

**Supplementary table 15: Differential predicted KEGG pathways (level 3) between superficial gastritis (SG) and gastric cancer (GC) in Xi'an cohort**

Predicted function level3	LogMaxMean	Class	LDA score	p value
Human Diseases Infectious Diseases Staphylococcus aureus infection	2.354666706	GC	1.652043936	0.000169216
Organismal Systems Digestive System Carbohydrate digestion and absorption	1.997080288	GC	1.183967592	0.005314938
Metabolism Metabolism of Other Amino Acids Phosphonate and phosphinate metabolism	2.763441764	GC	0.989973959	0.007685493
Metabolism Nucleotide Metabolism Purine metabolism	4.307627128	GC	2.554221903	0.010963282
Environmental Information Processing Signaling Molecules and Interaction Ion channels	2.3890563	GC	1.326896872	0.014425316
Metabolism Metabolism of Cofactors and Vitamins Thiamine metabolism	3.597299018	GC	1.853324163	0.014919696
Metabolism Carbohydrate Metabolism Glycolysis Gluconeogenesis	3.990531506	GC	2.282534633	0.015953428
Organismal Systems Immune System RIG I like receptor signaling pathway	1.593244891	GC	0.697096914	0.017049616
Metabolism Metabolism of Other Amino Acids D Alanine metabolism	3.003626265	GC	1.608269331	0.017622091
Metabolism Metabolism of Other Amino Acids Selenocompound metabolism	3.560354588	GC	1.610288115	0.018211345
Metabolism Lipid Metabolism Glycerolipid metabolism	3.534412171	GC	1.954468067	0.018817781
Environmental Information Processing Membrane Transport Phosphotransferase system PTS	3.45023709	GC	2.468648674	0.019441806
Genetic Information Processing Replication and Repair Base excision repair	3.635442266	GC	1.737537735	0.025920214
Genetic Information Processing Replication and Repair DNA repair and recombination proteins	4.399123797	GC	2.63536866	0.028459737
Metabolism Enzyme Families Peptidases	4.196929094	GC	2.495430163	0.030269412
Genetic Information Processing Transcription RNA polymerase	3.148868483	GC	1.660370707	0.030269412
Metabolism Glycan Biosynthesis and Metabolism Peptidoglycan biosynthesis	3.834312046	GC	2.27186173	0.033168958
Metabolism Carbohydrate Metabolism Fructose and mannose metabolism	3.828180886	GC	2.472189549	0.034186879
Metabolism Xenobiotics Biodegradation and Metabolism Drug metabolism of other enzymes	3.416089493	GC	1.951181078	0.045918204
Genetic Information Processing Replication and Repair Nucleotide excision repair	3.534016672	GC	1.926910581	0.052955164
Organismal Systems Nervous System Glutamatergic synapse	2.935003689	GC	1.176939934	0.057594522
Metabolism Metabolism of Other Amino Acids D Glutamine and D glutamate metabolism	3.106673555	GC	1.351402943	0.059214158
Environmental Information Processing Signal Transduction Calcium signaling pathway	0	GC	0.109394279	0.060871415
Unclassified Cellular Processes and Signaling Sporulation	3.264470661	GC	2.266473623	0.064301288
Unclassified Metabolism Others	3.962213789	GC	2.332932228	0.064301288
Metabolism Metabolism of Cofactors and Vitamins One carbon pool by folate	3.716056207	GC	2.047802889	0.066075157
Metabolism Nucleotide Metabolism Pyrimidine metabolism	4.183969008	GC	2.590266518	0.067889155
Genetic Information Processing Translation Aminoacyl tRNA biosynthesis	4.023637975	GC	2.366811488	0.069743915
Metabolism Energy Metabolism Carbon fixation in photosynthetic organisms	3.693263835	GC	2.053894087	0.071640071
Metabolism Carbohydrate Metabolism Galactose metabolism	3.650363824	GC	2.418447267	0.075559124
Metabolism Carbohydrate Metabolism Amino sugar and nucleotide sugar metabolism	4.03763298	GC	2.571724467	0.075559124
Metabolism Biosynthesis of Other Secondary Metabolites Butirosin and neomycin biosynthesis	2.707226999	GC	1.3484665	0.077583297
Environmental Information Processing Signaling Molecules and Interaction Bacterial toxins	3.030572967	GC	1.70722668	0.081764142
Genetic Information Processing Translation Ribosome	4.293044719	GC	2.687426101	0.086125929
Environmental Information Processing Membrane Transport Transporters	4.774264584	GC	3.045696195	0.086125929
Metabolism Carbohydrate Metabolism Pentose phosphate pathway	3.856390601	GC	2.141383304	0.08837628
