|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Group |  | *Species* |  |  |
| Metazoa | Deuterostomes | vertebrate | Rodents | *Mus musculus* | GULO |  |
|  |  |  |  | *Rattus norvegicus* | GULO |  |
|  |  |  |  | *Cavia porcellus* | ~~GULO~~ |  |
|  |  |  |  | *Orcinus orca* | GULO |  |
|  |  |  | Primates | *Otolemur garnettii* | GULO |  |
|  |  |  |  | *Gorilla gorilla* | ~~GULO~~ |  |
|  |  |  |  | *Homo sapiens* | ~~GULO~~ |  |
|  |  |  | bats | *Rousettus leschenaultii* |  |  |
|  |  |  |  | *Pteropus vampyrus* |  |  |
|  |  |  | Reptile | *Alligator sinensis* | GULO |  |
|  |  |  | Birds | *Falco peregrinus* | GULO |  |
|  |  |  |  | *Gallus gallus* | GULO |  |
|  |  |  |  | *Zonotrichia albicollis* |  |  |
|  |  |  | Amphibian | *Xenopus laevis* | GULO |  |
|  |  |  | Fish | *Danio rerio* |  |  |
|  |  |  |  | *Takifugu rubripes* |  |  |
|  |  |  |  | *Scyliorhinus torazame* | GULO |  |
|  |  |  |  | *Triakis scyllium* | GULO |  |
|  |  | cephalochordata |  | *Branchiostoma floridae* | GULO |  |
|  |  | urochordata |  | *Ciona intestinalis* | GULO |  |
|  |  | hemichordates |  | *Saccoglossus kowalevskii* |  |  |
|  |  | echinoderms |  | *Strongylocentrotus purpuratus* | GULO |  |
|  | Lophotrochozoans | platyhelminthes |  | *Schistosoma mansoni* |  |  |
|  |  | annelids |  | *Capitella teleta* | GULO |  |
|  |  |  |  | *Helobdella robusta* |  |  |
|  |  | molluscs |  | *Aplysia californica* | GULO |  |
|  |  |  |  | *Haliotis discus hannai* | GULO |  |
|  |  |  |  | *Lottia gigantea* | GULO |  |
|  |  |  |  | *Crassostrea gigas* |  |  |
|  | Ecdysozoans | nematodes |  | *Caenorhabditis elegans* |  |  |
|  |  |  |  | *Brugia malayi* |  |  |
|  |  |  |  | *Caenorhabditis brenneri* |  |  |
|  |  |  |  | *Caenorhabditis briggsae* |  |  |
|  |  |  |  | *Caenorhabditis japonica* |  |  |
|  |  |  |  | *Caenorhabditis remanei* |  |  |
|  |  |  |  | *Loa loa* |  |  |
|  |  |  |  | *Pristionchus pacificus* |  |  |
|  |  |  |  | *Trichinella spiralis* |  |  |
|  |  | arthropods | Chelicerata | *Ixodes scapularis* | GULO |  |
|  |  |  |  | *Tetranychus urticae* |  |  |
|  |  |  | Myriapoda | *Strigamia maritima* | GULO |  |
|  |  |  | Crustacea | *Daphnia pulex* |  |  |
|  |  |  | Insecta | *Tribolium castaneum* |  |  |
|  |  |  |  | *Aedes aegypti* |  |  |
|  |  |  |  | *Anopheles darlingi* |  |  |
|  |  |  |  | *Anopheles gambiae* |  |  |
|  |  |  |  | *Culex quinquefasciatus* |  |  |
|  |  |  |  | *Drosophila ananassae* |  |  |
|  |  |  |  | *Drosophila erecta* |  |  |
|  |  |  |  | *Drosophila grimshawi* |  |  |
|  |  |  |  | *Drosophila melanogaster* |  |  |
|  |  |  |  | *Drosophila mojavensis* |  |  |
|  |  |  |  | *Drosophila persimilis* |  |  |
