | SSRP1 | 671 | S | LSESFKSKEFVSSDESSSGENKSKKKRRRSE | 3.14 |
| 685 | Q9C0C2 | TNKS1BP1 | 1666 | S | LSPSALKAKLRPRNRSAEEGELAESKSSQKE | 3.14 |
| 686 | Q9UQ35 | SRRM2 | 575 | S | GRSHSRSPATRGRSRSRTPARRGRSRSRTPA | 3.14 |
| 687 | O43524 | FOXO3 | 253 | S | PDGGKSGKAPRRRAVSMDNSNKYTKSRGRAA | 3.14 |
| 688 | O95831 | AIFM1 | 116 | S | GLGLTPEQKQKKAALSASEGEEVPQDKAPSH | 3.14 |
| 689 | P12268 | IMPDH2 | 416 | S | FFSDGIRLKKYRGMGSLDAMDKHLSSQNRYF | 3.14 |
| 690 | Q6P6C2 | ALKBH5 | 361 | S | ENRRSVLLPTHRRRGSFSSENYWRKSYESSE | 3.14 |
| 691 | Q8IYB3 | SRRM1 | 616 | S | QRRYSPSPPPKRRTASPPPPPKRRASPSPPP | 3.13 |
| 692 | Q96ST2 | IWS1 | 287 | S | RISDSESEDPPRNQASDSENEELPKPRVSDS | 3.12 |
| 693 | O14654 | IRS4 | 1107 | S | FFAAARAAVSAFPTDSLERDLSPSSAPAVAS | 3.11 |
| 694 | P18583 | SON | 1784 | S | SPVVSSMPERASESSSEEKDDYEIFVKVKDT | 3.11 |
| 695 | P21127 | CDK11B | 283 | S | EKMEERDLLSDLQDISDSERKTSSAESSSAE | 3.10 |
| 696 | P51114 | FXR1 | 413 | S | GYGTNSELSNPSETESERKDELSDWSLAGED | 3.10 |
| 697 | P53999 | SUB1 | 13 | S | ***MPKSKELVSSSSSGSDSDSEVDKKLKRK | 3.07 |
| 698 | P85037 | FOXK1 | 257 | S | PSPTGTISVPNSCPASPRGAGSSSYRFVQNV | 3.05 |
| 699 | P98175 | RBM10 | 61 | S | REYGSQEGKHDYDDSSEEQSAEDSYEASPGS | 3.05 |
| 700 | Q13428 | TCOF1 | 548 | S | TPSAQVGKWEEDSESSSEESSDSSDGEVPTA | 3.04 |
| 701 | Q2NKX8 | ERCC6L | 1028 | S | VVVKAKIRSKARRIVSDGEDEDDSFKDTSSI | 3.02 |
| 702 | Q7Z4V5 | HDGFRP2 | 299 | S | LPKPRGRKPKPERPPSSSSSDSDSDEVDRIS | 3.02 |
| 703 | Q96ST2 | IWS1 | 511 | S | LEEEKGETQVKEAEDSDSDDNIKRGKHMDFL | 2.99 |
| 704 | Q9BW71 | HIRIP3 | 160 | S | EERQRDLPAQRGEESSEEEEKGYKGKTRKKP | 2.98 |
| 705 | Q9NR09 | BIRC6 | 480 | S | DIPKLEGDSDDLLEDSDSEEHSRSDSVTGHT | 2.97 |
| 706 | Q9UGP8 | SEC63 | 574 | S | EAAVKEDEEEVSDKGSDSEEEETNRDSQSEK | 2.97 |
| 707 | Q9UPT8 | ZC3H4 | 92 | S | GGPERSRKEKGEKHHSDSDEEKSHRRLKRKR | 2.97 |
| 708 | Q9UQ35 | SRRM2 | 629 | S | RSRSRTPARRRSRTRSPVRRRSRSRSPARRS | 2.96 |
| 709 | Q9Y4F5 | CEP170B | 1135 | S | PTRASRLRRARLGDASDTEAADGERGSLGNP | 2.95 |
| 710 | Q96ST2 | IWS1 | 167 | S | GKHPASDSEIEELQKSPASDSETEDALKPQI | 2.94 |
| 711 | Q04727 | TLE4 | 269 | S | LVVDVSNEDPSSPRGSPAHSPRENGLDKTRL | 2.94 |
| 712 | Q07157 | TJP1 | 277 | S | RDERATLLNVPDLSDSIHSANASERDDISEI | 2.94 |
| 713 | Q13428 | TCOF1 | 941 | S | AGKQDDSGSSSEESDSDGEAPAAVTSAQVIK | 2.94 |
| 714 | Q53EL6 | PDCD4 | 78 | S | LRKNSSRDSGRGDSVSDSGSDALRSGLTVPT | 2.93 |
| 715 | Q6UN15 | FIP1L1 | 87 | S | GVPKPKVTETEDDSDSDSDDDEDDVHVTIGD | 2.92 |
| 716 | Q7L1Q6 | BZW1 | 413 | S | KKFVEWLKNAEEESESEAEEGD********* | 2.92 |
| 717 | Q7LBC6 | KDM3B | 822 | S | RQDSDSSTNSDLSDLSDSEEQLQAKTGLKGI | 2.91 |
| 718 | Q92974 | ARHGEF2 | 947 | S | SPEERLQDSSDPDTGSEEEGSSRLSPPHSPR | 2.91 |
| 719 | Q9HCK8 | CHD8 | 2071 | S | RSVPPVKLEDEDDSDSELDLSKLSPSSSSSS | 2.91 |
| 720 | Q9NVU0 | POLR3E | 162 | S | AKHREREAANEAGDSSQDEAEDDVKQITVRP | 2.90 |
| 721 | Q9Y6M1 | IGF2BP2 | 161 | S | ENYSFKISYIPDEEVSSPSPPQRAQRGDHSS | 2.89 |
| 722 | O00567 | NOP56 | 569 | S | SGSKKKRKFSKEEPVSSGPEEAVGKSSSKKK | 2.89 |
| 723 | P49959 | MRE11A | 688 | S | KIMSQSQVSKGVDFESSEDDDDDPFMNTSSL | 2.88 |
| 724 | Q15345 | LRRC41 | 145 | S | EAFFSHVLRGTIDVSSDRRLCDQRFSPLLHS | 2.87 |
| 725 | O75179 | ANKRD17 | 2047 | S | PTAKEHYPVSSPSSPSPPAQPGGVSRNSPLD | 2.87 |
| 726 | P51114 | FXR1 | 409 | S | NYTSGYGTNSELSNPSETESERKDELSDWSL | 2.87 |
| 727 | Q06587 | RING1 | 229 | S | GTGGGGTGGVGGGAGSEDSGDRGGTLGGGTL | 2.86 |
| 728 | Q9NVU0 | POLR3E | 161 | S | DAKHREREAANEAGDSSQDEAEDDVKQITVR | 2.85 |
| 729 | Q13428 | TCOF1 | 342 | S | ASQTKAGKPEEDSESSSEESSDSEEETPAAK | 2.84 |
| 730 | Q9UDY2 | TJP2 | 1159 | S | KAPSRPYQDTRGSYGSDAEEEEYRQQLSEHS | 2.84 |
| 731 | Q9Y2U5 | MAP3K2 | 163 | S | RKKRLSIIGPTSRDRSSPPPGYIPDELHQVA | 2.84 |
| 732 | Q8TF01 | PNISR | 408 | S | SGDSEDERSDRGSESSDTDDEELRHRIRQKQ | 2.84 |
| 733 | O60832 | DKC1 | 453 | S | VAEAAKTAKRKRESESESDETPPAAPQLIKK | 2.84 |
| 734 | O95218-2 | ZRANB2 | 310 | S | SGDRKKRRTRSRSPESQVIGENTKQP***** | 2.84 |
| 735 | P46100 | ATRX | 1442 | S | RIKVQEDSSSENKSNSEEEEEEKEEEEEEEE | 2.83 |
| 736 | Q6PKG0 | LARP1 | 631 | S | MDGRKNTFTAWSDEESDYEIDDRDVNKILIV | 2.83 |
| 737 | Q7Z406 | MYH14 | 1969 | S | TRTVRQVFRLEEGVASDEEAEEAQPGSGPSP | 2.83 |
| 738 | Q92974 | ARHGEF2 | 941 | S | ERQELGSPEERLQDSSDPDTGSEEEGSSRLS | 2.82 |
| 739 | Q96ST2 | IWS1 | 172 | S | SDSEIEELQKSPASDSETEDALKPQISDSES | 2.81 |