Genetic Information Processing Replication and Repair Mismatch repair	3.839748212	GC	2.111969953	0.090673791
Genetic Information Processing Replication and Repair Homologous recombination	3.896246287	GC	2.194644854	0.100348246
Metabolism Carbohydrate Metabolism Starch and sucrose metabolism	3.785297819	GC	2.440734451	0.102891151
Metabolism Metabolism of Terpenoids and Polyketides Zeatin biosynthesis	2.60156751	GC	1.128121101	0.11638301
Metabolism Metabolism of Terpenoids and Polyketides Prenyltransferases	3.470206298	GC	1.596967113	0.128146561
Metabolism Metabolism of Terpenoids and Polyketides Terpenoid backbone biosynthesis	3.710042517	GC	1.883983243	0.13122726
Metabolism Amino Acid Metabolism Cysteine and methionine metabolism	3.922455288	GC	1.944328726	0.13122726
Genetic Information Processing Translation Translation factors	3.650055701	GC	1.970557385	0.13756059
Genetic Information Processing Replication and Repair DNA replication	3.759050136	GC	2.010685856	0.150931142
Unclassified Poorly Characterized General function prediction only	4.538430295	GC	2.137359032	0.150931142
Metabolism Amino Acid Metabolism Amino acid related enzymes	4.125930935	GC	2.160905784	0.157977335
Metabolism Glycan Biosynthesis and Metabolism Various types of N glycan biosynthesis	0.462694295	GC	0.280261235	0.161592562
Metabolism Glycan Biosynthesis and Metabolism Glycosyltransferases	3.542607066	GC	1.713623793	0.161592562

Human Diseases Metabolic Diseases Type I diabetes mellitus	2.705604935	GC	0.696503721	0.169009886
Genetic Information Processing Replication and Repair Chromosome	4.135795137	GC	2.155268462	0.169009886
Metabolism Energy Metabolism Photosynthesis	3.504589555	GC	1.858391257	0.176679745
Metabolism Metabolism of Other Amino Acids Cyanoamino acid metabolism	3.353187999	GC	1.488540129	0.19698438
Genetic Information Processing Translation RNA transport	3.025607378	GC	1.423898369	0.201242621
Genetic Information Processing Translation Ribosome Biogenesis	4.100740929	GC	2.269381495	0.201242621
Genetic Information Processing FoldingSorting and Degradation Protein export	3.730517881	GC	1.828292823	0.205567618
Metabolism Amino Acid Metabolism Lysine biosynthesis	3.802737568	GC	1.86401035	0.205567618
Genetic Information Processing Replication and Repair DNA replication proteins	4.004844038	GC	2.206284097	0.218947035
Unclassified Cellular Processes and Signaling Germination	1.894527709	GC	0.788087948	0.223542875
Metabolism Energy Metabolism Photosynthesis proteins	3.526937221	GC	1.819111456	0.228207307
Metabolism Amino Acid Metabolism Alanineaspartate and glutamate metabolism	3.974932692	GC	1.735040609	0.228207307
Unclassified Metabolism Carbohydrate metabolism	3.065394607	GC	1.599931177	0.247557169
Cellular Processes Cell Motility Cytoskeleton proteins	3.381589833	GC	1.639888721	0.252569079
Environmental Information Processing Signaling Molecules and Interaction G protein coupled receptors	0.004301906	GC	0.0906195	0.262803969
Metabolism Lipid Metabolism Ether lipid metabolism	1.992111814	GC	0.665808591	0.278687043
Human Diseases Metabolic Diseases Type II diabetes mellitus	2.584432661	GC	0.957602068	0.284123618
Metabolism Glycan Biosynthesis and Metabolism Glycosphingolipid biosynthesis globo series	2.708644564	GC	1.538011572	0.289631534
Metabolism Metabolism of Terpenoids and Polyketides Biosynthesis of ansamycins	2.857506249	GC	1.278346781	0.295210899
Unclassified Genetic Information Processing Restriction enzyme	3.269909531	GC	1.917239874	0.300861803
Metabolism Glycan Biosynthesis and Metabolism Other glycan degradation	3.154216741	GC	2.004404222	0.306584316
Unclassified Metabolism Lipid metabolism	3.041443163	GC	1.328087025	0.306584316
Unclassified Genetic Information Processing Translation proteins	3.90933824	GC	1.949555375	0.312378486
Metabolism Energy Metabolism Photosynthesis antenna proteins	1.005354298	GC	0.635733064	0.324181891
Metabolism Metabolism of Terpenoids and Polyketides Tetracycline biosynthesis	3.150557765	GC	1.299076758	0.324181891
Environmental Information Processing Signaling Molecules and Interaction ECM receptor interaction	0	GC	0.833285939	0.331832208
