

SUPPLEMENTAL DATA 1

The Genus *Patriarchus* Ameghino, 1889 (Mammalia, Notoungulata, Typotheria) from
the Santa Cruz Formation, Santa Cruz Province, Argentina

MERCEDES FERNÁNDEZ,^{*,1,2,3} JUAN C. FERNICOLA,^{1,2,3} and ESPERANZA
CERDEÑO^{3,4}

¹ Departamento de Ciencias Básicas, Universidad Nacional de Luján, Ruta 5 y Avenida
Constitución, 6700, Luján, Buenos Aires, Argentina, mechi_985@hotmail.com;
jctano@yahoo.com;

² División Paleontología de Vertebrados, Museo Argentino de Ciencias Naturales
'Bernardino Rivadavia', Av. Ángel Gallardo 470, C1405DJR, Ciudad Autónoma de
Buenos Aires, Argentina, mfernandez@macn.gov.ar; jctano@macn.gov.ar;

³ CONICET. Consejo Nacional de Investigaciones Científicas y Técnicas;

⁴ Paleontología, Instituto de Nivología, Glaciología y Ciencias Ambientales; Centro
Científico Tecnológico-CONICET-Mendoza. Avda. Ruiz Leal s/n, 5500 Mendoza,
Argentina. espe@mendoza-conicet.gob.ar

APPENDIX S1. List of characters and character states used in the phylogenetic analysis based on Hitz *et al.* (2006) with the modifications made by García Lopez and Babot (2015). All characters are treated as unordered. Asterisks (*) indicate new characters included in this contribution.

- (1) I1 size: subequal or larger than other anterior teeth (0); greatly enlarged (1).
- (2) I2-C shape: I2 laterally compressed, I3-C ovoid/conical (0); all laterally compressed (1).
- (3) C size: large, similar in size to I3 (0); reduced (1).
- (4) I2-3 size: subequal (0); reduced, with I3 smaller than I2 (1).
- (5) I2-C exterior face: convex or vague anterior swelling (0); distinct vertical anteroexternal ridge (1).
- (6) P1 vertical anteroexternal ridge: no ridge (0); ridge present (1).
- (7) P3-4 parastyle/paracone inflection: shallow (0); deep (1).
- (8) P3-4 fossettes: fossettes moderately to strongly persistent (0); labial fossettes disappear rapidly with wear (1).
- (9) P2-4 metacone ectoloph: moderate to strong metacone ectoloph column (0); metacone ectoloph very low or almost flat (1).
- (10) P3-4 dimensions: $W > L$ or with mild anteroexternal expansion (0); $L > W$, rectangular shape (1).
- (11) P2-4 cingulum: anterior cingulum low on crown, posterior about midway up crown (0); anterior cingulum absent, posterior high on crown, merging early in wear (1).
- (12) M1-3 paracone/parastyle inflection: distinct but shallow (0); absent or reduced (1).
- (13) M1-2 fossettes: anteroexternal, posteroexternal and lingual fossettes present (0); fossettes of varying longevity (1); fossettes absent or very rapidly disappear with wear (2).
- (14) Mesial inflection on M1-2 protoloph: weak or absent (0); well developed (1).
- (15) Lingual sulcus on M1-2: well expressed although rapidly interrupted by an entoloph (0); well expressed and more persistent, although narrow (1); well developed, persistent, relatively wide and well expressed on the lingual wall (2); highly or completely persistent and very expressed on the lingual wall (3).
- (16) Central fossa on M1-2: well or moderately developed and oblique (0); faint or absent (1).
- (17) M3 hypocone: absent or diminutive (0); developed (1).
- (18) M1-3 metacone ectoloph: distinct (0); very low or flat (1).
- (19) M1-3 anterior cingulum: present and low on crown (0); absent (1).
- (20) M1-3 dimensions: $W > L$ or about equidimensional (0); $L > W$, rectangular shape (1).
- (21) Crown height in posterior Ps and Ms: brachydont (0); hypsodont (1); hypselodont (2).
- (22) i3 size: $i3 > i2$ (0); reduced (1).
- (23) i1-2 shape: no groove (0); with a shallow lingual groove (1) / i1-2 bifid labial and lingually (2).

APPENDIX S1. (Continued)

Modified from ch. 23 of Hitz et al. (2006) since we have added a new state based on the studied specimens.

