

Table S1. Metadata of the 95 selected mitochondrial genomes

Higher taxon	Superfamily	Family	Subfamily	Species*	GenBank ID	Reference	
Dictyoptera	Blattaria	Blaberidae	Blaberinae	<i>Archimandrita tessellata</i>	MG882134.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Blaberinae	<i>Blaberus discoidalis</i>	MG882137.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Blaberinae	<i>Blaptica dubia</i>	NC_029224.1	Tian et al. (2015)	
Dictyoptera	Blattaria	Blaberidae	Blaberinae	<i>Byrsotria rothi</i>	MG882141.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Blaberinae	<i>Eublaberus distanti</i>	MG882147.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Blaberinae	<i>Phoetalia pallida</i>	MG882156.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Diplopterinae	<i>Diploptera punctata</i>	MG882143.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Epilamprinae	<i>Epilampra maya</i>	MG882194.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Epilamprinae	<i>Galiblatta cribrosa</i>	MG882232.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Epilamprinae	<i>Opisthoplatia orientalis</i>	NC_029225.1	Tian et al. (2015)	
Dictyoptera	Blattaria	Blaberidae	Epilamprinae	<i>Rhabdoblatta</i> sp.	MG882228.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Gyninae	<i>Gyna capucina</i>	MG882152.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Oxyhaloinae	<i>Aeluropoda insignis</i>	MG882133.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Oxyhaloinae	<i>Elliptorhina chopardi</i>	MG882144.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Oxyhaloinae	<i>Gromphadorhina portentosa</i>	MG882150.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Oxyhaloinae	<i>Nauphoeta cinerea</i>	NC_035052.1	Dumans et al. (2017)	
Dictyoptera	Blattaria	Blaberidae	Oxyhaloinae	<i>Rhyparobia grandis</i>	MG882208.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Panchlorinae	<i>Panchlora nivea</i>	NC_030002.1	Cheng et al. (2016)	
Dictyoptera	Blattaria	Blaberidae	Panesthiinae	<i>Panesthia</i> sp.	MG882229.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Panesthiinae/Geoscapheinae**	<i>Macropanesthia</i> sp.	MG882202.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Perisphaerinae?	<i>Laxta</i> sp.	MG882210.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Perisphaerinae?	<i>Neolaxta</i> sp.	MG882201.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Pycnoscelinae	<i>Pycnoscelus nigra</i>	MG882159.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Zetoborinae	<i>Schultesia lampyridiformis</i>	MG882163.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	<i>incertae sedis</i>	<i>Paranauphoeta circumdata</i>	MG882225.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Anallacta methanoides</i>	MG882165.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Asiablatta kyotensis</i>	MG882166.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Beybienkoa kurandanensis</i>	MG882208.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Blattella bisignata</i>	NC_018549.1	Chen (2012)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Carbrunneria paramaxi</i>	MG882214.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Ischnoptera bilunata</i>	MG882185.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Ischnoptera deropeltiformis</i>	MG882186.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Blattella dimidiatipes</i>	MG882195.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Paratemnopteryx coulouiana</i>	MG882168.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Parcoblatta lata</i>	MG882170.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Symploce pallens</i>	MG882173.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Ectobius</i> sp.	MG882236.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Ectoneura hanitschi</i>	MG882219.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Phyllodromia</i> sp.	MG882226.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Megaloblatta</i> sp.	MG882218.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Allacta australiensis</i>	MG882127.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Pseudophyllodromiinae</i>	<i>Allacta bimaculata</i>	MG882128.1	Bourguignon et al. (2018)
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Pseudophyllodromiinae</i>	<i>Amazonina</i> sp.	MG882237.1	Bourguignon et al. (2018)
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Pseudophyllodromiinae</i>	<i>Balta</i> sp.	MG882206.1	Bourguignon et al. (2018)
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Pseudophyllodromiinae</i>	<i>Ellipsoidon</i> sp.	MG882211.1	Bourguignon et al. (2018)
Dictyoptera	Blattaria	Blaberidae	Ectobiidae	<i>Pseudophyllodromiinae</i>	<i>Euphyllodromia</i> sp.	MG882238.1	Bourguignon et al. (2018)
