

Cladogram and data set by Clark et al. from the 2002 book
 “Mesozoic Birds, Above the Heads of Dinosaurs”, edited by
 Chiappe and Witmer.

APPENDIX 2.2

Character List and Data Matrix

Key: 0 = plesiomorphic character state; 1, 2, 3, 4 = apomorphic character states; ? = missing data; – = character not applicable (e.g., dental characters in *Oviraptor philoceratops*)

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| <ol style="list-style-type: none"> 1. Vaned feathers on forelimb: symmetric (0); asymmetric (1). <p style="margin-left: 20px;">Skull</p> <ol style="list-style-type: none"> 2. Orbit round in lateral or dorsolateral view (0) or dorso-ventrally elongate (1). It is unclear that the eye occupied the entire orbit of those taxa in which it is keyhole-shaped. 3. Anterior process of postorbital projects into orbit (0) or does not project into orbit (1). 4. Postorbital in lateral view with straight anterior (frontal) process (0) or frontal process curves anterodorsally, and dorsal border of temporal bar is dorsally concave (1). 5. Postorbital bar parallels quadrate, lower temporal fenestra rectangular in shape (0) or jugal and postorbital approach or contact quadratojugal to constrict lower temporal fenestra (1). 6. Otosphenoidal crest vertical on basisphenoid and prootic and does not border an enlarged pneumatic recess (0) or well-developed, crescent-shaped, thin crest forms anterior edge of enlarged pneumatic recess (1). This structure forms the anterior, and most distinct, border of the lateral depression of the middle ear region (see Currie and Zhao, 1994) of troodontids and some extant avians. 7. Crista interfenestralis confluent with lateral surface of prootic and opisthotic (0) or distinctly depressed within middle ear opening (1). 8. Subotic recess (pneumatic fossa ventral to fenestra ovalis) present (0) or absent (1). 9. Basisphenoid recess present between basisphenoid and basi-occipital (0) or entirely within basisphenoid (1) or absent (2). 10. Posterior opening of basisphenoid recess single (0) or divided into two small, circular foramina by a thin bar of bone (1). 11. Base of cultriform process not highly pneumatized (0) or base of cultriform process (parasphenoid rostrum) expanded and pneumatic (parasphenoid bulla) (1). | <ol style="list-style-type: none"> 12. Basipterygoid processes ventral or anteroventrally projecting (0) or lateroventrally projecting (1). 13. Basipterygoid processes well developed, extending as a distinct process from the base of the basisphenoid (0) or processes abbreviated or absent (1). 14. Basipterygoid processes solid (0) or processes hollow (1). 15. Basipterygoid recesses on dorsolateral surfaces of basipterygoid processes absent (0) or present (1). 16. Depression for pneumatic recess on prootic absent (0) or present as dorsally open fossa on prootic/opisthotic (1) or present as deep, posterolaterally directed concavity (2). The dorsal tympanic recess referred to here is the depression anterodorsal to the middle ear on the opisthotic, not the recess dorsal to the crista interfenestralis within the middle ear as seen in <i>Archaeopteryx lithographica</i>, <i>Shuvuuiaui deserti</i> and Aves. 17. Accessory tympanic recess dorsal to crista interfenestralis absent (0) small pocket present (1) or extensive with indirect pneumatization (2). According to Witmer (1990), this structure may be an extension from the caudal tympanic recess, although it has been interpreted as the main part of the caudal tympanic recess by some authors (e.g., Walker, 1985). 18. Caudal (posterior) tympanic recess absent (0) present as opening on anterior surface of paroccipital process (1) or extends into opisthotic posterodorsal to fenestra ovalis, confluent with this fenestra (2). 19. Exits of CN X–XII flush with surface of exoccipital (0) or cranial nerve exits located together in a bowl-like basisphenoid depression (1). 20. Maxillary process of premaxilla contacts nasal to form posterior border of nares (0) or maxillary process reduced so that maxilla participates broadly in external naris (1) or |
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- maxillary process of premaxilla extends posteriorly to separate maxilla from nasal posterior to nares (2).
21. Posterior process of premaxillary short and blunt (0) or elongate and extend along nasal-maxillary suture posterior to nares (1).
 22. Internarial bar rounded (0) or flat (1).
 23. Crenulate margin on buccal edge of premaxilla absent (0) or present (1).
 24. Caudal margin of naris farther rostral than (0), or nearly reaching or overlapping (1), the rostral border of the antorbital fossa.
 25. Premaxillary symphysis acute, V-shaped (0) or rounded, U-shaped (1).
 26. Secondary palate formed by premaxilla only (0) or by premaxilla, maxilla, and vomer (1).
 27. Palatal shelf of maxilla flat (0) or with midline ventral toothlike projection (1).
 28. Pronounced, round accessory antorbital fenestra absent (0) or present (1). A small fenestra, variously termed the accessory antorbital fenestra or maxillary fenestra, penetrates the medial wall of the antorbital fossa anterior to the antorbital fenestra in a variety of coelurosaurs and other theropods.
 29. Accessory antorbital fossa situated at rostral border of antorbital fossa (0) or situated posterior to rostral border of fossa (1).
 30. Tertiary antorbital fenestra (fenestra promaxillaris) absent (0) or present (1).
 31. Antorbital fossa without distinct rim ventrally and anteriorly (0) or with distinct rim composed of a thin wall of bone (1). A rim is most strongly developed in the therizinosauroid *E. andrewsi* (Clark et al., 1994b) but is nearly absent in ornithomimosaurs.
 32. Narial region apneumatic or poorly pneumatized (0) or with extensive pneumatic fossae, especially along posterodorsal rim of fossa (1).
 33. Jugal and postorbital contribute equally to postorbital bar (0) or ascending process of jugal reduced and descending process of postorbital ventrally elongate (1).
 34. Jugal tall beneath lower temporal fenestra, twice or more as tall dorsoventrally as it is wide transversely (0) or rodlike (1).
 35. Jugal pneumatic recess in posteroventral corner of antorbital fossa present (0) or absent (1).
 36. Medial jugal foramen present on medial surface ventral to postorbital bar (0) or absent (1).
 37. Quadratojugal without horizontal process posterior to ascending process (reversed L shape) (0) or with process (i.e., inverted T or Y shape) (1).
 38. Jugal and quadratojugal separate (0) or quadratojugal and jugal fused and not distinguishable from one another (1).
 39. Supraorbital crests on lacrimal in adult individuals absent (0) or dorsal crest above orbit (1) or lateral expansion anterior and dorsal to orbit (2).
