**Table 1.** Results of KEGG pathway mapping on the basis of the comparison of hypothalamic mRNA results in RYGB vs. sham treated animals. Pathways with p.adjusted≤ 0.05 only.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Description** | **setSize** | **enrichmentScore** | **NES** | **pvalue** | **p.adjust** | **qvalues** | **rank** |
| rno05168 | Herpes simplex virus 1 infection | 376 | 0,425142 | 1,533654 | 0,001037 | 0,01752 | 0,011973 | 8704 |
| rno05165 | Human papillomavirus infection | 345 | 0,469482 | 1,681053 | 0,001049 | 0,01752 | 0,011973 | 7039 |
| rno04151 | PI3K-Akt signaling pathway | 341 | 0,459294 | 1,654099 | 0,001054 | 0,01752 | 0,011973 | 6810 |
| rno04080 | Neuroactive ligand-receptor interaction | 339 | 0,456102 | 1,647899 | 0,001072 | 0,01752 | 0,011973 | 4716 |
| rno05206 | MicroRNAs in cancer | 251 | 0,420367 | 1,483651 | 0,001089 | 0,01752 | 0,011973 | 8712 |
| rno05205 | Proteoglycans in cancer | 204 | 0,47872 | 1,646001 | 0,00111 | 0,01752 | 0,011973 | 7056 |
| rno04022 | cGMP-PKG signaling pathway | 169 | 0,429261 | 1,467395 | 0,001114 | 0,01752 | 0,011973 | 6337 |
| rno04621 | NOD-like receptor signaling pathway | 172 | 0,481805 | 1,667434 | 0,001115 | 0,01752 | 0,011973 | 7825 |
| rno04510 | Focal adhesion | 200 | 0,547252 | 1,89303 | 0,00112 | 0,01752 | 0,011973 | 6172 |
| rno04514 | Cell adhesion molecules | 163 | 0,470979 | 1,587315 | 0,001135 | 0,01752 | 0,011973 | 8774 |
| rno04390 | Hippo signaling pathway | 157 | 0,443773 | 1,50621 | 0,001147 | 0,01752 | 0,011973 | 6643 |
| rno04934 | Cushing syndrome | 155 | 0,442055 | 1,494414 | 0,001151 | 0,01752 | 0,011973 | 7978 |
| rno05224 | Breast cancer | 146 | 0,467044 | 1,574252 | 0,001164 | 0,01752 | 0,011973 | 6602 |
| rno04630 | JAK-STAT signaling pathway | 152 | 0,505769 | 1,713026 | 0,001174 | 0,01752 | 0,011973 | 7855 |
| rno04668 | TNF signaling pathway | 110 | 0,512368 | 1,686079 | 0,001189 | 0,01752 | 0,011973 | 8703 |
| rno04974 | Protein digestion and absorption | 102 | 0,596591 | 1,930475 | 0,001215 | 0,01752 | 0,011973 | 4942 |
| rno04933 | AGE-RAGE signaling pathway in diabetic complications | 101 | 0,519177 | 1,697643 | 0,001238 | 0,01752 | 0,011973 | 7686 |
| rno05146 | Amoebiasis | 95 | 0,512213 | 1,655097 | 0,001245 | 0,01752 | 0,011973 | 6113 |
| rno04610 | Complement and coagulation cascades | 84 | 0,641777 | 1,999966 | 0,001248 | 0,01752 | 0,011973 | 3706 |
| rno05145 | Toxoplasmosis | 111 | 0,513113 | 1,680863 | 0,001253 | 0,01752 | 0,011973 | 8325 |
| rno04512 | ECM-receptor interaction | 87 | 0,652148 | 2,081489 | 0,001282 | 0,01752 | 0,011973 | 6576 |
