**Table S4. KEGG analysis of DMGs in cfDNA samples**

| ID | Description | GeneRatio | BgRatio | pvalue | p.adjust | qvalue | Count | geneID |
|---|---|---|---|---|---|---|---|---|
| hsa04071 | Sphingolipid signaling pathway | 34/1067 | 119/8105 | 6.18E-06 | 0.002007575 | 0.001677585 | 34 | 5590/5293/9517/4363/5295/9846/5578/5337/7124/7186/253782/1509/10000/2771/7132/56848/259230/5527/5579/5518/23236/166929/5529/5528/81537/130367/596/9294/5519/5581/2768/8698/5970/29956 |
| hsa04152 | AMPK signaling pathway | 33/1067 | 120/8105 | 2.03E-05 | 0.003032855 | 0.002534337 | 33 | 57521/51422/5468/5293/1385/8408/5862/5210/5295/6009/10645/10000/5564/3480/5527/51719/32/5518/64764/5529/5528/8900/31/5519/23216/5106/7249/2308/6319/6720/1374/5209/5562 |
| hsa05202 | Transcriptional misregulation in cancer | 46/1067 | 192/8105 | 2.80E-05 | 0.003032855 | 0.002534337 | 46 | 1669/1991/1053/6256/4353/5328/5468/2078/861/2313/1436/7185/4066/7704/3728/7048/4299/5218/7709/171558/3065/3480/2321/5081/5914/4298/860/2120/54738/8864/4914/8900/3205/4211/6929/4208/1051/2308/10912/598/3087/5970/79058/2005/7468/8350 |
| hsa04072 | Phospholipase D signaling pathway | 36/1067 | 148/8105 | 0.000146822 | 0.009941583 | 0.00830746 | 36 | 108/5293/8395/115/5295/146850/9846/5578/5337/1785/6009/23533/10000/56848/1609/80310/3577/5155/1606/8527/23236/1759/196883/5898/26052/9170/2768/27128/2149/56034/185/7249/5159/5335/55326/8613 |
| hsa04144 | Endocytosis | 54/1067 | 252/8105 | 0.000152947 | 0.009941583 | 0.00830746 | 54 | 5590/10938/160/64744/8395/5878/23527/5869/4088/80223/408/7456/5337/1785/11031/2352/116987/3107/116985/7048/274/28964/8724/112936/3134/3480/58513/50807/2870/8976/22905/57154/2869/9922/8853/3577/3800/6455/5584/409/1759/26052/27128/131890/2060/4734/381/80230/55040/93343/8218/9372/156/23111 |
| hsa04070 | Phosphatidylinositol signaling system | 26/1067 | 97/8105 | 0.000235494 | 0.01275595 | 0.010659223 | 26 | 8871/5293/3709/3632/8395/3635/5295/3707/5578/3708/3631/5305/1609/5579/1606/8527/56623/23236/3613/55361/5297/5335/22876/113026/8760/9807 |
| hsa05135 | Yersinia infection | 33/1067 | 137/8105 | 0.000331542 | 0.014124399 | 0.011802736 | 33 | 58484/27040/3586/6195/5293/9844/3932/5608/8395/1793/114548/5295/391/8874/7456/4210/7124/7186/4773/6196/4772/10458/10000/5829/8976/7410/71/64283/834/5335/5970/10451/2533 |
| hsa04810 | Regulation of actin cytoskeleton | 47/1067 | 218/8105 | 0.000347678 | 0.014124399 | 0.011802736 | 47 | 3682/54434/3985/2934/5293/4629/8395/1793/5295/4638/8874/26999/10627/221178/4627/28964/10458/5305/87/3674/81/54961/5829/3693/8976/2260/5216/80310/7410/3690/71/1129/5155/5500/3689/10787/3645/9170/2768/2149/56034/5159/23191/58498/7430/3694/10451 |
| hsa04210 | Apoptosis | 32/1067 | 136/8105 | 0.000629517 | 0.022732545 | 0.018995941 | 32 | 1522/1439/5293/3709/2081/5295/7124/7186/7185/3708/1509/1512/8737/10000/84823/7132/143/71/1677/1508/6708/7277/9020/51807/840/4914/596/10912/598/6709/5970/8772 |
| hsa05131 | Shigellosis | 50/1067 | 246/8105 | 0.000955707 | 0.029388148 | 0.024557546 | 50 | 58484/57521/3098/5293/3709/83660/9844/1793/114548/3554/5295/2017/7124/7186/6352/10627/26100/3708/8737/87/10000/81/7132/3611/5829/8976/5216/7335/10318/22863/3099/71/8915/23236/596/5581/27128/9181/834/2308/598/5335/5970/23291/58498/113026/7322/10801/340061/8350 |
| hsa04015 | Rap1 signaling pathway | 44/1067 | 210/8105 | 0.000994676 | 0.029388148 | 0.024557546 | 44 | 5590/27040/108/5293/83660/5608/284/115/5295/5908/5578/1436/2357/7057/10000/2771/3674/3480/2321/2260/9693/5579/5216/80310/7410/3690/71/5155/26037/23236/5584/3689/196883/57568/5898/999/2775/9170/2149/56034/5159/5335/10451/2533 |
| hsa04668 | TNF signaling pathway | 27/1067 | 112/8105 | 0.001102242 | 0.029852401 | 0.024945488 | 27 | 5293/1385/5608/7133/5295/7124/7186/7128/6352/7185/8737/10000/7132/8986/11035/6364/64764/9020/840/64127/10059/8809/1051/5970/602/3976/8772 |
| hsa04725 | Cholinergic synapse | 27/1067 | 113/8105 | 0.001271154 | 0.030146757 | 0.02519146 | 27 | 108/5293/3709/1385/775/115/5295/146850/5578/3785/3708/23533/10000/2771/5579/2788/2767/1129/2784/23236/64764/3784/196883/596/54331/2775/774 |
| hsa04931 | Insulin resistance | 26/1067 | 108/8105 | 0.001380558 | 0.030146757 | 0.02519146 | 26 | 5590/51422/6195/5293/1385/5295/7124/6196/10000/7132/5564/5579/7376/32/64764/5500/5581/9945/5106/6513/2308/6720/5970/1374/5562/5524 |
| hsa04666 | Fc gamma R-mediated phagocytosis | 24/1067 | 97/8105 | 0.001391389 | 0.030146757 | 0.02519146 | 24 | 27040/3985/2934/5293/8395/3635/1793/5295/9846/5578/5337/1785/274/10000/50807/56848/5579/8853/7410/5788/5581/5335/10451/8613 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa04211 | Longevity regulating pathway | 22/1067 | 89/8105 | 0.002190755 | 0.043801265 | 0.036601543 | 22 | 57521/51422/5468/108/5293/1385/8408/115/5295/6009/10645/10919/10000/5564/3480/64764/847/196883/7249/2308/5970/5562 |
| hsa04928 | Parathyroid hormone synthesis, secretion and action | 25/1067 | 106/8105 | 0.002291143 | 0.043801265 | 0.036601543 | 25 | 5144/6256/108/3709/1385/4209/11214/115/7421/408/5578/5337/3708/2771/2260/5579/2767/860/23236/64764/409/196883/596/4208/2768 |
| hsa04330 | Notch signaling pathway | 16/1067 | 59/8105 | 0.003152857 | 0.050041088 | 0.041815711 | 16 | 55534/9612/9794/84441/6310/28514/3516/171558/3065/7088/1487/1488/8650/1387/4851/4855 |
| hsa04728 | Dopaminergic synapse | 29/1067 | 132/8105 | 0.003346749 | 0.050041088 | 0.041815711 | 29 | 3709/1385/84152/775/408/5578/3708/1312/1644/10000/2771/6323/5527/5579/2788/3800/2784/5518/23236/64764/5500/409/406/5529/5528/54331/2775/5519/774 |
| hsa04062 | Chemokine signaling pathway | 39/1067 | 192/8105 | 0.003357024 | 0.050041088 | 0.041815711 | 39 | 5590/108/5293/9844/115/5295/5908/729230/146850/408/2268/6352/23533/10000/2771/57580/5829/2870/10803/5579/2869/2788/6364/7410/3577/2784/23236/409/196883/54331/131890/1794/5335/5970/10850/6367/1524/10451/156 |
| hsa05231 | Choline metabolism in cancer | 23/1067 | 98/8105 | 0.003595681 | 0.050041088 | 0.041815711 | 23 | 5130/5293/8395/5295/5578/5337/6009/80736/10000/1609/5579/56994/80310/5155/1606/6584/8527/56034/7249/5159/1120/5335/8613 |
| hsa04919 | Thyroid hormone signaling pathway | 27/1067 | 121/8105 | 0.00362484 | 0.050041088 | 0.041815711 | 27 | 6256/5293/486/5295/5578/6009/10000/1827/3065/23389/5579/9969/3690/71/8648/489/1387/23236/4851/4855/116931/7249/6513/2308/10499/5335/113026 |
| hsa05220 | Chronic myeloid leukemia | 19/1067 | 76/8105 | 0.003723515 | 0.050041088 | 0.041815711 | 19 | 5293/861/5295/4088/9846/1871/6776/7048/10000/3065/7040/1487/1488/613/5925/10912/598/5970/2122 |
| hsa04520 | Adherens junction | 18/1067 | 71/8105 | 0.003993452 | 0.050041088 | 0.041815711 | 18 | 4088/7048/10458/87/5777/81/6934/3480/8976/2260/2241/5795/4008/71/1387/999/5818/81607 |
| hsa05163 | Human cytomegalovirus infection | 44/1067 | 225/8105 | 0.004052037 | 0.050041088 | 0.041815711 | 44 | 811/108/5293/3709/1385/5608/11214/115/3554/5295/5578/1871/6009/7124/7186/6352/4773/3708/4772/3107/8737/10000/2771/3134/7132/5829/3716/5579/2788/2767/3690/2784/3570/23236/64764/196883/5925/54331/2775/2768/7249/5970/8772/340061 |
| hsa05166 | Human T-cell leukemia virus 1 infection | 43/1067 | 219/8105 | 0.004135133 | 0.050041088 | 0.041815711 | 43 | 3109/811/8379/108/5293/83660/4215/1385/3932/55697/115/3554/5295/4088/1871/7124/4773/6776/4772/3107/7048/10000/3134/7132/8881/64784/3716/7040/1387/64764/9020/2113/3689/196883/8900/5925/6929/11200/51434/6513/598/5970/2005 |
| hsa04380 | Osteoclast differentiation | 28/1067 | 128/8105 | 0.00415726 | 0.050041088 | 0.041815711 | 28 | 5468/5293/1385/3932/5608/10326/3554/5295/4689/9846/7124/7186/1436/4773/4772/7048/10000/7132/4688/3716/7040/11006/3690/9020/2274/55423/1540/5970 |
| hsa04710 | Circadian rhythm | 10/1067 | 31/8105 | 0.004862528 | 0.056440057 | 0.047162866 | 10 | 51422/1453/1385/5564/1454/406/8864/5187/23291/5562 |