- (24) *i1-i2: cylindrical or slightly expanded mesiodistally (0); expanded mesiodistally (1).
- (25) *i3-c: expanded mesiodistally, with distinct lingual groove (0); cylindrical, with shallow lingual groove (1).
- (26) *i1-c imbrication: absent (0); present (1).
- (27) *i1-3 implantation: non procumbent (0); procumbent (1).
- (28) c size: larger than i1-3 (0); subequal to i1-3 (1); smaller than i1-2 or missing (2).
- (29) c-p1 diastema: absent (0); present (1).
- (30) *p1: reduced or absent (0); no talonid differentiated (1); with talonid insinuated (2); with talonid differentiated (3).
- (31) *p1: not imbricated (0); mesially imbricated by c (1); mesial and distally imbricated by c and pm2, respectively (2).
- (32) p2-4 talonid development and relative size: p2 no talonid, p3 very small, p4 present but smaller than trigonid (0); p2-3 distinct talonids but small, p4 smaller or subequal to trigonid (1); p2-4 display reduced talonids (2); p2 subequal to larger, p3-4 larger talonids (3).
- (33) p3-4 crown morphology: narrow labial sulcus, more posteriorly oriented lingual sulcus (0); two lobes, well defined labial and lingual sulci opposite one another (1).
- (34) Relative size of m1-3 trigonid and talonid: m1 talonid subequal to or slightly smaller than trigonid, m2 talonid subequal to or slightly larger to trigonid, m3 talonid larger than trigonid (0); all talonids larger than trigonids (1).
- (35) m1-3 crown morphology: not bilobed, lingual sulcus broad and extends posteriorly (0); bilobed, persistent labial and lingual sulci directly opposite one another (1).
- (36) p3-4 molarization: p4 approaching molariform, p3 considerably smaller than the molars (0); p4 molariform, p3 enlarged but smaller than molars (1).
- (37) m1-3 trigonid shape: anterior margin broad (0); anterior margin short, producing a triangular appearing lobe (1).
- (38) m3 third lobe: small (0); larger with a distinct labial groove (1).
- (39) Role of jugal in zygoma: included in orbit (0); excluded from orbit by maxilla (1).
- (40) Position of nasofrontal suture: flush or posterior to anterior margin of orbit (0); well anterior to anterior margin of orbit (1).
- (41) Nasofrontal suture shape: rounded, nasal projecting into frontal (0); nearly straight transversely (1); nasal trends posteriorly from the median (2); nasal trends posteriorly from the median but is jagged with small posteriorly projecting processes (3).
- (42) Descending process on zygoma: none (0); small (1); large (2).
- (43) Dorsal-posterior maxillary process: dorsal process present but is not excluded from orbit rim (0); dorsal process present and is excluded from orbit margin by an anteriorly projecting sliver of frontal (1).
- (44) Rostrum length: rostrum short compared to anteroposterior length of skull, <35% of total cranium length (0); modest lengthening of rostrum, $\geq 35\%$ of total cranium length (1).
- (45) Angle of zygoma with face, at attachment site: low angle ($\leq 45^\circ$) (0); steep angle ($>45^\circ$ and $<90^\circ$) (1); perpendicular (90°) (2).
- (46) Muzzle shape and dental arcade: ventrally broader than dorsally, posterior broader than anterior, dental arcade forms a “triangle” (0); muzzle is narrower (ventral portion no broader than dorsal) and cheektooth rows are convex labially (1).
- (47) Dorsal-posterior process on external premaxillary: present (0); absent (1).

APPENDIX S1. (Continued)

- (48) Palatine notch position: reaches mid to anterior M3 region (0); reaches posterior M3 region (1).
- (49) Posterior bulla: adjacent to paraoccipital process (0); posterior bulla laps up onto paraoccipital process (1).
- (50) Glenoid fossa: shallow, wide mediolaterally (0); deeply excavated and narrow (1).
- (51) Postglenoid process and foramen: broad process with uncompressed foramen; glenoid fossa encroaches medioposteriorly on bulla/meatus (0); process is sharper and narrower separating fossa from meatus (1); process severely compressed as is foramen (2).
- (52) Size, as estimated from molar dimensions: moderate to large (M1 AP and TR dimensions both ≥ 4 mm) (0); very small (M1 AP and TR dimensions both < 4 mm) (1).

APPENDIX S2. Description of changes made to the data matrix of García

López and Babot (2015).

Proargyrohyrax

- Character 1: the scoring was changed from ? to 0.
- Character 2: the scoring was changed from ? to 1.
- Character 3: the scoring was changed from ? to 0.
- Character 4: the scoring was changed from ? to 0.
- Character 14: the scoring was changed from ? to 0.
- Character 15: the scoring was changed from 3 to 2.

