Modules can be looked up by: eg. https://www.genome.jp/kegg-bin/show\_module?eco\_M00016 -> change the text to see different modules

\*If the module is a pathway, there will be bricks like R00480 that describes the reaction. Otherwise, I will remove it.

\*Only finish the first 63. Not even sure they are correct

[1] "eco\_M00016 Lysine biosynthesis, succinyl-DAP pathway, aspartate => lysine"

[2] "eco\_M00017 Methionine biosynthesis, apartate => homoserine => methionine"

[3] "eco\_M00018 Threonine biosynthesis, aspartate => homoserine => threonine"

[4] "eco\_M00004 Pentose phosphate pathway (Pentose phosphate cycle)"

[5] "eco\_M00007 Pentose phosphate pathway, non-oxidative phase, fructose 6P => ribose 5P"

[6] "eco\_M00178 Ribosome, bacteria"

[7] "eco\_M00125 Riboflavin biosynthesis, GTP => riboflavin/FMN/FAD"

[8] "eco\_M00096 C5 isoprenoid biosynthesis, non-mevalonate pathway"

[9] "eco\_M00051 Uridine monophosphate biosynthesis, glutamine (+ PRPP) => UMP"

[10] "eco\_M00126 Tetrahydrofolate biosynthesis, GTP => THF"

[11] "eco\_M00124 Pyridoxal biosynthesis, erythrose-4P => pyridoxal-5P"

[12] "eco\_M00191 Thiamine transport system"

[13] "eco\_M00432 Leucine biosynthesis, 2-oxoisovalerate => 2-oxoisocaproate"

[14] "eco\_M00019 Valine/isoleucine biosynthesis, pyruvate => valine / 2-oxobutanoate => isoleucine"

[15] "eco\_M00570 Isoleucine biosynthesis, threonine => 2-oxobutanoate => isoleucine"

[16] "eco\_M00060 Lipopolysaccharide biosynthesis, KDO2-lipid A"

[17] "eco\_M00115 NAD biosynthesis, aspartate => NAD"

[18] "eco\_M00307 Pyruvate oxidation, pyruvate => acetyl-CoA"

[19] "eco\_M00009 Citrate cycle (TCA cycle, Krebs cycle)"

[20] "eco\_M00010 Citrate cycle, first carbon oxidation, oxaloacetate => 2-oxoglutarate"

[21] "eco\_M00012 Glyoxylate cycle"

[22] "eco\_M00133 Polyamine biosynthesis, arginine => agmatine => putrescine => spermidine"

[23] "eco\_M00254 ABC-2 type transport system"

[24] "eco\_M00119 Pantothenate biosynthesis, valine/L-aspartate => pantothenate"

[25] "eco\_M00240 Iron complex transport system"

[26] "eco\_M00241 Vitamin B12 transport system"

[27] "eco\_M00728 Cationic antimicrobial peptide (CAMP) resistance, envelope protein folding and degrading factors DegP and DsbA"

[28] "eco\_M00083 Fatty acid biosynthesis, elongation"

[29] "eco\_M00572 Pimeloyl-ACP biosynthesis, BioC-BioH pathway, malonyl-ACP => pimeloyl-ACP"

[30] "eco\_M00260 DNA polymerase III complex, bacteria"

[31] "eco\_M00238 D-Methionine transport system"

[32] "eco\_M00064 ADP-L-glycero-D-manno-heptose biosynthesis"

[33] "eco\_M00015 Proline biosynthesis, glutamate => proline"

[34] "eco\_M00844 Arginine biosynthesis, ornithine => arginine"

[35] "eco\_M00555 Betaine biosynthesis, choline => betaine"

[36] "eco\_M00545 Trans-cinnamate degradation, trans-cinnamate => acetyl-CoA"

[37] "eco\_M00435 Taurine transport system"

[38] "eco\_M00022 Shikimate pathway, phosphoenolpyruvate + erythrose-4P => chorismate"

[39] "eco\_M00434 PhoR-PhoB (phosphate starvation response) two-component regulatory system"

[40] "eco\_M00335 Sec (secretion) system"

[41] "eco\_M00364 C10-C20 isoprenoid biosynthesis, bacteria"

[42] "eco\_M00417 Cytochrome o ubiquinol oxidase"

[43] "eco\_M00707 Multidrug resistance, MdlAB/SmdAB transporter"

[44] "eco\_M00647 Multidrug resistance, efflux pump AcrAB-TolC/SmeDEF"