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|---|---|---|---|---|---|---|
| 740 | Q9C0C2 | TNKS1BP1 | 1621 | S | LFQDSTEPRASRVPSSDEEVVEEPQSRRTRM | 2.81 |
| 741 | Q9HAS0 | C17orf75 | 18 | S | PSLQESMDGDEKELESSEEGGSAEERRLEPP | 2.81 |
| 742 | Q9UQ35 | SRRM2 | 713 | S | RRGRSRSRSLVRRGRSHSRTPQRRGRSGSSS | 2.81 |
| 743 | Q9UQ35 | SRRM2 | 455 | S | SPKPAPAPGSHREISSSPTSKNRSHGRAKRD | 2.80 |
| 744 | O96007 | MOCS2 | 8 | S | ********MSSLEISSSCFSLETKLPLSPPL | 2.80 |
| 745 | P18583 | SON | 1931 | S | KTVRARSRTPSRRSRSHTPSRRRRSRSVGRR | 2.80 |
| 746 | Q01130 | SRSF2 | 220 | S | RSKSPPKSPEEEGAVSS************** | 2.80 |
| 747 | Q92769 | HDAC2 | 424 | S | RASDKRIACDEEFSDSEDEGEGGRRNVADHK | 2.80 |
| 748 | Q9UKJ3 | GPATCH8 | 353 | S | SSDQGLQKVGDSDGSSNLDGKKEDEDPQDGG | 2.79 |
| 749 | Q9UPT8 | ZC3H4 | 94 | S | PERSRKEKGEKHHSDSDEEKSHRRLKRKRKK | 2.78 |
| 750 | Q9UQ35 | SRRM2 | 954 | S | SRVTSRTTPRRSRSVSPCSNVESRLLPRYSH | 2.77 |
| 751 | Q9Y3T9 | NOC2L | 672 | S | KDEDRKQFKDLFDLNSSEEDDTEGFSERGIL | 2.76 |
| 752 | P53999 | SUB1 | 15 | S | *MPKSKELVSSSSSGSDSDSEVDKKLKRKKQ | 2.76 |
| 753 | Q9BW61 | DDA1 | 95 | S | EGESSAPPRKVARTDSPDMHEDT******** | 2.75 |
| 754 | Q9BWU0 | SLC4A1AP | 82 | S | SQDLSGDFKKPALPVSPAARSKAPASSSSNP | 2.75 |
| 755 | Q9P206 | KIAA1522 | 669 | S | TLTPLQESPVISKDQSPPPSPPPSYHPPPPP | 2.74 |
| 756 | O15021 | MAST4 | 1825 | S | IALLSGPQASKTELPSPESAQSPSPSGDVRA | 2.73 |
| 757 | Q8IYB3 | SRRM1 | 465 | S | SPSPAPKPRKVELSESEEDKGGKMAAADSVQ | 2.72 |
| 758 | Q9UGP8 | SEC63 | 570 | S | VVGNEAAVKEDEEEVSDKGSDSEEEETNRDS | 2.71 |
| 759 | P55081 | MFAP1 | 52 | S | KRYVSGKRPDYAPMESSDEEDEEFQFIKKAK | 2.71 |
| 760 | Q5M9Q1 | NKAPL | 140 | S | RERIGELGAPEVWGPSPKFPQLDSDEHTPVE | 2.71 |
| 761 | Q9UPP1 | PHF8 | 857 | S | GACFKDAEYIYPSLESDDDDPALKSRPKKKK | 2.71 |
| 762 | P46783 | RPS10 | 146 | S | AVPPGADKKAEAGAGSATEFQFRGGFGRGRG | 2.69 |
| 763 | Q01130 | SRSF2 | 191 | S | VSRSRSRSRSRSRSRSPPPVSKRESKSRSRS | 2.68 |
| 764 | Q01831 | XPC | 883 | S | KSEAAAPHTDAGGGLSSDEEEGTSSQAEAAR | 2.67 |
| 765 | Q15345 | LRRC41 | 144 | S | MEAFFSHVLRGTIDVSSDRRLCDQRFSPLLH | 2.67 |
| 766 | Q99871-2 | HAUS7 | 391 | S | RSGMLLQVVMAVADTSAKAVETVKKQQGEQI | 2.67 |
| 767 | Q8IYB3 | SRRM1 | 560 | S | RRRRSPSPPPTRRRRSPSPAPPPRRRRTPTP | 2.67 |
| 768 | Q96DR7 | ARHGEF26 | 222 | S | QKSSSEQKLPLQRLPSQENELLENPSVVLST | 2.67 |
| 769 | Q96ST2 | IWS1 | 27 | S | DDGGATPVQDERDSGSDGEDDVNEQHSGSDT | 2.67 |
| 770 | P35269 | GTF2F1 | 224 | S | DLEDDLEMSSDASDASGEEGGRVPKAKKKAP | 2.66 |
| 771 | P18583 | SON | 2009 | S | TPSRRRRSRSVVRRRSFSISPVRLRRSRTPL | 2.65 |
| 772 | P55081 | MFAP1 | 53 | S | RYVSGKRPDYAPMESSDEEDEEFQFIKKAKE | 2.65 |
| 773 | Q7L014 | DDX46 | 804 | S | NERKKLQKAALGLQDSDDEDAAVDIDEQIES | 2.65 |
| 774 | Q9H1B7 | IRF2BPL | 215 | S | PKPTPEEGPPELNRQSPNSSSAAASVASRRG | 2.65 |
| 775 | Q01130 | SRSF2 | 208 | S | PPVSKRESKSRSRSKSPPKSPEEEGAVSS** | 2.65 |
| 776 | Q13428 | TCOF1 | 341 | S | VASQTKAGKPEEDSESSSEESSDSEEETPAA | 2.64 |
| 777 | Q8WUB8 | PHF10 | 331 | S | KGTSDSSSGNVSEGESPPDSQEDSFQGRQKS | 2.64 |
| 778 | Q08J23 | NSUN2 | 456 | S | KLQGKSAETRESTQLSPADLTEGKPTDPSKL | 2.64 |
| 779 | Q13428 | TCOF1 | 939 | S | AQAGKQDDSGSSSEESDSDGEAPAAVTSAQV | 2.64 |
| 780 | Q13523 | PRPF4B | 580 | S | SEPSSPQSSTRTRSPSPDDILERVAADVKEY | 2.64 |
| 781 | Q14191 | WRN | 1133 | S | ISSGSNISKKSIMVQSPEKAYSSSQPVISAQ | 2.63 |
| 782 | Q14498 | RBM39 | 341 | S | VTERTDASSASSFLDSDELERTGIDLGTTGR | 2.62 |
| 783 | Q16629 | SRSF7 | 209 | S | SRSRSRSRSISRPRSSRSKSRSPSPKRSRSP | 2.61 |
| 784 | Q4VCS5 | AMOT | 1041 | S | EVPASPATGPGPHRLSIPSLTCNPDKTDGPV | 2.61 |
| 785 | Q5BKY9 | FAM133B | 192 | S | LSKKRKMYSEDKPLSSESLSESEYIEEVRAK | 2.61 |
| 786 | Q6PD62 | CTR9 | 1041 | S | LKIADEGHPRNSNSNSDSDEDEQRKKCASSE | 2.61 |
| 787 | Q6UN15 | FIP1L1 | 85 | S | ENGVPKPKVTETEDDSDSDSDDDEDDVHVTI | 2.61 |
| 788 | Q7L2J0 | MEPCE | 152 | S | QPHRPPGGGGGKRRNSCNVGGGGGGFKHPAF | 2.61 |
| 789 | Q7Z2Z1 | TICRR | 1750 | S | LEDFELEGVCQLPDQSPPRNSMPKAEEASSW | 2.61 |
| 790 | Q7Z6E9 | RBBP6 | 1644 | S | TRETDEAAFEPDYNESDSESNVSVKEEESSG | 2.61 |
| 791 | Q86VM9 | ZC3H18 | 32 | S | EEQPQGLSDDDILRDSGSDQDLDGAGVRASD | 2.60 |
| 792 | Q96I25 | RBM17 | 155 | S | DRHEASGFARRPDPDSDEDEDYERERRKRSM | 2.59 |
| 793 | Q96ST2 | IWS1 | 252 | S | SENEELPKPRISDSESEDPPRHQASDSENEE | 2.58 |
| 794 | Q96ST3 | SIN3A | 832 | S | HHFIPDLLFAQRGDLSDVEEEEEEEMDVDEA | 2.58 |
| 795 | Q99590 | SCAF11 | 832 | S | PSPRRETGKESRKSQSPSPKNESARGRKKSR | 2.58 |
| 796 | Q9Y5S9 | RBM8A | 166 | S | VRGPPKGKRRGGRRRSRSPDRRRR******* | 2.58 |