 40. Enlarged foramen or foramina opening laterally at the angle of the lacrimal, absent (0) or present (1).
 41. Lacrimal anterodorsal process absent (inverted L-shaped) (0) or lacrimal T-shaped in lateral view (1) or anterodorsal process much longer than posterior process (2). Ordered.
 42. Prefrontal large, dorsal exposure similar to that of lacrimal (0) or greatly reduced in size (1) or absent (2). Ordered.
 43. Frontals narrow anteriorly as a wedge between nasals (0) or end abruptly anteriorly, suture with nasal transversely oriented (1).
 44. Anterior emargination of supratemporal fossa on frontal straight or slightly curved (0) or strongly sinusoidal and reaching onto postorbital process (1) (Currie, 1995).
 45. Frontal postorbital process (dorsal view): smooth transition from orbital margin (0) or sharply demarcated from orbital margin (1) (Currie, 1995).
 46. Frontal edge smooth in region of lacrimal suture (0) or edge notched (1) (Currie, 1995).
 47. Dorsal surface of parietals flat, lateral ridge borders supratemporal fenestra (0) or parietals dorsally convex with very low sagittal crest along midline (1) or dorsally convex with well-developed sagittal crest (2).
 48. Parietals separate (0) or fused (1).
 49. Descending process of squamosal parallels quadrate shaft (0) or nearly perpendicular to quadrate shaft (1).
 50. Descending process of squamosal contacts quadratojugal (0) or does not contact quadratojugal (1).
 51. Posterolateral shelf on squamosal overhanging quadrate head absent (0) or present (1).
 52. Dorsal process of quadrate single headed (0) or with two distinct heads, a lateral one contacting the squamosal and a medial head contacting the braincase (1).
 53. Quadrate vertical (0) or strongly inclined anteroventrally so that distal end lies far forward of proximal end (1).
 54. Quadrate solid (0) or hollow, with depression on posterior surface (1).
 55. Lateral border of quadrate shaft straight (0) or with lateral tab that touches squamosal and quadratojugal above an enlarged quadrate foramen (1).
 56. Foramen magnum subcircular, slightly wider than tall (0) or oval, taller than wide (1). See Makovicky and Sues (1998).
 57. Occipital condyle without constricted neck (0) or subspherical with constricted neck (1).
 58. Paroccipital process elongate and slender, with dorsal and ventral edges nearly parallel (0) or process short, deep with convex distal end (1).
 59. Paroccipital process straight, projects laterally or posterolaterally (0) or distal end curves ventrally, pendant (1).
 60. Paroccipital process with straight dorsal edge (0) or with dorsal edge twisted rostrally at distal end (1) (Currie, 1995).
 61. Ectopterygoid with constricted opening into fossa (0) or with open ventral fossa in the main body of the element (1).
 62. Dorsal recess on ectopterygoid absent (0) or present (1).
 63. Flange of pterygoid well developed (0) or reduced in size or absent (1).
 64. Palatine and ectopterygoid separated by pterygoid (0) or contact (1) (Currie, 1995).
 65. Palatine tetradial, with jugal process (0) or palatine triradiate, jugal process absent (1).
 66. Suborbital fenestra similar in length to orbit (0) or reduced in size (less than one quarter orbital length) or absent (1).
- Mandible
67. Symphyseal region of dentary broad and straight, paralleling lateral margin (0) or medially recurved slightly (1) or strongly recurved medially (2).
 68. Dentary symphyseal region in line with main part of buccal edge (0) or symphyseal end downturned (1).
 69. Mandible without coronoid prominence (0) or with coronoid prominence (1).
 70. Posterior end of dentary without posterodorsal process dorsal to mandibular fenestra (0) or with dorsal process above anterior end of mandibular fenestra (1) or with elongate dorsal process extending over most of fenestra (2).
 71. Labial face of dentary flat (0) or with lateral ridge and inset tooth row (1).
 72. Dentary subtriangular in lateral view (0) or with subparallel dorsal and ventral edges (1) (Currie, 1995).

73. Nutrient foramina on external surface of dentary superficial (0) or lie within deep groove (1).
 74. External mandibular fenestra oval (0) or subdivided by a spinous rostral process of the surangular (1).
 75. Internal mandibular fenestra small and slitlike (0) or large and rounded (1) (Currie, 1995).
 76. Foramen in lateral surface of surangular rostral to mandibular articulation, absent (0) or present (1).
 77. Splenial not widely exposed on lateral surface of mandible (0) or exposed as a broad triangle between dentary and angular on lateral surface of mandible (1).
 78. Coronoid ossification large (0) or only a thin splint (1) or absent (2). Ordered.
 79. Articular without elongate, slender medial, posteromedial, or mediodorsal process from retroarticular process (0) or with process (1).
 80. Retroarticular process short, stout (0) or elongate and slender (1).
 81. Mandibular articulation surface as long as distal end of quadrate (0) or twice or more as long as quadrate surface, allowing anteroposterior movement of mandible (1).
- Dentition
82. Premaxilla toothed (0) or edentulous (1).
 83. Second premaxillary tooth approximately equivalent in size to other premaxillary teeth (0) or second tooth markedly larger than third and fourth premaxillary teeth (1) (Currie, 1995).
 84. Maxilla toothed (0) or edentulous (1).
 85. All maxillary teeth serrated (0) or some without serrations anteriorly (except at base in *Sauromithoides mongoliensis*) (1) or all without serrations (2). Ordered.
 86. All dentary teeth serrated (0) or some without serrations anteriorly (except at base in *S. mongoliensis*) (1) or all without serrations (2). Ordered.
 87. Dentary and maxillary teeth large, less than 25 in dentary (0) or moderate number of small teeth (25–30 in dentary) (1) or teeth relatively small, and numerous (more than 30 in dentary) (2).
 88. Serration denticles large (0) or small (1). Farlow et al. (1991) quantify this difference.
 89. Serrations simple, denticles convex (0) or distal and often mesial edges of teeth with large, hooked denticles that point toward the tip of the crown (1).
 90. Maxillary teeth constricted between root and crown (0) or root and crown confluent (1).
 91. Dentary teeth constricted between root and crown (0) or root and crown confluent (1).
 92. Dentary teeth evenly spaced (0) or anterior dentary teeth smaller, more numerous, and more closely appressed than those in middle of tooth row (1).