| rno04927 | Cortisol synthesis and secretion | 66 | 0,544918 | 1,662977 | 0,0013 | 0,01752 | 0,011973 | 8486 |
| rno04920 | Adipocytokine signaling pathway | 72 | 0,574229 | 1,792615 | 0,001316 | 0,01752 | 0,011973 | 5760 |
| rno05144 | Malaria | 55 | 0,549532 | 1,629942 | 0,001344 | 0,01752 | 0,011973 | 4623 |
| rno04340 | Hedgehog signaling pathway | 52 | 0,628368 | 1,848361 | 0,001348 | 0,01752 | 0,011973 | 6623 |
| rno04392 | Hippo signaling pathway - multiple species | 28 | 0,672378 | 1,76493 | 0,001439 | 0,017986 | 0,012291 | 6643 |
| rno04020 | Calcium signaling pathway | 237 | 0,421177 | 1,488492 | 0,002165 | 0,02415 | 0,016504 | 5942 |
| rno04060 | Cytokine-cytokine receptor interaction | 257 | 0,431851 | 1,51911 | 0,002165 | 0,02415 | 0,016504 | 7877 |
| rno05164 | Influenza A | 168 | 0,434239 | 1,478893 | 0,002237 | 0,02415 | 0,016504 | 8869 |
| rno04935 | Growth hormone synthesis, secretion and action | 116 | 0,487073 | 1,599614 | 0,002392 | 0,02415 | 0,016504 | 7039 |
| rno04928 | Parathyroid hormone synthesis, secretion and action | 105 | 0,465182 | 1,503843 | 0,00241 | 0,02415 | 0,016504 | 5910 |
| rno04931 | Insulin resistance | 109 | 0,495663 | 1,643606 | 0,002418 | 0,02415 | 0,016504 | 8703 |
| rno04064 | NF-kappa B signaling pathway | 98 | 0,50506 | 1,635355 | 0,002494 | 0,02415 | 0,016504 | 8868 |
| rno04620 | Toll-like receptor signaling pathway | 93 | 0,505008 | 1,629888 | 0,002558 | 0,02415 | 0,016504 | 8868 |
| rno04917 | Prolactin signaling pathway | 72 | 0,521043 | 1,623198 | 0,002601 | 0,02415 | 0,016504 | 7231 |
| rno05321 | Inflammatory bowel disease | 59 | 0,543141 | 1,615396 | 0,002774 | 0,025042 | 0,017114 | 4750 |
| rno04550 | Signaling pathways regulating pluripotency of stem cells | 141 | 0,437983 | 1,478774 | 0,003517 | 0,030255 | 0,020676 | 8022 |
| rno04152 | AMPK signaling pathway | 123 | 0,475658 | 1,580248 | 0,003538 | 0,030255 | 0,020676 | 5603 |
| rno04211 | Longevity regulating pathway | 89 | 0,476845 | 1,520762 | 0,003699 | 0,030255 | 0,020676 | 8703 |
| rno00830 | Retinol metabolism | 79 | 0,495718 | 1,550117 | 0,003764 | 0,030255 | 0,020676 | 3965 |
| rno03050 | Proteasome | 47 | -0,65356 | -2,16626 | 0,003817 | 0,030255 | 0,020676 | 9511 |
| rno02010 | ABC transporters | 50 | 0,570979 | 1,675837 | 0,004082 | 0,030905 | 0,021121 | 5700 |
| rno04930 | Type II diabetes mellitus | 47 | 0,542947 | 1,595419 | 0,004144 | 0,030905 | 0,021121 | 6445 |
| rno00970 | Aminoacyl-tRNA biosynthesis | 67 | -0,59165 | -2,1272 | 0,004184 | 0,030905 | 0,021121 | 3788 |
| rno04010 | MAPK signaling pathway | 291 | 0,375062 | 1,330208 | 0,004315 | 0,031164 | 0,021297 | 7510 |