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|---|---|---|---|---|---|---|
| 797 | Q9BW71 | HIRIP3 | 359 | S | PTAKGSRKMARLGSTSGEESDLEREVSDSEA | 2.57 |
| 798 | O60832 | DKC1 | 451 | S | QVVAEAAKTAKRKRESESESDETPPAAPQLI | 2.57 |
| 799 | Q8N5F7 | NKAP | 23 | S | RSPDREASGSGGRRRSSSKSPKPSKSARSPR | 2.57 |
| 800 | Q01130 | SRSF2 | 206 | S | SPPPVSKRESKSRSRSKSPPKSPEEEGAVSS | 2.57 |
| 801 | P55198 | MLLT6 | 258 | S | KDKERLKQKHKKRPESPPSILTPPVVPTADK | 2.57 |
| 802 | Q12923 | PTPN13 | 1321 | S | KPGISDVTDYSDRGDSDMDEATYSSSQDHQT | 2.56 |
| 803 | Q13428 | TCOF1 | 547 | S | ATPSAQVGKWEEDSESSSEESSDSSDGEVPT | 2.56 |
| 804 | Q13428 | TCOF1 | 936 | S | PSAAQAGKQDDSGSSSEESDSDGEAPAAVTS | 2.56 |
| 805 | Q9BW71 | HIRIP3 | 363 | S | GSRKMARLGSTSGEESDLEREVSDSEAGGGP | 2.56 |
| 806 | Q8IXM2 | BAP18 | 35 | S | TKLGELTMQLHPVADSSPAGAKWTETEIEML | 2.55 |
| 807 | Q8TAP9 | MPLKIP | 133 | S | TSTPFGSGRVREKRMSNELENYFKPSMLEDP | 2.54 |
| 808 | Q9NVU7 | SDAD1 | 585 | S | AAPGKSQKRKYIEIDSDEEPRGELLSLRDIE | 2.54 |
| 809 | Q8IXT5 | RBM12B | 278 | S | HFRKRSHSKSPRRTRSRSPLGFYVHLKNLSL | 2.54 |
| 810 | Q6PD62 | CTR9 | 1102 | S | SDQPSRKRRPSGSEQSDNESVQSGRSHSGVS | 2.53 |
| 811 | Q05519 | SRSF11 | 434 | S | KQVTRDYDEEEQGYDSEKEKKEEKKPIETGS | 2.53 |
| 812 | Q8N9T8 | KRI1 | 97 | S | QKDATFYNRTASSSDSEEDPEALEKQKKVRP | 2.53 |
| 813 | Q13428 | TCOF1 | 343 | S | SQTKAGKPEEDSESSSEESSDSEEETPAAKA | 2.52 |
| 814 | P52948 | NUP98 | 888 | S | WVFKVSHFSKYGLQDSDEEEEEHPSKTSTKK | 2.51 |
| 815 | Q96ST2 | IWS1 | 377 | S | SSDSEEEEHKKQKMDSDEDEKEGEEEKVAKR | 2.51 |
| 816 | Q9H019 | MTFR1L | 237 | S | CSSSEEDDCVSLSKASSFADMMGILKDFHRM | 2.50 |
| 817 | Q9HCE7 | SMURF1 | 106 | S | GAGFLGCVRLLSNAISRLKDTGYQRLDLCKL | 2.50 |
| 818 | P04637 | TP53 | 33 | S | TFSDLWKLLPENNVLSPLPSQAMDDLMLSPD | 2.50 |
| 819 | P18583 | SON | 1935 | S | ARSRTPSRRSRSHTPSRRRRSRSVGRRRSFS | 2.50 |
| 820 | P27815-7 | PDE4A | 6 | S | **********MKRSRSALSVAGTGDERSRET | 2.49 |
| 821 | Q9UQ35 | SRRM2 | 495 | S | RMGRSRSPATAKRGRSRSRTPTKRGHSRSRS | 2.49 |
| 822 | Q8WUB8 | PHF10 | 327 | S | KRKNKGTSDSSSGNVSEGESPPDSQEDSFQG | 2.48 |
| 823 | O00567 | NOP56 | 519 | S | SKPKKKKSFSKEELMSSDLEETAGSTSIPKR | 2.48 |
| 824 | Q9HCK8 | CHD8 | 2069 | S | VSRSVPPVKLEDEDDSDSELDLSKLSPSSSS | 2.47 |
| 825 | Q9Y2X7 | GIT1 | 388 | S | SQSDLDDQHDYDSVASDEDTDQEPLRSTGAT | 2.47 |
| 826 | Q13428 | TCOF1 | 545 | S | GPATPSAQVGKWEEDSESSSEESSDSSDGEV | 2.47 |
| 827 | Q13428 | TCOF1 | 932 | S | GKTGPSAAQAGKQDDSGSSSEESDSDGEAPA | 2.46 |
| 828 | Q9NUQ3 | TXLNG | 105 | S | TENRNLVSPAYCTQESREEIPGGEARTDPPD | 2.46 |
| 829 | Q14684 | RRP1B | 245 | S | ETMEEQKTKVGDGDLSAEEIPENEVSLRRAV | 2.45 |
| 830 | O60832 | DKC1 | 494 | S | AKAGLESGAEPGDGDSDTTKKKKKKKKAKEV | 2.45 |
| 831 | Q01130 | SRSF2 | 204 | S | SRSPPPVSKRESKSRSRSKSPPKSPEEEGAV | 2.45 |
| 832 | Q01804 | OTUD4 | 1024 | S | ANSVDSRVQRPKEESSEDENEVSNILRSGRS | 2.44 |
| 833 | P35611-3 | ADD1 | 358 | S | LLNPEKYKAKSRSPGSPVGEGTGSPPKWQIG | 2.44 |
| 834 | Q01804 | OTUD4 | 1023 | S | GANSVDSRVQRPKEESSEDENEVSNILRSGR | 2.44 |
| 835 | P50502 | ST13 | 79 | S | KVEEDLKADEPSSEESDLEIDKEGVIEPDTD | 2.43 |
| 836 | Q99759-2 | MAP3K3 | 175 | S | PRSRHLSVSSQNPGRSSPPPGYVPERQQHIA | 2.42 |
| 837 | Q16629 | SRSF7 | 208 | S | PSRSRSRSRSISRPRSSRSKSRSPSPKRSRS | 2.42 |
| 838 | Q7Z4V5 | HDGFRP2 | 190 | S | SDLDQASVSPSEEENSESSSESEKTSDQDFT | 2.42 |
| 839 | Q13523 | PRPF4B | 578 | S | VPSEPSSPQSSTRTRSPSPDDILERVAADVK | 2.41 |
| 840 | Q9Y2W1 | THRAP3 | 55 | S | SRKRRLSSRSRSRSYSPAHNRERNHPRVYQN | 2.41 |
| 841 | Q9UQ35 | SRRM2 | 564 | S | QRRGRSRSARRGRSHSRSPATRGRSRSRTPA | 2.41 |
| 842 | Q9UQ35 | SRRM2 | 562 | S | NTQRRGRSRSARRGRSHSRSPATRGRSRSRT | 2.40 |
| 843 | O15541 | RNF113A | 43 | S | AGRRKRPACDPEPGESGSSSDEGCTVVRPEK | 2.40 |
| 844 | P16989 | YBX3 | 369 | S | AGEAPTENPAPPTQQSSAE************ | 2.39 |
| 845 | Q9UQ35 | SRRM2 | 456 | S | PKPAPAPGSHREISSSPTSKNRSHGRAKRDK | 2.38 |
| 846 | O75494 | SRSF10 | 131 | S | YRRSRSRSYERRRSRSRSFDYNYRRSYSPRN | 2.38 |
| 847 | P16383 | GCFC2 | 119 | S | HHSSESKDDQGLSSDSSSSLGEKELSSTVKI | 2.37 |
| 848 | Q9NYV4 | CDK12 | 332 | S | GSYSGRSPSPYGRRRSSSPFLSKRSLSRSPI | 2.37 |
| 849 | Q9Y2W2 | WBP11 | 237 | S | ALDLPPRRRDEDMLYSPELAQRGHDDDVSST | 2.37 |
| 850 | Q9NYV4 | CDK12 | 333 | S | SYSGRSPSPYGRRRSSSPFLSKRSLSRSPLP | 2.36 |
| 851 | Q8IZ21 | PHACTR4 | 270 | S | AKQPPIPPPKPAHRNSNPVIAELSQAINSGT | 2.35 |
| 852 | Q9UPU7 | TBC1D2B | 957 | S | FLRERDTSPDKGELVSDEEEDT********* | 2.35 |
| 853 | Q14247 | CTTN | 438 | S | DAASFKAELSYRGPVSGTEPEPVYSMEAADY | 2.34 |