Transpithecus

- Character 1: the scoring was changed from ? to 0.
- Character 2: the scoring was changed from ? to 1.
- Character 3: the scoring was changed from ? to 0.
- Character 4: the scoring was changed from ? to 0.
- Character 5: the scoring was changed from ? to 0.
- Character 6: the scoring was changed from ? to 0.
- Character 23: the scoring was changed from ? to 1.
- Character 24: the scoring was changed from ? to 0.
- Character 42: the scoring was changed from ? to 1.

Antepithecus

- Character 42: the scoring was changed from ? to 1.

Archaeophylus

- Character 2: the scoring was changed from ? to 1.
- Character 3: the scoring was changed from ? to 0.
- Character 5: the scoring was changed from ? to 1.
- Character 6: the scoring was changed from ? to 1.
- Character 12: the scoring was changed from 0 to 01.
- Character 14: the scoring was changed from ? to 0.
- Character 16: the scoring was changed from ? to 1.
- Character 18: the scoring was changed from 1 to 0.

APPENDIX S2. (Continued)

- Character 34: the scoring was changed from 0 to 1.

Progaleopithecus

- Character 7: the scoring was changed from ? to 1.
- Character 9: the scoring was changed from ? to 0.
- Character 10: the scoring was changed from ? to 1.
- Character 11: the scoring was changed from ? to 1.
- Character 12: the scoring was changed from 1 to 01.
- Character 14: the scoring was changed from ? to 0.
- Character 16: the scoring was changed from ? to 1.
- Character 18: the scoring was changed from 1 to 0.
- Character 42: the scoring was changed from ? to 1.

Interatherium

- Character 9: the scoring was changed from 1 to 0.
- Character 12: the scoring was changed from 1 to 0.
- Character 14: the scoring was changed from ? to 0.
- Character 16: the scoring was changed from ? to 1.
- Character 18: the scoring was changed from 1 to 0.
- Character 38: the scoring was changed from 0 to 1.

Federicoanaya

- Character 10: the scoring was changed from 0 to 01.
- Character 16: the scoring was changed from ? to 1.

Santiagorothia

- Character 1: the scoring was changed from ? to 0.
- Character 14: the scoring was changed from ? to 0.
- Character 15: the scoring was changed from 3 to 2.

Plagiarthrus

- Character 14: the scoring was changed from ? to 0.
- Character 16: the scoring was changed from ? to 1.
- Character 28: the scoring was changed from ? to 0.
- Character 29: the scoring was changed from ? to 0.
- Character 33: the scoring was changed from ? to 0.
- Character 44: the scoring was changed from ? to 1.
- Character 47: the scoring was changed from ? to 0.

Miocochilius

- Character 14: the scoring was changed from ? to 0.

Protypotherium

- Character 14: the scoring was changed from ? to 0.
- Character 16: the scoring was changed from ? to 1.

Cochilius

- Character 14: the scoring was changed from ? to 0.

APPENDIX S2. (Continued)

- Character 16: the scoring was changed from ? to 1.

Brucemacfaddenia

- Character 16: the scoring was changed from ? to 1.
- Character 22: the scoring was changed from ? to 0.
- Character 29: the scoring was changed from ? to 0.
- Character 33: the scoring was changed from 1 to 0.

Johnbell

- Character 35: the scoring was changed from 1 to 0.
- Character 37: the scoring was changed from ? to 0.
- Character 38: the scoring was changed from ? to 0.

LITERATURE CITED

García-López, D. A., and M. J. Babot. 2015. Notoungulate faunas of north-western

Argentina: new findings of early-diverging forms from the Eocene Geste

Formation. *Journal of Systematic Palaeontology* 13:557–579.

Hitz, R.B., J. J. Flynn, and A. R. Wyss. 2006. New basal Interatheriidae (Typotheria,

Notoungulata, Mammalia) from the Paleogene of central Chile. *American*

Museum Novitates 3520:1–32.

Table S1: List of specimens mentioned in the text, table and figure captions.

