

List of sequences used for RT and RH phylogenies.

| Name | Organism | ID NCBI/Uniprot | Classification |
|------------------|---|-----------------|----------------|
| HBV | <i>Hepatitis B virus</i> | YP_009173866.1 | Hepadnavirus |
| WHV | <i>Woodchuck hepatitis virus 59</i> | P12899 | Hepadnavirus |
| DomCatH | <i>Domestic cat hepadnavirus</i> | NC_040719 | Hepadnavirus |
| Bluegill_HBV | <i>Bluegill hepatitis B virus</i> | NC_030445 | Hepadnavirus |
| ASHV | <i>Arctic ground squirrel hepatitis B</i> | U29144 | Hepadnavirus |
| RBVHB | <i>Roundleaf bat hepatitis B virus</i> | KC790376 | Hepadnavirus |
| Bat_hepadnavirus | <i>Bat hepadnavirus</i> | MG600411 | Hepadnavirus |
| SHBV | <i>Shrew hepatitis B virus</i> | MH484442 | Hepadnavirus |
| DHBV | <i>Duck hepatitis B virus</i> | P30028.1 | Hepadnavirus |
| LvNgaro1 | <i>Lytechinus variegatus</i> | BK001253 | Ngaro-like |
| HchiNgaro | <i>Hynobius chinensis</i> | GAQK01079872 | Ngaro-like |
| XtNgaro2 | <i>Xenopus tropicalis</i> | AC175582 | Ngaro-like |
| DIRS-7_CGi | <i>Crassostrea gigas</i> | Repbase | Ngaro-like |
| DIRS-32_ACar | <i>Anolis carolinensis</i> | Repbase | Ngaro-like |
| DIRS-6_CGi | <i>Crassostrea gigas</i> | Repbase | Ngaro-like |
| SpNgaro3 | <i>Strongylocentrotus purpuratus</i> | AAGJ04006304 | Ngaro-like |
| DIRS-22_NV | <i>Nematostella vectensis</i> | Repbase | Ngaro-like |
| LvNgaro2 | <i>Lytechinus variegatus</i> | AGCV01398517 | Ngaro-like |
| Ngaro1_Dr | <i>Danio rerio</i> | Repbase | Ngaro-like |
| MuLV | <i>Murine leukemia virus</i> | P03356.3 | Retrovirus |
| HTLV1 | <i>Human T-cell lymphotropic virus</i> | P03362.3 | Retrovirus |
| MMTV | <i>Mouse mammary tumor virus</i> | P03365.3 | Retrovirus |
| MPMV | <i>Mason-Pfizer monkey virus</i> | P07572.1 | Retrovirus |
| SIV | <i>Simian immunodeficiency virus</i> | P22382.2 | Retrovirus |
| HIV2 | <i>Human immunodeficiency virus type</i> | Q74120.3 | Retrovirus |
| CAEV | <i>Caprine arthritis encephalitis virus</i> | P33459.1 | Retrovirus |
| BFV | <i>Bovine foamy virus</i> | NC_001831 | Retrovirus |
| SERV | <i>Simian endogenous retrovirus</i> | U85505 | Retrovirus |
| SRV1 | <i>Simian retrovirus 1</i> | P04025 | Retrovirus |
| RSV | <i>Rous sarcoma virus</i> | BAD98246 | Retrovirus |
| FMV | <i>Figwort mosaic virus</i> | NP_619548.1 | Caulimovirus |
| BSOLV | <i>Banana streak OL virus</i> | AJ002234 | Caulimovirus |
| BsCVBV | <i>Bougainvillea spectabilis chlorotic</i> | EU034539 | Caulimovirus |
| CSSV | <i>Cacao swollen shoot virus</i> | L14546 | Caulimovirus |