Environmental Information Processing Signaling Molecules and Interaction CAM ligands	0	GC	0.741722184	0.331832208
Cellular Processes Transport and Catabolism Endocytosis	0.630217205	GC	0.136610777	0.33627199
Organismal Systems Immune System Fc gamma R mediated phagocytosis	0.630501164	GC	0.135806585	0.33627199
Organismal Systems Endocrine System GnRH signaling pathway	0.630217205	GC	0.136610777	0.33627199
Genetic Information Processing Transcription Transcription factors	4.161355114	GC	2.351940737	0.354943779
Metabolism Enzyme Families Cytochrome P450	0.814878893	GC	0.149452315	0.354943779
Metabolism Lipid Metabolism Fatty acid biosynthesis	3.706068449	GC	1.581191522	0.361310429
Cellular Processes Cell Growth and Death Cell cycle Caulobacter	3.678807189	GC	1.62144667	0.37425696
Metabolism Glycan Biosynthesis and Metabolism Glycosphingolipid biosynthesis ganglio series	2.273682256	GC	1.127790454	0.38083648
Metabolism Biosynthesis of Other Secondary Metabolites Streptomycin biosynthesis	3.418148747	GC	1.658006288	0.387486557
Metabolism Lipid Metabolism Secondary bile acid biosynthesis	2.12647182	GC	0.807281473	0.387486557
Human Diseases Infectious Diseases Tuberculosis	3.136840907	GC	1.103151206	0.387486557
Metabolism Metabolism of Other Amino Acids D Arginine and D ornithine metabolism	1.805555053	GC	0.504260787	0.39420695
Metabolism Metabolism of Cofactors and Vitamins Nicotinate and nicotinamide metabolism	3.601543769	GC	1.419526908	0.39420695
Genetic Information Processing Transcription Basal transcription factors	1.342140132	GC	0.240643695	0.400997399
Metabolism Lipid Metabolism Sphingolipid metabolism	3.034913101	GC	1.79253249	0.407857616
Metabolism Metabolism of Terpenoids and Polyketides Polyketide sugar unit biosynthesis	3.166010709	GC	1.445950959	0.407857616
Metabolism Carbohydrate Metabolism Pentose and glucuronate interconversions	3.586763126	GC	1.79012966	0.407857616
Cellular Processes Transport and Catabolism Lysosome	2.813925442	GC	1.568614724	0.421786093
Organismal Systems Digestive System Protein digestion and absorption	2.066282602	GC	0.783609598	0.435989615
Organismal Systems Immune System NOD like receptor signaling pathway	2.475245422	GC	0.8732678	0.435989615
Metabolism Biosynthesis of Other Secondary Metabolites Tropanepiperidine and pyridine alkaloid biosynthesis	3.068741448	GC	1.141576302	0.44319355
Genetic Information Processing FoldingSorting and Degradation RNA degradation	3.640830647	GC	1.530405687	0.450465035

Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Flavone_and_flavonol biosynthesis	1.830501282	GC	0.699762618	0.465208818
Metabolism_Glycan_Biosynthesis_and_Metabolism_Glycosaminoglycan_degradati on	2.495659362	GC	1.276986397	0.465208818
Unclassified_Genetic_Information_Processing_Replicationrecombination_and_repa ir_proteins	3.900819583	GC	1.955393335	0.511009207
Organismal_Systems_Endocrine_System_Insulin_signaling_pathway	2.744145537	GC	1.242786571	0.526783376
Genetic_Information_Processing_Transcription_Transcription_machinery	3.892658309	GC	1.760013579	0.559060606
Metabolism_Energy_Metabolism_Methane_metabolism	4.02039548	GC	1.684408748	0.575551626
Unclassified_Cellular_Processes_and_Signaling_Signal_transduction_mechanisms	3.651159977	GC	1.740629675	0.583882421
Metabolism_Metabolism_of_Terpenoids_and_Polyketides_Biosynthesis_of_vanco mycin_group_antibiotics	2.69073683	GC	1.053765984	0.592268939
Human_Diseases_Infectious_Diseases_Epithelial_cell_signaling_in_Helicobacter_p ylori_infection	2.83520567	GC	1.384152971	0.592268939
Metabolism_Glycan_Biosynthesis_and_Metabolism_Other_types_of_O_glycan_bio synthesis	0	GC	0.71719879	0.604771474
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Ethylbenzene_degradat ion	2.84953558	GC	1.246772643	0.609205613
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Caffeine_metabolism	1.396012086	GC	0.32490992	0.626354361
Metabolism_Metabolism_of_Cofactors_and_Vitamins_Folate_biosynthesis	3.639935632	GC	1.615028014	0.626354361
Genetic_Information_Processing_Folding_Sorting_and_Degradation_Proteasome	2.534634536	GC	0.761487114	0.635005891