Specimen number	Description	Species according to this paper
MACN-A 37	incomplete skull	<i>Protypotherium</i> sp.
MACN-A 38	partial right mandible with alveoli of i1–c and p1–m3	<i>Protypotherium</i> sp.
MACN-A 40	right mandibular fragment with i1–p4 and trigonid of m1	<i>Protypotherium</i> sp.
MACN-A 1082	fragmented mandible with right i1–m3 and broken left i1–c	<i>Protypotherium praerutilum</i>
MACN-A 3884	Incomplete mandible with both i1–2, left i3 and alveoli of right i3–p1 and complete p2–m3	<i>Protypotherium australe</i>
MACN-A 3970	left fragmented maxilla with P2–M3	<i>Protypotherium furculosus</i>
MACN-A 3972	right mandibular fragment with p2–m3, and isolated right i2–p1	<i>Protypotherium furculosus</i>
MACN-A 3989	almost complete skull	<i>Protypotherium leptocephalus</i>
MACN-A 3991	partial left mandible with broken i1 and complete i2–m3	<i>Protypotherium leptocephalus</i>
MACN-A 4000	incomplete mandible with alveoli of anterior dentition and right p3–m3 and left p4–m3	<i>Protypotherium altus</i>
MACN-A 4001	almost complete skull	<i>Protypotherium altus</i>
MACN-A 4005	right maxilla with alveolus of C and series P1–M3	<i>Protypotherium rectus</i>
MACN-A 4006	left maxillary fragment with series M1–3	<i>Protypotherium rectus</i>
MACN-A 4007	mandibular fragment with incomplete symphysis, broken alveoli of left and right i1–2 and complete left i3–m3 series	<i>Protypotherium rectus</i>
MACN-A 4021	right maxillary fragment with alveolus of P1 and series P2–M3	<i>Protypotherium?</i> <i>icochiloides</i>
MACN-A 4022	fragmented mandible with broken p2–3 and	<i>Protypotherium?</i>

	complete p4–m3	<i>icochiloides</i>
MACN-A 4044	almost complete skull	<i>Protypotherium?</i> <i>diastematus</i>
MACN-A 9623 to MACN-A 9633	articulated skull and mandible with postcranial elements without individual labels	<i>Protypotherium distortus</i>
MACN-A 9634	incomplete skull	<i>Protypotherium distortus</i>
MACN-A 9636 to MACN-A 9638	postcranial elements	<i>Protypotherium distortus</i>
MACN-A 9644	incomplete skull	<i>Protypotherium</i> sp.
MACN-A 9645	partial mandible with both i1 and right i2– m3 series, and left portion with p3–m3	<i>Protypotherium</i> sp.
MACN-A 9651a	mandibular symphysis with right i1–p1 and left i1–2 and the alveolus of i3	<i>Patriarchus palmidens</i>
MPM-PV 3531	incomplete mandible with complete dentition	<i>Protypotherium attenuatum</i>

Institutional abbreviations—**MACN-A**, Museo Argentino de Ciencias Naturales ‘Bernardino Rivadavia’, Ameghino National Collection, Buenos Aires, Argentina; **MPM-PV**, Museo Regional Provincial Padre M. Jesús Molina, Vertebrate Paleontology, Río Gallegos, Argentina.

Table S2: List of specimens and bibliographic resources studied for the phylogenetic analysis. Only the most complete or representative specimens are indicated.

‘Henricosborniidae’

Simpsonotus: *S. praecursor*, Pascual *et al.* (1978); MLP 73-VII-3-12.

‘Isotemnidae’

Pleurostylodon: *P. modicus* Ameghino, 1897; MACN-A 10548, MACN-A 10549; MACN-A 10554; MACN 10606; Simpson (1967).

‘Oldfieldthomasiidae’

Colbertia: *Colbertia* spp., Paula Couto (1952); Bond (1981); Cifelli (1983).

Interatheriidae

Notopithecus: *N. adapinus* Ameghino, 1897; Simpson (1967), Vera (2013), Vera and Cerdeño (2014); MACN-A 10786, MACN-A 10787, MACN-A 10788, MACN-A 10790 (holotype of *Adpithecus secans*), MACN-A 10860.

Antepithecus: *A. brachystephanus* Ameghino, 1901; Hitz *et al.* (2006), Vera (2013); MACN-A 10832, MACN-A 10841 (holotype), MACN-A 10859; Simpson (1967).

Transpithecus: *T. obtentus* Ameghino, 1901; Simpson (1967), Vera (2012, 2013), Vera and Cerdeño (2014); MACN-A 10833 (type).

Guiliemoscottia: *G. plicifera* Ameghino, 1901; Simpson (1967), Vera (2013).

Punapithecus: *P. minor* López and Bond, 1995; López and Bond, 1995, Hitz *et al.* (2006), García López and Babot (2014); MLP 86-V-6-5.

Johnbell: *J. hatchery* Hitz *et al.*, 2006; SGO-PV 2902, SGO-PV 2910, SGO-PV 3106, SGO-PV 3451.

