

[Genome info](#)[Pathway map](#)[Brite hierarchy](#)[Module](#)[Genome map](#)[Blast](#)[Taxonomy](#)

Search genes:

KEGG Mapper: [Search Pathway](#)
[Search&Color Pathway](#)

KEGG pathway maps

Metabolism

Global and overview maps

- 01100 [Metabolic pathways](#)
- 01200 [Carbon metabolism](#)
- 01210 [2-Oxocarboxylic acid metabolism](#)
- 01212 [Fatty acid metabolism](#)
- 01230 [Biosynthesis of amino acids](#)

Carbohydrate metabolism

- 00010 [Glycolysis / Gluconeogenesis](#)
- 00020 [Citrate cycle \(TCA cycle\)](#)
- 00030 [Pentose phosphate pathway](#)
- 00040 [Pentose and glucuronate interconversions](#)
- 00051 [Fructose and mannose metabolism](#)
- 00052 [Galactose metabolism](#)
- 00053 [Ascorbate and aldarate metabolism](#)
- 00500 [Starch and sucrose metabolism](#)
- 00520 [Amino sugar and nucleotide sugar metabolism](#)
- 00620 [Pyruvate metabolism](#)
- 00630 [Glyoxylate and dicarboxylate metabolism](#)
- 00640 [Propanoate metabolism](#)
- 00650 [Butanoate metabolism](#)
- 00562 [Inositol phosphate metabolism](#)

Energy metabolism

- 00190 [Oxidative phosphorylation](#)
- 00910 [Nitrogen metabolism](#)
- 00920 [Sulfur metabolism](#)

Lipid metabolism

- 00061 [Fatty acid biosynthesis](#)
- 00062 [Fatty acid elongation](#)
- 00071 [Fatty acid degradation](#)
- 00072 [Synthesis and degradation of ketone bodies](#)
- 00100 [Steroid biosynthesis](#)
- 00120 [Primary bile acid biosynthesis](#)
- 00140 [Steroid hormone biosynthesis](#)
- 00561 [Glycerolipid metabolism](#)
- 00564 [Glycerophospholipid metabolism](#)
- 00565 [Ether lipid metabolism](#)
- 00600 [Sphingolipid metabolism](#)
- 00590 [Arachidonic acid metabolism](#)
- 00591 [Linoleic acid metabolism](#)
- 00592 [alpha-Linolenic acid metabolism](#)
- 01040 [Biosynthesis of unsaturated fatty acids](#)

Nucleotide metabolism

- 00230 [Purine metabolism](#)
- 00240 [Pyrimidine metabolism](#)

Amino acid metabolism

- 00250 [Alanine, aspartate and glutamate metabolism](#)
- 00260 [Glycine, serine and threonine metabolism](#)
- 00270 [Cysteine and methionine metabolism](#)
- 00280 [Valine, leucine and isoleucine degradation](#)
- 00290 [Valine, leucine and isoleucine biosynthesis](#)
- 00310 [Lysine degradation](#)
- 00220 [Arginine biosynthesis](#)
- 00330 [Arginine and proline metabolism](#)
- 00340 [Histidine metabolism](#)
- 00350 [Tyrosine metabolism](#)
- 00360 [Phenylalanine metabolism](#)
- 00380 [Tryptophan metabolism](#)
- 00400 [Phenylalanine, tyrosine and tryptophan biosynthesis](#)

Metabolism of other amino acids

- 00410 [beta-Alanine metabolism](#)
- 00430 [Taurine and hypotaurine metabolism](#)
- 00440 [Phosphonate and phosphinate metabolism](#)