 93. Dentaries lack distinct interdental plates (0) or with interdental plates medially between teeth (1). Currie (1995) suggests the interdental plates of dromaeosaurids are present but fused to the medial surface of the dentary, but in the absence of convincing evidence for this fusion we did not recognize this distinction.
 94. In cross section, premaxillary tooth crowns suboval to subcircular (0) or asymmetrical (D-shaped in cross section) with flat lingual surface (1).
- Axial Skeleton
95. Number of cervical vertebrae: 10 (0) or 12 or more (1).
 96. Axial epiphyses absent or poorly developed, not extending past posterior rim of postzygapophyses (0) or large and posteriorly directed, extend beyond postzygapophyses (1).
 97. Axial neural spine flared transversely (0) or compressed mediolaterally (1).
 98. Epiphyses of cervical vertebrae placed distally on postzygapophyses, above postzygapophyseal facets (0) or placed proximally, proximal to postzygapophyseal facets (1).
 99. Anterior cervical centra level with or shorter than posterior extent of neural arch (0) or centra extending beyond posterior limit of neural arch (1).
 100. Carotid process on posterior cervical vertebrae absent (0) or present (1).
 101. Anterior cervical centra subcircular or square in anterior view (0) or distinctly wider than high, kidney-shaped (1).
 102. Cervical neural spines anteroposteriorly long (0) or short and centered on neural arch, giving arch an X shape in dorsal view (1).
 103. Cervical centra with one pair of pneumatic openings (0) or with two pairs of pneumatic openings (1).
 104. Cervical and anterior trunk vertebrae amphiplatyan (0) or opisthocelous (1).
 105. Anterior trunk vertebrae without prominent hypapophyses (0) or with large hypapophyses (1).
 106. Parapophyses of posterior trunk vertebrae flush with neural arch (0) or distinctly projected on pedicels (1).
 107. Hyposphene-hypantrum articulations in trunk vertebrae absent (0) or present (1).
 108. Zygapophyses of trunk vertebrae abutting one another above neural canal, opposite hyposphenes meet to form lamina (0), or zygapophyses placed lateral to neural canal and separated by groove for interspinous ligaments, hyposphenes separated (1).
 109. Cervical vertebrae but not dorsal vertebrae pneumatic (0) or all presacral vertebrae pneumatic (1).
 110. Transverse processes of anterior dorsal vertebrae long and thin (0) or short, wide, and only slightly inclined (1).
 111. Neural spines of dorsal vertebrae not expanded distally (0) or expanded to form spine table (1).
 112. Scars for interspinous ligaments terminate at apex of neural spine in dorsal vertebrae (0) or terminate below apex of neural spine (1).
 113. Number of sacral vertebrae: 5 (0) or 6 (1) or 8 or more (2). Ordered.
 114. Sacral vertebrae with unfused zygapophyses (0) or with fused zygapophyses forming a sinuous ridge in dorsal view (1).
 115. Ventral surface of posterior sacral centra gently rounded, convex (0) or ventrally flattened, sometimes with shallow sulcus (1) or centrum strongly constricted transversely, ventral surface keeled (2). Note that in *Alvarezsaurus calvoi* it is only the fifth sacral that is keeled, unlike other alvarezsaurids (Novas, 1996).
 116. Pleurocoels absent on sacral vertebrae (0) or present on anterior sacra only (1) or present on all sacra (2). A pleurocoel may be present on the first sacral in *A. elesitaiensis*, although this area is badly crushed (Russell and Dong, 1994a). Ordered.
 117. Last sacral centrum with flat posterior articulation surface (0) or convex articulation surface (1).
 118. Caudal vertebrae with distinct transition point, from shorter centra with long transverse processes proximally to longer centra with small or no transverse processes distally (0) or vertebrae homogeneous in shape, without transition point (1).
 119. Transition point in caudal series begins distal to the 10th caudal (0) or at or proximal to the 10th caudal vertebra (1).
 120. Anterior caudal centra tall, oval in cross section (0) or with boxlike centra in caudals I–V (1) or anterior caudal centra laterally compressed with ventral keel (2).
 121. Neural spines of caudal vertebrae simple, undivided (0) or separated into anterior and posterior alae throughout much of caudal sequence (1).

122. Neural spines on distal caudals form a low ridge (0) or spine absent (1) or midline sulcus in center of neural arch (2).
 123. Prezygapophyses of distal caudal vertebrae between one-third and whole centrum length (0) or with extremely long extensions of the prezygapophyses (up to 10 vertebral segments long in some taxa) (1) or strongly reduced as in *A. lithographica* (2).
 124. More than 40 caudal vertebrae (0) or 25–40 caudal vertebrae (1) or no more than 25 caudal vertebrae (2). Ordered.
 125. Proximal end of chevrons of proximal caudals short anteroposteriorly, shaft cylindrical (0) or proximal end elongate anteroposteriorly, flattened and platelike (1).
 126. Distal caudal chevrons are simple (0) or anteriorly bifurcate (1).
 127. Shaft of cervical ribs slender and longer than vertebra to which they articulate (0) or broad and shorter than vertebra (1).
 128. Ossified uncinata processes absent (0) or present (1).
 129. Ossified ventral rib segments absent (0) or present (1).
 130. Lateral gastral segment shorter than medial one in each arch (0) or distal segment longer than proximal segment (1).
 131. Ossified sternal plates separate in adults (0) or fused (1).
 132. Sternum without distinct lateral xiphoid process posterior to costal margin (0) or with lateral xiphoid process (1).
 133. Anterior edge of sternum grooved for reception of coracoids (0) or sternum without grooves (1).
 134. Articular facet of coracoid on sternum (conditions may be determined by the articular facet on coracoid in taxa without ossified sternum): anterolateral or more lateral than anterior (0); almost anterior (1) (Xu et al., 1999b).
- Pectoral Girdle and Forelimb
135. Hypocleidium on furcula absent (0) or present (1). The hypocleidium is a process extending from the ventral midline of the furcula and is attached to the sternum by a ligament in extant birds.
 136. Acromion margin of scapula continuous with blade (0) or anterior edge laterally everted (1).
 137. Anterior surface of coracoid ventral to glenoid fossa unexpanded (0) or anterior edge of coracoid expanded, forms triangular subglenoid fossa bounded laterally by coracoid tuber (1).
 138. Scapula and coracoid separate (0) or fused into scapulacoracoid (1).
 139. Coracoid in lateral view subcircular, with shallow ventral blade (0) or subquadrangular with extensive ventral blade (1) or shallow ventral blade with elongate posteroventral process (2).
