**Table S1 Accession numbers of proteins used in phylogenetic analysis of *black*.**

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| **Gene name** | **Species** | **Accession number** |
| *Dm-black* | *Drosophila melanogaster* | NP\_001246025.1 |
| *Dsi-black* | *Drosophila simulans* | EDX04973.1 |
| *Der-black* | *Drosophila erecta* | XP\_001969575.1 |
| *Dy-black* | *Drosophila yakuba* | XP\_002088643.1 |
| *Dsu-black* | *Drosophila subpulchrella* | XP\_037708646.1 |
| *Dsuz-black* | *Drosophila suzukii* | XP\_016944996.1 |
| *Db-black* | *Drosophila biarmipes* | XP\_016962075.1 |
| *Dg-black* | *Drosophila gunungcola* | XP\_052852182.1 |
| *Dn-black* | *Drosophila novamexicana* | XP\_030569880.1 |
| *Dv-black* | *Drosophila virilis* | XP\_002057466.1 |
| *Zb-black* | *Zaprionus bogoriensis* | KAH8400543.1 |
| *Ag-black* | *Anoplophora glabripennis* | XP\_018569492.1 |
| *At-black* | *Aethina tumida* | XP\_019876701.1 |
| *Tm-black* | *Tenebrio molitor* | KAJ3629405.1 |
| *Ha-black* | *Harmonia axyridis* | QNH91387.1 |
| *Cs-black* | *Cryptotermes secundus* | XP\_023726911.1 |
| *Hv-black* | *Henosepilachna vigintioctopunctata* | UGX61743.1 |
| *Hh-black* | *Halyomorpha halys* | XP\_014278487.1 |
| *Nv-black* | *Nezara viridula* | CAH1397765.1 |
| *Of-blac* | *Oncopeltus fasciatus* | AMW91812.1 |
| *Lh-black* | *Lygus hesperus* | UZP65153.1 |
| *Nt-black* | *Nesidiocoris tenuis* | CAA9994472.1 |
| *Cl-black* | *Cimex lectularius* | XP\_014248186.1 |
| *Sa-black* | *Schistocerca americana* | XP\_046994042.1 |
| *Sp-black* | *Schistocerca piceifrons* | XP\_047111899.1 |
| *Sg-black* | *Schistocerca gregaria* | QVD39510.1 |
| *Zn-black* | *Zootermopsis nevadensis* | XP\_021937855.1 |
| *Cse-black* | *Cryptotermes secundus* | XP\_023726911.1 |
| *Cf-black* | *Coptotermes formosanus* | GFG32988.1 |
| *Bg-black* | *Blattella germanica* | PSN32645.1 |
| *Sl-black* | *Spodoptera littoralis* | CAB3509244.1 |
| *Se-black* | *Spodoptera exigua* | KAH9644147.1 |
| *Sf-black* | *Spodoptera frugiperd* | KAF9811383.1 |
| *Hz-black* | *Helicoverpa zea* | XP\_047026439.1 |
| *Har-black* | *Helicoverpa armigera* | XP\_021181644.2 |
| *Tn-black* | *Trichoplusia ni* | XP\_026732366.1 |
| *Ci-black* | *Chrysodeixis includens* | CAH0584123.1 |
| *Bma-black* | *Bombyx mandarina* | XP\_028030531.1 |
| *Bm-black* | *Bombyx mori* | AJQ30182.1 |
| *Ms-black* | *Manduca sexta* | XP\_030035154.1 |
| *Va-black* | *Vanessa atalanta* | XP\_047534855.1 |
| *Vt-black:* | *Vanessa tameamea* | XP\_026486789.1 |
| *Vc-black* | *Vanessa cardui* | XP\_046968956.1 |
| *Ni-black* | *Nymphalis io* | XP\_050351869.1 |
| *Ee-black* | *Euphydryas editha* | CAH2091357.1 |
| *Laa-black* | *Limenitis arthemis astyanax* | QHN70665.1 |
| *Ba-black* | *Bicyclus anynana* | XP\_023936449.2 |
| *Px-black* | *Papilio xuthus* | NP\_001298768.1 |
| *Pm-black* | *Papilio machaon* | XP\_014362088.2 |
| *Pp-black* | *Papilio polytes* | XP\_013140182.1 |
| *Ip-black* | *Iphiclides podalirius* | CAH2039807.1 |