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|---|---|---|---|---|---|---|
| 854 | Q8WX93 | PALLD | 1121 | S | SGHPHVRRPRSRSRDSGDENEPIQERFFRPH | 2.34 |
| 855 | P46100 | ATRX | 1348 | S | KPRYRHRLLRHKLTVSDGESGEEKKTKPKEH | 2.27 |
| 856 | Q13428 | TCOF1 | 549 | S | PSAQVGKWEEDSESSSEESSDSSDGEVPTAV | 2.24 |
| 857 | P52701 | MSH6 | 287 | S | EGSSDEISSGVGDSESEGLNSPVKVARKRKR | 2.24 |
| 858 | Q8NDI1 | EHBP1 | 174 | S | LREGKATDEDMQSLASLMSMKQADIGNLDDF | 2.23 |
| 859 | Q04637 | EIF4G1 | 1596 | S | SVTAFFKWLREAEEESDHN************ | 2.19 |
| 860 | Q6PD62 | CTR9 | 1043 | S | IADEGHPRNSNSNSDSDEDEQRKKCASSESD | 2.16 |
| 861 | Q96CB8 | INTS12 | 378 | S | PPPLTLGKTGLSRSVSCDNVSKVGLPSPSSL | 2.16 |
| 862 | Q96ST2 | IWS1 | 25 | S | QSDDGGATPVQDERDSGSDGEDDVNEQHSGS | 2.16 |
| 863 | P16383 | GCFC2 | 117 | S | KIHHSSESKDDQGLSSDSSSSLGEKELSSTV | 2.15 |
| 864 | P51858 | HDGF | 133 | S | AAEGDGDKKGNAEGSSDEEGKLVIDEPAKEK | 2.15 |
| 865 | O60832 | DKC1 | 485 | S | KKKSKKDKKAKAGLESGAEPGDGDSDTTKKK | 2.14 |
| 866 | P18583 | SON | 1929 | S | NRKTVRARSRTPSRRSRSHTPSRRRRSRSVG | 2.14 |
| 867 | Q8TF01 | PNISR | 286 | S | TEDAEGGDGPRLPQRSKFDSDEEEEDTENVE | 2.14 |
| 868 | Q9Y3T9 | NOC2L | 673 | S | DEDRKQFKDLFDLNSSEEDDTEGFSERGILR | 2.13 |
| 869 | O95382 | MAP3K6 | 914 | S | TLLGDPFLQPGKRSRSPSSPRHAPRPSDAPS | 2.12 |
| 870 | O00567 | NOP56 | 570 | S | GSKKKRKFSKEEPVSSGPEEAVGKSSSKKKK | 2.11 |
| 871 | Q8TF01 | PNISR | 396 | S | SLTGLGGLGGYGSGDSEDERSDRGSESSDTD | 2.04 |
| 872 | P18583 | SON | 1783 | S | ASPVVSSMPERASESSSEEKDDYEIFVKVKD | 2.04 |
| 873 | Q5T3I0 | GPATCH4 | 130 | S | LTSGGEKPNKDLESCSDDDNQGSKSPKILTD | 2.04 |
| 874 | Q96IZ7 | RSRC1 | 116 | S | SKSRTRRSRSRPRLRSHSRSSERSSHRRTRS | 2.04 |
| 875 | Q9NPQ8 | RIC8A | 436 | S | AARGLMAGGRPEGQYSEDEDTDTDEYKEAKA | 2.00 |
| 876 | Q9Y2W1 | THRAP3 | 743 | S | KERDLKRGKSRESVDSRDSSHSRERSAEKTE | 2.00 |
| 877 | Q01433 | AMPD2 | 188 | T | LEPDILLRAKQDFLKTDSDSDLQLYKEQGEG | 1769.91 |
| 878 | O75400 | PRPF40A | 932 | T | KSPKKKTGKDSGNWDTSGSELSEGELEKRRR | 1140.61 |
| 879 | Q9UQ35 | SRRM2 | 1927 | T | RSRASPVSRRRSRSRTPPVTRRRSRSRTPTT | 786.63 |
| 880 | Q3YEC7 | RABL6 | 599 | T | RRADDFPVRDDPSDVTDEDEGPAEPPPPPKI | 570.30 |
| 881 | P25205 | MCM3 | 674 | T | EKEKKRKKRSEDESETEDEEEKSQEDQEQKR | 550.64 |
| 882 | Q6QNY0 | BLOC1S3 | 63 | T | RGRPTGLRVAGEAAETDSEPEPEPEPTAAPR | 452.31 |
| 883 | Q6PD62 | CTR9 | 925 | T | RSKKGGEFDEFVNDDTDDDLPISKKKKRRKG | 393.31 |
| 884 | Q4G0J3 | LARP7 | 338 | T | EASEASKENRDIEISTEEEKDTGDLKDSSLI | 334.32 |
| 885 | Q9NU22 | MDN1 | 4898 | T | DDLNLDSEDKNGGEDTDNEEGEEENPLEIKE | 324.37 |
| 886 | P55081 | MFAP1 | 267 | T | LEENKRSLAALDALNTDDENDEEEYEAWKVR | 314.65 |
| 887 | Q13427 | PPIG | 358 | T | TPSRSRSRDRFRRSETPPHWRQEMQRAQRMR | 255.65 |
| 888 | P25205 | MCM3 | 713 | T | DAKDGDSYDPYDFSDTEEEMPQVHTPKTADS | 235.99 |
| 889 | Q8IZL8 | PELP1 | 1090 | T | KVQPPPETPAEEEMETETEAEALQEKEQDDT | 235.99 |
| 890 | Q5C9Z4 | NOM1 | 287 | T | KAQEAEAQSEDDDEDTEEEQGEEKEKGAQEK | 196.66 |