[45] "eco\_M00646 Multidrug resistance, efflux pump AcrAD-TolC"

[46] "eco\_M00049 Adenine ribonucleotide biosynthesis, IMP => ADP,ATP"

[47] "eco\_M00211 Putative ABC transport system"

[48] "eco\_M00258 Putative ABC transport system"

[49] "eco\_M00048 Inosine monophosphate biosynthesis, PRPP + glutamine => IMP"

[50] "eco\_M00360 Aminoacyl-tRNA biosynthesis, prokaryotes"

[51] "eco\_M00452 CusS-CusR (copper tolerance) two-component regulatory system"

[52] "eco\_M00116 Menaquinone biosynthesis, chorismate => menaquinone"

[53] "eco\_M00486 CitA-CitB (citrate fermentation) two-component regulatory system"

[54] "eco\_M00724 Cationic antimicrobial peptide (CAMP) resistance, palmitoyl transferase PagP"

[55] "eco\_M00336 Twin-arginine translocation (Tat) system"

[56] "eco\_M00230 Glutamate/aspartate transport system"

[57] "eco\_M00117 Ubiquinone biosynthesis, prokaryotes, chorismate => ubiquinone"

[58] "eco\_M00267 PTS system, N-acetylglucosamine-specific II component"

[59] "eco\_M00549 Nucleotide sugar biosynthesis, glucose => UDP-glucose"

[60] "eco\_M00454 KdpD-KdpE (potassium transport) two-component regulatory system"

[61] "eco\_M00011 Citrate cycle, second carbon oxidation, 2-oxoglutarate => oxaloacetate"

[62] "eco\_M00149 Succinate dehydrogenase, prokaryotes"

[63] "eco\_M00305 PTS system, 2-O-A-mannosyl-D-glycerate-specific II component"

[64] "eco\_M00153 Cytochrome bd ubiquinol oxidase"

[65] "eco\_M00001 Glycolysis (Embden-Meyerhof pathway), glucose => pyruvate"

[66] "eco\_M00002 Glycolysis, core module involving three-carbon compounds"

[67] "eco\_M00003 Gluconeogenesis, oxaloacetate => fructose-6P"

[68] "eco\_M00632 Galactose degradation, Leloir pathway, galactose => alpha-D-glucose-1P"

[69] "eco\_M00554 Nucleotide sugar biosynthesis, galactose => UDP-galactose"

[70] "eco\_M00362 Nucleotide sugar biosynthesis, prokaryotes"

[71] "eco\_M00189 Molybdate transport system"

[72] "eco\_M00006 Pentose phosphate pathway, oxidative phase, glucose 6P => ribulose 5P"

[73] "eco\_M00008 Entner-Doudoroff pathway, glucose-6P => glyceraldehyde-3P + pyruvate"

[74] "eco\_M00123 Biotin biosynthesis, pimeloyl-ACP/CoA => biotin"

[75] "eco\_M00227 Glutamine transport system"

[76] "eco\_M00348 Glutathione transport system"

[77] "eco\_M00300 Putrescine transport system"

[78] "eco\_M00229 Arginine transport system"

[79] "eco\_M00709 Macrolide resistance, MacAB-TolC transporter"

[80] "eco\_M00020 Serine biosynthesis, glycerate-3P => serine"

[81] "eco\_M00052 Pyrimidine ribonucleotide biosynthesis, UMP => UDP/UTP,CDP/CTP"

[82] "eco\_M00063 CMP-KDO biosynthesis"

[83] "eco\_M00746 Multidrug resistance, repression of porin OmpF"

[84] "eco\_M00436 Sulfonate transport system"

[85] "eco\_M00742 Aminoglycoside resistance, protease FtsH"

[86] "eco\_M00455 TorS-TorR (TMAO respiration) two-component regulatory system"

[87] "eco\_M00394 RNA degradosome"

[88] "eco\_M00082 Fatty acid biosynthesis, initiation"

[89] "eco\_M00265 PTS system, glucose-specific II component"

[90] "eco\_M00299 Spermidine/putrescine transport system"

[91] "eco\_M00444 PhoQ-PhoP (magnesium transport) two-component regulatory system"

[92] "eco\_M00721 Cationic antimicrobial peptide (CAMP) resistance, arnBCADTEF operon"

[93] "eco\_M00723 Cationic antimicrobial peptide (CAMP) resistance, ethanolaminephosphotransferase EptB"