 140. Scapula and coracoid form a continuous arc in posterior and anterior views (0) or coracoid inflected medially, scapulacoracoid L-shaped in lateral view (1).
 141. Glenoid fossa faces posteriorly or posterolaterally (0) or laterally (1).
 142. Scapula longer than humerus (0) or humerus longer than scapula (1).
 143. Deltopectoral crest large and distinct, proximal end of humerus quadrangular in anterior view (0) or deltopectoral crest less pronounced, forming an arc rather than being quadrangular (1) or deltopectoral crest very weakly developed, proximal end of humerus with rounded edges (2) or deltopectoral crest extremely long (3) or proximal end of humerus extremely broad, triangular in anterior view (4).
 144. Anterior surface of deltopectoral crest smooth (0) or with distinct groove or ridge near lateral edge along distal end of crest (1).
 145. Olecranon process weakly developed (0) or distinct and large (1).
 146. Distal articular surface of ulna flat (0) or convex, semilunate surface (1).
 147. Proximal surface of ulna a single continuous articular facet (0) or divided into two distinct fossae separated by a median ridge (1).
 148. Lateral proximal carpal (ulnare?) quadrangular (0) or triangular in proximal view (1). The homology of the carpal elements of coelurosaurs is unclear (see, e.g., Padian and Chiappe, 1998), but the large, triangular lateral element of some taxa most likely corresponds to the lateral proximal carpal of basal tetanurans.
 149. Two distal carpals in contact with metacarpals, one covering the base of metacarpal I (and perhaps contacting metacarpal II) and the other covering the base of metacarpal II (0) or a single distal carpal capping metacarpals I and II (1). In the absence of ontogenetic data, it is not possible to determine whether the single large semilunate carpal of birds and many other coelurosaurs is formed by fusion of the two distal carpals or is, instead, an enlarged distal carpal 1 or 2.
 150. Distal carpals not fused to metacarpals (0) or fused to metacarpals, forming carpometacarpus (1).
 151. Semilunate distal carpal well developed, covering all of proximal ends of metacarpals I and II (0) or small, covers about half of base of metacarpals I and II (1) or covers bases of all metacarpals (2).
 152. Metacarpal I half the length of metacarpal II (0) or less than half the length of metacarpal II (1) or subequal in length to metacarpal II (2).
 153. Third manual digit present, phalanges present (0) or reduced to no more than metacarpal splint (1).
 154. Manual unguals strongly curved, with large flexor tubercles (0) or weakly curved or straight with weak flexor tubercles displaced distally from articular end (1).
 155. Unguals on all digits generally similar in size (0) or digit I bearing large ungual and unguals of other digits distinctly smaller (1).
 156. Proximodorsal “lip” on some manual unguals—a transverse ridge immediately dorsal to the articulating surface—absent (0) or present (1). In *V. mongoliensis* and *Deinonychus antirrhopus* a lip is present, contrary to previous contentions.
- Pelvic Girdle and Hindlimb
157. Ventral edge of anterior ala of ilium straight or gently curved (0) or ventral edge hooked anteriorly (1) or very strongly hooked (2). Ordered.
 158. Preacetabular part of ilium roughly as long as postacetabular part of ilium (0) or preacetabular portion of ilium markedly longer (more than two-thirds of total ilium length) than postacetabular part (1).
 159. Anterior end of ilium gently rounded or straight (0) or anterior end strongly curved (1) or pointed at anterodorsal corner (2). Ordered.
 160. Supraacetabular crest on ilium as a separate process from antitrochanter, forms “hood” over femoral head present (0) reduced, not forming hood (1) or absent (2).
 161. Postacetabular ala of ilium in lateral view squared (0) or acuminate (1).
 162. Postacetabular blades of ilia in dorsal view parallel (0) or diverge posteriorly (1).
 163. Tuber along dorsal edge of ilium, dorsal or slightly posterior to acetabulum absent (0) or present (1).
 164. Brevis fossa shelflike (0) or deeply concave with lateral overhang (1).
 165. Antitrochanter posterior to acetabulum absent or poorly developed (0) or prominent (1).

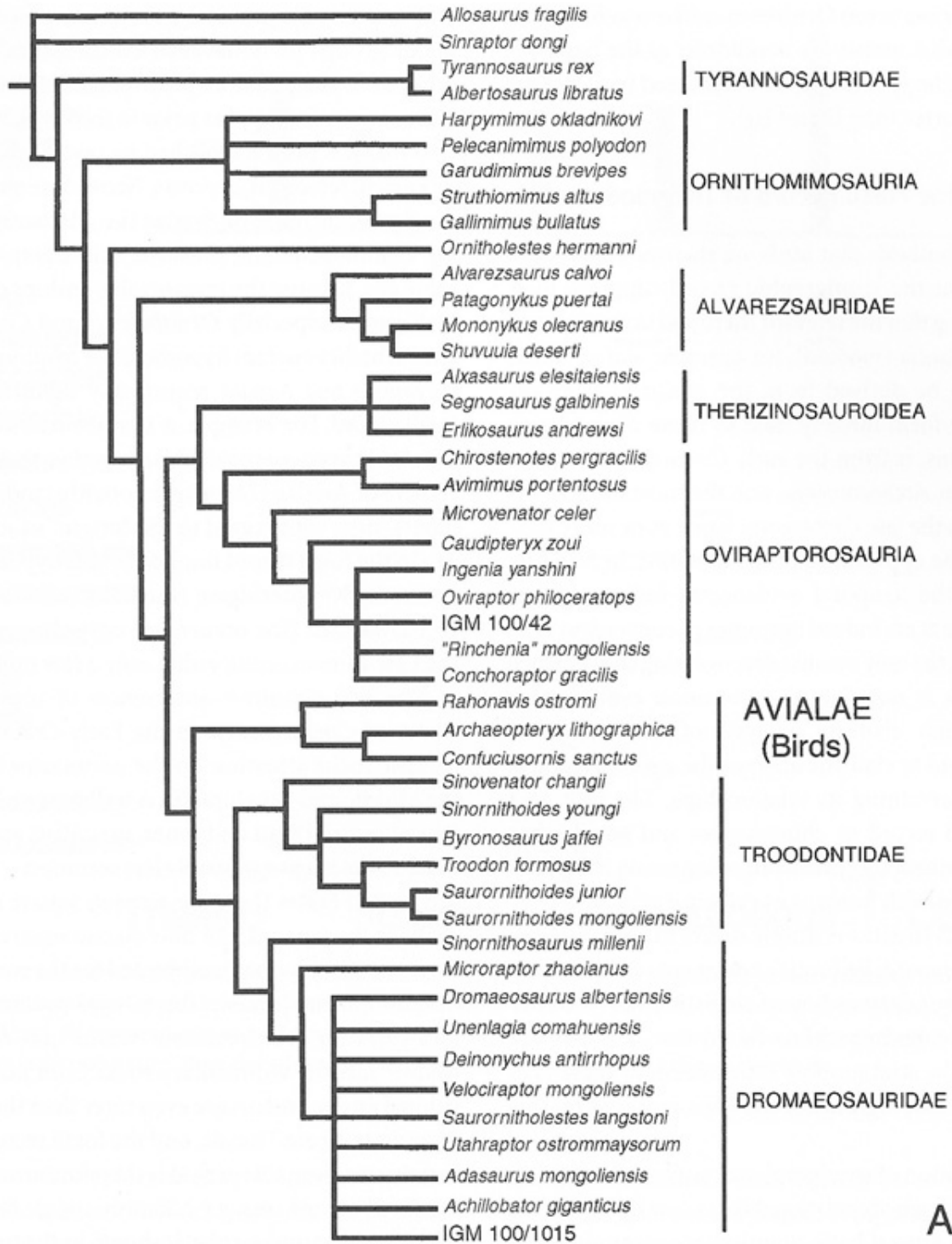
166. Cuppedicus fossa formed as antiliac shelf anterior to acetabulum, extends posteriorly to above anterior end of acetabulum (0) or posterior end of fossa on anterior end of pubic peduncle, anterior to acetabulum (1).