| rno04910 | Insulin signaling pathway | 138 | 0,429325 | 1,431453 | 0,004662 | 0,032938 | 0,02251 | 7510 |
| rno04926 | Relaxin signaling pathway | 127 | 0,445325 | 1,474672 | 0,005945 | 0,039634 | 0,027086 | 7997 |
| rno03040 | Spliceosome | 134 | -0,50703 | -2,04114 | 0,006024 | 0,039634 | 0,027086 | 8414 |
| rno01200 | Carbon metabolism | 122 | -0,3628 | -1,4302 | 0,006098 | 0,039634 | 0,027086 | 9623 |
| rno04350 | TGF-beta signaling pathway | 94 | 0,477579 | 1,537428 | 0,006098 | 0,039634 | 0,027086 | 8173 |
| rno00190 | Oxidative phosphorylation | 125 | -0,71278 | -2,83863 | 0,006711 | 0,042769 | 0,029228 | 5314 |
| rno04932 | Non-alcoholic fatty liver disease | 151 | -0,45637 | -1,86695 | 0,006993 | 0,043706 | 0,029869 | 4624 |
| rno04723 | Retrograde endocannabinoid signaling | 144 | -0,41259 | -1,66433 | 0,007813 | 0,047907 | 0,03274 | 5547 |
| rno04310 | Wnt signaling pathway | 161 | 0,415621 | 1,40927 | 0,008102 | 0,048761 | 0,033323 | 7978 |

**Table 2.** Results of KEGG pathway mapping on the basis of the comparison of hypothalamic mRNA results in BWM vs. sham treated animals. Pathways with p.adjusted ≤ 0.05 only.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ID | Description | setSize | enrichmentScore | NES | pvalue | p.adjust | qvalues | rank |
| rno04151 | PI3K-Akt signaling pathway | 341 | 0,537428 | 1,764344 | 0,001004 | 0,007767 | 0,004603 | 6684 |
| rno05168 | Herpes simplex virus 1 infection | 376 | 0,500028 | 1,634425 | 0,001004 | 0,007767 | 0,004603 | 8921 |
| rno04010 | MAPK signaling pathway | 291 | 0,460442 | 1,487375 | 0,001007 | 0,007767 | 0,004603 | 6651 |
| rno05165 | Human papillomavirus infection | 345 | 0,535059 | 1,760798 | 0,001007 | 0,007767 | 0,004603 | 6755 |
| rno05166 | Human T-cell leukemia virus 1 infection | 238 | 0,489225 | 1,576963 | 0,00101 | 0,007767 | 0,004603 | 6679 |
| rno04060 | Cytokine-cytokine receptor interaction | 257 | 0,5784 | 1,843946 | 0,001013 | 0,007767 | 0,004603 | 4717 |
| rno05205 | Proteoglycans in cancer | 204 | 0,535253 | 1,720996 | 0,001013 | 0,007767 | 0,004603 | 6797 |
| rno05206 | MicroRNAs in cancer | 251 | 0,464661 | 1,491083 | 0,001017 | 0,007767 | 0,004603 | 6904 |
| rno04510 | Focal adhesion | 200 | 0,601001 | 1,928159 | 0,001022 | 0,007767 | 0,004603 | 6333 |
| rno04621 | NOD-like receptor signaling pathway | 172 | 0,522381 | 1,671006 | 0,001022 | 0,007767 | 0,004603 | 8921 |
| rno05169 | Epstein-Barr virus infection | 219 | 0,501604 | 1,62225 | 0,001026 | 0,007767 | 0,004603 | 6616 |
| rno05202 | Transcriptional misregulation in cancer | 186 | 0,506337 | 1,629042 | 0,001032 | 0,007767 | 0,004603 | 7905 |