- 00450 [Selenocompound metabolism](#)
- 00471 [D-Glutamine and D-glutamate metabolism](#)
- 00472 [D-Arginine and D-ornithine metabolism](#)
- 00480 [Glutathione metabolism](#)
- Glycan biosynthesis and metabolism
 - 00510 [N-Glycan biosynthesis](#)
 - 00512 [Mucin type O-glycan biosynthesis](#)
 - 00515 [Mannose type O-glycan biosynthesis](#)
 - 00514 [Other types of O-glycan biosynthesis](#)
 - 00532 [Glycosaminoglycan biosynthesis - chondroitin sulfate / dermatan sulfate](#)
 - 00534 [Glycosaminoglycan biosynthesis - heparan sulfate / heparin](#)
 - 00533 [Glycosaminoglycan biosynthesis - keratan sulfate](#)
 - 00531 [Glycosaminoglycan degradation](#)
 - 00563 [Glycosylphosphatidylinositol \(GPI\)-anchor biosynthesis](#)
 - 00601 [Glycosphingolipid biosynthesis - lacto and neolacto series](#)
 - 00603 [Glycosphingolipid biosynthesis - globo and isoglobo series](#)
 - 00604 [Glycosphingolipid biosynthesis - ganglio series](#)
 - 00511 [Other glycan degradation](#)
- Metabolism of cofactors and vitamins
 - 00730 [Thiamine metabolism](#)
 - 00740 [Riboflavin metabolism](#)
 - 00750 [Vitamin B6 metabolism](#)
 - 00760 [Nicotinate and nicotinamide metabolism](#)
 - 00770 [Pantothenate and CoA biosynthesis](#)
 - 00780 [Biotin metabolism](#)
 - 00785 [Lipoic acid metabolism](#)
 - 00790 [Folate biosynthesis](#)
 - 00670 [One carbon pool by folate](#)
 - 00830 [Retinol metabolism](#)
 - 00860 [Porphyrin and chlorophyll metabolism](#)
 - 00130 [Ubiquinone and other terpenoid-quinone biosynthesis](#)
- Metabolism of terpenoids and polyketides
 - 00900 [Terpenoid backbone biosynthesis](#)
- Biosynthesis of other secondary metabolites
 - 00232 [Caffeine metabolism](#)
 - 00524 [Neomycin, kanamycin and gentamicin biosynthesis](#)
- Xenobiotics biodegradation and metabolism
 - 00980 [Metabolism of xenobiotics by cytochrome P450](#)
 - 00982 [Drug metabolism - cytochrome P450](#)
 - 00983 [Drug metabolism - other enzymes](#)

Genetic Information Processing

- Transcription
 - 03020 [RNA polymerase](#)
 - 03022 [Basal transcription factors](#)
 - 03040 [Spliceosome](#)
- Translation
 - 03010 [Ribosome](#)
 - 00970 [Aminoacyl-tRNA biosynthesis](#)
 - 03013 [RNA transport](#)
 - 03015 [mRNA surveillance pathway](#)
 - 03008 [Ribosome biogenesis in eukaryotes](#)
- Folding, sorting and degradation
 - 03060 [Protein export](#)
 - 04141 [Protein processing in endoplasmic reticulum](#)
 - 04130 [SNARE interactions in vesicular transport](#)
 - 04120 [Ubiquitin mediated proteolysis](#)
 - 04122 [Sulfur relay system](#)
 - 03050 [Proteasome](#)
 - 03018 [RNA degradation](#)
- Replication and repair
 - 03030 [DNA replication](#)
 - 03410 [Base excision repair](#)
 - 03420 [Nucleotide excision repair](#)
 - 03430 [Mismatch repair](#)
 - 03440 [Homologous recombination](#)
 - 03450 [Non-homologous end-joining](#)
 - 03460 [Fanconi anemia pathway](#)

Environmental Information Processing

- Membrane transport
 - 02010 [ABC transporters](#)
- Signal transduction
 - 04014 [Ras signaling pathway](#)
 - 04015 [Rap1 signaling pathway](#)
 - 04010 [MAPK signaling pathway](#)
 - 04012 [ErbB signaling pathway](#)
 - 04310 [Wnt signaling pathway](#)

- 04330 Notch signaling pathway
- 04340 Hedgehog signaling pathway
- 04350 TGF-beta signaling pathway
- 04390 Hippo signaling pathway
- 04392 Hippo signaling pathway - multiple species
- 04370 VEGF signaling pathway
- 04371 Apelin signaling pathway
- 04630 Jak-STAT signaling pathway
- 04064 NF-kappa B signaling pathway
- 04668 TNF signaling pathway
- 04066 HIF-1 signaling pathway
- 04068 FoxO signaling pathway
- 04020 Calcium signaling pathway
- 04070 Phosphatidylinositol signaling system
- 04072 Phospholipase D signaling pathway
- 04071 Sphingolipid signaling pathway
- 04024 cAMP signaling pathway
- 04022 cGMP-PKG signaling pathway
- 04151 PI3K-Akt signaling pathway
- 04152 AMPK signaling pathway
- 04150 mTOR signaling pathway
- Signaling molecules and interaction
- 04080 Neuroactive ligand-receptor interaction
- 04060 Cytokine-cytokine receptor interaction
- 04512 ECM-receptor interaction
- 04514 Cell adhesion molecules (CAMs)