167. Cuppedicus fossa deep, ventrally concave (0) or fossa shallow or flat, with no lateral overhang (1) or absent (2).
168. Posterior edge of ischium straight (0) or with median posterior process (1).
169. Ischium straight (0) or ventrodistally curved anteriorly (1) or twisted at midshaft and with flexure of obturator process toward midline so that distal end is horizontal (2) or with laterally concave curvature in anterior view (3).
170. Obturator process of ischium absent (0) or proximal in position (1) or located near middle of ischiadic shaft (2) or located at distal end of ischium (3).
171. Obturator process does not contact pubis (0) or contacts pubis (1).
172. Obturator notch present (0) or notch or foramen absent (1).
173. Semicircular scar on posterior part of the proximal end of the ischium, absent (0) or present (1).
174. Ischium more than two-thirds (0) or two-thirds or less of pubis length (1).
175. Distal ends of ischia form symphysis (0) or approach one another but do not form symphysis (1) or widely separated (2). Ordered.
176. Ischial boot (expanded distal end) present (0) or absent (1).
177. Tubercle on anterior edge of ischium absent (0) or present (1).
178. Pubis propubic (0) or pubis vertical (1) or pubis moderately posteriorly oriented (2) or pubis fully posteriorly oriented (opisthopic) (3). The oviraptorid condition, in which the proximal end of the pubis is vertical and the distal end curves anteriorly, is considered to be state 1. Ordered.
179. Pubic boot projects anteriorly and posteriorly (0) or with little or no anterior process (1) or no anteroposterior projections (2).
180. Shelf on pubic shaft proximal to symphysis ("pubic apron") extends medially from middle of cylindrical pubic shaft (0) or shelf extends medially from anterior edge of anteroposteriorly flattened shaft (1).
181. Pubic shaft straight (0) or distal end curves anteriorly, anterior surface of shaft concave (1).
182. Pubic apron about half of pubic shaft length (0) or less than one-third of shaft length (1).
183. Femoral head without fovea capitalis (for attachment of capital ligament) (0) or circular fovea present in center of medial surface of head (1).
184. Lesser trochanter separated from greater trochanter by deep cleft (0) or trochanters separated by small groove (1) or completely fused (or absent) to form crista trochanteris (2).
185. Lesser trochanter of femur alariform (0) or cylindrical in cross section (1).
186. Posterior trochanter absent or represented only by rugose area (0) or posterior trochanter distinctly raised from shaft, moundlike (1). Cited by Gauthier (1986) as synapomorphy of Coelurosauria (his character 64), but he termed it the greater trochanter, which he equated with the posterior trochanter. Ostrom (1969) identifies the posterior and greater trochanter as separate structures, and we follow his terminology.
187. Fourth trochanter on femur present (0) or absent (1).
188. Accessory trochanteric crest distal to lesser trochanter absent (0) or present (1). This character was identified as an autapomorphy of *M. celer* (Makovicky and Sues, 1998), but it is more widespread.
189. Anterior surface of femur proximal to medial distal condyle without longitudinal crest (0) or crest present extending proximally from medial condyle on anterior surface of shaft (1).
190. Popliteal fossa on distal end of femur open distally (0) or closed off distally by contact between distal condyles (1).
191. Fibula reaches proximal tarsals (0) or short, tapering distally, and not in contact with proximal tarsals (1).
192. Medial surface of proximal end of fibula concave along long axis (0) or flat (1).
193. Deep oval fossa on medial surface of fibula near proximal end absent (0) or present (1).
194. Distal end of tibia and astragalus without distinct condyles (0) or with distinct condyles separated by prominent tendinal groove on anterior surface (1).
195. Medial cnemial crest absent (0) or present on proximal end of tibia (1).
196. Ascending process of the astragalus tall and broad, covering most of anterior surface of distal end of tibia (0) or process short and slender, covering only lateral half of anterior surface of tibia (1) or ascending process tall with medial notch that restricts it to lateral side of anterior face of distal tibia (2).
197. Ascending process of astragalus confluent with condylar portion (0) or separated by transverse groove or fossa across base (1).
198. Astragalus and calcaneum separate from tibia (0) or fused to each other and to the tibia in late ontogeny (1).
199. Distal tarsals separate, not fused to metatarsals (0) or form metatarsal cap with intercondylar prominence that fuses to metatarsal early in postnatal ontogeny (1).
200. Metatarsals not co-ossified (0) or co-ossification of metatarsals begins proximally (1) or distally (2).
201. Distal end of metatarsal II smooth, not ginglymoid (0) or with developed ginglymus (1).
202. Distal end of metatarsal III smooth, not ginglymoid (0) or with developed ginglymus (1).
203. Proximal surface of metatarsal IV subequal to II in size, proximal end of metatarsal III visible between metatarsals II and IV in anterior view (0) or metatarsal III pinched between metatarsals II and IV, the latter two contacting one another proximally in front of III (1) or metatarsal III does not reach proximal end of metatarsus (2). Ordered.
