Divergence	Calibration
Monotremata-Theria (= 'root height')	Hard minimum = 162.5 MYA – age of oldest known theriimorph mammals (following Benton and Donoghue [1])
	Mean = 185 MYA - lower end of the molecular estimates of van Rheede et al. [2]
	Soft maximum = 220 MYA – the age of the oldest known mammals [3]
Ornithorhynchus-Tachyglossus	Hard minimum = 15.92 MYA – age (lower bound) of the oldest known tachyglossid, *Megalibgwilia* [4,5] (the apparent early Palaeocene ornithorhynchid *Monotrematum sudamericum* was not used to date this node, as it is possible that an ornithorhynchid-like morphology is plesiomorphic for crown-group monotremes as a whole)
	Mean = 52.2 MYA – lower end of molecular date of Bininda-Emonds et al. [6]
	Soft maximum = 125 MYA – age (lower bound) of oldest known monotreme, *Teinolophus trusleri* [7]
Eutheria-Metatheria	Hard minimum = 124.6 MYA – age (lower bound) of the oldest known eutherian, *Eomaia scansoria* [8], and the oldest known metatherian, *Sinodelphys szalayi* [9]
	Mean = 165 MYA – lower end of the molecular estimates of van Rheede et al. [2]

Soft maximum = 185 MYA – based on estimated age of Monotremata-Theria split assumed here

Eulipotyphla-Xenarthra

Hard minimum = 58.5 MYA – age of oldest known xenarthran, *Riostegotherium yanei* [10]

Mean = 96 MYA – lower end (lower bound of 95% confidence interval) of molecular date of Murphy et al. [11]

Soft maximum = 125.4 MYA – age (upper bound) of oldest eutherian, *Eomaia scansoria* [8]

Crown marsupial radiation

Hard minimum = 58.5 MYA – oldest known crown-marsupials from the late Palaeocene Itaborai fauna [12-15]

Mean = 75.4 MYA – lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]

Soft maximum = 98.5 MYA – age (upper bound) of oldest stem-marsupial, *Kokopellia juddi* [17]

Crown australidelphian radiation

Hard minimum = 23.03 MYA – age (lower bound) of oldest undoubted australidelphians [4,5]

Mean = 63.5 MYA – lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]

Soft maximum = 71.2 MYA – age (lower bound) of the Alamitian fauna of South America, in which marsupials appear to be completely absent; there is no evidence of australidelphians amongst the numerous Late Cretaceous metatherians known

from North America, suggesting the Australidelphia did not radiate until marsupials reached South America, at the earliest

Thylacinus-dasyurids	Hard minimum = 23.03 MYA – age (lower bound) of oldest known thylacinid, *Badjcinus turnbulli* [18]

Mean = 23.8 MYA - lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]

Soft maximum = 54.65 MYA - age (upper bound) of the Tingamarra Local Fauna [19], in which there is no evidence of either thylacinids or dasyurids |
| **Dasyurinae-Phascogalinae** | Hard minimum = 4.45 MYA – age (lower bound) of the oldest known crown dasyurine, cf. *Dasyurus* sp. [20], and the oldest known phascogaline, *Antechinus* sp. [20,21]

Mean = 10.0 MYA - lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]

Soft maximum = 23.03 MYA – age (upper bound) of oldest stem-dasyurid, *Barinya wangala* [22] |
| *Dasyurus*-*Dasyuroides* | Hard minimum = 4.45 MYA – age (lower bound) of cf. *Dasyurus* sp. [20]

Mean = 6.3 MYA - lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]

Soft maximum = 23.03 MYA – age (upper bound) of oldest stem-dasyurid, *Barinya wangala* [22] |

Didelphini-*Monodelphis*

Hard minimum = 11.8 MYA – age (lower bound) of oldest known undoubted crown didelphid, *Micoureus laventicus* [23]; *Micoureus* is more closely related to *Monodelphis* than to didelphins [24,25]

Mean = 25.3 - lower end (1 standard deviation less than the point estimate) of molecular date of Steiner et al. [25]

Soft maximum = 60.4 MYA – age (upper bound) of Middle Palaeocene Tiupampa fauna (following Gradstein et al. [26]), at which didelphids appear to be entirely absent

***Echymipera*-Peramelinae**

Hard minimum = 3.53 MYA – age of cf. *Peroryctes* spp. [20], the oldest known peroryctines

Mean = 10.2 MYA – lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]

Soft maximum = 23.03 MYA – age (upper bound) of *Yarala burchfieldi*, the oldest known stem-peramelemorphian [27,28]

Phalangerida-Vombatiformes

Hard minimum = 23.03 MYA – lower age estimate of oldest phalangeridans and vombatiforms [4,5]

Mean = 53.7 MYA - lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]

Soft maximum = 65 MYA, following Raterman et al. [29]

Crown phalangeridan radiation	Hard minimum = 23.03 MYA – oldest known petauroids, burramyids, phalangerids, and macropodoids [4,5]
	Mean = 47.9 MYA - lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]
	Soft maximum = 54.65 MYA – upper age estimate of Tingamarra fauna [19], in which there is no evidence of phalangeridans
Phascolarctos-Vombatus	Hard minimum = 23.03 MYA – oldest known phascolarctids and vombatoids [4,5]
	Mean = 37.4 MYA - lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]
	Soft maximum = 54.65 MYA – upper age estimate of Tingamarra fauna [19], in which there is no evidence of vombatiforms
Crown-macropodid radiation	Hard minimum = 4.45 MYA – lower age estimate of *Dorcopsis wintercookorum* and *Thylogale ignis*, the oldest known crown macropodids [30]
	Mean = 12.6 MYA - lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]
	Soft maximum = 23.03 MYA – upper age estimate of oldest known macropodids [4,5]
Phalanger-Trichosurus	Hard minimum = 23.03 MYA – lower age estimates of oldest trichosurins [31]

Mean = 24.9 MYA – lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]

Soft maximum = 54.65 MYA – upper age estimate of Tingamarra fauna [19], in which there is no evidence of phalangerids

Petauridae-Pseudocheiridae

Hard minimum = 23.03 MYA – lower age estimate of oldest known petaurids and pseudocherids [4,5]

Mean = 29.3 MYA – lower end (1 standard deviation less than the point estimate) of molecular date of Beck [16]

Soft maximum = 54.65 MYA – upper age estimate of Tingamarra fauna [19], in which there is no evidence of petauroids

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