Ignigena: *I. minisculus* Hitz *et al.*, 2006.

Antofagastia: *A. turneri* García López and Babot, 2015.

Interatherium: *Interatherium* spp, Sinclair (1909), Fernández (2015); MACN-A 1083, MACN-A 1084, MACN-A 3454 to MACN-A 3505, MACN-A 9851.

Cochilius: *Cochilius* spp., Ameghino (1902), Simpson (1932a, b); MACN-A 265, MACN-A 52-268, MACN-A 269, MACN-A 52-278, MACN-A 52-266, MACN-A 52-276, MLP 72-I-1-23.

Patriarchus: *P. palmidens* Ameghino, 1889; MACN-A 9651a (holotype).

Archaeophylus: *A. patrius* Ameghino, 1897; MACN-A 52-483 (type), MACN-A 52-484, MACN-A 52-485.

Proargyrohyrax: *P. curanderensis* Hitz et al., 2000, Dozo et al. (2014); MLP 61-VIII-3-27 (holotype), MLP 61-IV-14-1, MLP 61-VIII-3-24.

Federicoanaya: *F. sallaensis* Hitz et al., 2006.

Brucemacfaddenina: *B. boliviensis*, Hitz et al., 2006.

Santiagorothia: *S. chiliensis* Hitz et al., 2000; Reguero (1999); MLP 83-I-12-11, MLP 61-VIII-3-27, SGO-PV 2812, SGO-PV 2816, SGO-PV 2914 (holotype).

Eopachyrucos: *E. pliciferus* Ameghino, 1901; Reguero (1999), Hitz et al. (2000), Reguero et al. (2003); MACN-A 55-12 (holotype), MLP 12-1529.

Plagiarthrus: *P. clivus* Ameghino, 1897; Loomis (1914), Simpson (1932b), Reguero (1999); MACN-A 52-633, MACN-A 52-472, MACN-A 52-475, MACN-A 52-474, MCNAM 3968, AMC 3142 (photograph sent by B. Vera, Instituto Argentino de Nivología, Glaciología y Ciencias Ambientales, Mendoza, Argentina).

Progaleopithecus: *P. tournoueri* Ameghino, 1904; MACN-A 52-479b and MACN-A 52-479c, MLP 93-XI-21-51, MLP 93-XI-21-18 (last two photographs sent by B. Vera, Instituto Argentino de Nivología, Glaciología y Ciencias Ambientales, Mendoza,

Argentina), AMNH 29603 (cast); Ameghino (1904), Patterson (1940), Chaffee (1952), Reguero (1999).

Protypotherium: *Protypotherium* spp., Sinclair (1909); MACN-A 37, MACN-A 39-40, MACN-A 1081-1082, MACN-A 3920-3921, MACN-A 3882 and MACN-A 3884, MACN-A 3999-4000 and MACN-A 4001, MACN-A 3990-3991, MACN-A 9644-48, MLP 12-2176, MLP 12-2177, MLP 12-2178, ZMK 21/1877 (photographs taken by K. L. Hansen and sent by B. E. Kramer from the Zoological Museum of the University of Copenhagen).

Miocochilius: *Miocochilius* spp, Stirton (1953), Croft (2007); UCMP 38409 (photographs sent by B. Vera, Instituto Argentino de Nivología, Glaciología y Ciencias Ambientales, Mendoza, Argentina).

LITERATURE CITED

- Ameghino, F., 1889. Contribución al conocimiento de los mamíferos fósiles de la República Argentina. Actas de la Academia Nacional de Ciencias 6:1–1028, atlas of 98 pls.
- Ameghino, F. 1897. Mammifères crétacés de l'Argentine (Deuxième contribution à la connaissance de la faune mammalogique des couches à *Pyrotherium*). Boletín del Instituto Geográfico Argentino 18:406–521.
- Ameghino, F. 1904. Nuevas especies de mamíferos, cretáceos y terciarios de la República Argentina. Anales de la Sociedad Científica Argentina 56:162–175, 327–341, 58: 35–42, 56–71, 182–192, 225–291.
- Bond, M. 1981. Un nuevo Oldfieldthomasiidae (Mammalia, Notoungulata) del Eoceno Inferior (Fm. Luján, Grupo Salta) del NW argentino. II Congreso Latinoamericano de Paleontología, Abstracts, 521–536.