204. Ungual and penultimate phalanx of pedal digit II similar to those of III (0) or penultimate phalanx highly modified for extreme hyper-extension, ungual more strongly curved and about 50% larger than that of III (1).
205. Metatarsal I articulates in the middle of the medial surface of metatarsal II (0) or metatarsal I attaches to posterior surface of distal quarter of metatarsal II (1) or metatarsal I articulates to medial surface of metatarsal II near its proximal end (2) or metatarsal I absent (3).
206. Metatarsal I attenuates proximally, without proximal articulating surface (0) or proximal end of metatarsal I similar to that of metatarsals II-IV (1).
207. Shaft of metatarsal IV round or thicker dorsoventrally than wide in cross section (0) or shaft of metatarsal IV mediolaterally widened and flat in cross section (1).
208. Foot symmetrical (0) or asymmetrical with slender metatarsal II and very robust metatarsal IV (1).

Taxon	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50
<i>Allosaurus fragilis</i>	?1100	0?100	00001	?0011	00010	00100	00001	11011	0010-	?0000
<i>Sinraptor dongi</i>	?1100	0?000	?0001	00010	00000	0010?	00000	01011	0010-	00?00
<i>Ingenia yanshini</i>	?01?0	?????	?????	?????	?1?1?	?????	?1???	?????	?????	?????
<i>Oviraptor mongoliensis</i>	?01?0	?????	?????	?????	10111	?1???	?1?11	?0001	0?000	??000
<i>O. philoceratops</i>	?01?0	?????	?01?1	?????	1??1?	?111?	01011	?????	?1?0?	?11??
<i>Conchoraptor gracilis</i>	?0110	?????	?????	?????	10111	?1???	?1?11	?000?	?2100	0110?
Oviraptorid IGM 100/42	?0110	01001	001-?	22100	10101	111?0	01011	?0001	02100	01100
<i>C. pergracilis</i>	?????	1?01	?0110	??0?	??1?	110-0	1????	?????	?????	?????
<i>Dromaeosaurus albertensis</i>	?0?0	01100	00000	0010?	?0?0?	?0?01	?0?01	110??	?1111	1????
<i>D. antirrhopus</i>	?0110	?????	?????	?1??	10000	?0111	00001	11000	11???	??0?
<i>V. mongoliensis</i>	?0110	01101	00001	20112	10000	10111	00001	11000	12111	?10?0
<i>Mononykus olecranus</i>	?????	?00??	?????	112??	?????	?????	?????	?????	?????	?????
<i>S. deserti</i>	?0110	10000	0000?	11201	01000	?0?0?	00-11	1-110	02100	00101
<i>Patagonykus puertai</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>A. calvoi</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>O. hermanni</i>	?0100	??0?	0?00?	1?00?	1?010	?0111	00001	?1000	01?0?	?1000
<i>M. celer</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>A. lithographica</i>	101?0	100??	000??	11201	10010	?1111	00?11	1?000	12100	?10?0
<i>A. portentosus</i>	?01?0	?1?10	011?0	0?0?0	?1?1?	?????	?????	-?1??	????0	?11-?
<i>C. zoui</i>	00110	?????	?????	?????	0?111	?110?	00001	?10??	?2100	0??0?
<i>U. comahuensis</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>Confuciusornis sanctus</i>	10110	?????	?????	?????	0-000	?00??	00001	?????	?2?0?	?11??
<i>R. ostromi</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>Struthiomimus altus</i>	?0101	0?010	?0?0?	10102	11000	10111	001-1	10000	10000	00000
<i>Gallimimus bullatus</i>	?0101	0?010	11010	10102	11001	10010	001-1	11020	10000	00000
<i>Garudimimus brevipes</i>	?0100	?????	1101?	?????	1?001	10101	1000?	?000?	10?00	?0?00
<i>P. polyodon</i>	?01??	?????	1????	?????	1?00?	?1?10	?0???	?????	?0?0?	?????
<i>Harpyimimus okladnikovi</i>	?0???	?????	?????	?????	?0?0?	?????	?????	?????	?????	?????
<i>Troodon formosus</i>	??1?	1102-	11010	00001	?????	?011?	10???	??20	22000	0210?
<i>S. mongoliensis</i>	?01??	1?0??	1101?	?0?1	01000	1?100	10???	?????	2????	?????
<i>Byronosaurus jaffei</i>	?????	100??	1101?	11001	01010	1011?	?0???	??20	220??	?????
<i>Saurornithoides junior</i>	?0110	1?02-	11010	0?001	0?000	?1100	0000?	??20	22000	?21??
<i>S. youngi</i>	?0?0?	1????	?????	?????	?0000	?11??	?0???	?00??	?2???	?????
<i>Segnosaurus galbinensis</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>E. andrewsi</i>	?0110	?02-	0-1-0	?1101	00011	100-?	10001	?1000	00100	00100
<i>A. elesitaiensis</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>Tyrannosaurus rex</i>	?1000	0?111	00001	00210	00000	10101	00000	00011	00001	02110
<i>Albertosaurus libratus</i>	?1000	0?0?	0????	??10	00000	101?1	00000	00011	0000-	?2110
<i>Adasaurus mongoliensis</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>Utahraptor ostrommaysorum</i>	?????	?????	?????	?????	1?0??	?????	?????	??00	1????	?????
<i>Saurornitholestes langstoni</i>	?????	?????	?????	?????	?????	?????	?????	?????	??111	1????
<i>Achillobator giganticus</i>	?????	?????	?????	?????	?????	?01?1	0????	?????	?????	?????
Dromaeosaurid IGM100/1015	?0110	01101	00001	20112	10000	10101	00001	?1000	1211?	11000
<i>S. milleni</i>	?011?	?????	0????	?????	?000?	?1111	00???	?1000	11110	0?1??
<i>S. changii</i>	?0???	0012-	00001	11100	01010	1?111	10?01	1?0??	?2?0?	011??
<i>M. zhaoianus</i>	0????	?????	?????	?????	0?0??	?????	?????	?????	?????	?????

Taxon	51-55	56-60	61-65	66-70	71-75	76-80	81-85	86-90	91-95	96-100
<i>Allosaurus fragilis</i>	00000	10000	10000	00000	01000	10000	00000	00101	00100	10000
<i>Sinraptor dongi</i>	00000	00000	10000	00000	01000	10000	00000	00101	10100	10000
<i>Ingenia yanshini</i>	?????	?????	?????	02112	0-010	00001	1101-	---	0-0-?	?????