| 891 | Q8N5F7 | NKAP | 161 | T | WGLSPKNPEPDSDEHTPVEDEEPKKSTTSAS | 186.90 |
| 892 | Q8TF01 | PNISR | 410 | T | DSEDERSDRGSESSDTDDEELRHRIRQKQEA | 176.99 |
| 893 | Q9NYF8 | BCLAF1 | 402 | T | KESGKQKFNDSEGDDTEETEDYRQFRKSVLA | 174.01 |
| 894 | Q8IWX8 | CHERP | 819 | T | SYSPGRRRRSRSRSPTPPSSAGLGSNSAPPI | 157.33 |
| 895 | O43583 | DENR | 86 | T | ENSPKQEAGISEGQGTAGEEEEKKKQKRGGR | 137.66 |
| 896 | Q8WVC0 | LEO1 | 188 | T | EDKLQNSDDDEKMQNTDDEERPQLSDDERQQ | 117.99 |
| 897 | P51116 | FXR2 | 411 | T | GSGRGSGGSDKAGYSTDESSSSSLHATRTYG | 108.33 |
| 898 | Q8N1G4 | LRRC47 | 522 | T | KKYTLENKEEGSLSDTEADAVSGQLPDPTTN | 105.23 |
| 899 | Q9H501 | ESF1 | 311 | T | SDSGPDLARGKGNIETSSEDEDDTADLFPEE | 100.32 |
| 900 | Q9UQ35 | SRRM2 | 717 | T | SRSRSLVRRGRSHSRTPQRRGRSGSSSERKN | 98.33 |
| 901 | P62269 | RPS18 | 60 | T | LRKADIDLTKRAGELTEDEVERVITIMQNPR | 88.66 |
| 902 | Q13427 | PPIG | 748 | T | VHEKNKKFDHESSPGTDEDKSG********* | 88.06 |
| 903 | Q13610 | PWP1 | 55 | T | KEKLQEEGGGSDEEETGSPSEDGMQSARTQA | 84.66 |
| 904 | Q14684 | RRP1B | 454 | T | LKARVAEPGAEATSSTGEESGSEHPPAVPMH | 83.54 |
| 905 | Q5VZL5 | ZMYM4 | 118 | T | SSIHTDDSLEVERRVTQHESDNENEIQIQNK | 81.60 |
| 906 | Q8WVC0 | LEO1 | 302 | T | KRKNAIASDSEADSDTEVPKDNSGTMDLFGG | 80.61 |
| 907 | Q9UQ35 | SRRM2 | 1655 | T | SSSKGRGPSPEGSSSTESSPEHPPKSRTARR | 78.66 |
| 908 | Q9UQ35 | SRRM2 | 2022 | T | RSRTSPVTRRRSRSRTPPAIRRRSRSRTPLL | 72.11 |
| 909 | Q9UQ35 | SRRM2 | 2034 | T | RSRTPPAIRRRSRSRTPLLPRKRSRSRSPLA | 63.41 |
| 910 | Q92733 | PRCC | 261 | T | KAAAKSAALQVTKQITQEEDDSDEEVAPENF | 59.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 911 | Q9NPQ8 | RIC8A | 441 | T | MAGGRPEGQYSEDEDTDTDEYKEAKASINPV | 57.64 |
| 912 | Q9UQ35 | SRRM2 | 2069 | T | SRSRTPRTARGKRSLTRSPPAIRRRSASGSS | 54.12 |
| 913 | Q9H501 | ESF1 | 319 | T | RGKGNIETSSEDEDDTADLFPEESGFEHAWR | 49.85 |
| 914 | P51116 | FXR2 | 451 | T | RRTGGPAYGPSSDVSTASETESEKREEPNRA | 49.33 |
| 915 | Q4G0J3 | LARP7 | 257 | T | DTSNTSISKMKRSRPTSEGSDIESTEPQKQC | 47.33 |
| 916 | Q7L590 | MCM10 | 85 | T | EKENLATLFGDMEDLTDEEEVPASQSTENRV | 47.54 |
| 917 | Q8IZL8 | PELP1 | 1014 | T | PEPEPGLLLEVEEPGTEEERGADTAPTLAPE | 46.32 |
| 918 | Q92541 | RTF1 | 334 | T | EEDDKSSEKSDRSSRTSSSDEEEEKEEIPPK | 46.22 |
| 919 | Q96QU1 | PCDH15 | 1863 | T | CTTNLMPAEKIKSSMTQLSTTTVCKTDPQRE | 42.38 |
| 920 | O15021 | MAST4 | 1821 | T | GTLDIALLSGPQASKTELPSPESAQSPSPSG | 42.79 |
| 921 | Q9H0G5 | NSRP1 | 263 | T | SDFDAKSSADDEIEETRVNCRREKVIETPEN | 41.33 |
| 922 | Q9UJV9 | DDX41 | 13 | T | ***MEESEPERKRARTDEVPAGGSRSEAEDE | 39.33 |
| 923 | Q96ST2 | IWS1 | 317 | T | SESEGPQKGPASDSETEDASRHKQKPESDDD | 37.33 |
| 924 | Q8WVC0 | LEO1 | 629 | T | SEEDKAQRLLKAKKLTSDEEGEPSGKRKAED | 34.52 |
| 925 | Q96QU1 | PCDH15 | 1867 | T | LMPAEKIKSSMTQLSTTTVCKTDPQREPKGI | 28.51 |
| 926 | Q96QU1 | PCDH15 | 1873 | T | IKSSMTQLSTTTVCKTDPQREPKGILRHVKN | 27.34 |
| 927 | Q66PJ3 | ARL6IP4 | 343 | T | QWHRSAGEEEDGPVLTDEQKSRIQAMKPMTK | 7.38 |