| rno05152 | Tuberculosis | 176 | 0,48629 | 1,533782 | 0,001036 | 0,007767 | 0,004603 | 5091 |
| rno04390 | Hippo signaling pathway | 157 | 0,487535 | 1,526583 | 0,001041 | 0,007767 | 0,004603 | 3570 |
| rno04934 | Cushing syndrome | 155 | 0,505241 | 1,592152 | 0,001042 | 0,007767 | 0,004603 | 6317 |
| rno05164 | Influenza A | 168 | 0,531133 | 1,672794 | 0,001045 | 0,007767 | 0,004603 | 8975 |
| rno04630 | JAK-STAT signaling pathway | 152 | 0,617805 | 1,946985 | 0,001048 | 0,007767 | 0,004603 | 8765 |
| rno04550 | Signaling pathways regulating pluripotency of stem cells | 141 | 0,484002 | 1,519709 | 0,00105 | 0,007767 | 0,004603 | 8235 |
| rno04514 | Cell adhesion molecules | 163 | 0,557336 | 1,75251 | 0,001052 | 0,007767 | 0,004603 | 4748 |
| rno05162 | Measles | 142 | 0,495308 | 1,55334 | 0,001054 | 0,007767 | 0,004603 | 6890 |
| rno04668 | TNF signaling pathway | 110 | 0,603409 | 1,858053 | 0,001059 | 0,007767 | 0,004603 | 7059 |
| rno05224 | Breast cancer | 146 | 0,521456 | 1,642849 | 0,00106 | 0,007767 | 0,004603 | 6852 |
| rno04380 | Osteoclast differentiation | 121 | 0,513122 | 1,590528 | 0,001063 | 0,007767 | 0,004603 | 7905 |
| rno04659 | Th17 cell differentiation | 102 | 0,584622 | 1,783785 | 0,001064 | 0,007767 | 0,004603 | 4634 |
| rno04611 | Platelet activation | 126 | 0,520243 | 1,616135 | 0,001073 | 0,007767 | 0,004603 | 3804 |
| rno05145 | Toxoplasmosis | 111 | 0,619462 | 1,896353 | 0,001079 | 0,007767 | 0,004603 | 5571 |
| rno04064 | NF-kappa B signaling pathway | 98 | 0,625851 | 1,907894 | 0,001082 | 0,007767 | 0,004603 | 5941 |
| rno04928 | Parathyroid hormone synthesis, secretion and action | 105 | 0,513293 | 1,571499 | 0,001085 | 0,007767 | 0,004603 | 5017 |
| rno04933 | AGE-RAGE signaling pathway in diabetic complications | 101 | 0,59577 | 1,821338 | 0,001085 | 0,007767 | 0,004603 | 7284 |
| rno05410 | Hypertrophic cardiomyopathy | 91 | 0,554283 | 1,676396 | 0,001088 | 0,007767 | 0,004603 | 6664 |
| rno04974 | Protein digestion and absorption | 102 | 0,713025 | 2,169708 | 0,001091 | 0,007767 | 0,004603 | 5259 |
| rno04658 | Th1 and Th2 cell differentiation | 88 | 0,60828 | 1,82666 | 0,001103 | 0,007767 | 0,004603 | 4634 |
| rno05146 | Amoebiasis | 95 | 0,640747 | 1,929177 | 0,001103 | 0,007767 | 0,004603 | 4745 |
| rno04612 | Antigen processing and presentation | 80 | 0,59192 | 1,761336 | 0,001106 | 0,007767 | 0,004603 | 6446 |
| rno05414 | Dilated cardiomyopathy | 94 | 0,540239 | 1,631458 | 0,001107 | 0,007767 | 0,004603 | 6664 |
| rno04512 | ECM-receptor interaction | 87 | 0,729915 | 2,194053 | 0,001109 | 0,007767 | 0,004603 | 5391 |
| rno04657 | IL-17 signaling pathway | 87 | 0,563089 | 1,682937 | 0,001111 | 0,007767 | 0,004603 | 5427 |