<i>Oviraptor mongoliensis</i>	000??	0000	0001?	12112	0-010	00001	11-1-	---	0-0-?	?????
<i>O. philoceratops</i>	0001	0000?	0001?	12112	0-01?	00001	11-1-	---	0-0-?	?????
<i>Conchoraptor gracilis</i>	000??	0001?	0000?	12112	0-010	00001	11-1-	---	0-0-?	?????
<i>Oviraptorid IGM 100/42</i>	00011	00010	00110	12112	0-010	00101	11-1-	---	0-0-1	01110
<i>C. pergracilis</i>	?????	10010	?????	02112	0-000	00001	111-	---	0-0-?	?????
<i>Dromaeosaurus albertensis</i>	01001	10001	1000?	00000	01001	11110	00000	00101	1001?	?????
<i>D. antirrhopus</i>	0100?	0000?	11010	0000?	01001	11010	00001	10101	1000?	11000
<i>V. mongoliensis</i>	01001	00001	11010	00000	01001	11100	00101	10101	10000	11000
<i>Mononykus olecranus</i>	?????	00100	?????	?????	?????	?????	00002	00-0	0000?	00001
<i>S. deserti</i>	10001	0010?	00101	00101	01000	00210	00102	00-0	0000?	01111
<i>Patagonykus puertai</i>	?????	?????	?????	?????	?????	?????	?????	?????	0100?	0000?
<i>A. calvoi</i>	?????	?????	?????	?????	?????	?????	?????	?????	0000?	0000?
<i>O. hermanni</i>	00001	00101	1000?	00000	01000	00000	0010?	00101	1001?	0000?
<i>M. celer</i>	?????	?????	?????	02112	0000?	?????	?????	?????	0000?	01110
<i>A. lithographica</i>	00000	00100	11101	00000	01000	00000	00002	00-0	00100	0111?
<i>A. portentosus</i>	00001	00110	?????	0211?	0000?	00001	11-0-	---	0-0-?	01101
<i>C. zui</i>	0000?	?????	?????	02112	0-00?	?????	00001	---	0-0-0	0000?
<i>U. comahuensis</i>	?????	?????	?????	?????	?????	?????	?????	?????	0000?	0000?
<i>Confuciusornis sanctus</i>	1000?	0010?	0000?	01001	0000?	10000	01-1?	0-0?	0000?	0000?
<i>R. ostromi</i>	?????	?????	?????	?????	?????	?????	?????	?????	0000?	0000?
<i>Struthiomimus altus</i>	00100	00000	1001?	00001	00000	10200	01-1-	---	0-0-0	01110
<i>Gallimimus bullatus</i>	00100	00000	10010	00000	00000	00200	01-1-	---	0-0-0	01110
<i>Garudimimus brevipes</i>	0000?	00000	1001?	0000?	0000?	00200	01-1-	---	0-0-?	0000?
<i>P. polyodon</i>	?????	?????	?????	0000?	0000?	?????	00002	00-0	0001?	0000?
<i>Harpymimus okladnikov</i>	?????	?????	?????	0010?	00000	?????	00002	00-1	1-00?	0000?
<i>Troodon formosus</i>	0001?	11100	0000?	0100?	0010?	?????	00001	11010	0100?	00111
<i>S. mongoliensis</i>	?????	?????	10010	0100?	0010?	0100?	00001	11010	0100?	0000?
<i>Byronosaurus jaffei</i>	?????	00100	0000?	00000	0010?	1100?	00002	01-0	0100?	0000?
<i>Saurornithoides junior</i>	0000?	11100	0000?	0100?	0010?	0100?	00001	11010	0100?	0000?
<i>S. youngi</i>	0000?	0000?	0000?	0000?	0010?	0000?	00001	11000	0100?	00111
<i>Segnosaurus galbinensis</i>	?????	?????	0000?	0010?	10000	00000	0000?	0000?	01000	0010?
<i>E. andrewsi</i>	0000?	00000	00111	12100	10000	00200	01-00	01000	001-?	0000?
<i>A. elesitaiensis</i>	?????	?????	0000?	0010?	1000?	0000?	0000?	01000	0010?	0000?
<i>Tyrannosaurus rex</i>	00010	10000	10000	00000	01001	10010	00000	00101	10110	10000
<i>Albertosaurus libratus</i>	00010	10000	1000?	00000	0100?	10010	00000	00101	10110	10000
<i>Adasaurus mongoliensis</i>	?????	?????	0000?	0000?	0000?	0000?	0000?	0000?	0000?	0000?
<i>Utahraptor ostrommaysorum</i>	?????	?????	0000?	0000?	0000?	0000?	0000?	00101	1001?	0000?
<i>Saurornitholestes langstoni</i>	?????	0000?	1100?	0000?	0000?	0000?	0000?	10101	1000?	11000
<i>Achillobator giganticus</i>	?????	0000?	0000?	0000?	0000?	0000?	0000?	00101	1000?	0000?
<i>Dromaeosaurid IGM100/1015</i>	0100?	00010	1000?	00000	0100?	11110	00101	10101	1000?	0000?
<i>S. milleni</i>	00001	0000?	0000?	0000?	0100?	0100?	00101	1000?	1000?	0000?
<i>S. changii</i>	0011?	01110	0000?	0000?	0010?	0000?	00001	1110?	0100?	0011?
<i>M. zhaoianus</i>	?????	0000?	0000?	0000?	0100?	0100?	00001	10000	0000?	00001

Taxon	101-105	106-110	111-115	116-120	121-125	126-130	131-135	136-140	141-145	146-150
<i>Allosaurus fragilis</i>	00100	01000	00000	00000	10000	00?01	????0	00000	00000	00000
<i>Sinraptor dongi</i>	00010	01000	00000	00000	?????	?????	2?00?	0?0??	00?00	?????
<i>Ingenia yanshini</i>	?????	?????	??1??	?01-?	??2?0	0???0	01111	0011?	?0000	0??10
<i>Oviraptor mongoliensis</i>	?????	?????	?????	?0????	??210	?????	?????	??1??	?00?0	??110
<i>O. philoceratops</i>	?????	?????	?????	?0????	?????	?????	??111	??1??	??000	??11?
<i>Conchoraptor gracilis</i>	??001	0??1?	013?1	10??1	?????	0??1?	??1?1	00110	00010	?????