Human_Diseases_Neurodegenerative_Diseases_Prion_diseases	2.095100632	GC	0.56434609	0.652458338
Metabolism_Glycan_Biosynthesis_and_Metabolism_Glycosaminoglycan_biosynthe sis_chondroitin_sulfate	0	GC	0.840059845	0.678753082
Organismal_Systems_Immune_System_Hematopoietic_cell_lineage	0.666576271	GC	0.156033968	0.678995081
Genetic_Information_Processing_FoldingSorting_and_Degradation_Chaperones_and folding_catalysts	3.992356349	GC	1.683623535	0.678995081
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Isoquinoline_alkaloid biosynthesis	2.764212665	GC	0.933898111	0.687931904
Metabolism_Amino_Acid_Metabolism_Phenylalanine_tyrosine_and_tryptophan_bi osynthesis	3.858364964	GC	1.802521035	0.687931904
Metabolism_Amino_Acid_Metabolism_Tyrosine_metabolism	3.61698413	GC	1.564683125	0.696912526
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Dioxin_degradation	2.858602577	GC	1.010304657	0.696912526
Environmental_Information_Processing_Signal_Transduction_Phosphatidylinositol signaling_system	2.983186895	GC	0.852985546	0.715000655
Organismal_Systems_Digestive_System_Mineral_absorption	2.081178957	GC	0.590708768	0.724105864
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_111_Trichloro_22_bis_4_chlorophenyl_ethane_DDT_degradation	1.435923206	GC	0.308135803	0.760906727
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Polycyclic_aromatic_h ydrocarbon_degradation	3.174385786	GC	1.370845393	0.779518102
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Indole_alkaloid_biosy nthesis	1.267113093	GC	0.236898553	0.807670565
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Xylene_degradation	2.73687753	GC	1.103318779	0.817112326
Human_Diseases_Cancers_Prostate_cancer	2.443225425	GC	0.791195064	0.826580701
Metabolism_Glycan_Biosynthesis_and_Metabolism_Glycosphingolipid_biosynthesi s_lacto_and_neolacto_series	0	GC	0.065082011	0.836073162
Organismal_Systems_Endocrine_System_Progesterone_mediated_oocyte_maturatio n	2.442934098	GC	0.790804743	0.836074359
Organismal_Systems_Immune_System_Antigen_processing_and_presentation	2.442934098	GC	0.790804743	0.836074359
Unclassified_Metabolism_Amino_acid_metabolism	3.284011632	GC	1.397524022	0.836074359
Metabolism_Lipid_Metabolism_Primary_bile_acid_biosynthesis	2.300771655	GC	0.739917123	0.855132141
Human_Diseases_Immune_System_Diseases_Primary_immunodeficiency	2.661698391	GC	0.723320383	0.855132141
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Betalain_biosynthesis	1.328781458	GC	0.273643785	0.874274808
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Bisphenol_degradation	3.067114296	GC	1.47685778	0.874274808
Human_Diseases_Immune_System_Diseases_Systemic_lupus_erythematosus	0.894287911	GC	0.146852147	0.893491348
Metabolism_Lipid_Metabolism_Glycerophospholipid_metabolism	3.72724515	GC	1.390405988	0.912770619
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Novobiocin_biosynth esis	3.083341046	GC	1.090532359	0.941782504
Metabolism_Glycan_Biosynthesis_and_Metabolism_N_Glycan_biosynthesis	2.398744991	GC	0.832557621	0.951472249
Organismal_Systems_Excretory_System_Vasopressin_regulated_water_reabsorptio n	0.78760129	GC	0.090817418	0.951472249
Unclassified_Genetic_Information_Processing_Transcription_related_proteins	2.074410523	GC	0.726281656	0.961169175
Metabolism_Lipid_Metabolism_Linoleic_acid_metabolism	2.824432177	GC	1.310476821	0.970871848
Cellular_Processes_Cell_Motility_Bacterial_chemotaxis	3.840617644	SG	2.468742915	0.002979225

Environmental_Information_Processing_Signal_Transduction_Two_component_system	4.313474505	SG	2.798393615	0.005728049
Cellular Processes Cell Motility Bacterial motility proteins	4.254255092	SG	2.908229617	0.010222514
Human Diseases Infectious Diseases Vibrio cholerae infection	1.426610468	SG	0.611627575	0.010222514
Metabolism Energy Metabolism Carbon fixation pathways in prokaryotes	4.0449781	SG	2.251185804	0.013479713
Environmental_Information_Processing_Signaling_Molecules_and_Interaction_Cellular_antigens	2.816646417	SG	1.007149674	0.015428944
Cellular Processes Cell Motility Flagellar assembly	3.912363148	SG	2.600998378	0.019441806