| rno05222 | Small cell lung cancer | 92 | 0,5863 | 1,796336 | 0,001111 | 0,007767 | 0,004603 | 6235 |
| rno04640 | Hematopoietic cell lineage | 89 | 0,564301 | 1,681782 | 0,001112 | 0,007767 | 0,004603 | 7230 |
| rno04061 | Viral protein interaction with cytokine and cytokine receptor | 83 | 0,594567 | 1,758444 | 0,001114 | 0,007767 | 0,004603 | 4482 |
| rno05150 | Staphylococcus aureus infection | 87 | 0,581628 | 1,759024 | 0,001115 | 0,007767 | 0,004603 | 7228 |
| rno04620 | Toll-like receptor signaling pathway | 93 | 0,62841 | 1,89632 | 0,001116 | 0,007767 | 0,004603 | 6565 |
| rno05416 | Viral myocarditis | 78 | 0,548204 | 1,620212 | 0,001122 | 0,007767 | 0,004603 | 4748 |
| rno04920 | Adipocytokine signaling pathway | 72 | 0,565743 | 1,6636 | 0,00113 | 0,007767 | 0,004603 | 5051 |
| rno04610 | Complement and coagulation cascades | 84 | 0,669845 | 1,987684 | 0,001131 | 0,007767 | 0,004603 | 6387 |
| rno05320 | Autoimmune thyroid disease | 64 | 0,607289 | 1,764908 | 0,001152 | 0,007767 | 0,004603 | 6446 |
| rno05144 | Malaria | 55 | 0,615522 | 1,727209 | 0,001157 | 0,007767 | 0,004603 | 5051 |
| rno05321 | Inflammatory bowel disease | 59 | 0,70089 | 2,004387 | 0,001159 | 0,007767 | 0,004603 | 4634 |
| rno05330 | Allograft rejection | 55 | 0,594561 | 1,68215 | 0,001171 | 0,007767 | 0,004603 | 6446 |
| rno02010 | ABC transporters | 50 | 0,596395 | 1,66345 | 0,001206 | 0,007841 | 0,004647 | 8489 |
| rno04392 | Hippo signaling pathway - multiple species | 28 | 0,699705 | 1,785772 | 0,001292 | 0,008233 | 0,00488 | 5572 |
| rno05163 | Human cytomegalovirus infection | 241 | 0,448945 | 1,462735 | 0,002022 | 0,012508 | 0,007413 | 6852 |
| rno04145 | Phagosome | 177 | 0,465163 | 1,46771 | 0,002068 | 0,012508 | 0,007413 | 6056 |
| rno05161 | Hepatitis B | 157 | 0,468252 | 1,479785 | 0,002088 | 0,012508 | 0,007413 | 6855 |
| rno04935 | Growth hormone synthesis, secretion and action | 116 | 0,507444 | 1,556563 | 0,002144 | 0,012508 | 0,007413 | 7284 |
| rno04670 | Leukocyte transendothelial migration | 115 | 0,488233 | 1,509959 | 0,002155 | 0,012508 | 0,007413 | 6358 |
| rno00830 | Retinol metabolism | 79 | 0,533592 | 1,567589 | 0,002237 | 0,012597 | 0,007466 | 5003 |
| rno05140 | Leishmaniasis | 71 | 0,566777 | 1,645512 | 0,002288 | 0,012597 | 0,007466 | 6258 |
| rno04213 | Longevity regulating pathway - multiple species | 63 | 0,544908 | 1,572501 | 0,002296 | 0,012597 | 0,007466 | 6755 |
| rno05332 | Graft-versus-host disease | 54 | 0,585034 | 1,667987 | 0,002326 | 0,012597 | 0,007466 | 6446 |
| rno04020 | Calcium signaling pathway | 237 | 0,425547 | 1,360698 | 0,003036 | 0,015401 | 0,009128 | 6674 |