|  |  |  |  | *Drosophila pseudoobscura* |  |  |
|  |  |  |  | *Drosophila sechellia* |  |  |
|  |  |  |  | *Drosophila simulans* |  |  |
|  |  |  |  | *Drosophila virilis* |  |  |
|  |  |  |  | *Drosophila willistoni* |  |  |
|  |  |  |  | *Drosophila yakuba* |  |  |
|  |  |  |  | *Megaselia scalaris* |  |  |
|  |  |  |  | *Acyrthosiphon pisum* |  |  |
|  |  |  |  | *Rhodnius prolixus* |  |  |
|  |  |  |  | *Apis florea* |  |  |
|  |  |  |  | *Bombus impatiens* |  |  |
|  |  |  |  | *Apis mellifera* |  |  |
|  |  |  |  | *Atta cephalotes* |  |  |
|  |  |  |  | *Nasonia vitripennis* |  |  |
|  |  |  |  | *Bombyx mori* |  |  |
|  |  |  |  | *Danaus plexippus* |  |  |
|  |  |  |  | *Heliconius melpomene* |  |  |
|  |  |  |  | *Pediculus humanus* |  |  |
|  | cnidarians |  |  | *Nematostella vectensis* | GULO |  |
|  | poriferans |  |  | *Amphimedon queenslandica* | GULO |  |
|  | placozoa |  |  | *Trichoplax adhaerens* | GULO |  |
| Choanoflagellata |  |  |  | *Monosiga brevicolis* |  | GLDH |
|  |  |  |  | *Salpingoeca rosetta* |  | GLDH |
| Filasterea |  |  |  | *Capsaspora owczarzaki* | GULO |  |
| Ichtyosporea |  |  |  | *Sphaeroforma artica* |  |  |
|  |  |  |  |  |  |  |
| Fungi | Cryptomycota |  |  | *Rozella allomycis CSF55* |  |  |
|  | Microsporidia |  |  | *Antonospora locustae* |  |  |
|  |  |  |  | *Encephalitozoon cuniculi* |  |  |
|  |  |  |  | *Nematocida parisii* |  |  |
|  | Neocallimastigomycota | |  | *Piromyces sp. E2* |  |  |
|  | Chytridiomycota |  |  | *Batrachochytrium dendrobatidis* |  |  |
|  |  |  |  | *Gonapodya prolifera* |  | GLDH |
|  | Blastocladiomycota |  |  | *Catenaria anguillulae* | GULO |  |
|  | Kickxellomycotina |  |  | *Coemansia reversa* | GULO |  |
|  | Mucoromycotina |  |  | *Mucor circinelloides* | GULO |  |
|  |  |  |  | *Rhizopus oryzae* | GULO |  |
|  | Basidiomycetes |  |  | *Cryptococcus neoformans* | GULO |  |
|  |  |  |  | *Ustilago maydis* | GULO |  |
|  |  |  |  | *Agaricus bisporus* | GULO |  |
|  |  |  |  | *Scleroderma citrinum* | GULO |  |
|  |  |  |  | *Laccaria bicolor* | GULO |  |
|  |  |  |  | *Exidia glandulosa* | GULO |  |
|  |  |  |  | *Postia placenta* | GULO |  |
|  |  |  |  | *Tremella mesenterica* | GULO |  |
|  |  |  |  | *Gloephyllum trabeum* | GULO |  |
|  |  |  |  | *Coniophora puteana* | GULO |  |
|  | Ascomycetes |  |  | *Saccharomyces cerevisiae* | GULO |  |
|  |  |  |  | *Aspergillus niger* | GULO |  |
|  |  |  |  | *Neurospora crassa* | GULO |  |
| Nucleariidae |  |  |  | *Fonticula alba* |  |  |
|  |  |  |  |  |  |  |
| Apusumondida |  |  |  | *Thecamonas trahens* | GULO |  |

**Supplementary File 1: Distribution of *GULO* and *GLDH* in opisthokont and apusomonad genomes**