

**Appendices to Proc. R. Soc. Lond. B (ISSN 0962 8452): No. 1476, pp. 1605–1615, August 7 2001**

This is an electronic appendix to the paper by Delsuc *et al* 2001 (The evolution of armadillos, anteaters, and sloths depicted by nuclear and mitochondrial phylogenies: implications for the status of the enigmatic fossil *Eurotamandua*). *Proc. R. Soc. Lond. B* **268**, 1605–1615.

Electronic appendices are refereed with the text. However, no attempt has been made to impose a uniform editorial style on the electronic appendices.

**Appendix A.** Taxonomic sampling used for this study. Accession numbers and corresponding references are given for each sequence used. Tissue numbers refer to the collection of mammalian tissues of the "Institut des Sciences de l'Evolution" de Montpellier (Catzefflis 1991).

| Species                       | Common name            | 12S rRNA                                | Partial 16S rRNA                            | vWF exon 28                             |
|-------------------------------|------------------------|---|---|---|
| <b>MARSUPIALIA</b>            |                        |   |   |   |
| DIDELPHIMORPHIA               |                        |   |   |   |
| <i>Didelphis virginiana</i>   | Virginia opossum       | Z29573, Janke <i>et al.</i> (1994)      | Z29573, Janke <i>et al.</i> (1994)          | AF226848, Madsen <i>et al.</i> (2001)   |
| DIPROTODONTIA                 |                        |   |   |   |
| <i>Macropus giganteus</i>     | Eastern grey kangaroo  | X86941, Douzery & Catzefflis (1995)     | —   | AJ224670, Huchon <i>et al.</i> (1999)   |
| <i>Macropus robustus</i>      | Wallaroo               | —                                       | Y10524, Janke <i>et al.</i> (1997)          | —                                       |
| <b>PLACENTALIA</b>            |                        |   |   |   |
| CHRYSOCHLORIDAE               |                        |   |   |   |
| <i>Amblysomus hottentotus</i> | Hottentot golden mole  | M95108, Allard & Miyamoto (1992)        | U97336, Springer <i>et al.</i> (1997)       | U97534, Springer <i>et al.</i> (1997)   |
| TENRECIDAE                    |                        |   |   |   |
| <i>Echinops telfairi</i>      | Lesser hedgehog-tenrec | AF069540, Stanhope <i>et al.</i> (1998) | AF069540, Stanhope <i>et al.</i> (1998)     | AF076478, Stanhope <i>et al.</i> (1998) |
| EULIPOTYPHILA                 |                        |   |   |   |
| <i>Erinaceus europaeus</i>    | West European hedgehog | X88898, Krettek <i>et al.</i> (1995)    | X88898, Krettek <i>et al.</i> (1995)        | U97536, Springer <i>et al.</i> (1997)   |
| <i>Scalopus aquaticus</i>     | Eastern mole           | AF069539, Stanhope <i>et al.</i> (1998) | AF069539, Stanhope <i>et al.</i> (1998)     | AF076479, Stanhope <i>et al.</i> (1998) |
| MACROSCELIDEA                 |                        |   |   |   |
| <i>Elephantulus rufescens</i> | Rufous elephant shrew  | U97339, Springer <i>et al.</i> (1997)   | U97339, Springer <i>et al.</i> (1997)       | U31612, Porter <i>et al.</i> (1996)     |
| SIRENIA                       |                        |   |   |   |
| <i>Dugong dugon</i>           | Dugong                 | U60185, Lavergne <i>et al.</i> (1996)   | AF179291, Springer <i>et al.</i> (in press) | U31608, Porter <i>et al.</i> (1996)     |
| PROBOSCIDEA                   |                        |   |   |   |
| <i>Elephas maximus</i>        | Asian elephant         | X93602, Lavergne <i>et al.</i> (1996)   | —   | U31611, Porter <i>et al.</i> (1996)     |
| <i>Loxodonta africana</i>     | African elephant       | —                                       | AJ224821, Hauf <i>et al.</i> (2000)         | —                                       |
| HYRACOIDEA                    |                        |   |   |   |
| <i>Procavia capensis</i>      | Common rock hyrax      | U60184, Lavergne <i>et al.</i> (1996)   | U97335, Springer <i>et al.</i> (1997)       | U31619, Porter <i>et al.</i> (1996)     |
| TUBULIDENTATA                 |                        |   |   |   |