Unclassified Cellular Processes and Signaling Pores ion channels	3.705006177	SG	2.169261108	0.024338183
Unclassified Metabolism Glycan biosynthesis and metabolism	2.842392954	SG	1.487302787	0.028459737
Metabolism Lipid Metabolism Synthesis and degradation of ketone bodies	3.214100986	SG	1.922524972	0.034186879
Environmental_Information_Processing_Membrane_Transport_Bacterial_secretion_system	3.879610403	SG	2.221102964	0.038529752
Environmental Information Processing Membrane Transport Secretion system	4.268911271	SG	2.713935792	0.04725887
Human Diseases Infectious Diseases Pertussis	2.491043873	SG	1.168582288	0.048632305
Metabolism_Carbohydrate_Metabolism_Glyoxylate_and_dicarboxylate_metabolism	3.876280669	SG	2.429326194	0.056011888
Unclassified Metabolism Energy metabolism	3.941938395	SG	2.114199421	0.057594522
Unclassified Cellular Processes and Signaling Membrane and intracellular structural molecules	3.861859808	SG	2.283538503	0.059214158
Metabolism_Glycan_Biosynthesis_and_Metabolism_Lipopolysaccharide_biosynthesis	3.627507201	SG	2.244560941	0.060871415
Human Diseases Neurodegenerative Diseases Parkinson s disease	2.785070177	SG	1.639487364	0.062566916
Metabolism_Glycan_Biosynthesis_and_Metabolism_Lipopolysaccharide_biosynthesis_proteins	3.723423338	SG	2.281188309	0.071640071
Organismal Systems Circulatory System Cardiac muscle contraction	2.722988701	SG	1.594470157	0.075559124
Metabolism Carbohydrate Metabolism Citrate cycle TCA cycle	3.851938849	SG	2.082529908	0.075559124
Metabolism_Metabolism_of_Cofactors_and_Vitamins_Ubiquinone_and_other_terpenoid_quinone_biosynthesis	3.508307784	SG	1.878981496	0.075559124
Metabolism Amino Acid Metabolism Lysine degradation	3.654487612	SG	2.360925692	0.077583297
Human Diseases Neurodegenerative Diseases Alzheimer s disease	3.080861886	SG	1.716925188	0.077583297
Metabolism Amino Acid Metabolism Valineleucine and isoleucine degradation	3.924488564	SG	2.628251533	0.079651423
Metabolism Energy Metabolism Sulfur metabolism	3.466148143	SG	1.563555137	0.081764142
Metabolism Xenobiotics Biodegradation and Metabolism Atrazine degradation	2.778604048	SG	1.490179246	0.081764142
Human Diseases Neurodegenerative Diseases Huntington s disease	3.024859139	SG	1.682262641	0.086125929
Metabolism Carbohydrate Metabolism Propanoate metabolism	3.974237354	SG	2.467123841	0.08837628
Metabolism Lipid Metabolism alpha Linolenic acid metabolism	2.61281651	SG	1.393412216	0.090673791
Unclassified_Genetic_Information_Processing_Protein_folding_and_associated_processing	3.917524694	SG	2.073434794	0.090673791
Metabolism Metabolism of Other Amino Acids beta Alanine metabolism	3.672229876	SG	2.330086183	0.093019105
Metabolism Carbohydrate Metabolism Butanoate metabolism	4.028809026	SG	2.478719699	0.100348246
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Caprolactam_degradation	3.378371846	SG	2.147717581	0.100348246
Metabolism Amino Acid Metabolism Phenylalanine metabolism	3.509506105	SG	1.976660721	0.10548504
Metabolism Energy Metabolism Oxidative phosphorylation	4.103483268	SG	2.387228644	0.108130545
Metabolism Metabolism of Cofactors and Vitamins Biotin metabolism	3.211049918	SG	1.719056979	0.108130545
Metabolism Amino Acid Metabolism Tryptophan metabolism	3.735092619	SG	2.389900512	0.108130545
Cellular Processes Transport and Catabolism Peroxisome	3.392342152	SG	1.821329064	0.113578908
Metabolism Metabolism of Terpenoids and Polyketides Geraniol degradation	3.536003219	SG	2.316496224	0.11638301
Metabolism Xenobiotics Biodegradation and Metabolism Toluene degradation	3.281609202	SG	1.827483285	0.125122387
Unclassified_Metabolism_Biosynthesis_and_biodegradation_of_secondary_metabolites	2.945949326	SG	1.535969248	0.125122387
Genetic_Information_Processing_FoldingSorting_and_Degradation_Sulfur_relay_system	3.531393904	SG	1.793543105	0.128146561
Environmental_Information_Processing_Signaling_Molecules_and_Interaction_Glycan_binding_proteins	0	SG	0.613494758	0.137557677
Metabolism Lipid Metabolism Fatty acid metabolism	3.824424972	SG	2.470404226	0.13756059
Metabolism Lipid Metabolism Biosynthesis of unsaturated fatty acids	3.377037896	SG	1.911274821	0.140814386