[94] "eco\_M00471 NarX-NarL (nitrate respiration) two-component regulatory system"

[95] "eco\_M00530 Dissimilatory nitrate reduction, nitrate => ammonia"

[96] "eco\_M00439 Oligopeptide transport system"

[97] "eco\_M00023 Tryptophan biosynthesis, chorismate => tryptophan"

[98] "eco\_M00739 Cationic peptide transport system"

[99] "eco\_M00136 GABA biosynthesis, prokaryotes, putrescine => GABA"

[100] "eco\_M00027 GABA (gamma-Aminobutyrate) shunt"

[101] "eco\_M00207 Putative multiple sugar transport system"

[102] "eco\_M00087 beta-Oxidation"

[103] "eco\_M00093 Phosphatidylethanolamine (PE) biosynthesis, PA => PS => PE"

[104] "eco\_M00193 Putative spermidine/putrescine transport system"

[105] "eco\_M00239 Peptides/nickel transport system"

[106] "eco\_M00219 AI-2 transport system"

[107] "eco\_M00631 D-Galacturonate degradation (bacteria), D-galacturonate => pyruvate + D-glyceraldehyde 3P"

[108] "eco\_M00061 D-Glucuronate degradation, D-glucuronate => pyruvate + D-glyceraldehyde 3P"

[109] "eco\_M00711 Multidrug resistance, efflux pump MdtIJ"

[110] "eco\_M00446 RstB-RstA two-component regulatory system"

[111] "eco\_M00050 Guanine ribonucleotide biosynthesis IMP => GDP,GTP"

[112] "eco\_M00275 PTS system, cellobiose-specific II component"

[113] "eco\_M00552 D-galactonate degradation, De Ley-Doudoroff pathway, D-galactonate => glycerate-3P"

[114] "eco\_M00086 beta-Oxidation, acyl-CoA synthesis"

[115] "eco\_M00276 PTS system, mannose-specific II component"

[116] "eco\_M00743 Aminoglycoside resistance, protease HtpX"

[117] "eco\_M00242 Zinc transport system"

[118] "eco\_M00213 L-Arabinose transport system"

[119] "eco\_M00475 BarA-UvrY (central carbon metabolism) two-component regulatory system"

[120] "eco\_M00234 Cystine transport system"

[121] "eco\_M00026 Histidine biosynthesis, PRPP => histidine"

[122] "eco\_M00793 dTDP-L-rhamnose biosynthesis"

[123] "eco\_M00053 Pyrimidine deoxyribonuleotide biosynthesis, CDP/CTP => dCDP/dCTP,dTDP/dTTP"

[124] "eco\_M00648 Multidrug resistance, efflux pump MdtABC"

[125] "eco\_M00450 BaeS-BaeR (envelope stress response) two-component regulatory system"

[126] "eco\_M00279 PTS system, galactitol-specific II component"

[127] "eco\_M00127 Thiamine biosynthesis, AIR => thiamine-P/thiamine-2P"

[128] "eco\_M00209 Osmoprotectant transport system"

[129] "eco\_M00214 Methyl-galactoside transport system"

[130] "eco\_M00273 PTS system, fructose-specific II component"

[131] "eco\_M00349 Microcin C transport system"

[132] "eco\_M00472 NarQ-NarP (nitrate respiration) two-component regulatory system"

[133] "eco\_M00259 Heme transport system"

[134] "eco\_M00474 RcsC-RcsD-RcsB (capsule synthesis) two-component regulatory system"

[135] "eco\_M00500 AtoS-AtoC (cPHB biosynthesis) two-component regulatory system"

[136] "eco\_M00761 Undecaprenylphosphate alpha-L-Ara4N biosynthesis, UDP-GlcA => undecaprenyl phosphate alpha-L-Ara4N"

[137] "eco\_M00144 NADH:quinone oxidoreductase, prokaryotes"

[138] "eco\_M00579 Phosphate acetyltransferase-acetate kinase pathway, acetyl-CoA => acetate"

[139] "eco\_M00225 Lysine/arginine/ornithine transport system"

[140] "eco\_M00226 Histidine transport system"

[141] "eco\_M00477 EvgS-EvgA (acid and drug tolerance) two-component regulatory system"

[142] "eco\_M00697 Multidrug resistance, efflux pump MdtEF-TolC"

[143] "eco\_M00306 PTS system, fructose-specific II-like component"

[144] "eco\_M00121 Heme biosynthesis, glutamate => heme"