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|                                |                                 |   |   |   |
|--------------------------------|---------------------------------|---|---|---|
| <i>Orycteropus afer</i>        | Aardvark                        | U97338, Springer <i>et al.</i> (1997)   | U97338, Springer <i>et al.</i> (1997)   | U31617, Porter <i>et al.</i> (1996)     |
| CARNIVORA                      |                                 |   |   |   |
| <i>Canis familiaris</i>        | Domestic dog                    | Y08507, Ledje & Arnason (1996)          | U96639, Kim <i>et al.</i> (1998)        | L16903, Mancuso <i>et al.</i> (unp.)    |
| <i>Felis catus</i>             | Domestic cat                    | U20753, Lopez <i>et al.</i> (1996)      | U20753, Lopez <i>et al.</i> (1996)      | U31613, Porter <i>et al.</i> (1996)     |
| PRIMATES                       |                                 |   |   |   |
| <i>Homo sapiens</i>            | Human                           | J01415, Anderson <i>et al.</i> (1981)   | J01415, Anderson <i>et al.</i> (1981)   | X06828, Bonthron & Orkin (1988)         |
| <i>Ateles sp.</i> †            | Spider monkey                   | AF069978, Horovitz <i>et al.</i> (1998) | U39011, Horovitz & Meyer (1995)         | —                                       |
| <i>Ateles belzebuth</i>        | White-bellied spider monkey     | —                                       | —                                       | AF061059, Stanhope <i>et al.</i> (1998) |
| CETARTIODACTYLA                |                                 |   |   |   |
| <i>Bos Taurus</i>              | Domestic cow                    | J01394, Anderson <i>et al.</i> (1982)   | J01394, Anderson <i>et al.</i> (1982)   | X63820, Bakhshi <i>et al.</i> (1992)    |
| <i>Sus scrofa</i>              | Domestic pig                    | AJ002189, Ursing & Arnason (1998a)      | AJ002189, Ursing & Arnason (1998a)      | S78431, Bahnak <i>et al.</i> (1992)     |
| <i>Physeter catodon</i>        | Sperm whale                     | Arnason <i>et al.</i> (1993)*           | AJ277029, Arnason <i>et al.</i> (2000)  | AF108834, Gatesy <i>et al.</i> (1999)   |
| <i>Hippopotamus amphibius</i>  | Common hippopotamus             | AJ010957, Ursing & Arnason (1998b)      | AJ010957, Ursing & Arnason (1998b)      | AF108832, Gatesy <i>et al.</i> (1999)   |
| <i>Lama guanicoe</i>           | Guanaco                         | Y08809, Montgelard <i>et al.</i> (1997) | AJ010815, Douzery <i>et al.</i> (unp.)  | —                                       |
| <i>Lama glama</i>              | Lama                            | —                                       | —                                       | AF108835, Gatesy <i>et al.</i> (1999)   |
| PHOLIDOTA                      |                                 |   |   |   |
| <i>Manis sp.</i> †             | Pangolin                        | U61079, Springer & Douzery (1996)       | U97340, Springer <i>et al.</i> (1997)   | U97535, Springer <i>et al.</i> (1997)   |