| rno04015 | Rap1 signaling pathway | 210 | 0,441293 | 1,416363 | 0,003049 | 0,015401 | 0,009128 | 7840 |
| rno04926 | Relaxin signaling pathway | 127 | 0,490415 | 1,534576 | 0,003158 | 0,015401 | 0,009128 | 4634 |
| rno04270 | Vascular smooth muscle contraction | 138 | 0,463445 | 1,455451 | 0,003168 | 0,015401 | 0,009128 | 3869 |
| rno05135 | Yersinia infection | 135 | 0,467803 | 1,467379 | 0,003168 | 0,015401 | 0,009128 | 6565 |
| rno04931 | Insulin resistance | 109 | 0,503924 | 1,542625 | 0,003191 | 0,015401 | 0,009128 | 7905 |
| rno05322 | Systemic lupus erythematosus | 115 | 0,491905 | 1,511976 | 0,003209 | 0,015401 | 0,009128 | 6869 |
| rno04350 | TGF-beta signaling pathway | 94 | 0,525836 | 1,588862 | 0,003222 | 0,015401 | 0,009128 | 7911 |
| rno05323 | Rheumatoid arthritis | 83 | 0,53314 | 1,568723 | 0,003344 | 0,015753 | 0,009337 | 4669 |
| rno05217 | Basal cell carcinoma | 61 | 0,552056 | 1,598062 | 0,003488 | 0,016064 | 0,009521 | 8235 |
| rno04672 | Intestinal immune network for IgA production | 43 | 0,622163 | 1,699773 | 0,003521 | 0,016064 | 0,009521 | 6638 |
| rno04622 | RIG-I-like receptor signaling pathway | 61 | 0,555518 | 1,591503 | 0,003559 | 0,016064 | 0,009521 | 9385 |
| rno05167 | Kaposi sarcoma-associated herpesvirus infection | 210 | 0,437495 | 1,410547 | 0,004082 | 0,017943 | 0,010635 | 6979 |
| rno04022 | cGMP-PKG signaling pathway | 169 | 0,455042 | 1,43711 | 0,004128 | 0,017943 | 0,010635 | 7048 |
| rno04310 | Wnt signaling pathway | 161 | 0,449751 | 1,413204 | 0,004141 | 0,017943 | 0,010635 | 6224 |
| rno00020 | Citrate cycle (TCA cycle) | 31 | -0,64583 | -2,02634 | 0,004329 | 0,018331 | 0,010865 | 8639 |
| rno05142 | Chagas disease | 103 | 0,501151 | 1,519947 | 0,004343 | 0,018331 | 0,010865 | 6549 |
| rno01522 | Endocrine resistance | 94 | 0,492994 | 1,498865 | 0,004469 | 0,018511 | 0,010972 | 7284 |
| rno04917 | Prolactin signaling pathway | 72 | 0,538376 | 1,587757 | 0,004525 | 0,018511 | 0,010972 | 7905 |
| rno05133 | Pertussis | 73 | 0,542703 | 1,591595 | 0,004561 | 0,018511 | 0,010972 | 6834 |
| rno04927 | Cortisol synthesis and secretion | 66 | 0,569957 | 1,658347 | 0,004614 | 0,018511 | 0,010972 | 6317 |
| rno04614 | Renin-angiotensin system | 32 | 0,620398 | 1,615778 | 0,004957 | 0,019645 | 0,011644 | 5085 |
| rno05310 | Asthma | 25 | 0,678444 | 1,699031 | 0,005215 | 0,020421 | 0,012104 | 5074 |
| rno03050 | Proteasome | 47 | -0,68223 | -2,45082 | 0,005495 | 0,021259 | 0,0126 | 6532 |
| rno04211 | Longevity regulating pathway | 89 | 0,508667 | 1,519338 | 0,005574 | 0,021313 | 0,012632 | 6755 |