| hsa05215 | Prostate cancer | 22/1067 | 97/8105 | 0.006687979 | 0.074102302 | 0.061921924 | 22 | 5328/7039/5293/2078/1385/5295/1871/10000/6934/3480/2260/80310/5155/1387/64764/3645/5925/596/56034/5159/2308/5970 |
| hsa04920 | Adipocytokine signaling pathway | 17/1067 | 69/8105 | 0.006898088 | 0.074102302 | 0.061921924 | 17 | 51422/6256/2180/7133/7124/7186/10645/10000/7132/5564/32/5106/6513/5970/1374/4852/5562 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa04390 | Hippo signaling pathway | 32/1067 | 157/8105 | 0.00706822 | 0.074102302 | 0.061921924 | 32 | 5590/1453/7533/23418/4088/7048/6934/8994/4092/26524/7481/7040/8312/25937/71/658/81029/6788/1454/5518/5500/5584/3689/7534/999/5519/7159/8463/392255/122786/10971/23291 |
| hsa05132 | Salmonella infection | 46/1067 | 249/8105 | 0.009861299 | 0.10015382 | 0.08369129 | 46 | 58484/1639/5293/9844/399/5608/114548/5878/391/5869/1785/7124/7186/26999/1778/10627/54106/10383/79026/8737/10000/6934/7132/8976/10540/11035/5216/57617/5788/71/3800/9842/112574/7277/64746/51807/840/10787/5898/596/27128/834/23191/5970/58498/8772 |
| hsa04371 | Apelin signaling pathway | 28/1067 | 137/8105 | 0.010855156 | 0.104901012 | 0.087658173 | 28 | 9759/51422/108/3709/4209/115/4638/146850/4088/6546/4899/3708/23533/10000/2771/5564/56848/2788/2784/23236/196883/999/54331/4208/5581/185/5140/5562 |
| hsa00532 | Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate | 7/1067 | 20/8105 | 0.01097426 | 0.104901012 | 0.087658173 | 7 | 55790/29940/22856/50515/51363/64131/11285 |
| hsa04218 | Cellular senescence | 31/1067 | 156/8105 | 0.011449085 | 0.106312934 | 0.088838014 | 31 | 5293/3709/10114/5608/5295/4088/1871/3364/6009/4773/28996/3708/4772/3107/7048/10000/3134/993/7040/5500/2113/8900/5925/10758/2305/11200/7249/2308/10912/5970/23291 |
| hsa05032 | Morphine addiction | 20/1067 | 91/8105 | 0.013372511 | 0.12072406 | 0.100880348 | 20 | 5144/108/115/408/5578/2771/2870/5579/2869/2788/2784/409/196883/54331/2550/2775/774/9568/5140/156 |
| hsa04929 | GnRH secretion | 15/1067 | 64/8105 | 0.017054969 | 0.148253446 | 0.123884661 | 15 | 5293/3709/775/5295/408/5578/3780/3708/10000/5579/2767/23236/409/2550/9568 |
| hsa04961 | Endocrine and other factor-regulated calcium reabsorption | 13/1067 | 53/8105 | 0.017620851 | 0.148253446 | 0.123884661 | 13 | 160/486/115/7421/6546/5578/1785/491/5579/23236/1759/26052/8218 |
| hsa05212 | Pancreatic cancer | 17/1067 | 76/8105 | 0.018216545 | 0.148253446 | 0.123884661 | 17 | 7039/5293/675/5295/4088/1871/5337/7048/10000/10928/3716/7040/5898/5925/10912/598/5970 |
| hsa04611 | Platelet activation | 25/1067 | 124/8105 | 0.018246578 | 0.148253446 | 0.123884661 | 25 | 5590/2815/108/5293/3709/83660/115/5295/5908/4638/146850/10627/3708/23533/10000/2771/3674/3690/71/23236/5500/5584/196883/5023/2149 |
| hsa04933 | AGE-RAGE signaling pathway in diabetic complications | 21/1067 | 100/8105 | 0.018874269 | 0.149613104 | 0.125020829 | 21 | 5590/5293/5295/4088/5578/1284/7124/6776/4772/7048/10000/7040/5579/23236/596/5581/185/2308/5335/5970/113026 |
| hsa04510 | Focal adhesion | 37/1067 | 201/8105 | 0.020269833 | 0.155751674 | 0.130150386 | 37 | 29780/5293/83660/8395/1793/5295/5908/4638/5578/1284/10627/7057/87/10000/3674/81/7148/3611/5829/3480/2321/3693/5579/80310/7410/3690/71/5155/5500/596/64098/56034/5159/3914/58498/3694/10451 |
| hsa05100 | Bacterial invasion of epithelial cells | 17/1067 | 77/8105 | 0.020607145 | 0.155751674 | 0.130150386 | 17 | 5293/9844/1793/5295/391/2017/1785/3611/5829/8976/71/1759/999/26052/79658/8218/10801 |
| hsa04151 | PI3K-Akt signaling pathway | 60/1067 | 354/8105 | 0.021639817 | 0.15983956 | 0.133566337 | 60 | 57521/6256/7039/5293/1385/4602/1441/7533/284/118788/5295/146850/5578/1284/6009/6446/1436/23239/7057/23533/10000/3674/7148/3480/2321/3693/3716/2260/5527/2788/80310/1440/3690/1129/2784/3570/5155/5518/64764/5529/5528/7534/4914/596/54331/9170/5519/2149/56034/5106/7249/5159/598/10971/3914/5970/10110/3694/4909/5562 |
| hsa05221 | Acute myeloid leukemia | 15/1067 | 67/8105 | 0.025399008 | 0.178311528 | 0.149002022 | 15 | 1053/4353/5293/861/5295/1436/6776/7704/3728/10000/6934/5914/8864/8900/5970 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa00562 | Inositol phosphate metabolism | 16/1067 | 73/8105 | 0.02584893 | 0.178311528 | 0.149002022 | 16 | 8871/5293/3632/8395/3635/3707/3631/5305/56623/23236/3613/55361/5297/5335/22876/113026 |
| hsa01521 | EGFR tyrosine kinase inhibitor resistance | 17/1067 | 79/8105 | 0.026098304 | 0.178311528 | 0.149002022 | 17 | 7039/5293/5295/5578/10000/3480/3716/5579/4763/80310/3570/5155/596/56034/5159/598/5335 |
| hsa04142 | Lysosome | 25/1067 | 128/8105 | 0.026335241 | 0.178311528 | 0.149002022 | 25 | 1522/1511/23659/3074/2588/6556/11154/22901/2581/1509/4891/1512/162/9516/1508/6272/4864/411/8906/533/968/8943/1203/8218/527 |
| hsa04213 | Longevity regulating pathway - multiple species | 14/1067 | 62/8105 | 0.028182113 | 0.183140389 | 0.153037151 | 14 | 57521/51422/108/5293/115/5295/10000/5564/3065/3480/847/196883/2308/5562 |
| hsa04064 | NF-kappa B signaling pathway | 21/1067 | 104/8105 | 0.028372378 | 0.183140389 | 0.153037151 | 21 | 27040/5328/3932/3554/7124/7186/7128/7185/10673/23085/8737/7132/5579/8915/9020/596/10912/598/1540/5335/5970 |
| hsa04750 | Inflammatory mediator regulation of TRP channels | 20/1067 | 98/8105 | 0.028738953 | 0.183140389 | 0.153037151 | 20 | 108/5293/3709/5608/115/3554/5295/5578/3708/5583/55515/3269/5579/23236/5500/196883/4914/5581/5335/51393 |
| hsa04150 | mTOR signaling pathway | 29/1067 | 155/8105 | 0.030291131 | 0.188087103 | 0.157170761 | 29 | 57521/6195/5293/8408/5295/5578/6009/7124/6446/6196/2887/10000/526/7132/3480/7481/5579/55615/8140/6396/51719/81029/57600/7249/9675/23175/10641/5562/528 |
| hsa05225 | Hepatocellular carcinoma | 31/1067 | 168/8105 | 0.030672666 | 0.188087103 | 0.157170761 | 31 | 7039/5293/5295/4088/5578/1871/7048/10000/6934/6595/3480/7481/7040/5579/2949/8312/57492/71/81029/4258/6602/4780/23401/6603/5925/9446/10912/598/5335/10587/119391 |
| hsa00310 | Lysine degradation | 14/1067 | 63/8105 | 0.032004848 | 0.188897216 | 0.157847714 | 14 | 29072/217/64754/55526/10919/8085/23067/7799/9739/63976/38/2122/54904/7468 |
| hsa04110 | Cell cycle | 24/1067 | 124/8105 | 0.032091853 | 0.188897216 | 0.157847714 | 24 | 51343/7027/8379/7533/4088/1871/4174/8881/7709/3065/993/7040/10274/4171/1387/902/7534/8900/5925/11200/51434/10912/8556/10971 |
| hsa00072 | Synthesis and degradation of ketone bodies | 4/1067 | 10/8105 | 0.032548443 | 0.188897216 | 0.157847714 | 4 | 622/3155/38/3157 |
| hsa00630 | Glyoxylate and dicarboxylate metabolism | 8/1067 | 30/8105 | 0.035936042 | 0.200840756 | 0.167828065 | 8 | 283871/132158/84532/189/847/55902/112817/38 |
| hsa04540 | Gap junction | 18/1067 | 88/8105 | 0.035961604 | 0.200840756 | 0.167828065 | 18 | 108/3709/1453/115/5578/3708/10383/2771/5579/80310/2767/5155/23236/7277/51807/196883/56034/5159 |
| hsa05230 | Central carbon metabolism in cancer | 15/1067 | 70/8105 | 0.036460322 | 0.200840756 | 0.167828065 | 15 | 3098/5293/9123/5295/6510/10000/5223/2260/8140/3099/4914/5315/5159/6513/23410 |
| hsa05130 | Pathogenic Escherichia coli infection | 35/1067 | 197/8105 | 0.037723393 | 0.201894856 | 0.1687089 | 35 | 4629/114548/3554/7456/2017/7124/7186/26999/8440/55971/4627/10458/10383/8737/5777/7132/8976/4644/71/7277/51807/840/9632/10787/9170/2768/27128/2149/9181/834/4641/23191/5970/7430/8772 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa05165 | Human papillomavirus infection | 55/1067 | 331/8105 | 0.037894111 | 0.201894856 | 0.1687089 | 55 | 5590/55534/5293/23352/1385/9794/5295/1284/6009/7124/84441/3107/7057/10000/3516/3134/3674/526/6934/7132/7148/3065/5829/7481/3693/3716/5527/8312/3690/81029/5518/1387/64764/5584/5529/5528/8900/5925/5315/4851/4855/5519/533/7337/7249/5159/2308/4599/3914/5970/3694/390992/8772/527/528 |