Cellular Processes

Transport and catabolism

- 04144 Endocytosis
- 04145 Phagosome
- 04142 Lysosome
- 04146 Peroxisome
- 04140 Autophagy - animal
- 04136 Autophagy - other
- 04137 Mitophagy - animal

Cell growth and death

- 04110 Cell cycle
- 04114 Oocyte meiosis
- 04210 Apoptosis
- 04215 Apoptosis - multiple species
- 04216 Ferroptosis
- 04217 Necroptosis
- 04115 p53 signaling pathway
- 04218 Cellular senescence

Cellular community - eukaryotes

- 04510 Focal adhesion
- 04520 Adherens junction
- 04530 Tight junction
- 04540 Gap junction
- 04550 Signaling pathways regulating pluripotency of stem cells

Cell motility

- 04810 Regulation of actin cytoskeleton

Organismal Systems

Immune system

- 04640 Hematopoietic cell lineage
- 04610 Complement and coagulation cascades
- 04611 Platelet activation
- 04620 Toll-like receptor signaling pathway
- 04621 NOD-like receptor signaling pathway
- 04622 RIG-I-like receptor signaling pathway
- 04623 Cytosolic DNA-sensing pathway
- 04650 Natural killer cell mediated cytotoxicity
- 04612 Antigen processing and presentation
- 04660 T cell receptor signaling pathway
- 04658 Th1 and Th2 cell differentiation
- 04659 Th17 cell differentiation
- 04657 IL-17 signaling pathway
- 04662 B cell receptor signaling pathway
- 04664 Fc epsilon RI signaling pathway
- 04666 Fc gamma R-mediated phagocytosis
- 04670 Leukocyte transendothelial migration
- 04672 Intestinal immune network for IgA production
- 04062 Chemokine signaling pathway

Endocrine system

- 04911 Insulin secretion
- 04910 Insulin signaling pathway

04922 [Glucagon signaling pathway](#)
 04923 [Regulation of lipolysis in adipocytes](#)
 04920 [Adipocytokine signaling pathway](#)
 03320 [PPAR signaling pathway](#)
 04912 [GnRH signaling pathway](#)
 04913 [Ovarian steroidogenesis](#)
 04915 [Estrogen signaling pathway](#)
 04914 [Progesterone-mediated oocyte maturation](#)
 04917 [Prolactin signaling pathway](#)
 04921 [Oxytocin signaling pathway](#)
 04926 [Relaxin signaling pathway](#)
 04918 [Thyroid hormone synthesis](#)
 04919 [Thyroid hormone signaling pathway](#)
 04916 [Melanogenesis](#)
 04924 [Renin secretion](#)
 04614 [Renin-angiotensin system](#)
 04925 [Aldosterone synthesis and secretion](#)
Circulatory system
 04260 [Cardiac muscle contraction](#)
 04261 [Adrenergic signaling in cardiomyocytes](#)
 04270 [Vascular smooth muscle contraction](#)
Digestive system
 04970 [Salivary secretion](#)
 04971 [Gastric acid secretion](#)
 04972 [Pancreatic secretion](#)
 04976 [Bile secretion](#)
 04973 [Carbohydrate digestion and absorption](#)
 04974 [Protein digestion and absorption](#)
 04975 [Fat digestion and absorption](#)
 04977 [Vitamin digestion and absorption](#)
 04978 [Mineral absorption](#)
Excretory system
 04962 [Vasopressin-regulated water reabsorption](#)
 04960 [Aldosterone-regulated sodium reabsorption](#)
 04961 [Endocrine and other factor-regulated calcium reabsorption](#)
 04964 [Proximal tubule bicarbonate reclamation](#)
 04966 [Collecting duct acid secretion](#)
Nervous system
 04724 [Glutamatergic synapse](#)
 04727 [GABAergic synapse](#)
 04725 [Cholinergic synapse](#)
 04728 [Dopaminergic synapse](#)
 04726 [Serotonergic synapse](#)
 04720 [Long-term potentiation](#)
 04730 [Long-term depression](#)
 04723 [Retrograde endocannabinoid signaling](#)
 04721 [Synaptic vesicle cycle](#)
 04722 [Neurotrophin signaling pathway](#)
Sensory system
 04744 [Phototransduction](#)
 04740 [Olfactory transduction](#)
 04742 [Taste transduction](#)
 04750 [Inflammatory mediator regulation of TRP channels](#)
Development
 04360 [Axon guidance](#)
 04380 [Osteoclast differentiation](#)
Aging
 04211 [Longevity regulating pathway](#)
 04213 [Longevity regulating pathway - multiple species](#)
Environmental adaptation
 04710 [Circadian rhythm](#)
 04713 [Circadian entrainment](#)