| BSVAV | <i>Banana streak virus</i> | AY750155 | Caulimovirus |
| CSVMV | <i>Cassava vein mosaic virus</i> | U59751 | Caulimovirus |
| LLDAV | <i>Lamium leaf distortion associated</i> | NC_010737 | Caulimovirus |
| PVCV | <i>Petunia vein clearing virus</i> | NC_001839 | Caulimovirus |
| RTBV | <i>Rice tungro bacilliform virus</i> | X57924 | Caulimovirus |
| CerV | <i>Carnation etched ring virus</i> | P05400.1 | Caulimovirus |
| CaMV | <i>Cauliflower mosaic virus</i> | Q02964.1 | Caulimovirus |
| 17.6 | <i>Drosophila melanogaster</i> | P04323.1 | Gypsy |
| 297 | <i>Drosophila melanogaster</i> | P20825.1 | Gypsy |
| Gypsy | <i>Drosophila melanogaster</i> | P10401.1 | Gypsy |
| Ty3 | <i>Saccharomyces cerevisiae</i> | CAA97115.1 | Gypsy |
| MAGGY | <i>Pyricularia grisea</i> | L35053.1 | Gypsy |

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| Peabody | <i>Pisum sativum</i> | AF083074 | <i>Gypsy</i> |
| 412 | <i>Drosophila melanogaster</i> | X04132 | <i>Gypsy</i> |
| Micropia | <i>Drosophila melanogaster</i> | X14037 | <i>Gypsy</i> |
| Cer1 | <i>Caenorhabditis elegans</i> | U15406 | <i>Gypsy</i> |
| Mag | <i>Bombyx mori</i> | X17219 | <i>Gypsy</i> |
| Tor2 | <i>Oikopleura dioica</i> | AY634223 | <i>Gypsy</i> |
| Cinful1 | <i>Zea mays</i> | AF049110.1 | <i>Gypsy</i> |
| Copia | <i>Drosophila melanogaster</i> | P04146.3 | <i>Copia</i> |
| 1731 | <i>Drosophila melanogaster</i> | S00954 | <i>Copia</i> |
| Ty1 | <i>Saccharomyces cerevisiae</i> | P47100.3 | <i>Copia</i> |
| CoDi5.5 | <i>Thalassiosira pseudonana</i> | EU432490 | <i>Copia</i> |
| GalEa1 | <i>Eumunida annulosa</i> | EU097705 | <i>Copia</i> |
| Koala | <i>Oryza australiensis</i> | DQ365823 | <i>Copia</i> |
| Tnt-1 | <i>Nicotiana tabacum</i> | X13777 | <i>Copia</i> |
| Yokozuna | <i>Bombyx mori</i> | AB014676 | <i>Copia</i> |
| pCretro6 | <i>Phanerochaete chrysosporium</i> | DQ097838 | <i>Copia</i> |
| CoDi4.5 | <i>Thalassiosira pseudonana</i> | EU432485 | <i>Copia</i> |
| CoDi7.1 | <i>Phaeodactylum tricornutum</i> | EU432499 | <i>Copia</i> |
| Kangaroo | <i>Volvox carteri f. nagariensis</i> | AAM94957.1 | <i>PAT-like</i> |
| PAT | <i>Panagrellus redivivus</i> | Q26106 | <i>PAT-like</i> |
| DIRS-1_CCri | <i>Chondrus crispus</i> | Rebase | <i>PAT-like</i> |
| DIRS-1_CGi | <i>Crassostrea gigas</i> | Rebase | <i>PAT-like</i> |
| SkowPAT | <i>Saccoglossus kowalevskii</i> | ACQM01123180 | <i>PAT-like</i> |
| DIRS-1_NGr | <i>Naegleria gruberi</i> | Rebase | <i>PAT-like</i> |
| DIRS-1_PH | <i>Parhyale hawaiiensis</i> | Rebase | <i>DIRS</i> |
| EvenDIRS | <i>Echinogammarus veneris</i> | GARO01000003 | <i>DIRS</i> |