| hsa05418 | Fluid shear stress and atherosclerosis | 26/1067 | 139/8105 | 0.038810818 | 0.203443805 | 0.170003244 | 26 | 5590/5293/5608/3554/5295/7124/10000/3674/7132/4688/6383/2949/3690/71/658/4258/5155/4780/596/9446/4208/9181/4880/5970/119391/5562 |
| hsa05142 | Chagas disease | 20/1067 | 102/8105 | 0.042077596 | 0.217066965 | 0.181387132 | 20 | 811/3586/5293/5295/7124/6352/54106/7048/10000/2771/7132/7040/2767/5518/23236/2775/5519/713/5970/8772 |
| hsa00520 | Amino sugar and nucleotide sugar metabolism | 11/1067 | 48/8105 | 0.044013386 | 0.222283865 | 0.185746517 | 11 | 55577/3098/3074/51005/80896/1118/80146/3099/606495/5373/9945 |
| hsa04022 | cGMP-PKG signaling pathway | 30/1067 | 167/8105 | 0.045356893 | 0.222283865 | 0.185746517 | 30 | 108/3709/1385/486/4209/775/115/4638/146850/6546/4773/491/3708/4772/23533/10000/2771/2767/489/23236/64764/5500/196883/4208/5581/2768/4880/185/5140/10335 |
| hsa04730 | Long-term depression | 13/1067 | 60/8105 | 0.045582519 | 0.222283865 | 0.185746517 | 13 | 3709/5578/2781/3708/2771/3480/5579/2767/5518/23236/2775/5519/2768 |
| hsa04010 | MAPK signaling pathway | 49/1067 | 294/8105 | 0.045824674 | 0.222283865 | 0.185746517 | 49 | 7039/6195/4215/5608/775/284/93589/3554/5908/408/5578/7124/7186/1436/6196/4772/7048/10000/7132/8986/3480/2321/2260/7040/9693/5579/4763/80310/6788/5155/8569/23542/9020/409/51347/4914/4208/1845/2768/56034/7867/5159/10912/774/5970/2122/4909/2005/51776 |
| hsa00600 | Sphingolipid metabolism | 11/1067 | 49/8105 | 0.050277084 | 0.240294887 | 0.200797023 | 11 | 9517/2581/253782/56848/259230/166929/81537/130367/29956/64781/8613 |
| hsa00564 | Glycerophospholipid metabolism | 19/1067 | 98/8105 | 0.051559637 | 0.242853362 | 0.202934955 | 19 | 23659/5130/79888/5337/9489/1609/56994/1606/8527/51365/23646/1120/81490/23175/8760/11313/55326/55224/8613 |
| hsa04261 | Adrenergic signaling in cardiomyocytes | 27/1067 | 150/8105 | 0.054258507 | 0.251914496 | 0.210506688 | 27 | 3753/108/1385/486/775/93589/115/146850/6546/5578/491/23533/10000/2771/5527/489/5518/23236/64764/5500/3784/5529/5528/196883/596/5519/185 |
| hsa00601 | Glycosphingolipid biosynthesis - lacto and neolacto series | 7/1067 | 27/8105 | 0.055491838 | 0.253210386 | 0.21158957 | 7 | 2526/2529/84002/6484/8703/2651/10678 |
| hsa04962 | Vasopressin-regulated water reabsorption | 10/1067 | 44/8105 | 0.056095839 | 0.253210386 | 0.21158957 | 10 | 1639/1385/397/115/5878/5869/1778/10540/64764/360 |
| hsa04340 | Hedgehog signaling pathway | 12/1067 | 56/8105 | 0.057477305 | 0.25589211 | 0.213830492 | 12 | 23295/23288/1453/408/51684/8452/57154/1454/409/596/23291/156 |
| hsa03410 | Base excision repair | 8/1067 | 33/8105 | 0.059902472 | 0.261196289 | 0.21826281 | 8 | 5426/55247/7374/4913/143/4595/10714/56655 |
| hsa04935 | Growth hormone synthesis, secretion and action | 22/1067 | 119/8105 | 0.060276067 | 0.261196289 | 0.21826281 | 22 | 108/5293/3709/1385/5608/775/115/5295/5578/6776/3708/10000/2771/5579/2767/51738/1387/23236/64764/196883/5335/6750 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa05170 | Human immunodeficiency virus 1 infection | 36/1067 | 212/8105 | 0.062659029 | 0.267949796 | 0.223906226 | 36 | 811/3985/5293/3709/5608/7133/5295/5578/7124/7186/4773/3708/4772/3107/8737/10000/2771/3134/7132/5829/162/5579/2788/85363/2767/2784/8906/596/54331/2775/598/5335/5970/23291/8772/340061 |
| hsa04922 | Glucagon signaling pathway | 20/1067 | 107/8105 | 0.064452889 | 0.268629243 | 0.224473991 | 20 | 51422/108/3709/1385/3708/10000/5564/5223/32/1387/23236/64764/5315/31/5106/6513/2308/5140/1374/5562 |
| hsa04923 | Regulation of lipolysis in adipocytes | 12/1067 | 57/8105 | 0.064471018 | 0.268629243 | 0.224473991 | 12 | 57104/11343/108/5293/115/5295/10000/2771/196883/51099/5140/4852 |
| hsa04662 | B cell receptor signaling pathway | 16/1067 | 82/8105 | 0.066621613 | 0.270328638 | 0.225894052 | 16 | 5293/3635/118788/5295/4773/4772/10000/5777/5579/11006/973/7410/8915/27071/5970/10451 |
| hsa04670 | Leukocyte transendothelial migration | 21/1067 | 114/8105 | 0.067374214 | 0.270328638 | 0.225894052 | 21 | 5293/399/5295/5908/4689/5578/10627/87/2771/81/4688/5829/5579/83700/7410/71/3689/5335/58498/7430/10451 |
| hsa04724 | Glutamatergic synapse | 21/1067 | 114/8105 | 0.067374214 | 0.270328638 | 0.225894052 | 21 | 108/3709/775/115/5578/5337/3708/2771/2900/5579/2788/6506/2784/6511/23236/196883/6507/54331/2775/22941/156 |
| hsa04971 | Gastric acid secretion | 15/1067 | 76/8105 | 0.068253202 | 0.270515739 | 0.226050399 | 15 | 3772/108/3709/115/4638/5578/3708/2771/5579/71/23236/3784/196883/7430/6750 |
| hsa04921 | Oxytocin signaling pathway | 27/1067 | 154/8105 | 0.070967264 | 0.277417126 | 0.231817388 | 27 | 7226/51422/108/3709/775/93589/115/4638/146850/5578/4773/3708/10645/4772/23533/2771/5564/1827/5579/57118/71/23236/5500/196883/2775/4208/5562 |
| hsa05146 | Amoebiasis | 19/1067 | 102/8105 | 0.072185287 | 0.277417126 | 0.231817388 | 19 | 1511/3586/5293/3554/5295/5878/5869/5578/1284/7124/87/81/7040/5579/2767/23236/3689/3914/5970 |
| hsa04930 | Type II diabetes mellitus | 10/1067 | 46/8105 | 0.072555248 | 0.277417126 | 0.231817388 | 10 | 5590/3098/5293/775/5295/7124/3099/5315/5581/774 |
| hsa04066 | HIF-1 signaling pathway | 20/1067 | 109/8105 | 0.075354161 | 0.284768633 | 0.237960509 | 20 | 2023/3098/5293/284/5295/5578/10000/3480/2321/5579/2027/3099/3570/8569/1387/596/6513/5335/5970/5209 |
| hsa04392 | Hippo signaling pathway - multiple species | 7/1067 | 29/8105 | 0.077467654 | 0.289390661 | 0.241822804 | 7 | 8994/26524/25937/6788/1454/8463/122786 |
| hsa00620 | Pyruvate metabolism | 10/1067 | 47/8105 | 0.081811622 | 0.298750303 | 0.249643978 | 10 | 217/84532/5091/32/55902/5315/31/5106/38/98 |
| hsa04973 | Carbohydrate digestion and absorption | 10/1067 | 47/8105 | 0.081811622 | 0.298750303 | 0.249643978 | 10 | 6518/3098/5293/486/5295/8972/10000/5579/3099/23236 |
| hsa04660 | T cell receptor signaling pathway | 19/1067 | 104/8105 | 0.084335906 | 0.301420097 | 0.251874931 | 19 | 27040/3586/5293/3932/5295/7124/9402/8440/4773/4772/10000/5777/7410/5788/8915/9020/5335/5970/10451 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa05223 | Non-small cell lung cancer | 14/1067 | 72/8105 | 0.084397627 | 0.301420097 | 0.251874931 | 14 | 6256/7039/5293/5295/5578/1871/6776/10000/27436/5579/3800/5925/10912/5335 |
| hsa04910 | Insulin signaling pathway | 24/1067 | 137/8105 | 0.085468172 | 0.301925609 | 0.252297351 | 24 | 5590/57521/51422/3098/5293/3632/5575/5295/6009/10000/5564/3099/32/8569/5500/5584/31/5106/7249/2308/6720/5140/10211/5562 |
| hsa03015 | mRNA surveillance pathway | 18/1067 | 98/8105 | 0.087514994 | 0.30402827 | 0.254054392 | 18 | 10482/81608/51692/8761/9887/80335/100529063/8106/5527/26528/23293/5518/5500/5529/5528/5519/10898/64895 |
| hsa04014 | Ras signaling pathway | 38/1067 | 232/8105 | 0.08793433 | 0.30402827 | 0.254054392 | 38 | 8844/27040/7039/5293/284/5295/5908/5878/5869/9846/5578/5337/1436/9462/10000/22821/3480/10928/2321/2260/8831/5579/2788/4763/80310/2784/5155/2113/5898/4914/54331/51365/56034/5159/598/5335/5970/4909 |
| hsa04915 | Estrogen signaling pathway | 24/1067 | 138/8105 | 0.091170199 | 0.309617245 | 0.258724694 | 24 | 7039/108/5293/3709/1385/2289/115/5295/3708/1509/3872/10000/2771/5914/8648/23236/64764/196883/596/2550/2775/25984/9568/10499 |
| hsa00280 | Valine, leucine and isoleucine degradation | 10/1067 | 48/8105 | 0.091758526 | 0.309617245 | 0.258724694 | 10 | 27034/217/34/11112/593/197322/3155/38/3157/316 |
| hsa01524 | Platinum drug resistance | 14/1067 | 73/8105 | 0.092408839 | 0.309617245 | 0.258724694 | 14 | 5293/5295/1244/10000/2949/4258/596/9446/2067/598/540/7507/119391/8772 |