| 928 | Q8NE71 | ABCF1 | 108 | T | EEKELMERLKKLSVPTSDEEDEVPAPKPRGG | 6.90 |
| 929 | P27361 | MAPK3 | 202 | T | LARIADPEHDHTGFLTEYVATRWYRAPEIML | 5.02 |
| 930 | P27361 | MAPK3 | 207 | T | DPEHDHTGFLTEYVATRWYRAPEIMLNSKGY | 4.88 |
| 931 | O75528 | TADA3 | 297 | T | IPDMSGKESGADGASTSPRNQNKPFSVPHTK | 4.46 |
| 932 | Q8IYB3 | SRRM1 | 872 | T | LAQEEPVAAPEPKKETESEAEDNLDDLEKHL | 4.42 |
| 933 | Q13523 | PRPF4B | 847 | T | LCDFGSASHVADNDITPYLVSRFYRAPEIII | 3.60 |
| 934 | Q9UQ35 | SRRM2 | 577 | T | SHSRSPATRGRSRSRTPARRGRSRSRTPARR | 3.25 |
| 935 | Q9UQ35 | SRRM2 | 627 | T | RGRSRSRTPARRRSRTRSPVRRRSRSRSPAR | 3.19 |
| 936 | P17544 | ATF7 | 53 | T | GPARTDSVIIADQTPTPTRFLKNCEEVGLFN | 3.15 |
| 937 | Q27J81 | INF2 | 1179 | T | PAAGPGGDEDEDEEDTAPESALDTSLDKSFS | 3.15 |
| 938 | O15042 | U2SURP | 931 | T | DECTPTRKERKRRHSTSPSPSRSSSGRRVKS | 3.05 |
| 939 | P17544 | ATF7 | 51 | T | KFGPARTDSVIIADQTPTPTRFLKNCEEVGL | 3.05 |
| 940 | Q9BVV6 | KIAA0586 | 378 | T | NVRLLEQILNNNDSLTRKSESSNTTSLTRSK | 2.89 |
| 941 | P85037 | FOXK1 | 247 | T | PDLRSMVSPVPSPTGTISVPNSCPASPRGAG | 2.87 |
| 942 | Q9BW71 | HIRIP3 | 358 | T | EPTAKGSRKMARLGSTSGEESDLEREVSDSE | 2.81 |
| 943 | P28482 | MAPK1 | 190 | T | DPDHDHTGFLTEYVATRWYRAPEIMLNSKGY | 2.75 |
| 944 | Q9BW71 | HIRIP3 | 84 | T | REDKLDLTKKGKRPPTPCSDPERKRFRFNSE | 2.67 |
| 945 | Q13523 | PRPF4B | 576 | T | MSVPSEPSSPQSSTRTRSPSPDDILERVAAD | 2.64 |
| 946 | Q9UQ35 | SRRM2 | 499 | T | SRSPATAKRGRSRSRTPTKRGHSRSRSPQWR | 2.64 |
| 947 | P42166 | TMPO | 74 | T | SKGPPDFSSDEEREPTPVLGSGAAAAGRSRA | 2.54 |
| 948 | Q6UN15 | FIP1L1 | 79 | T | IEDETAENGVPKPKVTETEDDSDSDSDDDED | 2.50 |
| 949 | P51003 | PAPOLA | 544 | T | SDNSMSVPSPTSATKTSPLNSSGSSQGRNSP | 2.45 |
| 950 | O95218-2 | ZRANB2 | 303 | T | SRSRSSSSGDRKKRRTRSRSPESQVIGENTK | 2.41 |
| 951 | P35222 | CTNNB1 | 551 | T | LVQLLVRAHQDTQRRTSMGGTQQQFVEGVRM | 2.37 |
| 952 | P06493 | CDK1 | 14 | T | **MEDYTKIEKIGEGTYGVVYKGRHKTTGQV | 2.27 |
| 953 | Q13017 | ARHGAP5 | 1217 | T | SPVETWKGGIDNPAITSDQELDDKKMKKKTH | 2.18 |
| 954 | Q02156 | PRKCE | 710 | T | VNNFDQDFTREEPVLTLVDEAIVKQINQEEF | 2.14 |
| 955 | P29692 | EEF1D | 147 | T | VSPMRQVEPPAKKPATPAEDDEDDDIDLFGS | 2.06 |
| 956 | Q04759 | PRKCQ | 536 | T | ADFGMCKENMLGDAKTNTFCGTPDYIAPEIL | 2.04 |
| 957 | Q7KZI7 | MARK2 | 208 | T | DFGFSNEFTFGNKLDTFCGSPPYAAPELFQG | 2.00 |
| 958 | Q13627 | DYRK1A | 321 | Y | LGQRIYQYIQSRFYR | 373.65 |
| 959 | P25205 | MCM3 | 705 | Y | DAKDGDSYDPYDFSD | 117.99 |
| 960 | P45973 | CBX5 | 20 | Y | SSEDEEEYVVEKVLD | 61.34 |
| 961 | O60841 | EIF5B | 134 | Y | AKPKVEMYSGSDDDD | 59.54 |
| 962 | O15541 | RNF113A | 80 | Y | SGKQKAAYGDLSSEE | 59.14 |
| 963 | | PREDICTED: | 113 | Y | MVSFIAVYTSHLS-- | 59.00 |
| 964 | P98175 | KFZp686E245 | 122 | Y | SQEGKHDYDDSSEEQ | 57.64 |
| 965 | O15173 | PGRMC2 | 179 | Y | EGEEPTVYSDEEEPK | 49.31 |
| 966 | P51116 | FXR2 | 409 | Y | GGSDKAGYSTDESSS | 39.33 |
| 967 | P06493 | CDK1 | 15 | Y | EKIGEGTYGVVYKGR | 8.63 |