| DIRS-1_ACar | <i>Anolis carolinensis</i> | Rebase | <i>DIRS</i> |
| DIRS-6_CPB | <i>Chrysemys picta bellii</i> | Rebase | <i>DIRS</i> |
| DIRS-8_PSi | <i>Pelodiscus sinensis</i> | Rebase | <i>DIRS</i> |
| DIRS-12_DR | <i>Danio rerio</i> | Rebase | <i>DIRS</i> |
| DIRS-3_XT | <i>Xenopus tropicalis</i> | Rebase | <i>DIRS</i> |
| DIRS-7_XL | <i>Xenopus laevis</i> | Rebase | <i>DIRS</i> |
| DIRS-1_LG | <i>Lottia gigantea</i> | Rebase | <i>DIRS</i> |
| DIRS-1_CTe | <i>Capitella teleta</i> | Rebase | <i>DIRS</i> |
| DIRS-1_BF | <i>Branchiostoma floridae</i> | Rebase | <i>DIRS</i> |
| DIRS-1_NV | <i>Nematostella vectensis</i> | Rebase | <i>DIRS</i> |
| DIRS-1_NVi | <i>Nasonia vitripennis</i> | Rebase | <i>DIRS</i> |
| DIRS-1_SIn | <i>Solenopsis invicta</i> | Rebase | <i>DIRS</i> |
| DIRS-2_DPu | <i>Daphnia pulex</i> | Rebase | <i>DIRS</i> |
| DIRS-8_NV | <i>Nematostella vectensis</i> | Rebase | <i>DIRS</i> |
| DIRS-8_Lch | <i>Latimeria chalumnae</i> | Rebase | <i>DIRS</i> |
| DIRS1 | <i>Dictyostelium discoideum</i> | M11339 | <i>DIRS</i> |
| DIRS_Nvi | <i>Nasonia vitripennis</i> | Rebase | <i>DIRS</i> |
| PAO | <i>Bombyx mori</i> | Rebase | <i>Bel-Pao</i> |
| BEL | <i>Drosophila melanogaster</i> | U23420.1 | <i>Bel-Pao</i> |
| BEL-26_DR | <i>Danio rerio</i> | Rebase | <i>Bel-Pao</i> |
| Ninja | <i>Drosophila simulans</i> | D83207.1 | <i>Bel-Pao</i> |
| Tammy | <i>Antheraea mylitta</i> | AF530470.1 | <i>Bel-Pao</i> |
| Max | <i>Drosophila melanogaster</i> | AJ487856.1 | <i>Bel-Pao</i> |

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| Cer7 | <i>Caenorhabditis elegans</i> | AF014939.1 | <i>Bel-Pao</i> |
| Moose | <i>Anopheles gambiae</i> | AF060859.1 | <i>Bel-Pao</i> |
| Roo | <i>Drosophila melanogaster</i> | AY180917.1 | <i>Bel-Pao</i> |
| Suzu | <i>Takifugu rubripes</i> | AF537216.1 | <i>Bel-Pao</i> |
| BEL-4_LSal | <i>Lepeophtheirus salmonis</i> | Repbase | <i>Bel-Pao</i> |
| Ingi | <i>Trypanosoma brucei</i> | M16068 | <i>LINE</i> |
| Jockey | <i>Drosophila melanogaster</i> | P21328 | <i>LINE</i> |
| Lian | <i>Aedes aegypti</i> | Repbase | <i>LINE</i> |
| Bilbo | <i>Drosophila subobscura</i> | Repbase | <i>LINE</i> |
| TRAS1 | <i>Bombyx mori</i> | Repbase | <i>LINE</i> |
| SLACS | <i>Trypanosoma brucei</i> | CAA34931.1 | <i>LINE</i> |
| <i>S.pombe</i> | <i>Schizosaccharomyces pombe</i> | NP_596126.1 | <i>RH outgroup</i> |
| <i>G.gallus</i> | <i>Gallus gallus</i> | NP_990329.1 | <i>RH outgroup</i> |
| <i>C.fasciculata</i> | <i>Crithidia fasciculata</i> | Q07762.1 | <i>RH outgroup</i> |