| hsa04145 | Phagosome | 26/1067 | 152/8105 | 0.094872362 | 0.314627733 | 0.262911595 | 26 | 3109/4353/811/4973/4689/5878/5869/1778/6441/3107/7057/10383/3134/526/81035/4688/3693/8685/3690/71/7277/51807/3689/533/527/528 |
| hsa00533 | Glycosaminoglycan biosynthesis - keratan sulfate | 4/1067 | 14/8105 | 0.101392484 | 0.330663726 | 0.276311713 | 4 | 9435/8703/6483/10678 |
| hsa04914 | Progesterone-mediated oocyte maturation | 18/1067 | 100/8105 | 0.101742685 | 0.330663726 | 0.276311713 | 18 | 51343/6195/8379/108/5293/115/5295/6196/10000/2771/8881/3480/993/22849/196883/8900/51434/5140 |
| hsa01523 | Antifolate resistance | 7/1067 | 31/8105 | 0.103833715 | 0.333164564 | 0.278401482 | 7 | 4363/7124/2352/1244/6573/8714/5970 |
| hsa04960 | Aldosterone-regulated sodium reabsorption | 8/1067 | 37/8105 | 0.104562417 | 0.333164564 | 0.278401482 | 8 | 5293/486/5295/5578/6446/9351/5579/3291 |
| hsa04350 | TGF-beta signaling pathway | 17/1067 | 94/8105 | 0.105882613 | 0.334095625 | 0.279179502 | 17 | 4052/7027/4088/7124/7048/7057/4092/7040/57154/658/5518/1387/5519/392255/3624/4838/9372 |
| hsa05214 | Glioma | 14/1067 | 75/8105 | 0.109804919 | 0.340515535 | 0.284544156 | 14 | 7039/5293/5295/5578/1871/10000/3480/5579/57118/5155/5925/5159/10912/5335 |
| hsa04024 | cAMP signaling pathway | 35/1067 | 216/8105 | 0.110012711 | 0.340515535 | 0.284544156 | 35 | 5144/108/5293/1385/486/84152/775/5348/115/5295/5908/5337/491/4772/10000/2771/2696/7410/1262/51738/1129/489/1387/64764/5500/196883/2550/2149/7434/9568/5140/5970/4852/6750/10451 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa05110 | Vibrio cholerae infection | 10/1067 | 50/8105 | 0.113714673 | 0.345395036 | 0.288621601 | 10 | 9414/115/5578/526/71/3784/533/5335/527/528 |
| hsa05144 | Malaria | 10/1067 | 50/8105 | 0.113714673 | 0.345395036 | 0.288621601 | 10 | 3586/7124/54106/7057/6383/7040/3043/1440/3689/2532 |
| hsa04530 | Tight junction | 28/1067 | 169/8105 | 0.115560499 | 0.347751502 | 0.290590729 | 28 | 5590/51422/4629/9414/861/2017/10627/123720/4627/87/81/5564/9693/83700/71/5518/7277/5584/51807/23370/5519/5581/55114/9181/4734/7430/11346/5562 |
| hsa04114 | Oocyte meiosis | 22/1067 | 129/8105 | 0.119772718 | 0.353873941 | 0.295706807 | 22 | 6195/8379/108/3709/7533/115/6196/3708/8881/3480/5527/22849/5518/5500/5529/5528/196883/7534/5519/51434/10971/23291 |
| hsa04926 | Relaxin signaling pathway | 22/1067 | 129/8105 | 0.119772718 | 0.353873941 | 0.295706807 | 22 | 5590/108/5293/1385/115/5295/408/5578/1284/7048/10000/2771/7040/2788/2784/23236/64764/409/196883/54331/2775/5970 |
| hsa00240 | Pyrimidine metabolism | 11/1067 | 57/8105 | 0.121859466 | 0.356795735 | 0.298148339 | 11 | 978/1807/953/50484/7084/7371/51733/4860/1635/1723/7083 |
| hsa04020 | Calcium signaling pathway | 38/1067 | 240/8105 | 0.127395166 | 0.369673474 | 0.308909332 | 38 | 108/845/3709/775/115/3707/4638/6546/5578/491/3708/2321/56413/2260/56848/3269/5579/80310/57118/2767/1129/489/5155/23236/219931/196883/4914/5023/2149/56034/185/5159/774/444/5335/5026/113026/844 |
| hsa04713 | Circadian entrainment | 17/1067 | 97/8105 | 0.131277801 | 0.374648289 | 0.313066425 | 17 | 108/1385/775/115/5578/3708/2771/9722/5579/2788/2784/23236/196883/8864/5187/54331/2775 |
| hsa00524 | Neomycin, kanamycin and gentamicin biosynthesis | 2/1067 | 5/8105 | 0.131975119 | 0.374648289 | 0.313066425 | 2 | 3098/3099 |
| hsa00770 | Pantothenate and CoA biosynthesis | 5/1067 | 21/8105 | 0.132567856 | 0.374648289 | 0.313066425 | 5 | 1807/339896/217/51733/60490 |
| hsa04625 | C-type lectin receptor signaling pathway | 18/1067 | 104/8105 | 0.134291272 | 0.376247098 | 0.314402433 | 18 | 8844/3586/5293/3709/114548/5295/7124/4773/3708/4772/10000/8915/9020/834/1540/5970/602/6367 |
| hsa04927 | Cortisol synthesis and secretion | 12/1067 | 65/8105 | 0.140023593 | 0.388954426 | 0.325021027 | 12 | 108/3709/1385/775/115/3708/56246/2767/23236/64764/196883/185 |
| hsa05417 | Lipid and atherosclerosis | 34/1067 | 215/8105 | 0.144504093 | 0.394780924 | 0.329889808 | 34 | 6256/5468/4973/5293/5608/2081/114548/5295/5908/4689/5578/7124/7186/6352/9619/4773/3708/4772/10000/57534/7132/4688/7410/19/23236/4780/840/5452/596/834/598/5335/5970/10451 |
| hsa05218 | Melanoma | 13/1067 | 72/8105 | 0.145454618 | 0.394780924 | 0.329889808 | 13 | 5293/5295/1871/10000/3480/2260/80310/5155/999/5925/56034/5159/10912 |
| hsa04658 | Th1 and Th2 cell differentiation | 16/1067 | 92/8105 | 0.146979975 | 0.394780924 | 0.329889808 | 16 | 3109/27040/55534/3932/9794/84441/4773/6776/4772/28514/3516/3716/4851/864/5335/5970 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa05222 | Small cell lung cancer | 16/1067 | 92/8105 | 0.146979975 | 0.394780924 | 0.329889808 | 16 | 6256/5293/5295/1284/1871/7186/7185/10000/3674/7709/5925/596/10912/598/3914/5970 |
| hsa00640 | Propanoate metabolism | 7/1067 | 34/8105 | 0.151212011 | 0.402818883 | 0.336606548 | 7 | 84532/32/55902/593/31/38/79611 |
| hsa04360 | Axon guidance | 29/1067 | 182/8105 | 0.156863805 | 0.414477534 | 0.346348838 | 29 | 10501/5590/10154/54434/3985/5293/5295/5578/8440/4773/2049/10627/64218/219699/10509/2771/54961/3611/22885/10507/658/81029/57522/5998/6586/5335/3983/6585/137970 |
| hsa00983 | Drug metabolism - other enzymes | 14/1067 | 80/8105 | 0.161165124 | 0.422408592 | 0.352976248 | 14 | 978/1807/4353/50484/7084/2949/7371/7172/4258/51733/9446/119391/7083/3614 |
| hsa05161 | Hepatitis B | 26/1067 | 162/8105 | 0.163117033 | 0.424104285 | 0.354393216 | 26 | 5293/6554/1385/5608/5295/4088/5578/1871/7124/4773/6776/4772/7048/10000/3716/7040/5579/1387/64764/7534/8900/5925/596/10971/5970/8772 |
| hsa05203 | Viral carcinogenesis | 32/1067 | 204/8105 | 0.164522872 | 0.424364551 | 0.354610702 | 32 | 9759/2934/8379/5293/23352/1385/55697/51564/7533/5295/7186/7185/6776/3107/87/3516/3134/81/3065/5829/3716/1387/64764/7534/8900/5925/5315/6672/7337/27044/10971/5970 |
| hsa00430 | Taurine and hypotaurine metabolism | 3/1067 | 11/8105 | 0.167641091 | 0.429002791 | 0.358486543 | 3 | 339896/2678/84890 |
| hsa00561 | Glycerolipid metabolism | 11/1067 | 61/8105 | 0.171950129 | 0.436592125 | 0.364828399 | 11 | 57104/11343/3990/217/132158/1609/1606/8527/23175/55326/8613 |
| hsa00450 | Selenocompound metabolism | 4/1067 | 17/8105 | 0.176486383 | 0.442761952 | 0.369984076 | 4 | 51540/9060/10587/4141 |
| hsa04664 | Fc epsilon RI signaling pathway | 12/1067 | 68/8105 | 0.177104781 | 0.442761952 | 0.369984076 | 12 | 27040/5293/5608/3635/5295/9846/5578/7124/10000/7410/5335/10451 |
| hsa00440 | Phosphonate and phosphinate metabolism | 2/1067 | 6/8105 | 0.181247573 | 0.442995784 | 0.370179473 | 2 | 5130/56994 |
| hsa00750 | Vitamin B6 metabolism | 2/1067 | 6/8105 | 0.181247573 | 0.442995784 | 0.370179473 | 2 | 8566/316 |
| hsa04918 | Thyroid hormone synthesis | 13/1067 | 75/8105 | 0.181287505 | 0.442995784 | 0.370179473 | 13 | 108/3709/1385/486/115/5578/3708/7038/433/5579/23236/64764/196883 |
| hsa04140 | Autophagy - animal | 22/1067 | 137/8105 | 0.186656934 | 0.444715122 | 0.371616199 | 22 | 57521/5293/8408/2081/5295/6009/26100/3708/1509/10645/10000/7405/3480/22863/1508/23604/596/81671/7249/598/1613/5562 |
| hsa05167 | Kaposi sarcoma-associated herpesvirus infection | 30/1067 | 193/8105 | 0.187310317 | 0.444715122 | 0.371616199 | 30 | 5293/3709/1385/5608/5295/146850/1871/7186/4773/3708/4772/3107/23533/10000/3134/6934/7132/57580/1827/3716/2788/22863/2784/5155/1387/5925/54331/5335/5970/8772 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa04727 | GABAergic synapse | 15/1067 | 89/8105 | 0.187464528 | 0.444715122 | 0.371616199 | 15 | 108/775/115/5578/2771/5579/2788/2784/196883/5334/54331/2550/2775/774/9568 |
| hsa05235 | PD-L1 expression and PD-1 checkpoint pathway in cancer | 15/1067 | 89/8105 | 0.187464528 | 0.444715122 | 0.371616199 | 15 | 27040/5293/4215/3932/5608/5295/4773/54106/4772/10000/27436/5777/3716/5335/5970 |