- Chaffee, R. G. 1952. The Deseadan vertebrate fauna of the Scarrit Pocket, Patagonia. *Bulletin of the American Museum of Natural History* 98:503–562.
- Croft, D. A. 2007. The middle Miocene (Laventan) Quebrada Honda fauna, southern Bolivia and a description of its notoungulates. *Palaeontology* 50:277-303.
- Cifelli, R. L. 1993. The phylogeny of the native South American Ungulates. *Mammal phylogeny, Placentals*: pp. 195–216. F.S. Szalay, M.J. Novacek y M.C. McKenna (Eds.). New York, Springer-Verlag.
- Fernández, M. 2015. Revisión taxonómica de *Interatherium* Ameghino 1887 e *Icochilus* Ameghino 1889 (Interatheriidae, Notoungulata) de la Edad Mamífero Santacruceño (Mioceno Temprano) de la Provincia de Santa Cruz, Argentina. Unpublished thesis, Universidad Nacional de Luján, Luján, 175 pp.
- García-López, D. A., and M. J. Babot. 2015. Notoungulate faunas of north-western Argentina: new findings of early-diverging forms from the Eocene Geste Formation. *Journal of Systematic Palaeontology* 13:557–579.
- Hitz, R.B., G. Billet, and D. Derryberry. 2008. New interatheres (Mammalia, Notoungulata) from the late Oligocene Salla beds of Bolivia. *Journal of Paleontology* 82:447–469.
- Hitz, R.B., J. J. Flynn, and A. R. Wyss. 2006. New basal Interatheriidae (Typotheria, Notoungulata, Mammalia) from the Paleogene of central Chile. *American Museum Novitates* 3520:1–32.
- Hitz, R., M. A. Reguero, A. R. Wyss, and J. J. Flynn. 2000. New interatheriines (Interatheriidae, Notoungulata) from the Paleogene of central Chile and southern Argentina. *Feldiana Geology* 42:1–26.
- Loomis, F. B. 1914. The Deseado Formation of Patagonia. Amherst, Amherst College. 232 pp.

- Patterson, B. 1940. The status of *Progaleopithecus* Ameghino. Field Museum of Natural History, Geology Series 8:21–25.
- Paula-Couto, C. de. 1952. Fossil Mammals of the Beginning of the Cenozoic in Brazil. Notoungulata. *American Museum Novitates*, 1568:1–16.
- Reguero, M. A. 1999. El problema de las relaciones sistemáticas y filogenéticas de los Typotheria y Hegetotheria (Mammalia, Notoungulata): análisis de los taxones de Patagonia de la Edad-mamífero Deseadense (Oligoceno). Unpublished Ph.D. dissertation, Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Buenos Aires, 301 pp.
- Reguero, M. A., M. Ubilla, and D. Perea. 2003. A new species of *Eopachyrucos* (Mammalia, Notoungulata, Interatheriidae) from the late Oligocene of Uruguay. *Journal of Vertebrate Paleontology* 23:445–457.
- Reguero, M. A., D. C. Croft, G. López, and R. N. Alonso. 2008. Eocene archaeohyracids (Mammalia: Notoungulata: Hegetotheria) from the Puna: northwest Argentina. *Journal of South American Earth Sciences* 26:225–233.
- Simpson, G. G. 1932a. *Cochilius volvens* from the Colpodon beds of Patagonia. *American Museum Novitates* 553:1–113.
- Simpson, G. G. 1932b. New or little-known ungulates from the *Pyrotherium* and *Colpodon* beds of Patagonia. *American Museum Novitates* 576:1–13.
- Simpson, G. G. 1967. The beginning of the age of mammals in South America. Part 2. *Bulletin of the American Museum of Natural History* 137:1–260.
- Sinclair, W. J. 1909. Mammalia of the Santa Cruz Beds, part 1: Typotheria of the Santa Cruz Beds; pp. 1–110 in W.B. Scott (ed.), *Reports of the Princeton University expeditions to Patagonia*, Princeton University, Nueva Jersey.

- Stirton, R. A. 1953. A new genus of interatheres from the Miocene of Colombia.
University of California Publications in Geological Sciences 29:265–348.
- Vera, B. 2012. Revisión del género *Transpithecus* Ameghino, 1901 (Notoungulata, Interatheriidae) del Eoceno medio de Patagonia, Argentina. *Ameghiniana* 49:60–74.
- Vera, B. 2013. Sistemática, filogenia y Paleoecología de los Notopithecinae (Interatheriidae, Notoungulata) del Paleógeno de Argentina. Unpublished Ph.D. dissertation, Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Buenos Aires, 374 pp.
- Vera, B., and E. Cerdeño, E. 2014. New insights on *Antepithecus brachystephanus* Ameghino, 1901 and dental eruption sequence in ‘notopithecines’ (Mammalia, Notoungulata) from the Eocene of Patagonia, Argentina. *Geobios*, 47:165–181.