|  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|
| 968 | B4DWW4 | MCM3 | 753 | Y | DGDSYDPYDFSDTEE | 7.42 |
| 969 | Q9HCE7 | SMURF1 | 113 | Y | SRLKDTGYQRLDLCK | 7.19 |
| 970 | P27361 | MAPK3 | 204 | Y | HTGFLTEYVATRWYR | 4.74 |
| 971 | Q13523 | PRPF4B | 849 | Y | ADNDITPYLVSRFYR | 4.61 |
| 972 | P49840 | GSK3A | 279 | Y | RGEPNVSYICSRYYR | 2.84 |
| 973 | G3V5T9 | CDK2 | 15 | Y | EKIGEGTYGVVYKAR | 2.27 |
| 974 | Q8IZT6 | ASPM | 2564 | Y | SIVIQSTYRMYRQYC | 2.11 |

**Table S1:** Identified phosphorylation sites are list with acession information, phosphorylation site with positions in the proteins, spanning amino acids sequnces and fold of changes. Protein identifications overlapped with protein array analysis (Keller *et al*., *Mol Cell* 2014) were highlited in blue.

## Supplemental Table S2

| No. | Sample ID | Gender | Age | Histology (WHO Grade) |
|---|---|---|---|---|
| 1 | 2014-06517 | M | 51 | Renal Clear Cell Carcinoma (Ⅱ) |
| 2 | 2014-03303 | M | 38 | Renal Clear Cell Carcinoma (Ⅱ) |
| 3 | 2014-01577 | F | 64 | Renal Clear Cell Carcinoma (Ⅱ-III) |
| 4 | 2014-05726 | F | 78 | Renal Clear Cell Carcinoma (Ⅰ-Ⅱ) |
| 5 | 2014-02433 | M | 69 | Renal Clear Cell Carcinoma (Ⅱ) |
| 6 | 2013-05583 | F | 40 | Renal Clear Cell Carcinoma (Ⅱ) |
| 7 | 2013-05739 | F | 62 | Renal Clear Cell Carcinoma (Ⅱ-III) |
| 8 | 2013-06867 | M | 32 | Renal Clear Cell Carcinoma (Ⅰ-Ⅱ) |
| 9 | 2014-00532 | M | 77 | Renal Clear Cell Carcinoma (Ⅱ-III) |
| 10 | 2014-00862 | M | 58 | Renal Clear Cell Carcinoma (Ⅱ) |
|  |  |  |  |  |
| 1 | 2015-05563 | M | 38 | Breast Infiltrating Ductal Carcinoma (Ⅱ) |
| 2 | 2015-06795 | M | 51 | Breast Infiltrating Ductal Carcinoma (Ⅱ-III) |
| 3 | 2015-19494 | M | 45 | Breast Infiltrating Ductal Carcinoma (III) |
| 4 | 2015-19651 | M | 39 | Breast Infiltrating Ductal Carcinoma (Ⅱ) |
| 5 | 2015-19745 | M | 53 | Breast Infiltrating Ductal Carcinoma (III) |
| 6 | 2015-19926 | M | 49 | Breast Infiltrating Apocrine Carcinoma (Ⅱ-III) |
| 7 | 2015-20046 | M | 69 | Breast Infiltrating Ductal Carcinoma (Ⅱ) |
| 8 | 2015-20132 | M | 47 | Breast Infiltrating Ductal Carcinoma (Ⅱ) |
| 9 | 2015-20133 | M | 62 | Breast Infiltrating Ductal Carcinoma (Ⅱ) |
| 10 | 2015-20135 | M | 36 | Breast Infiltrating Ductal Carcinoma (Ⅱ) |

**Supplemental Table S2, Information of RCC and breast cancer samples were obtained and listed (related to Figure 7A&B and Figure S6).**

## Supplementary Experimental Procedures

### Antibodies

Ser202, S203 and S202/203 specific phosphorylation antibodies were homemade. AKT1S1 antibody (#2610), PKM2 antibody (#3198), p70 S6 kinase antibody (#9202), Phospho-p70 S6 kinase (Thr389) antibody (#9205), LC3B antibody (#2775), 4E-BP1 (53H11) rabbit mAb (#9644) and Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb (#2855) were purchased from Cell Signaling Technology. Anti-SQSTM1 / p62 antibody (ab56416) was from abcam.