| hsa03320 | PPAR signaling pathway | 13/1067 | 76/8105 | 0.194101779 | 0.457123754 | 0.381985194 | 13 | 6256/5468/4973/2180/5360/3611/34/2172/8309/5106/3157/6319/1374 |
| hsa05410 | Hypertrophic cardiomyopathy | 15/1067 | 90/8105 | 0.199395664 | 0.463568974 | 0.387370997 | 15 | 51422/7273/775/93589/6546/7124/3674/5564/3693/7040/3690/71/489/3694/5562 |
| hsa05120 | Epithelial cell signaling in Helicobacter pylori infection | 12/1067 | 70/8105 | 0.204192496 | 0.463568974 | 0.387370997 | 12 | 6352/28964/526/83700/1445/3577/9020/533/5335/5970/527/528 |
| hsa04621 | NOD-like receptor signaling pathway | 28/1067 | 181/8105 | 0.204569771 | 0.463568974 | 0.387370997 | 28 | 1669/7226/58484/9447/3709/9051/114548/4210/7124/7186/7128/6352/3708/8737/3716/11035/1508/23236/64127/596/7158/10059/834/598/51393/5970/8772/340061 |
| hsa00061 | Fatty acid biosynthesis | 4/1067 | 18/8105 | 0.204803064 | 0.463568974 | 0.387370997 | 4 | 2180/32/31/197322 |
| hsa00510 | N-Glycan biosynthesis | 9/1067 | 50/8105 | 0.205024239 | 0.463568974 | 0.387370997 | 9 | 6184/4249/11320/4248/6480/8703/440138/57134/1798 |
| hsa05143 | African trypanosomiasis | 7/1067 | 37/8105 | 0.206823081 | 0.463568974 | 0.387370997 | 7 | 3586/5578/7124/54106/5579/3043/23236 |
| hsa05216 | Thyroid cancer | 7/1067 | 37/8105 | 0.206823081 | 0.463568974 | 0.387370997 | 7 | 6256/5468/6934/4914/999/10912/8031 |
| hsa04925 | Aldosterone synthesis and secretion | 16/1067 | 98/8105 | 0.213123455 | 0.47441865 | 0.396437285 | 16 | 108/3709/1385/775/115/5578/491/3708/5579/57118/2767/23236/64764/196883/5581/185 |
| hsa04721 | Synaptic vesicle cycle | 13/1067 | 78/8105 | 0.220925001 | 0.488439629 | 0.408153601 | 13 | 160/1785/526/6506/6511/1759/6507/26052/533/774/8218/527/528 |
| hsa04610 | Complement and coagulation cascades | 14/1067 | 85/8105 | 0.222847624 | 0.489361336 | 0.408923804 | 14 | 5265/5328/719/1604/5055/5648/1191/2161/966/716/3689/1361/2149/713 |
| hsa02010 | ABC transporters | 8/1067 | 45/8105 | 0.234260876 | 0.51097171 | 0.426982028 | 8 | 4363/9619/1244/1672/19/8714/11194/85320 |
| hsa04061 | Viral protein interaction with cytokine and cytokine receptor | 16/1067 | 100/8105 | 0.237750432 | 0.512300518 | 0.428092416 | 16 | 3586/7133/729230/7124/6352/1436/7132/10803/6364/3577/3570/8807/8809/10850/6367/1524 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa04659 | Th17 cell differentiation | 17/1067 | 107/8105 | 0.238022702 | 0.512300518 | 0.428092416 | 17 | 3109/27040/6256/3932/861/3554/4088/4773/6776/4772/7048/3716/7040/5914/3570/5335/5970 |
| hsa04141 | Protein processing in endoplasmic reticulum | 26/1067 | 171/8105 | 0.242745737 | 0.516852313 | 0.431896022 | 26 | 5034/811/6184/2081/267/8720/10483/7186/10960/9695/51009/22824/118424/6396/55741/4780/9632/596/165324/57134/7322/7993/22872/258010/10299/5071 |
| hsa04370 | VEGF signaling pathway | 10/1067 | 59/8105 | 0.243318166 | 0.516852313 | 0.431896022 | 10 | 5293/5295/5578/4773/10000/5829/56848/5579/7867/5335 |
| hsa04115 | p53 signaling pathway | 12/1067 | 73/8105 | 0.247921276 | 0.523210486 | 0.437209086 | 12 | 3732/7057/50484/64065/84883/596/11200/7249/10912/598/9540/10572 |
| hsa00563 | Glycosylphosphatidylinositol (GPI)-anchor biosynthesis | 5/1067 | 26/8105 | 0.251617766 | 0.527585639 | 0.440865085 | 5 | 9487/128869/2822/23556/9091 |
| hsa00010 | Glycolysis / Gluconeogenesis | 11/1067 | 67/8105 | 0.262087404 | 0.539171438 | 0.450546497 | 11 | 2023/3098/217/83440/5223/84532/2027/3099/55902/5315/5106 |
| hsa04720 | Long-term potentiation | 11/1067 | 67/8105 | 0.262087404 | 0.539171438 | 0.450546497 | 11 | 6195/3709/775/5908/5578/6196/3708/5579/1387/23236/5500 |
| hsa00051 | Fructose and mannose metabolism | 6/1067 | 33/8105 | 0.262120268 | 0.539171438 | 0.450546497 | 6 | 3098/5210/55556/3099/5373/5209 |
| hsa00670 | One carbon pool by folate | 4/1067 | 20/8105 | 0.264756459 | 0.541168862 | 0.4522156 | 4 | 25902/10588/100528021/4522 |
| hsa04068 | FoxO signaling pathway | 20/1067 | 131/8105 | 0.271781493 | 0.551350033 | 0.460723266 | 20 | 51422/3586/5293/5295/4088/6446/7048/10000/5564/3480/7040/1454/1387/847/8698/5106/2308/10912/10110/5562 |
| hsa00514 | Other types of O-glycan biosynthesis | 8/1067 | 47/8105 | 0.273130324 | 0.551350033 | 0.460723266 | 8 | 2590/152002/79695/727936/29954/6480/8703/50614 |
| hsa04714 | Thermogenesis | 34/1067 | 232/8105 | 0.275015409 | 0.551728444 | 0.461039477 | 34 | 57104/57521/51422/9658/11343/5468/6195/108/2180/1385/90639/115/6009/137682/6196/4720/6595/5564/2260/4728/57492/71/64764/6602/63976/196883/6603/4712/56901/7249/6392/1374/5562/10476 |
| hsa05414 | Dilated cardiomyopathy | 15/1067 | 96/8105 | 0.277599186 | 0.553495309 | 0.462515918 | 15 | 108/7273/775/93589/115/6546/7124/3674/3693/7040/3690/71/489/196883/3694 |
| hsa03440 | Homologous recombination | 7/1067 | 41/8105 | 0.290506351 | 0.575698562 | 0.481069568 | 7 | 641/675/5893/146956/10714/84142/9577 |
| hsa05211 | Renal cell carcinoma | 11/1067 | 69/8105 | 0.295188947 | 0.57866089 | 0.483544971 | 11 | 7039/5293/5295/5908/10000/7040/5155/1387/2113/2034/6513 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa04270 | Vascular smooth muscle contraction | 20/1067 | 133/8105 | 0.295562178 | 0.57866089 | 0.483544971 | 20 | 108/3709/4629/775/115/4638/5578/3708/4627/5583/5579/2767/23236/5500/196883/5581/2768/4880/185/10335 |
| hsa04934 | Cushing syndrome | 23/1067 | 155/8105 | 0.300335251 | 0.584484769 | 0.488411564 | 23 | 108/3709/1385/775/9070/115/5908/1871/3708/9049/2771/6934/56246/7481/8312/8085/2767/81029/23236/64764/196883/5925/185 |
| hsa00604 | Glycosphingolipid biosynthesis - ganglio series | 3/1067 | 15/8105 | 0.315479476 | 0.610302558 | 0.509985619 | 3 | 3074/9197/6483 |
| hsa04640 | Hematopoietic cell lineage | 15/1067 | 99/8105 | 0.320105175 | 0.615586875 | 0.51440134 | 15 | 3109/2815/928/1441/1604/3554/7124/1436/3674/966/1440/3690/3570/951/945 |
| hsa00340 | Histidine metabolism | 4/1067 | 22/8105 | 0.327375184 | 0.625864322 | 0.522989457 | 4 | 3034/217/55748/3176 |
| hsa03030 | DNA replication | 6/1067 | 36/8105 | 0.334609185 | 0.634326093 | 0.530060347 | 6 | 5426/4174/23649/4171/10714/56655 |
| hsa05152 | Tuberculosis | 26/1067 | 180/8105 | 0.335849867 | 0.634326093 | 0.530060347 | 26 | 3109/8844/3586/1385/7421/5878/5869/7124/54106/1509/10000/7132/3716/56848/7040/8915/1387/3689/3656/64127/596/533/1051/5970/8772/527 |
| hsa05323 | Rheumatoid arthritis | 14/1067 | 93/8105 | 0.337656659 | 0.634326093 | 0.530060347 | 14 | 3109/284/7124/6352/10673/526/2321/7040/6364/3689/533/8741/527/528 |
| hsa04911 | Insulin secretion | 13/1067 | 86/8105 | 0.340688019 | 0.636342564 | 0.531745366 | 13 | 108/1385/486/775/115/5578/3780/5579/2767/23236/64764/196883/6513 |
| hsa04310 | Wnt signaling pathway | 24/1067 | 166/8105 | 0.342719961 | 0.636479928 | 0.53186015 | 24 | 4088/81839/5578/4773/29964/4772/166336/6934/7481/5579/8312/7088/1487/1488/81029/1454/1387/23236/23401/23002/57680/8607/23291/8840 |
| hsa00230 | Purine metabolism | 19/1067 | 130/8105 | 0.348564709 | 0.642066121 | 0.536528127 | 19 | 5144/272/5145/108/953/115/50484/5149/5152/4860/2987/196883/9060/5315/204/51292/26289/5140/3614 |
| hsa05321 | Inflammatory bowel disease | 10/1067 | 65/8105 | 0.349679087 | 0.642066121 | 0.536528127 | 10 | 3109/3586/4088/7124/4772/7040/8807/64127/8809/5970 |
| hsa00730 | Thiamine metabolism | 3/1067 | 16/8105 | 0.35375056 | 0.643140875 | 0.537426221 | 3 | 249/204/26289 |
| hsa01200 | Carbon metabolism | 17/1067 | 116/8105 | 0.356108103 | 0.643140875 | 0.537426221 | 17 | 2023/3098/283871/4967/83440/5223/132158/84532/5091/2027/189/3099/847/55902/5315/38/6392 |
| hsa00515 | Mannose type O-glycan biosynthesis | 4/1067 | 23/8105 | 0.359067804 | 0.643140875 | 0.537426221 | 4 | 2526/29954/8703/11041 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa04614 | Renin-angiotensin system | 4/1067 | 23/8105 | 0.359067804 | 0.643140875 | 0.537426221 | 4 | 1511/4012/5550/185 |