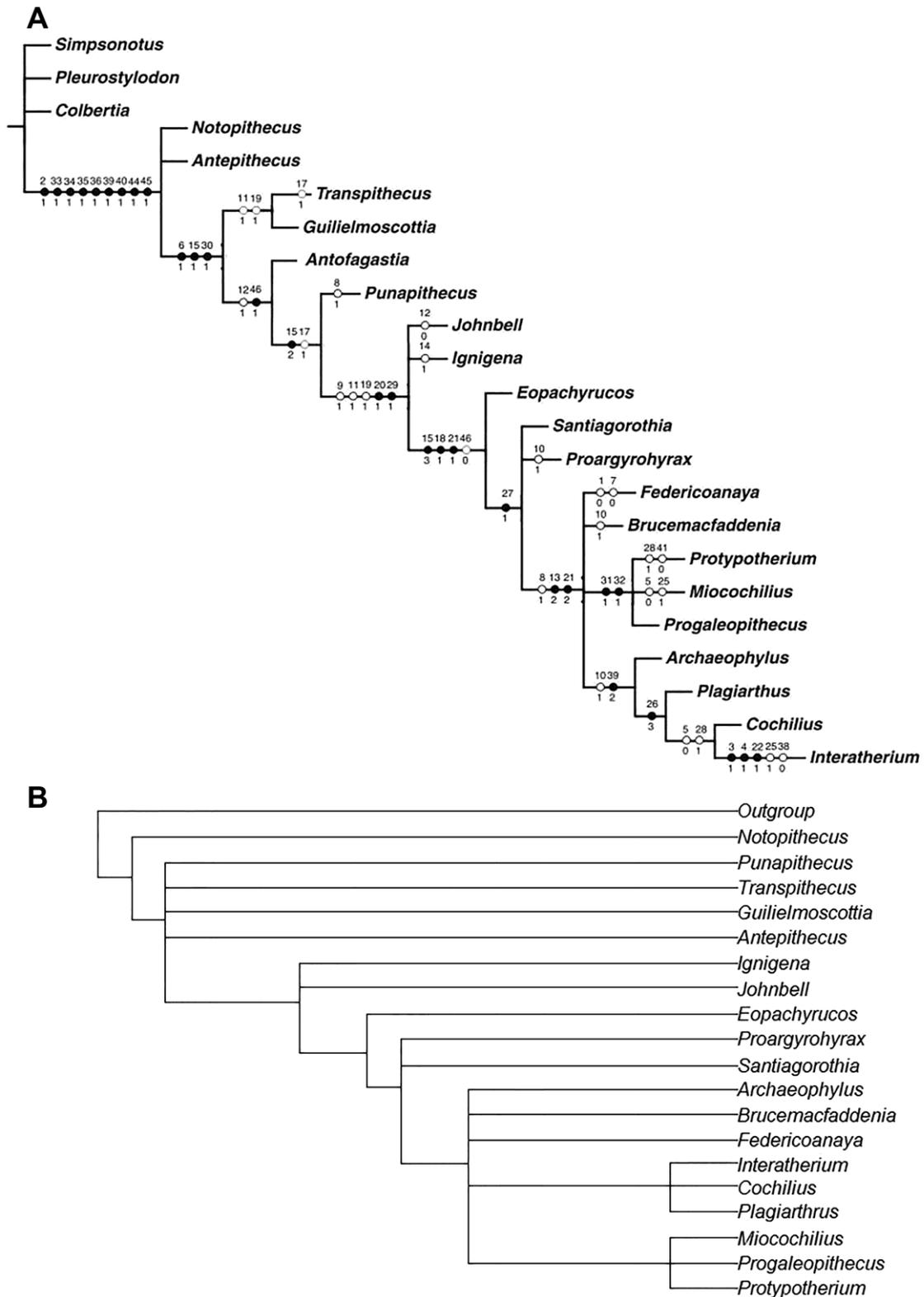


FIGURE S1. Two strict consensus trees under equally weighted characters. A. Modified from García López and Babot (2015); circles on nodes represent synapomorphies; black circles indicate autapomorphic features and white circles homoplastic synapomorphies. B. Modified from Hitz et al. (2006).