### *In vitro* PKM2 phosphorylation of HEK293T proteome

HEK293T proteome were prepared as following: HEK293T cells were cultured in DMEM medium with 10% newborn bovine serum, 100 units/ml penicillin and 100 μg/ml streptomycin in a humidified atmosphere of 5% $CO_2$ at 37℃. Harvested cells were collected, washed with PBS (pH7.5) and lysed in 50 mM HEPES buffer (pH 7.5) buffer containing 1% Triton (v/v) , 65 mM DTT , 1 mM PMSF, 2% proteases inhibitors cocktail (Roche) for 30 minutes. After centrifugation at 12000 rpm at 4℃ for 30 minutes, the supernatant was collected and subject to either acetone precipitation followed by PKM2 phosphorylation or immobilization to CNBr-activated Sepharose for dephosphorylation and phosphorylation. For proteome dephosphorylation, 50U alkaline phosphatase (Sigma) was incubated with immobilized proteins in 1mM MgCl2, 1mM ZnCl2, 50 mM HEPES (pH 7.5). The resulted dephosphorylated immobilized proteome were washed with PBS (pH7.5) overnight to remove alkaline phosphatase and any small molecules that may serve as phosphor-donor.

### *In vitro* kinase reaction

The proteins or dephosphorylated immobilized proteome were preincubated in kinase buffer (100mM KCl, 50mM $MgCl_2$, 1mM DTT, 1mM $NaVO_4$, 5% glycerol, 30mM HEPES (pH 7.6)) at 30℃ for 30min. *In vitro* kinase reaction was triggered by adding 50 μg recombinant PKM2 and 0.5mM PEP, while in the control experiment only contains 0.5 mM PEP. Both reactions were allowed to process at 30℃ for 2 hours before 100 mM ammonium bicarbonate ($NH_4HCO_3$) was added to stop the reaction.

### Trypsin digestion and phosphopeptides enrichment

The washed immobilized proteome were incubated with 20 mM DTT for 2 hours at 37℃, followed by addition of 60 mM iodoacetic acid to the reaction mixture. After incubation in the dark for 1 hour at 25℃, trypsin was added at 50 μg/ mg protein in 100mM $NH_4HCO_3$ buffer (pH 8.0). After digestion for 18h at 37℃, the released peptides were collected and acidized by 5% trifluoroacetic acid before they were subjected to phosphopeptides enrichment by Ti41-IMAC microspheres.

### Mass Spectrometry

The mass spectrometer was set as below: ion transfer capillary 200 ℃, spray voltage 1.8 kV, full MS range 400-2000, and full mass spectra was acquired in the Orbitrap at a resolution of 60,000 with the target ion setting of $10^6$. One full MS scan was followed by ten MS/MS scans, and the multistage activation was enabled. The dynamic exclusion function was set as follows: repeat count 2, repeat duration 30 s, and exclusion duration 60 s. Each sample was analyzed five times by the RPLC-MS/MS.

### Gene silence

Synthetic oligos were used for *siRNA* silencing of *AKT1S1* and *PKM2*, the sequence used for silencing genes are:

*AKT1S1*: –GCTGAGTTCTAAGCTCTAAAT-

*PKM2*: -CTGCAGCGTTGTTAGCAAATAAT-

For *shRNA* silencing of genes, above sequences were cloned into PMKO vector, the plasmids constructed were cotransfected into HEK293T cells together with the *gag* and *vsvg* genes expressing plasmids to produce retrovirus. Retroviral supernatant was harvested 36 hr after initial plasmid transfection and mixed with polybrene (8 mg/ml) to increase the infection efficiency. Cells were infected with retrovirus and selected in puromycin (1 μg/ml) for 2 weeks. Knockdown efficiencies were analyzed by either western blots or Q-PCR.

## Bioinformatics analysis

All analysis were performed using published software. The secondary structures and solvent accessibilities of HPSRPs were predicted with NetSurfP 1.1 (Petersen et al., 2009), while the disorder regions and sub-cellular localizations were predicted by ESpritz (Walsh et al., 2012) and WoLF PSORT ({Qi et al., 2007), repectively. The gene ontology annotations were downloaded from QuickGO database (Barrell et al., 2009), while the enrichment analyses were performed with a hypergeometric distribution as previously described (Qi et al., 2014). The enrichment analyses of KEGG pathways were carried out using DAVID (Huang da et al., 2009), which also presented the pathways with annotated HPSPs. All the heatmaps were visualized with the ggplot2 program (http://had.co.nz/ggplot2/) in the R package (http://www.r-project.org/). The amino acid preferences were visualized with WebLogo (Crooks et al., 2004), while the comparisons of amino acid preferences were visualized with Two Sample Logo (Vacic et al., 2006).

## Immunohistochemistry

Tissue sections were prepared form the formalin-fixed paraffin embedded specimens. Antigen retrieval of renal cell carcinoma or breast cancer specimens was performed by incubating the slides in Tris-EDTA buffer (pH 8.4) at 99℃ for 60 mins. The endogenous peroxidase activity was inactivated in solution of methanol with 3% $H_2O_2$. The slides were incubated with primary antibody for 60 mins and secondary antibody for 8 mins, then stained with DAB Chromagen for 8 mins. All procedures were performed using stainer (BenchMark XT, Ventana) and the slides were scaned by scanner (Ventana iScan Coreo). The quantification of IHC results were performed by an experienced pathologist. The intensity was calculated according to positive areas and positive degree. Sections were staining with PKM2 (1:100), P-S202/203-AKT1S1 (1:30), P-S2448-mTOR (1:100), P-T37/46-4EBP1 (1:500), p62 (1:200) and LC3B (1:100) antibody using a Ultraview Detection Kit.

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