[145] "eco\_M00846 Siroheme biosynthesis, glutamate => siroheme"

[146] "eco\_M00021 Cysteine biosynthesis, serine => cysteine"

[147] "eco\_M00266 PTS system, maltose/glucose-specific II component"

[148] "eco\_M00270 PTS system, trehalose-specific II component"

[149] "eco\_M00272 PTS system, beta-glucoside (arbutin/salicin/cellobiose)-specific II component"

[150] "eco\_M00303 PTS system, N-acetylmuramic acid-specific II component"

[151] "eco\_M00185 Sulfate transport system"

[152] "eco\_M00616 Sulfate-sulfur assimilation"

[153] "eco\_M00727 Cationic antimicrobial peptide (CAMP) resistance, N-acetylmuramoyl-L-alanine amidase AmiA and AmiC"

[154] "eco\_M00221 Putative simple sugar transport system"

[155] "eco\_M00502 GlrK-GlrR (amino sugar metabolism) two-component regulatory system"

[156] "eco\_M00024 Phenylalanine biosynthesis, chorismate => phenylalanine"

[157] "eco\_M00025 Tyrosine biosynthesis, chorismate => tyrosine"

[158] "eco\_M00208 Glycine betaine/proline transport system"

[159] "eco\_M00701 Multidrug resistance, efflux pump EmrAB"

[160] "eco\_M00118 Glutathione biosynthesis, glutamate => glutathione"

[161] "eco\_M00280 PTS system, glucitol/sorbitol-specific II component"

[162] "eco\_M00176 Assimilatory sulfate reduction, sulfate => H2S"

[163] "eco\_M00028 Ornithine biosynthesis, glutamate => ornithine"

[164] "eco\_M00274 PTS system, mannitol-specific II component"

[165] "eco\_M00331 Type II general secretion pathway"

[166] "eco\_M00453 QseC-QseB (quorum sensing) two-component regulatory system"

[167] "eco\_M00210 Phospholipid transport system"

[168] "eco\_M00168 CAM (Crassulacean acid metabolism), dark"

[169] "eco\_M00696 Multidrug resistance, efflux pump AcrEF-TolC"

[170] "eco\_M00445 EnvZ-OmpR (osmotic stress response) two-component regulatory system"

[171] "eco\_M00198 Putative sn-glycerol-phosphate transport system"

[172] "eco\_M00237 Branched-chain amino acid transport system"

[173] "eco\_M00256 Cell division transport system"

[174] "eco\_M00440 Nickel transport system"

[175] "eco\_M00324 Dipeptide transport system"

[176] "eco\_M00215 D-Xylose transport system"

[177] "eco\_M00550 Ascorbate degradation, ascorbate => D-xylulose-5P"

[178] "eco\_M00183 RNA polymerase, bacteria"

[179] "eco\_M00473 UhpB-UhpA (hexose phosphates uptake) two-component regulatory system"

[180] "eco\_M00271 PTS system, beta-glucoside-specific II component"

[181] "eco\_M00222 Phosphate transport system"

[182] "eco\_M00157 F-type ATPase, prokaryotes and chloroplasts"

[183] "eco\_M00212 Ribose transport system"

[184] "eco\_M00497 GlnL-GlnG (nitrogen regulation) two-component regulatory system"

[185] "eco\_M00447 CpxA-CpxR (envelope stress response) two-component regulatory system"

[186] "eco\_M00499 HydH-HydG (metal tolerance) two-component regulatory system"

[187] "eco\_M00194 Maltose/maltodextrin transport system"

[188] "eco\_M00217 D-Allose transport system"

[189] "eco\_M00451 BasS-BasR (antimicrobial peptide resistance) two-component regulatory system"

[190] "eco\_M00722 Cationic antimicrobial peptide (CAMP) resistance, ethanolaminephosphotransferase EptA"

[191] "eco\_M00488 DcuS-DcuR (C4-dicarboxylate metabolism) two-component regulatory system"

[192] "eco\_M00150 Fumarate reductase, prokaryotes"

[193] "eco\_M00283 PTS system, ascorbate-specific II component"

[194] "eco\_M00449 CreC-CreB (phosphate regulation) two-component regulatory system"

[195] "eco\_M00456 ArcB-ArcA (anoxic redox control) two-component regulatory system"

[196] "eco\_M00192 Putative thiamine transport system"

Might write a script that parse the pages and see if there is “Reaction” session found