Metabolism Metabolism of Other Amino Acids Glutathione metabolism	3.602717397	SG	1.996607082	0.140814386
Unclassified_Cellular_Processes_and_Signaling_Inorganic_ion_transport_and_metabolism	3.490543097	SG	1.879300057	0.147499101
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Penicillin_and_cephalosporin_biosynthesis	2.686931312	SG	1.121187973	0.161592562
Human Diseases Infectious Diseases Vibrio cholerae pathogenic cycle	3.021555253	SG	1.430227908	0.165269907

Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Metabolism_of_xenobiotics by cytochrome P450	3.151675591	SG	1.906950451	0.184606038
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Isoflavonoid_biosynthesis	0.749673091	SG	0.148123071	0.184606038
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Drug_metabolism_cytochrome P450	3.180052015	SG	1.924653223	0.192792487
Metabolism_Amino Acid Metabolism Arginine and proline metabolism	4.088454494	SG	2.225682073	0.19698438
Metabolism_Metabolism_of_Terpenoids_and_Polyketides_Limonene_and_pinene_degradation	3.533289089	SG	2.115338625	0.205567618
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Styrene degradation	2.965226214	SG	1.611659637	0.209959767
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Benzoate degradation	3.705555267	SG	2.233284849	0.21441945
Organismal Systems Environmental Adaptation Plant pathogen interaction	3.164840704	SG	1.176537335	0.21441945
Unclassified Cellular Processes and Signaling Cell motility and secretion	3.406027004	SG	1.760851517	0.218947035
Organismal Systems Digestive System Fat digestion and absorption	0	SG	0.998643895	0.232742055
Human Diseases Cancers Pathways in cancer	2.772381235	SG	1.124630998	0.232940653
Metabolism Enzyme Families Protein kinases	3.573861234	SG	1.692557771	0.232940653
Metabolism Energy Metabolism Nitrogen metabolism	3.874219689	SG	1.644281357	0.247557169
Organismal Systems Digestive System Pancreatic secretion	0	SG	0.084318921	0.257651272
Environmental Information Processing Signaling Molecules and Interaction Cytokine receptors	0	SG	1.135767193	0.262861708
Environmental Information Processing Signaling Molecules and Interaction Cytokine cytokine receptor interaction	0	SG	1.042349414	0.262861708
Human Diseases Neurodegenerative Diseases Amyotrophic lateral sclerosis ALS	2.650647091	SG	1.137750042	0.268027376
Metabolism_Metabolism_of_Terpenoids_and_Polyketides_Biosynthesis_of_type_II_polyketide products	0.971654119	SG	0.370535631	0.273321678
Organismal Systems Digestive System Bile secretion	1.037989477	SG	0.21472584	0.278687043
Metabolism Metabolism of Cofactors and Vitamins Riboflavin metabolism	3.415118052	SG	1.45418509	0.289631534
Metabolism_Metabolism_of_Terpenoids_and_Polyketides_Biosynthesis_of siderophore group nonribosomal peptides	2.691023782	SG	1.216210639	0.289631534
Metabolism Metabolism of Cofactors and Vitamins Retinol metabolism	2.84512693	SG	1.357783004	0.300861803
Unclassified Metabolism Metabolism of cofactors and vitamins	3.28557467	SG	1.713471671	0.300861803
Metabolism Lipid Metabolism Arachidonic acid metabolism	2.807734417	SG	1.157678879	0.300861803
Metabolism Lipid Metabolism Lipid biosynthesis proteins	3.869811646	SG	1.942727664	0.306584316
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_beta_Lactam_resistance	2.49685356	SG	1.024050865	0.312378486
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Nitrotoluene degradation	2.982957075	SG	1.640162164	0.318244342
Organismal Systems Endocrine System Adipocytokine signaling pathway	2.909775538	SG	1.332420113	0.324181891
Unclassified Cellular Processes and Signaling Cell division	2.877897382	SG	1.03286346	0.324181891
Metabolism_Metabolism_of_Terpenoids_and_Polyketides_Carotenoid_biosynthesis	2.316515915	SG	1.00190478	0.330191119
Human Diseases Cancers Bladder cancer	2.055978872	SG	0.902336435	0.342424447
Human Diseases Cardiovascular Diseases Hypertrophic cardiomyopathy HCM	1.413897699	SG	0.271994408	0.348648411
Organismal Systems Endocrine System PPAR signaling pathway	3.232950755	SG	1.671019743	0.354943779
Human Diseases Infectious Diseases Chagas disease American trypanosomiasis	2.188122247	SG	0.868714935	0.38083648