| RODENTIA                       |                                 |   |   |   |
| <i>Mus musculus</i>            | Domestic mouse                  | X84382, Hänni <i>et al.</i> (1995)      | V00711, Bibb <i>et al.</i> (1981)       | AJ238390, Huchon <i>et al.</i> (1999)   |
| <i>Cavia porcellus</i>         | Domestic Guinea pig             | AJ222767, D'Erchia <i>et al.</i> (1996) | AJ222767, D'Erchia <i>et al.</i> (1996) | AJ224663, Huchon <i>et al.</i> (1999)   |
| PERISSODACTYLA                 |                                 |   |   |   |
| <i>Equus asinus</i>            | Donkey                          | X97337, Xu <i>et al.</i> (1996)         | X97337, Xu <i>et al.</i> (1996)         | U31610, Porter <i>et al.</i> (1996)     |
| <i>Ceratotherium simum</i>     | White rhinoceros                | X86942, Douzery & Catzeflis (1995)      | Y07726, Xu & Arnason (1997)             | U31604, Porter <i>et al.</i> (1996)     |
| CHIROPTERA                     |                                 |   |   |   |
| <i>Megaderma lyra</i>          | False vampire bat               | AF069538, Stanhope <i>et al.</i> (1998) | AF069538, Stanhope <i>et al.</i> (1998) | U31616, Porter <i>et al.</i> (1996)     |
| <i>Dobsonia moluccensis</i>    | Bar-backed fruit bat            | U93065, Hollar & Springer (1997)        | AF179290, Teeling <i>et al.</i> (2000)  | U31609, Porter <i>et al.</i> (1996)     |
| XENARTHRA                      |                                 |   |   |   |
| <i>Dasyopus novemcinctus</i>   | Nine-banded armadillo           | Y11832, Arnason <i>et al.</i> (1997)    | Y11832, Arnason <i>et al.</i> (1997)    | AJ278158, tissue T-1830, this study     |
| <i>Chaetophractus villosus</i> | Larger hairy armadillo          | U61080, Springer & Douzery (1996)       | AF069534, Stanhope <i>et al.</i> (1998) | AF076480, Stanhope <i>et al.</i> (1998) |
| <i>Cabassous unicinctus</i>    | Southern naked-tailed armadillo | AJ278151, tissue T-1641, this study     | Z48940, Höss <i>et al.</i> (1996)       | AJ278159, tissue T-1641, this study     |
| <i>Myrmecophaga tridactyla</i> | Giant anteater                  | AJ278153, tissue T-2080, this study     | AJ297939, tissue T-2080, this study     | AJ278157, tissue T-2080, this study     |
| <i>Tamandua tetradactyla</i>   | Collared anteater               | AJ278154, tissue T-1640, this study     | Z48946, Höss <i>et al.</i> (1996)       | AJ278161, tissue T-2038, this study     |
| <i>Cyclopes didactylus</i>     | Pygmy anteater                  | AJ278155, tissue T-1724, this study     | Mark Springer (unpublished)             | AJ278156, tissue T-1724, this study     |
| <i>Bradypus tridactylus</i>    | Pale-throated three-toed sloth  | AF038022, Springer <i>et al.</i> (unp.) | AF069535, Stanhope <i>et al.</i> (1998) | U31603, Porter <i>et al.</i> (1996)     |
| <i>Choloepus didactylus</i>    | Southern two-toed sloth         | AJ278152, tissue T-1722, this study     | Z48942, Höss <i>et al.</i> (1996)       | AJ278160, tissue T-1722, this study     |