| hsa00410 | beta-Alanine metabolism | 5/1067 | 30/8105 | 0.36015889 | 0.643140875 | 0.537426221 | 5 | 1807/339896/217/55748/51733 |
| hsa04972 | Pancreatic secretion | 15/1067 | 102/8105 | 0.364117147 | 0.644461226 | 0.538529542 | 15 | 108/3709/486/115/5908/5578/491/3708/5579/489/23236/219931/3784/196883/1361 |
| hsa04613 | Neutrophil extracellular trap formation | 27/1067 | 190/8105 | 0.364864202 | 0.644461226 | 0.538529542 | 27 | 566/1991/9759/1511/4353/5293/51564/5295/4689/5578/2358/2357/10000/3674/4688/3065/5579/3690/71/23236/3689/834/5335/5970/366/55506/8350 |
| hsa04974 | Protein digestion and absorption | 15/1067 | 103/8105 | 0.379017281 | 0.665841169 | 0.556395211 | 15 | 91522/1308/486/6510/6546/1284/1303/9056/7373/3784/285641/1289/1361/23428/340267 |
| hsa00534 | Glycosaminoglycan biosynthesis - heparan sulfate / heparin | 4/1067 | 24/8105 | 0.390720623 | 0.677202743 | 0.565889256 | 4 | 9953/3340/64131/11285 |
| hsa00120 | Primary bile acid biosynthesis | 3/1067 | 17/8105 | 0.39173574 | 0.677202743 | 0.565889256 | 3 | 23600/6718/8309 |
| hsa00910 | Nitrogen metabolism | 3/1067 | 17/8105 | 0.39173574 | 0.677202743 | 0.565889256 | 3 | 761/759/771 |
| hsa05145 | Toxoplasmosis | 16/1067 | 112/8105 | 0.40337483 | 0.686841131 | 0.573943358 | 16 | 3109/3586/5608/146850/7124/23533/10000/2771/7132/3716/7040/596/2775/598/3914/5970 |
| hsa04514 | Cell adhesion molecules | 21/1067 | 149/8105 | 0.403688824 | 0.686841131 | 0.573943358 | 21 | 3109/57863/4685/3107/10666/3134/6383/1001/201633/9378/83700/5788/1002/9019/9379/3689/999/8506/23705/5818/64115 |
| hsa04976 | Bile secretion | 13/1067 | 90/8105 | 0.405028304 | 0.686841131 | 0.573943358 | 13 | 6256/200931/108/6554/486/115/1244/358/8714/196883/2052/6513/366 |
| hsa00513 | Various types of N-glycan biosynthesis | 6/1067 | 39/8105 | 0.409016653 | 0.686841131 | 0.573943358 | 6 | 6184/3074/11320/8703/440138/57134 |
| hsa05169 | Epstein-Barr virus infection | 28/1067 | 202/8105 | 0.414952164 | 0.686841131 | 0.573943358 | 28 | 3109/811/9612/5293/953/5608/5295/1871/7124/7186/7128/3107/8737/10000/3516/3134/3065/3716/9020/8900/5925/596/4734/864/10912/5970/8772/5719 |
| hsa00512 | Mucin type O-glycan biosynthesis | 5/1067 | 32/8105 | 0.415390504 | 0.686841131 | 0.573943358 | 5 | 2590/55808/79695/50614/6483 |
| hsa04215 | Apoptosis - multiple species | 5/1067 | 32/8105 | 0.415390504 | 0.686841131 | 0.573943358 | 5 | 7132/840/596/598/8772 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa04932 | Non-alcoholic fatty liver disease | 21/1067 | 150/8105 | 0.416315349 | 0.686841131 | 0.573943358 | 21 | 51422/6256/5293/2081/5295/7124/7186/10000/4720/7132/5564/7040/4728/3570/840/4712/56901/6720/5970/6392/5562 |
| hsa05133 | Pertussis | 11/1067 | 76/8105 | 0.417367383 | 0.686841131 | 0.573943358 | 11 | 3394/3586/114548/7124/2771/716/840/3689/834/713/5970 |
| hsa03460 | Fanconi anemia pathway | 8/1067 | 54/8105 | 0.418444751 | 0.686841131 | 0.573943358 | 8 | 641/675/116028/146956/2175/2067/84464/11201 |
| hsa05017 | Spinocerebellar ataxia | 20/1067 | 143/8105 | 0.421916037 | 0.688378503 | 0.575228028 | 20 | 5293/3709/8408/2081/5295/5578/7186/26100/6310/3708/10000/3516/5579/22863/489/6511/23236/5695/2259/5719 |
| hsa04924 | Renin secretion | 10/1067 | 69/8105 | 0.424171231 | 0.688378503 | 0.575228028 | 10 | 3709/1385/775/3708/2771/358/1508/23236/185/5140 |
| hsa03420 | Nucleotide excision repair | 7/1067 | 47/8105 | 0.425735628 | 0.688378503 | 0.575228028 | 7 | 5426/902/2067/10714/7507/2068/56655 |
| hsa05140 | Leishmaniasis | 11/1067 | 77/8105 | 0.435122038 | 0.696623952 | 0.582118153 | 11 | 3109/3586/4689/7124/5777/4688/3716/7040/5579/3689/5970 |
| hsa05412 | Arrhythmogenic right ventricular cardiomyopathy | 11/1067 | 77/8105 | 0.435122038 | 0.696623952 | 0.582118153 | 11 | 775/93589/6546/3728/3674/6934/3693/3690/71/489/3694 |
| hsa05205 | Proteoglycans in cancer | 28/1067 | 205/8105 | 0.447760728 | 0.713344298 | 0.596090134 | 28 | 5328/5293/3709/5295/5578/2017/7124/3708/7057/10000/5777/6383/5829/3480/7481/3693/2260/7040/5579/7410/3690/71/81029/5500/287/5335/7430/10451 |
| hsa04623 | Cytosolic DNA-sensing pathway | 9/1067 | 63/8105 | 0.451239393 | 0.715379525 | 0.597790826 | 9 | 9447/5435/6352/8737/11035/834/5970/51082/340061 |
| hsa04912 | GnRH signaling pathway | 13/1067 | 93/8105 | 0.453745272 | 0.715860259 | 0.59819254 | 13 | 108/3709/4215/5608/775/115/5578/5337/3708/5579/2767/23236/196883 |
| hsa05219 | Bladder cancer | 6/1067 | 41/8105 | 0.458317506 | 0.718137604 | 0.600095552 | 6 | 1871/7057/999/23604/5925/1613 |
| hsa05210 | Colorectal cancer | 12/1067 | 86/8105 | 0.461803078 | 0.718137604 | 0.600095552 | 12 | 7039/5293/5295/4088/7048/10000/6934/7040/8312/5898/596/10912 |
| hsa04916 | Melanogenesis | 14/1067 | 101/8105 | 0.461817721 | 0.718137604 | 0.600095552 | 14 | 108/1385/115/5578/2771/6934/7481/5579/81029/1387/23236/64764/196883/2775 |
| hsa00531 | Glycosaminoglycan degradation | 3/1067 | 19/8105 | 0.465648348 | 0.720646252 | 0.602191848 | 3 | 3074/2588/411 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa00565 | Ether lipid metabolism | 7/1067 | 49/8105 | 0.470820287 | 0.721776383 | 0.603136216 | 7 | 79888/5337/56994/23646/387521/387522/8613 |
| hsa04672 | Intestinal immune network for IgA production | 7/1067 | 49/8105 | 0.470820287 | 0.721776383 | 0.603136216 | 7 | 3109/3586/10673/10803/7040/9020/8741 |
| hsa01212 | Fatty acid metabolism | 8/1067 | 57/8105 | 0.481297089 | 0.730987268 | 0.610833086 | 8 | 2180/34/31/197322/38/6319/1374/37 |
| hsa00380 | Tryptophan metabolism | 6/1067 | 42/8105 | 0.482606145 | 0.730987268 | 0.610833086 | 6 | 217/55526/1644/847/38/316 |
| hsa04966 | Collecting duct acid secretion | 4/1067 | 27/8105 | 0.483576193 | 0.730987268 | 0.610833086 | 4 | 526/10723/527/528 |
| hsa04723 | Retrograde endocannabinoid signaling | 20/1067 | 148/8105 | 0.486757134 | 0.732389206 | 0.612004583 | 20 | 11343/108/3709/775/115/5578/3708/2771/4720/5579/4728/2788/2784/23236/196883/54331/2775/4712/56901/774 |
| hsa04979 | Cholesterol metabolism | 7/1067 | 50/8105 | 0.493044117 | 0.738244079 | 0.616897077 | 7 | 114879/3990/5360/19/6272/4864/55908 |
| hsa00760 | Nicotinate and nicotinamide metabolism | 5/1067 | 35/8105 | 0.496427465 | 0.738244079 | 0.616897077 | 5 | 65220/349565/4860/23410/316 |
| hsa05213 | Endometrial cancer | 8/1067 | 58/8105 | 0.501900201 | 0.738244079 | 0.616897077 | 8 | 5293/5295/10000/6934/3611/8312/999/10912 |
| hsa05150 | Staphylococcus aureus infection | 13/1067 | 96/8105 | 0.502044529 | 0.738244079 | 0.616897077 | 13 | 1669/3109/3586/719/2358/2357/3872/5648/1672/716/3689/25984/713 |
| hsa05164 | Influenza A | 23/1067 | 172/8105 | 0.502271529 | 0.738244079 | 0.616897077 | 23 | 3109/10482/11100/5293/114548/5295/8480/5578/7124/6352/10000/7132/3716/100529063/8106/5579/71/1387/834/4599/5970/10898/8772 |
| hsa00471 | D-Glutamine and D-glutamate metabolism | 1/1067 | 5/8105 | 0.506371815 | 0.738244079 | 0.616897077 | 1 | 80017 |
| hsa00071 | Fatty acid degradation | 6/1067 | 43/8105 | 0.506549014 | 0.738244079 | 0.616897077 | 6 | 2180/217/34/38/1374/37 |
| hsa00650 | Butanoate metabolism | 4/1067 | 28/8105 | 0.513310914 | 0.743852945 | 0.621583999 | 4 | 622/3155/38/3157 |
| hsa00330 | Arginine and proline metabolism | 7/1067 | 51/8105 | 0.514975116 | 0.743852945 | 0.621583999 | 7 | 217/4953/55748/8659/112817/112483/8974 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa04550 | Signaling pathways regulating pluripotency of stem cells | 19/1067 | 143/8105 | 0.520551251 | 0.74483042 | 0.622400805 | 19 | 5293/5295/4088/463/10000/3480/7481/3716/2260/8312/658/81029/2103/4211/6929/10336/3624/4838/3976 |