Metabolism_Metabolism_of_Cofactors_and_Vitamins_Porphyrin_and_chlorophyll_metabolism	3.956246959	SG	1.995212507	0.39420695
Cellular Processes Cell Growth and Death p53 signaling pathway	1.926939442	SG	0.841904195	0.428853661
Metabolism_Metabolism_of_Terpenoids_and_Polyketides_Sesquiterpenoid_biosynthesis	0.25867731	SG	0.09017638	0.435989615
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Chlorocyclohexane_and_chlorobenzene degradation	2.925053771	SG	1.52295144	0.44319355
Human Diseases Infectious Diseases African trypanosomiasis	2.175647742	SG	0.823666388	0.450465035
Metabolism_Amino Acid Metabolism Glycineserine and threonine metabolism	3.958954346	SG	1.80802485	0.450465035
Unclassified Poorly Characterized Function unknown	4.213285012	SG	2.220150669	0.450465035
Human Diseases Cancers Renal cell carcinoma	2.374201285	SG	0.940017961	0.450465035
Human Diseases Infectious Diseases Influenza A	1.911798809	SG	0.828846186	0.457803618
Environmental Information Processing Signaling Molecules and Interaction Neuroactive ligand receptor interaction	0	SG	0.091935021	0.457803618
Environmental Information Processing Signal Transduction VEGF signaling pathway	0	SG	0.064022145	0.465208818
Human Diseases Cardiovascular Diseases Viral myocarditis	1.909889064	SG	0.827088495	0.465208818

Human Diseases Cancers Small cell lung cancer	1.909438121	SG	0.825294722	0.472680136
Metabolism_Metabolism_of_Terpenoids_and_Polyketides_Biosynthesis_of_type_II polyketide backbone	0.343790933	SG	0.103408615	0.472680136
Metabolism_Metabolism_of_Terpenoids_and_Polyketides_Biosynthesis_of_12_14_ and 16 membered macrolides	1.043328552	SG	0.287005416	0.480217044
Human Diseases Infectious Diseases Toxoplasmosis	1.906153234	SG	0.821673892	0.487818991
Human Diseases Cancers Colorectal cancer	1.906039695	SG	0.821823123	0.487818991
Human Diseases Infectious Diseases Leishmaniasis	0	SG	0.065697404	0.487818991
Metabolism_Metabolism_of_Cofactors_and_Vitamins_Lipoic acid metabolism	2.716915778	SG	0.933816383	0.495485404
Environmental_Information_Processing_Signal_Transduction_Wnt_signaling_path way	0.22317251	SG	0.080295759	0.526783376
Environmental_Information_Processing_Signal_Transduction_Notch_signaling_pat hway	0.22317251	SG	0.080295759	0.526783376
Human Diseases Cancers Chronic myeloid leukemia	0.22317251	SG	0.080295759	0.526783376
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Clavulanic_acid_bios ynthesis	0	SG	0.200777973	0.542802454
Metabolism Lipid Metabolism Steroid biosynthesis	2.074727301	SG	0.825835737	0.542802454
Cellular Processes Cell Growth and Death Apoptosis	2.026975584	SG	0.722073258	0.542802454
Metabolism Carbohydrate Metabolism Inositol phosphate metabolism	3.29836506	SG	1.705313889	0.575551626
Genetic Information Processing Translation mRNA surveillance pathway	0.720317587	SG	0.165443883	0.575551626
Metabolism_Metabolism_of_Other_Amino_Acids_Taurine_and_hypotaurine_mета bolism	3.157972902	SG	1.245732408	0.592268939
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Fluorobenzoate_degrad ation	2.581813561	SG	1.258670966	0.592268939
Organismal_Systems_Excretory_System_Proximal_tubule_bicarbonate_reclamation	2.397842404	SG	0.945225048	0.592268939
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Chloroalkane_and_chl oroalkene degradation	3.402538439	SG	1.669155411	0.600710304
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Aminobenzoate_degra dation	3.541908778	SG	1.908282261	0.617753947
Genetic_Information_Processing_FoldingSorting_and_Degradation_Protein_proces sing in endoplasmic reticulum	2.765220904	SG	0.942854425	0.617753947
Human Diseases Infectious Diseases Amoebiasis	2.183716974	SG	0.919142246	0.617753947
Metabolism Lipid Metabolism Fatty acid elongation in mitochondria	0.072733894	SG	0.096344332	0.652458338
Metabolism Lipid Metabolism Steroid hormone biosynthesis	2.273981737	SG	0.744991136	0.670103158
Unclassified Cellular Processes and Signaling Electron transfer carriers	2.558388879	SG	1.141232866	0.678995081
Organismal_Systems_Digestive_System_Salivary_secretion	0	SG	0.147786764	0.678995081