Human Diseases

Cancers: Overview
 05200 [Pathways in cancer](#)
 05230 [Central carbon metabolism in cancer](#)
 05231 [Choline metabolism in cancer](#)
 05202 [Transcriptional misregulation in cancer](#)
 05206 [MicroRNAs in cancer](#)
 05205 [Proteoglycans in cancer](#)
 05204 [Chemical carcinogenesis](#)
 05203 [Viral carcinogenesis](#)
Cancers: Specific types
 05210 [Colorectal cancer](#)
 05212 [Pancreatic cancer](#)
 05214 [Glioma](#)
 05216 [Thyroid cancer](#)
 05221 [Acute myeloid leukemia](#)

05220 Chronic myeloid leukemia
 05217 Basal cell carcinoma
 05218 Melanoma
 05211 Renal cell carcinoma
 05219 Bladder cancer
 05215 Prostate cancer
 05213 Endometrial cancer
 05224 Breast cancer
 05222 Small cell lung cancer
 05223 Non-small cell lung cancer
 Immune diseases
 05310 Asthma
 05322 Systemic lupus erythematosus
 05323 Rheumatoid arthritis
 05320 Autoimmune thyroid disease
 05321 Inflammatory bowel disease (IBD)
 05330 Allograft rejection
 05332 Graft-versus-host disease
 05340 Primary immunodeficiency
 Neurodegenerative diseases
 05010 Alzheimer's disease
 05012 Parkinson's disease
 05014 Amyotrophic lateral sclerosis (ALS)
 05016 Huntington's disease
 05020 Prion diseases
 Substance dependence
 05030 Cocaine addiction
 05031 Amphetamine addiction
 05032 Morphine addiction
 05033 Nicotine addiction
 05034 Alcoholism
 Cardiovascular diseases
 05418 Fluid shear stress and atherosclerosis
 05410 Hypertrophic cardiomyopathy (HCM)
 05412 Arrhythmogenic right ventricular cardiomyopathy (ARVC)
 05414 Dilated cardiomyopathy (DCM)
 05416 Viral myocarditis
 Endocrine and metabolic diseases
 04930 Type II diabetes mellitus
 04940 Type I diabetes mellitus
 04950 Maturity onset diabetes of the young
 04932 Non-alcoholic fatty liver disease (NAFLD)
 04931 Insulin resistance
 04933 AGE-RAGE signaling pathway in diabetic complications
 Infectious diseases: Bacterial
 05132 Salmonella infection
 05133 Pertussis
 05134 Legionellosis
 05150 Staphylococcus aureus infection
 05152 Tuberculosis
 05100 Bacterial invasion of epithelial cells
 Infectious diseases: Viral
 05166 HTLV-I infection
 05162 Measles
 05164 Influenza A
 05161 Hepatitis B
 05160 Hepatitis C
 05168 Herpes simplex infection
 05167 Kaposi's sarcoma-associated herpesvirus infection
 05169 Epstein-Barr virus infection
 05165 Human papillomavirus infection
 Infectious diseases: Parasitic
 05146 Amoebiasis
 05144 Malaria
 05145 Toxoplasmosis
 05140 Leishmaniasis
 05142 Chagas disease (American trypanosomiasis)
 05143 African trypanosomiasis
 Drug resistance: Antineoplastic
 01521 EGFR tyrosine kinase inhibitor resistance
 01524 Platinum drug resistance
 01523 Antifolate resistance
 01522 Endocrine resistance

KEGG2

PATHWAY

BRITE

GENES

GENOME

LIGAND

DISEASE

DRUG