Dictyoptera	Blattaria	Blattoidea	Anaplectidae	<i>Anaplecta calosoma</i>	MG882215.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattoidea	Anaplectidae	<i>Anaplecta omei</i>	MG882129.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Archiblattinae	<i>Protagonista lugubris</i>	MG882216.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Blattinae	<i>Blatta orientalis</i>	MG882174.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Blattinae	<i>Deropeltis paulinoi</i>	MG882175.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Blattinae	<i>Neostylopyga rhombifolia</i>	NC_034842.1	Ma et al. (2017)	
Dictyoptera	Blattaria	Blattidae	Blattinae	<i>Periplaneta brunnea</i>	NC_039940.1	Gong et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Blattinae	<i>Shelfordella lateralis</i>	NC_030003.1	Cheng et al. (2016)	
Dictyoptera	Blattaria	Blattidae	Polyzosteriinae	<i>Cosmozosteria</i> sp.	MG882203.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Polyzosteriinae	<i>Eurycotis opaca</i>	MG882178.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Polyzosteriinae	<i>Melanozosteria nitida</i>	MG882204.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Polyzosteriinae	<i>Methana</i> sp.	MG882130.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Polyzosteriinae	<i>Platzosteria</i> sp.	MG882132.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattidae	Polyzosteriinae	<i>Polyzosteria viridissima</i>	MG882209.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattoidea	Cryptocercidae	<i>Cryptocercus hirtus</i>	MG882220.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattoidea	Cryptocercidae	<i>Cryptocercus kyebangensis</i>	NC_030191.1	Jeon & Park (2015)	
Dictyoptera	Blattaria	Blattoidea	Cryptocercidae	<i>Cryptocercus meridianus</i>	MG882224.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattoidea	Cryptocercidae	<i>Cryptocercus punctulatus</i>	MG882217.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattoidea	Lamproblattidae	<i>Lamproblatta albipalpus</i>	MG882233.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattoidea	Lamproblattidae	<i>Lamproblatta</i> sp.	MG882222.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattoidea	Tryonicidae	<i>Tryonicus mackerrasae</i>	MG882205.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Blattoidea	Tryonicidae	<i>Tryonicus parvus</i>	MG882230.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Corydioidea	Corydiidae	<i>Arenivaga</i> sp.	MG882196.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Corydioidea	Corydiidae	<i>Ergaula capucina</i>	MG882188.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Corydioidea	Corydiidae	<i>Eupolyphaga sinensis</i>	NC_014274.1	Zhang et al. (2009)	
Dictyoptera	Blattaria	Corydioidea	Corydiidae	<i>Heterogamodes hebraica</i>	MG882193.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Corydioidea	Corydiidae	<i>Polyphaga aegyptiaca</i>	MG882189.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Corydioidea	Corydiidae	<i>Therea regularis</i>	MG882192.1	Bourguignon et al. (2018)	
Dictyoptera	Blattaria	Corydioidea	Nocticolidae	<i>Nocticola</i> sp.	MG882221.1	Bourguignon et al. (2018)	
Dictyoptera	Isoptera	-	Hodotermitidae	<i>Microhodotermes viator</i>	JX144931.1	Cameron et al. (2012)	
Dictyoptera	Isoptera	-	Kalotermitidae	<i>Neotermes insularis</i>	NC_018124.1	Cameron et al. (2012)	
Dictyoptera	Isoptera	-	Mastotermitidae	<i>Mastotermes darwiniensis</i>	NC_018120.1	Cameron et al. (2012)	
Dictyoptera	Isoptera	-	Termopsidae	<i>Hodotermopsis sjostedi</i>	KP026259.1	Bourguignon et al. (2014)	
Dictyoptera	Isoptera	-	Termopsidae	<i>Poortermes adamsoni</i>	JX144930.1	Cameron et al. (2012)	
Dictyoptera	Isoptera	-	Termopsidae	<i>Zootermopsis angusticollis</i>	JX144932.1	Cameron et al. (2012)	
Dictyoptera	Mantodea	-	Hymenopodidae	<i>Creobroter gemmatus</i>	NC_030267.1	Ye et al. (2016)	
Dictyoptera	Mantodea	-	Liturgusidae	<i>Humbertiella nada</i>	NC_030264.1	Ye et al. (2016)	
Dictyoptera	Mantodea	-	Mantidae	<i>Mantis religiosa</i>	NC_030265.1	Ye et al. (2016)	
Dictyoptera	Mantodea	-	Metallyticidae	<i>Metallyticus</i> sp.	KY689122.1	Zhang et al. (2018)	
Dictyoptera	Mantodea	-	Tarachodidae	<i>Leptomantella albella</i>	KJ463364.1	Wang et al. (2014)	
Eukinolabia	Embioptera	-	Oligotomidae	<i>Aposthonia borneensis</i>	KX965988.1	Chen et al. (2017)	
Eukinolabia	Embioptera	-	Oligotomidae	<i>Aposthonia japonica</i>	AB639034.1	Kōmoto et al. (2012)	
Eukinolabia	Phasmatodea	-	Lonchodidae	<i>Micadina phluctainoides</i>	NC_014673.1	Kōmoto et al. (2010)	
Eukinolabia	Phasmatodea	-	Platyraninae	<i>Megacrania alpheus adan</i>	AB477471.1	Kōmoto et al. (2010)	
Eukinolabia	Phasmatodea	-	Timematidae	<i>Timema californicum</i>	DQ241799.1	Cameron et al. (2005)	
Eukinolabia	Phasmatodea	Bacilloidea	Heteropteryginae	<i>Heteropteryx dilatata</i>	NC_014680.1	Kōmoto et al. (2010)	
Eukinolabia	Phasmatodea	Phyllioidea	Phylliinae	<i>Phyllium giganteum</i>	AB477461.1	Kōmoto et al. (2010)	
Xenonomia	Grylloblattodea	-	Grylloblattidae	<i>Grylloblatta sculleni</i>	DQ241796.1	Cameron et al. (2005)	
Xenonomia	Mantophasmatodea	-	Mantophasmatidae	<i>Sclerophasma paresisense</i>	NC_007701.1	Cameron et al. (2005)	

* Red species are excluded from the final dataset

** Panesthiinae sensu lato include Geoscapheinae