FIGURE S2. Strict consensus excluding *Patriarchus* from three MPTs (115 steps; CI = 0.574; RI = 0.790) obtained under equally weighted characters. Upper numbers represent character number and lower numbers character states; circles on nodes represent synapomorphies; black circles indicate autapomorphic features and white circles homoplastic synapomorphies.

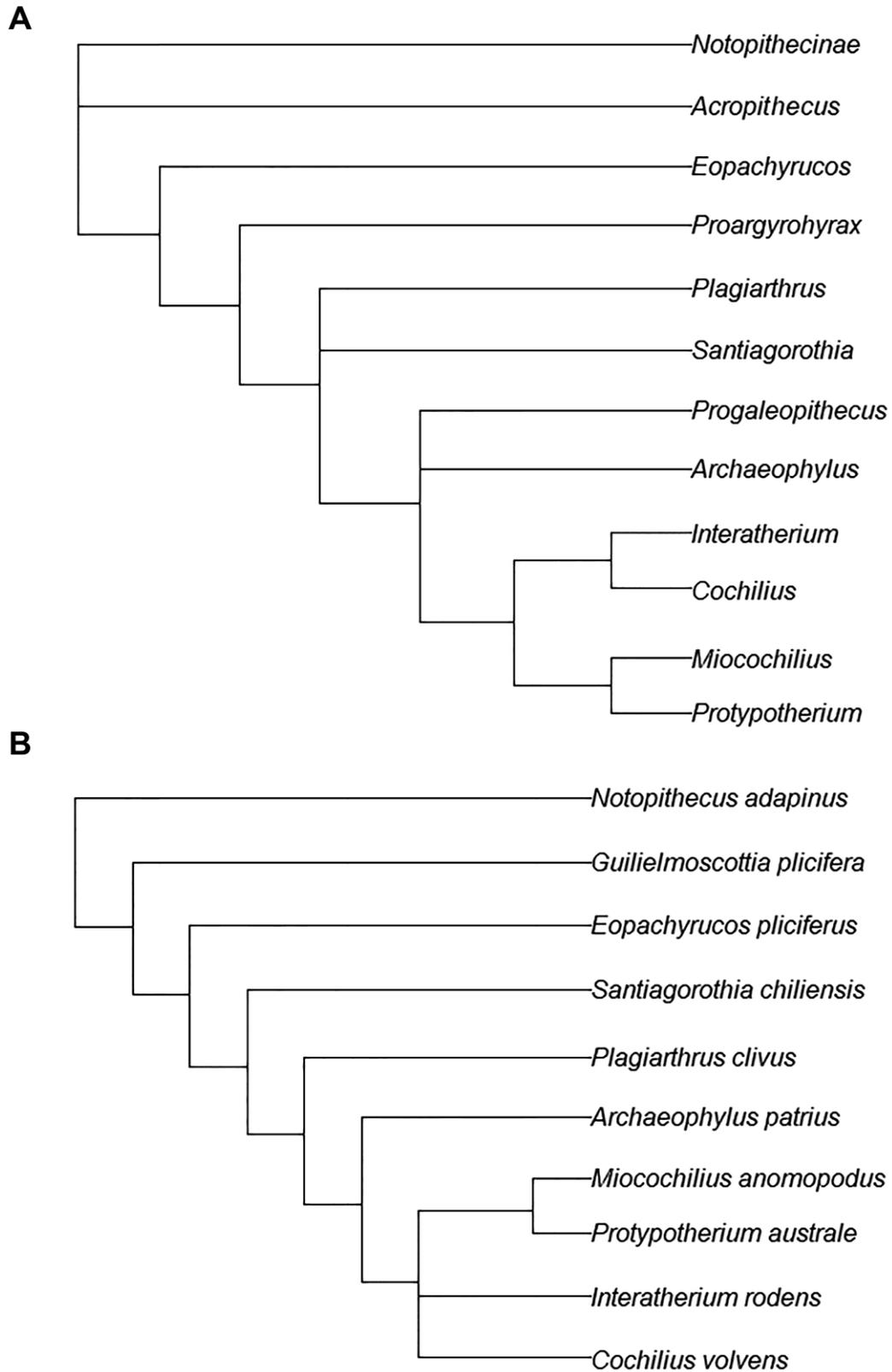


FIGURE S3. Phylogenetic hypothesis of Interatheriidae. A. Strict consensus tree modified from Reguero et al. (2003). B. Detail of the Interatheriidae genealogic relationships modified from the strict consensus tree of Reguero and Prevosti (2010).