| hsa04978 | Mineral absorption | 8/1067 | 59/8105 | 0.522247631 | 0.74483042 | 0.622400805 | 8 | 486/7421/6546/491/4891/140803/475/540 |
| hsa00350 | Tyrosine metabolism | 5/1067 | 36/8105 | 0.522527187 | 0.74483042 | 0.622400805 | 5 | 3081/1312/1644/2184/316 |
| hsa01522 | Endocrine resistance | 13/1067 | 98/8105 | 0.533681161 | 0.757407761 | 0.632910777 | 13 | 108/5293/115/5295/1871/28514/10000/3480/196883/5925/596/4851/4855 |
| hsa04744 | Phototransduction | 4/1067 | 29/8105 | 0.542230866 | 0.766195789 | 0.640254295 | 4 | 5957/5145/2780/131890 |
| hsa04726 | Serotonergic synapse | 15/1067 | 115/8105 | 0.557605365 | 0.784509713 | 0.655557914 | 15 | 3709/775/5578/3708/1644/2771/351/5579/2788/3359/2784/23236/54331/2775/774 |
| hsa04650 | Natural killer cell mediated cytotoxicity | 17/1067 | 131/8105 | 0.565116442 | 0.788632469 | 0.659003003 | 17 | 27040/5293/3932/6452/5295/5578/7124/4773/4772/3107/5777/9437/5579/7410/3689/5335/10451 |
| hsa05031 | Amphetamine addiction | 9/1067 | 69/8105 | 0.565974533 | 0.788632469 | 0.659003003 | 9 | 1385/84152/775/5578/1644/3065/5579/64764/5500 |
| hsa00900 | Terpenoid backbone biosynthesis | 3/1067 | 22/8105 | 0.568137827 | 0.788632469 | 0.659003003 | 3 | 3422/38/3157 |
| hsa00020 | Citrate cycle (TCA cycle) | 4/1067 | 30/8105 | 0.570241939 | 0.788632469 | 0.659003003 | 4 | 4967/5091/5106/6392 |
| hsa05330 | Allograft rejection | 5/1067 | 38/8105 | 0.572850081 | 0.788882527 | 0.659211958 | 5 | 3109/3586/7124/3107/3134 |
| hsa04120 | Ubiquitin mediated proteolysis | 18/1067 | 140/8105 | 0.581546214 | 0.797478986 | 0.666395395 | 18 | 51343/23295/11060/8916/8452/63893/8881/118424/23221/57154/92912/7337/4734/51434/9320/23291/7322/5071 |
| hsa05415 | Diabetic cardiomyopathy | 26/1067 | 203/8105 | 0.592561374 | 0.809169943 | 0.676164681 | 26 | 5590/5293/5295/4689/4088/5578/1509/7048/10000/4720/4688/7040/5579/4728/489/23236/5500/4712/9945/56901/185/6513/5970/6392/10476/5524 |
| hsa05310 | Asthma | 4/1067 | 31/8105 | 0.597268241 | 0.811820655 | 0.678379689 | 4 | 3109/3586/6037/7124 |
| hsa04964 | Proximal tubule bicarbonate reclamation | 3/1067 | 23/8105 | 0.59949833 | 0.811820655 | 0.678379689 | 3 | 486/358/5106 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa00603 | Glycosphingolipid biosynthesis - globo and isoglobo series | 2/1067 | 15/8105 | 0.60619597 | 0.817484191 | 0.683112296 | 2 | 3074/6483 |
| hsa04722 | Neurotrophin signaling pathway | 15/1067 | 119/8105 | 0.613499317 | 0.823914372 | 0.688485532 | 15 | 6195/5293/4215/397/5295/5908/6196/10000/6272/3656/4914/596/5335/5970/4909 |
| hsa00260 | Glycine, serine and threonine metabolism | 5/1067 | 40/8105 | 0.620255154 | 0.829559363 | 0.693202642 | 5 | 875/5223/132158/189/211 |
| hsa04977 | Vitamin digestion and absorption | 3/1067 | 24/8105 | 0.629323717 | 0.838238557 | 0.700455215 | 3 | 4363/6573/9963 |
| hsa00480 | Glutathione metabolism | 7/1067 | 57/8105 | 0.637725249 | 0.841529218 | 0.703204982 | 7 | 2678/4953/50484/2949/4258/9446/119391 |
| hsa05134 | Legionellosis | 7/1067 | 57/8105 | 0.637725249 | 0.841529218 | 0.703204982 | 7 | 58484/7124/840/3689/834/23786/5970 |
| hsa05030 | Cocaine addiction | 6/1067 | 49/8105 | 0.639562206 | 0.841529218 | 0.703204982 | 6 | 1385/84152/1644/2771/64764/5970 |
| hsa05224 | Breast cancer | 18/1067 | 147/8105 | 0.667219238 | 0.87438005 | 0.730656042 | 18 | 5293/675/5295/1871/28514/10000/6934/3480/7481/2260/8312/81029/8648/23401/5925/4851/4855/10912 |
| hsa04950 | Maturity onset diabetes of the young | 3/1067 | 26/8105 | 0.684242088 | 0.888770041 | 0.742680715 | 3 | 6927/3087/2494 |
| hsa04940 | Type I diabetes mellitus | 5/1067 | 43/8105 | 0.685155249 | 0.888770041 | 0.742680715 | 5 | 3109/7124/3107/3134/5799 |
| hsa05226 | Gastric cancer | 18/1067 | 149/8105 | 0.689895502 | 0.888770041 | 0.742680715 | 18 | 6256/5293/5295/4088/1871/3728/7048/10000/6934/7481/7040/8312/81029/23401/999/5925/596/10912 |
| hsa05160 | Hepatitis C | 19/1067 | 157/8105 | 0.68995895 | 0.888770041 | 0.742680715 | 19 | 6256/5293/7533/5295/1871/7124/7186/8737/10000/7132/3716/5518/7534/5925/5519/4599/10971/5970/8772 |
| hsa05416 | Viral myocarditis | 7/1067 | 60/8105 | 0.691873294 | 0.888770041 | 0.742680715 | 7 | 3109/1604/3107/3134/71/3689/1981 |
| hsa04970 | Salivary secretion | 11/1067 | 93/8105 | 0.695094094 | 0.889392049 | 0.743200481 | 11 | 108/3709/486/115/4025/5578/491/3708/5579/23236/196883 |
| hsa00511 | Other glycan degradation | 2/1067 | 18/8105 | 0.706480344 | 0.899749089 | 0.751855109 | 2 | 3074/4123 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa04657 | IL-17 signaling pathway | 11/1067 | 94/8105 | 0.708725436 | 0.899749089 | 0.751855109 | 11 | 6279/3934/7124/7186/7128/1440/6364/10758/1051/5970/8772 |
| hsa04620 | Toll-like receptor signaling pathway | 12/1067 | 104/8105 | 0.731807706 | 0.925437761 | 0.77332127 | 12 | 3663/5293/54472/5608/5295/7124/6352/54106/8737/10000/5970/8772 |
| hsa04512 | ECM-receptor interaction | 10/1067 | 88/8105 | 0.738486373 | 0.930263842 | 0.777354076 | 10 | 2815/22987/1284/7057/3674/7148/3693/3690/3914/3694 |
| hsa04630 | JAK-STAT signaling pathway | 19/1067 | 162/8105 | 0.741413189 | 0.930344735 | 0.777421673 | 19 | 3586/1439/5293/1441/5295/6776/10000/5777/3716/1440/3570/5155/2670/1387/596/5159/598/3976/316 |
| hsa05340 | Primary immunodeficiency | 4/1067 | 38/8105 | 0.75569058 | 0.941933767 | 0.787105788 | 4 | 3932/7374/973/5788 |
| hsa00920 | Sulfur metabolism | 1/1067 | 10/8105 | 0.756445272 | 0.941933767 | 0.787105788 | 1 | 9060 |
| hsa01240 | Biosynthesis of cofactors | 18/1067 | 156/8105 | 0.761959255 | 0.945178465 | 0.789817146 | 18 | 65220/25902/217/349565/249/2235/211/5498/5373/8566/4522/60490/5315/204/4143/26289/124454/1723 |
| hsa04146 | Peroxisome | 9/1067 | 82/8105 | 0.769115526 | 0.950427931 | 0.794203745 | 9 | 2180/55711/23600/189/847/55670/8309/3155/8799 |
| hsa04060 | Cytokine-cytokine receptor interaction | 35/1067 | 295/8105 | 0.77402397 | 0.952870418 | 0.796244754 | 35 | 246778/3586/1439/3603/1441/7133/3554/729230/7124/6352/1436/10673/7048/7132/27242/10803/7040/3557/284340/1440/6364/658/3577/3570/8807/8809/392255/8742/8741/10850/3624/4838/6367/3976/1524 |
| hsa05016 | Huntington disease | 36/1067 | 306/8105 | 0.793437547 | 0.970641449 | 0.811094717 | 36 | 1639/160/5468/55567/1385/8408/2081/7186/5435/4899/26100/3708/10383/4720/3065/10540/4728/6506/3064/22863/3800/1387/23236/64764/7277/51807/6507/5695/4712/56901/774/64446/6392/8218/5719/10476 |
| hsa00052 | Galactose metabolism | 3/1067 | 31/8105 | 0.794432694 | 0.970641449 | 0.811094717 | 3 | 3098/8972/3099 |
| hsa04012 | ErbB signaling pathway | 9/1067 | 85/8105 | 0.804676084 | 0.978533359 | 0.817689415 | 9 | 7039/5293/5295/5578/8440/6776/10000/5579/5335 |
| hsa04216 | Ferroptosis | 4/1067 | 41/8105 | 0.806913663 | 0.978533359 | 0.817689415 | 4 | 2180/4891/112483/8031 |
| hsa05206 | MicroRNAs in cancer | 36/1067 | 310/8105 | 0.817687326 | 0.9820693 | 0.820644144 | 36 | 9759/57521/27086/5328/5293/4363/406935/406937/5295/90427/5578/1871/406976/9839/406894/7057/407018/407010/7148/3065/993/5579/3690/5155/1387/596/406977/4851/1786/4855/5581/113130/5159/5335/7430/6541 |
| hsa04913 | Ovarian steroidogenesis | 5/1067 | 51/8105 | 0.81953847 | 0.9820693 | 0.820644144 | 5 | 108/115/3294/3480/196883 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa00860 | Porphyrin and chlorophyll metabolism | 4/1067 | 42/8105 | 0.82191646 | 0.9820693 | 0.820644144 | 4 | 2235/211/5498/124454 |
| hsa05332 | Graft-versus-host disease | 4/1067 | 42/8105 | 0.82191646 | 0.9820693 | 0.820644144 | 4 | 3109/7124/3107/3134 |
| hsa04130 | SNARE interactions in vesicular transport | 3/1067 | 33/8105 | 0.828540682 | 0.986357955 | 0.824227862 | 3 | 6811/143187/10791 |
| hsa04622 | RIG-I-like receptor signaling pathway | 7/1067 | 70/8105 | 0.832209802 | 0.987110167 | 0.824856431 | 7 | 7124/7186/8737/1540/5970/8772/340061 |