Organismal_Systems_Excretory_System_Endocrine_and_other_factor_regulated_ca lcium reabsorption	0	SG	0.147786764	0.678995081
Organismal_Systems_Digestive_System_Gastric_acid_secretion	0	SG	0.147786764	0.678995081
Human Diseases Infectious Diseases Bacterial invasion of epithelial cells	1.431495171	SG	0.245722627	0.687931904
Organismal_Systems_Endocrine_System_Melanogenesis	0.859204885	SG	0.139666974	0.696912526
Organismal_Systems_Environmental_Adaptation_Circadian_rhythm_plant	1.597965814	SG	0.449409231	0.724105864
Unclassified Cellular Processes and Signaling Other transporters	3.350291333	SG	1.092791153	0.742432698
Metabolism_Metabolism_of_Cofactors_and_Vitamins_Pantothenate_and_CoA_bio synthesis	3.74473586	SG	1.259047583	0.742432698
Metabolism Amino Acid Metabolism Histidine metabolism	3.727262726	SG	1.632570953	0.751651923
Cellular Processes Cell Growth and Death Meiosis yeast	2.389968933	SG	1.062586931	0.788872152
Human Diseases Infectious Diseases Shigellosis	0	SG	0.084912547	0.798256737
Organismal_Systems_Excretory_System_Aldosterone_regulated_sodium_reabsorpti on	0	SG	0.273800552	0.798256737
Metabolism Carbohydrate Metabolism C5 Branched dibasic acid metabolism	3.432633405	SG	1.505017517	0.807670565
Metabolism Carbohydrate Metabolism Ascorbate and aldarate metabolism	3.119402286	SG	1.262305924	0.817112326
Metabolism_Xenobiotics_Biodegradation_and_Metabolism_Naphthalene_degradati on	3.3834943	SG	1.6410424	0.845591956
Metabolism_Metabolism_of_Cofactors_and_Vitamins_Vitamin_B6_metabolism	3.240903732	SG	0.962855051	0.845591956
Metabolism Carbohydrate Metabolism Pyruvate metabolism	4.031493096	SG	1.579625972	0.855132141
Genetic_Information_Processing_Replication_and_Repair_Non_homologous_end_j oining	2.521830167	SG	1.093397343	0.855132141
Genetic Information Processing Translation Ribosome biogenesis in eukaryotes	2.742620155	SG	0.811558398	0.855132141
Organismal_Systems_Endocrine_System_Renin_angiotensin_system	1.646269943	SG	0.384513138	0.864693548
Unclassified Cellular Processes and Signaling Other ion coupled transporters	4.075978669	SG	1.903709344	0.903123843
Metabolism_Glycan_Biosynthesis_and_Metabolism_Glycosylphosphatidylinositol_ GPI_anchor_biosynthesis	0	SG	0.875257036	0.907954566

Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Flavonoid_biosynthesis	2.142928426	SG	0.649400663	0.912770619
Metabolism_Amino Acid Metabolism_Valineleucine and isoleucine biosynthesis	3.815114793	SG	1.66276195	0.912770619
Genetic_Information_Processing_FoldingSorting_and_Degradation_Ubiquitin_system	2.215427948	SG	0.672677627	0.912770619
Environmental_Information_Processing_Membrane Transport_ABC transporters	4.524461699	SG	2.369919775	0.912770619
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Stilbenoiddiarylheptanoid and gingerol biosynthesis	2.265455373	SG	0.926887966	0.912770619
Human_Diseases_Cardiovascular_Diseases_Arrhythmogenic_right_ventricular_cardiomyopathy_ARVC	0	SG	0.051927194	0.922430266
Organismal_Systems_Immune_System_Leukocyte transendothelial migration	0	SG	0.051927194	0.922430266
Organismal_Systems_Sensory_System_Phototransduction_fly	0	SG	0.051927194	0.922430266
Cellular_Processes_Cell_Communication_Adherens junction	0	SG	0.051927194	0.922430266
Human_Diseases_Cardiovascular_Diseases_Dilated cardiomyopathy_DCM	0	SG	0.051927194	0.922430266
Cellular_Processes_Cell_Motility_Regulation_of_actin_cytoskeleton	0	SG	0.051927194	0.922430266
Human_Diseases_Infectious_Diseases_Pathogenic_Escherichia_coli_infection	0	SG	0.051927194	0.922430266
Cellular_Processes_Transport_and_Catabolism_Phagosome	0	SG	0.051927194	0.922430266
Cellular_Processes_Cell_Communication_Tight junction	0	SG	0.051927194	0.922430266
Environmental_Information_Processing_Signal_Transduction_MAPK_signaling_pathway_yeast	2.603748172	SG	0.943447959	0.941782504
Cellular_Processes_Cell_Communication_Focal adhesion	0	SG	0.051300857	0.961169175
Metabolism_Biosynthesis_of_Other_Secondary_Metabolites_Phenylpropanoid_biosynthesis	2.982608882	SG	1.327506415	0.970871848
Unclassified_Metabolism_Nucleotide metabolism	2.666842218	SG	1.096708777	0.990288698

LDA: Linear discriminant analysis