unp. : unpublished.

\* : This sequence was manually copy from the reference cited because it has not been yet deposited in EMBL.

† : The species name of the specimens are unknown.

**Abridged references:** Allard & Miyamoto (1992) *Mol. Biol. Evol.* 9: 778-786; Anderson *et al.* (1981) *Nature* 290: 457-465; Anderson *et al.* (1982) *J. Mol. Evol.* 156: 683-717; Arnason *et al.* (1993) *Biochem. Syst. Ecol.* 21: 115-122; Arnason *et al.* (1997) *Mol. Biol. Evol.* 14: 762-768; Arnason *et al.* (2000) *J. Mol. Evol.* 50: 569-578; Bahnak *et al.* (1992) *Biochem. Biophys. Res. Commun.* 182: 561-568; Bakhshi *et al.* (1992) *Biochim. Biophys. Acta* 1132: 325-328; Bibb *et al.* (1981) *Cell* 26: 167-180; Bonthron & Orkin (1988) *Eur. J. Biochem.* 171: 51-57; D'Erchia *et al.* (1996) *Nature* 381: 597-600; Douzery (1993) *C. R. Acad. Sci. Paris, Sciences de la vie* 316: 1511-1518; Douzery & Catzeflis (1995) *J. Mol. Evol.* 41: 622-636; Höss *et al.* (1996) *Proc. Natl. Acad. Sci. U.S.A.* 93: 181-185; Gatesy *et al.* (1999) *Syst. Biol.* 48: 16-20; Hänni *et al.* (1995) *Isr. J. Zool.* 41: 131-146; Hauf *et al.* (2000) *Zoology* 102: 184-195; Hollar & Springer (1997) *Proc. Natl. Acad. Sci. U.S.A.* 94: 5716-5721; Horovitz & Meyer (1995) *Mol. Phylogenet. Evol.* 4: 448-456; Horovitz *et al.* (1998) *Am. J. Phys. Anthropol.* 106: 261-281; Huchon *et al.* (1999) *Mol. Biol. Evol.* 16: 577-589; Huchon *et al.* (2000) *Proc. R. Soc. Lond. B* 267: 393-402; Janke *et al.* (1994) *Genetics* 137: 243-256; Janke *et al.* (1997) *Proc. Natl. Acad. Sci. U.S.A.* 94: 1276-1281; Kim *et al.* (1998) *Mol. Phylogenet. Evol.* 10: 210-220; Krettek *et al.* (1995) *J. Mol. Evol.* 41: 952-957; Lavergne *et al.* (1996) *Mol. Phylogenet. Evol.* 6: 245-258; Ledje & Arnason (1996) *J. Mol. Evol.* 43: 641-649; Lopez *et al.* (1996) *Genomics* 33: 229-246; Madsen *et al.* (2001) *Nature* 409: 610-614; Mancuso *et al.* (1989) *J. Biol. Chem.* 264: 19514-19527; Montgelard *et al.* (1997) *Mol. Biol. Evol.* 14: 550-559; Porter *et al.* (1996) *Mol. Phylogenet. Evol.* 5: 89-101; Springer & Douzery (1996) *J. Mol. Evol.* 43: 357-373; Springer *et al.* (1997) *Nature* 388: 61-64; Stanhope *et al.* (1998) *Proc. Natl. Acad. Sci. U.S.A.* 95: 9967-9972; Teeling *et al.* (2000) *Nature* 403: 188-192; Ursing & Arnason (1998a) *J. Mol. Evol.* 47: 302-306; Ursing & Arnason (1998b) *Proc. R. Soc. Lond. B.* 265: 2251-2255; Xu *et al.* (1996) *Mol. Biol. Evol.* 13: 1167-1173; Xu & Arnason (1997) *Mol. Phylogenet. Evol.* 7: 189-194.

**Appendix B.** Position and nature of the exclusive Amino-Acids synapomorphies observed in the vWF exon 28 protein sequences alignment supporting nodes of the Xenarthra subtree.

| <b>Clades</b>                                   | <b>Positions</b>                       | <b>Substitutions</b>   |
|---|--|--|
| <b>Cingulata (armadillos)</b>                   | 25<br>162                              | Asp, Glu => Gly<br>Phe, Val, Leu, Ala, Gly => Pro  |
| <b><i>Cabassous</i> + <i>Chaetophractus</i></b> | 254<br>294                             | Gly, Ala, Glu, Leu, Ile, Thr, Arg, Asn => Ser<br>Asp, Ala => His   |
| <b>Vermilingua (anteaters)</b>                  | 35<br>360<br>375                       | Phe, His, Tyr, Leu => Glu<br>Gly, Asp => His<br>Asn, Ser => Gly  |
| <b><i>Tamandua</i> + <i>Myrmecophaga</i></b>    | 2<br>212<br>223<br>303<br>320          | Ala, Glu, Lys, Arg, Gly => Ser<br>Gln, Arg, His, Pro => Ala<br>Asp => Gly<br>Thr, Ala, Ser, Met => Glu<br>Ala, Thr, Pro, Val => Arg                    |
| <b>Folivora (sloths)</b>                        | 168<br>233<br>234<br>235<br>307<br>375 | Leu => Met<br>Gln, Arg, Pro, Val, Met, Ile, Leu => Ala<br>Pro, Gln, Arg, His, Phe => Ala<br>Pro, Ser, Thr, His => Ala<br>Tyr => Phe<br>Asn, Ser => Thr |
| <b>Pilosa (anteaters + sloths)</b>              | 121<br>154                             | Thr, Ile => Ala<br>Pro => Ser  |
| <b>Xenarthra</b>                                | 173<br>331<br>371                      | Val, Ala => Ile<br>Arg, Gln, Glu, His, Asp => Gly<br>Met => Leu  |