| hsa05320 | Autoimmune thyroid disease | 5/1067 | 53/8105 | 0.844757421 | 0.998349679 | 0.834248477 | 5 | 3109/3586/3107/7038/3134 |
| hsa05217 | Basal cell carcinoma | 6/1067 | 63/8105 | 0.853838068 | 1 | 0.83562753 | 6 | 51684/6934/7481/8312/81029/10912 |
| hsa05034 | Alcoholism | 20/1067 | 187/8105 | 0.870391863 | 1 | 0.83562753 | 20 | 9759/1385/51564/84152/55315/10645/1644/2771/84254/3065/2788/2784/64764/5500/54331/2775/2030/4852/55506/8350 |
| hsa00500 | Starch and sucrose metabolism | 3/1067 | 36/8105 | 0.87055084 | 1 | 0.83562753 | 3 | 3098/8972/3099 |
| hsa01230 | Biosynthesis of amino acids | 7/1067 | 75/8105 | 0.880433437 | 1 | 0.83562753 | 7 | 2023/875/5223/5091/2027/5315/4143 |
| hsa00250 | Alanine, aspartate and glutamate metabolism | 3/1067 | 37/8105 | 0.882383778 | 1 | 0.83562753 | 3 | 8659/189/9945 |
| hsa01040 | Biosynthesis of unsaturated fatty acids | 2/1067 | 27/8105 | 0.88773709 | 1 | 0.83562753 | 2 | 11332/6319 |
| hsa04137 | Mitophagy - animal | 6/1067 | 68/8105 | 0.899013701 | 1 | 0.83562753 | 6 | 8408/51024/23786/598/5970/5071 |
| hsa04612 | Antigen processing and presentation | 7/1067 | 78/8105 | 0.903393975 | 1 | 0.83562753 | 7 | 3109/811/1385/7124/3107/3134/1508 |
| hsa00360 | Phenylalanine metabolism | 1/1067 | 17/8105 | 0.909483091 | 1 | 0.83562753 | 1 | 1644 |
| hsa03018 | RNA degradation | 7/1067 | 79/8105 | 0.910162483 | 1 | 0.83562753 | 7 | 2023/27257/23404/8761/80153/51690/2027 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa00270 | Cysteine and methionine metabolism | 4/1067 | 50/8105 | 0.910284311 | 1 | 0.83562753 | 4 | 875/1786/4143/55256 |
| hsa03008 | Ribosome biogenesis in eukaryotes | 10/1067 | 110/8105 | 0.927495857 | 1 | 0.83562753 | 10 | 10482/23160/10171/28987/6023/65083/2091/83732/780851/84916 |
| hsa03020 | RNA polymerase | 2/1067 | 31/8105 | 0.928684545 | 1 | 0.83562753 | 2 | 5435/51082 |
| hsa05162 | Measles | 13/1067 | 139/8105 | 0.93449488 | 1 | 0.83562753 | 13 | 5293/5295/7128/54106/6776/10000/3716/596/598/8667/4599/5970/8772 |
| hsa04975 | Fat digestion and absorption | 3/1067 | 43/8105 | 0.935131713 | 1 | 0.83562753 | 3 | 19/38/8613 |
| hsa05014 | Amyotrophic lateral sclerosis | 39/1067 | 364/8105 | 0.935612095 | 1 | 0.83562753 | 39 | 1639/10482/55567/8408/5608/2081/7133/8480/7124/7186/26100/10383/4741/4720/7132/10540/4728/9688/5216/6506/22863/6396/71/3800/847/7277/51807/596/5695/4712/834/56901/598/64446/6392/310/5719/10476/5071 |
| hsa04136 | Autophagy - other | 2/1067 | 32/8105 | 0.936454104 | 1 | 0.83562753 | 2 | 57521/26100 |
| hsa04217 | Necroptosis | 15/1067 | 159/8105 | 0.941641298 | 1 | 0.83562753 | 15 | 114548/7124/7186/7128/6776/8737/7132/3716/11035/596/10059/834/1540/8772/55506 |
| hsa00970 | Aminoacyl-tRNA biosynthesis | 5/1067 | 66/8105 | 0.946678636 | 1 | 0.83562753 | 5 | 79587/124454/4141/5188/8565 |
| hsa04742 | Taste transduction | 7/1067 | 86/8105 | 0.947061497 | 1 | 0.83562753 | 7 | 775/3359/2784/23236/196883/2550/9568 |
| hsa03022 | Basal transcription factors | 3/1067 | 45/8105 | 0.947160255 | 1 | 0.83562753 | 3 | 6881/902/2068 |
| hsa05010 | Alzheimer disease | 39/1067 | 369/8105 | 0.947237067 | 1 | 0.83562753 | 39 | 5293/3709/8408/775/2081/5295/7124/7186/26100/57142/3708/10383/10000/351/4720/10313/7132/7481/8312/4728/22863/81029/3800/489/1454/23236/7277/51807/840/23401/5695/4712/56901/5970/6392/8883/8772/5719/10476 |
| hsa04260 | Cardiac muscle contraction | 7/1067 | 87/8105 | 0.95104895 | 1 | 0.83562753 | 7 | 845/486/775/93589/6546/489/444 |
| hsa03050 | Proteasome | 3/1067 | 46/8105 | 0.952363986 | 1 | 0.83562753 | 3 | 9491/5695/5719 |
| hsa00830 | Retinol metabolism | 5/1067 | 68/8105 | 0.955301643 | 1 | 0.83562753 | 5 | 10170/157506/317749/8854/316 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa05322 | Systemic lupus erythematosus | 12/1067 | 136/8105 | 0.95561083 | 1 | 0.83562753 | 12 | 1991/3109/1511/3586/6634/7124/87/81/716/713/55506/8350 |
| hsa05022 | Pathways of neurodegeneration - multiple diseases | 51/1067 | 475/8105 | 0.956738288 | 1 | 0.83562753 | 51 | 1639/55567/3709/8408/5608/775/2081/7133/5578/7124/7186/26100/6310/3708/10383/4741/351/4720/7132/118424/7481/10540/5579/8312/4728/3064/22863/81029/3800/489/1454/23236/847/7277/51807/840/23401/596/5695/4712/56901/774/598/64446/5335/5970/6392/8772/5719/10476/5071 |
| hsa03060 | Protein export | 1/1067 | 23/8105 | 0.961278316 | 1 | 0.83562753 | 1 | 28972 |
| hsa03430 | Mismatch repair | 1/1067 | 23/8105 | 0.961278316 | 1 | 0.83562753 | 1 | 10714 |
| hsa05020 | Prion disease | 27/1067 | 273/8105 | 0.961350625 | 1 | 0.83562753 | 27 | 5293/3709/1385/775/5295/4689/4685/7124/6352/3708/10383/4720/4688/4728/3800/64764/7277/51807/5695/4851/4712/56901/774/713/6392/5719/10476 |
| hsa04917 | Prolactin signaling pathway | 5/1067 | 70/8105 | 0.962633933 | 1 | 0.83562753 | 5 | 5293/5295/6776/10000/5970 |
| hsa05171 | Coronavirus disease - COVID-19 | 22/1067 | 232/8105 | 0.967153314 | 1 | 0.83562753 | 22 | 719/5293/114548/5295/5578/7124/5648/100529239/7132/3716/5579/716/1440/3570/834/185/4599/713/5335/6147/5970/340061 |
| hsa00140 | Steroid hormone biosynthesis | 4/1067 | 61/8105 | 0.968086166 | 1 | 0.83562753 | 4 | 6718/3294/1312/3291 |
| hsa00982 | Drug metabolism - cytochrome P450 | 5/1067 | 72/8105 | 0.96884601 | 1 | 0.83562753 | 5 | 2949/4258/9446/119391/316 |
| hsa05204 | Chemical carcinogenesis | 6/1067 | 83/8105 | 0.970343497 | 1 | 0.83562753 | 6 | 6799/2949/4258/9446/2052/119391 |
| hsa00190 | Oxidative phosphorylation | 11/1067 | 133/8105 | 0.97141461 | 1 | 0.83562753 | 11 | 4720/526/4728/533/4712/56901/6392/64077/10476/527/528 |
| hsa00790 | Folate biosynthesis | 1/1067 | 26/8105 | 0.974680438 | 1 | 0.83562753 | 1 | 249 |
| hsa00062 | Fatty acid elongation | 1/1067 | 27/8105 | 0.978024412 | 1 | 0.83562753 | 1 | 11332 |
| hsa00980 | Metabolism of xenobiotics by cytochrome P450 | 5/1067 | 78/8105 | 0.982208085 | 1 | 0.83562753 | 5 | 2949/4258/9446/2052/119391 |
| hsa03040 | Spliceosome | 12/1067 | 151/8105 | 0.984285445 | 1 | 0.83562753 | 12 | 6634/23450/51690/100534599/10594/151903/8449/56259/24148/25766/10523/5356 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| hsa00030 | Pentose phosphate pathway | 1/1067 | 30/8105 | 0.985633721 | 1 | 0.83562753 | 1 | 132158 |
| hsa00053 | Ascorbate and aldarate metabolism | 1/1067 | 30/8105 | 0.985633721 | 1 | 0.83562753 | 1 | 217 |
| hsa03013 | RNA transport | 15/1067 | 186/8105 | 0.989683059 | 1 | 0.83562753 | 15 | 10482/8480/8761/26999/8893/9688/10460/6396/10073/10605/8667/23191/1981/50628/780851 |
| hsa00590 | Arachidonic acid metabolism | 3/1067 | 61/8105 | 0.990659627 | 1 | 0.83562753 | 3 | 2678/4051/127281 |
| hsa05012 | Parkinson disease | 21/1067 | 249/8105 | 0.993031024 | 1 | 0.83562753 | 21 | 3709/2081/3708/10383/2771/4720/118424/4728/3800/7277/51807/4780/5695/4712/56901/598/5335/6392/5719/10476/5071 |
| hsa05033 | Nicotine addiction | 1/1067 | 40/8105 | 0.996520706 | 1 | 0.83562753 | 1 | 774 |
| hsa04080 | Neuroactive ligand-receptor interaction | 28/1067 | 341/8105 | 0.998684025 | 1 | 0.83562753 | 28 | 1511/719/2358/2357/2900/56413/5031/3269/2696/51738/1129/1269/9294/2550/5023/9170/2149/8698/185/7434/9568/5026/2894/64106/4852/1241/2834/6750 |
| hsa05168 | Herpes simplex virus 1 infection | 45/1067 | 498/8105 | 0.998689135 | 1 | 0.83562753 | 45 | 3109/29992/811/29990/10482/5293/5295/201514/6009/7124/7186/6352/8893/54106/3107/10000/197320/3134/199692/7132/155054/148198/3716/730087/155061/170960/3690/57541/58492/5500/5452/596/6672/255403/7249/340385/598/55769/5970/163071/284306/25799/8772/340061/5818 |
| hsa03010 | Ribosome | 5/1067 | 158/8105 | 0.999997219 | 1 | 0.83562753 | 5 | 11222/100529239/54460/10573/6147 |
| hsa04740 | Olfactory transduction | 8/1067 | 443/8105 | 1 | 1 | 0.83562753 | 8 | 123041/6546/408/2788/390077/1262/409/156 |