| rno04940 | Type I diabetes mellitus | 61 | 0,530153 | 1,521745 | 0,005787 | 0,02187 | 0,012962 | 6446 |
| rno04024 | cAMP signaling pathway | 212 | 0,422712 | 1,346463 | 0,006141 | 0,022941 | 0,013598 | 6674 |
| rno04152 | AMPK signaling pathway | 123 | 0,477125 | 1,471605 | 0,006316 | 0,023325 | 0,013825 | 7381 |
| rno05412 | Arrhythmogenic right ventricular cardiomyopathy | 77 | 0,510126 | 1,501797 | 0,006865 | 0,025069 | 0,014859 | 5837 |
| rno04218 | Cellular senescence | 178 | 0,446984 | 1,424837 | 0,007277 | 0,026276 | 0,015574 | 7299 |
| rno05226 | Gastric cancer | 148 | 0,454277 | 1,432438 | 0,007361 | 0,026288 | 0,015581 | 8235 |
| rno05220 | Chronic myeloid leukemia | 78 | 0,509248 | 1,518601 | 0,007928 | 0,028005 | 0,016599 | 9005 |
| rno05170 | Human immunodeficiency virus 1 infection | 227 | 0,41192 | 1,339554 | 0,008163 | 0,028528 | 0,016909 | 6755 |
| rno04662 | B cell receptor signaling pathway | 77 | 0,508656 | 1,524425 | 0,008909 | 0,030185 | 0,017891 | 6651 |
| rno00970 | Aminoacyl-tRNA biosynthesis | 67 | -0,61897 | -2,31985 | 0,008929 | 0,030185 | 0,017891 | 706 |
| rno01230 | Biosynthesis of amino acids | 78 | -0,45163 | -1,73591 | 0,008929 | 0,030185 | 0,017891 | 7911 |
| rno04136 | Autophagy - other | 32 | -0,51315 | -1,7082 | 0,009009 | 0,030185 | 0,017891 | 8452 |
| rno04913 | Ovarian steroidogenesis | 56 | 0,536886 | 1,529986 | 0,009456 | 0,03136 | 0,018588 | 5763 |
| rno04915 | Estrogen signaling pathway | 133 | 0,453786 | 1,42921 | 0,009554 | 0,031365 | 0,01859 | 7241 |
| rno04925 | Aldosterone synthesis and secretion | 95 | 0,484997 | 1,469954 | 0,009783 | 0,031793 | 0,018844 | 7048 |
| rno00310 | Lysine degradation | 63 | 0,504625 | 1,467656 | 0,010753 | 0,0346 | 0,020508 | 6633 |
| rno05203 | Viral carcinogenesis | 211 | 0,420045 | 1,359196 | 0,011168 | 0,035493 | 0,021037 | 8620 |
| rno04918 | Thyroid hormone synthesis | 73 | 0,509293 | 1,484946 | 0,011249 | 0,035493 | 0,021037 | 5769 |
| rno04068 | FoxO signaling pathway | 132 | 0,445318 | 1,387697 | 0,011591 | 0,036222 | 0,021469 | 6651 |
| rno05225 | Hepatocellular carcinoma | 178 | 0,417989 | 1,32382 | 0,013499 | 0,041784 | 0,024766 | 8235 |
| rno04014 | Ras signaling pathway | 229 | 0,405584 | 1,299146 | 0,014315 | 0,04389 | 0,026014 | 7905 |
| rno01521 | EGFR tyrosine kinase inhibitor resistance | 80 | 0,497348 | 1,489694 | 0,014509 | 0,044069 | 0,02612 | 7414 |
| rno04371 | Apelin signaling pathway | 138 | 0,442529 | 1,396966 | 0,014675 | 0,044161 | 0,026175 | 7113 |
| rno01200 | Carbon metabolism | 122 | -0,48092 | -1,99231 | 0,016393 | 0,04888 | 0,028972 | 7911 |
| rno05160 | Hepatitis C | 156 | 0,419944 | 1,338312 | 0,016895 | 0,049918 | 0,029587 | 9027 |