<i>Oviraptorid IGM 100/42</i>	11001	01111	001??	201-?	00210	0111?	01111	00110	10010	0?110
<i>C. pergracilis</i>	?1101	?11??	?11?1	2????	?????	?????	?????	?01??	1????	?????
<i>Dromaeosaurus albertensis</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>D. antirrhopus</i>	1100?	11110	11???	?0011	011?1	11???	??1??	11011	10010	01110
<i>V. mongoliensis</i>	11001	11110	11111	00011	01111	11110	01110	11111	10010	01110
<i>Mononykus olecranus</i>	?1?11	10100	1????	?10?2	?????	?1???	2000?	00020	00301	10-11
<i>S. deserti</i>	11011	101?0	?11?2	01012	01221	0100?	2000?	00020	00301	1?-11
<i>Patagonykus puertai</i>	?????	111??	?????	?10?2	?????	?????	?????	?0020	0?301	10?11
<i>A. calvoi</i>	?100?	?????	?????	?10?2	?12??	?????	?????	0?0?0	0????	?????
<i>O. hermanni</i>	11?01	01100	00???	000?0	010??	1????	?????	?????	?01?0	0????
<i>M. celer</i>	?1100	01111	00???	0?1-1	002??	?????	?????	00?00	0?110	00???
<i>A. lithographica</i>	?000?	0??0?	0?0??	?0011	01221	1000?	1??10	11111	11100	0?110
<i>A. portentosus</i>	01101	01?0?	00???	00???	?????	?????	?????	?????	?0100	?????
<i>C. zoui</i>	?000?	?????	?0???	?01-?	??2?0	?????	0??0?	?0???	?0?0?	??110
<i>U. comahuensis</i>	?????	1111?	11???	?0???	?????	?????	?????	1?0??	1001?	?????
<i>Confuciusornis sanctus</i>	?????	101??	0?2??	?0???	??2??	-111?	21010	?-1-1	11400	?1111
<i>R. ostromi</i>	??001	?111?	?11?0	1?011	11221	1????	?????	?????	11?0?	11???
<i>Struthiomimus altus</i>	11000	01000	00101	00000	00011	01001	?????	01120	00200	00000
<i>Gallimimus bullatus</i>	11000	01000	001?1	00000	00011	0100?	?????	01020	00200	000?0
<i>Garudimimus brevipes</i>	?????	??0??	?11??	0????	?????	?????	?????	?????	?????	?????
<i>P. polyodon</i>	?????	?????	?????	?????	?????	?????	0?00?	??2??	?????	0?000
<i>Harpymimus okladnikov</i>	?????	?????	?????	?????	?????	?????	?????	?????	??2?0	0?000
<i>Troodon formosus</i>	11001	01101	111?1	000?1	020??	11???	?????	?????	1?010	?????
<i>S. mongoliensis</i>	?1???	0??0?	?????	00???	?????	?????	?????	?????	?????	?????
<i>Byronosaurus jaffei</i>	??001	0110?	?????	?0???	02???	?????	?????	?????	?????	?????
<i>Saurornithoides junior</i>	?????	?????	?11?1	000?1	020?1	?????	?????	?????	?????	?????
<i>S. youngi</i>	?0001	?????	?????	?0011	?1011	1101?	??1-	00?1?	101?0	??110
<i>Segnosaurus galbinensis</i>	?????	?????	?????	?0???	???????	?????	?????	?111?	?000?	?????
<i>E. andrewsi</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?00??
<i>A. elesitaiensis</i>	??0??	01000	000?1	?001?	?02?0	?1???	?????	?????	?0000	0?100
<i>Tyrannosaurus rex</i>	0-000	01010	00000	10000	?0010	00???	?????	00000	00100	00???
<i>Albertosaurus libratus</i>	0-?00	01010	00000	10000	00010	000?1	00110	00000	00100	00000
<i>Adasaurus mongoliensis</i>	?????	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>Utahraptor ostrommaysorum</i>	11110	1????	?????	?0???	011??	?????	?????	?????	?????	?????
<i>Saurornitholestes langstoni</i>	11001	11110	11011	100?1	011?1	11???	1????	?????	?101?	?????
<i>Achillobator giganticus</i>	1100?	11110	?????	?0???	011?1	1????	?????	101??	?????	?????
<i>Dromaeosaurid IGM100/1015</i>	?1???	?????	?????	?????	?????	?????	?????	?????	?????	?????
<i>S. milleni</i>	?1???	?????	?0???	?00?1	?1???	?????	0111?	11011	100?0	?????
<i>S. changi</i>	10100	01101	0?001	00011	0221?	1????	?????	11011	11???	??110
<i>M. zhaoianus</i>	?1??(01)	1?100	0?01?	?0011	0?11?	1111?	01?10	1?1?1	11010	??100

Taxon	151-155	156-160	161-165	166-170	171-175	176-180	181-185	186-190	191-195	196-200	201-205	206-208
<i>Allosaurus fragilis</i>	00000	01000	00010	00001	00000	00000	0000?	00110	00000	10000	00000	000
<i>Sinraptor dongi</i>	00000	01000	00010	00001	00000	00000	00000	00000	00000	10000	00000	000
<i>Ingenia yanshini</i>	00000	10002	10000	00000	01001	10100	11011	01000	00000	01000	00000	000
<i>Oviraptor mongoliensis</i>	00000	11000	10000	11000	00000	00000	00000	00000	00000	00000	00000	000
<i>O. philoceratops</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>Conchoraptor gracilis</i>	00000	11002	10001	10000	00000	00000	00000	00000	00000	00000	00000	000
<i>Oviraptorid IGM 100/42</i>	01000	10002	11000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>C. pergracilis</i>	00000	10002	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>Dromaeosaurus albertensis</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>D. antirrhopus</i>	01000	10022	11101	11022	00011	11001	00011	11000	00000	01000	01000	010
<i>V. mongoliensis</i>	01000	10022	11101	11022	01011	11211	00111	10000	00000	01010	11010	010
<i>Mononykus olecranus</i>	22011	00001	00001	00000	10000	10000	00000	01001	11011	21100	00200	000
<i>S. deserti</i>	22011	00001	00001	00000	10000	10000	00000	01001	11011	21100	00200	000
<i>Patagonykus puertai</i>	00001	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>A. calvoi</i>	00000	00001	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>O. hermanni</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>M. celer</i>	00000	10002	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>A. lithographica</i>	01000	00112	11100	10103	01012	00112	00111	11000	00000	00011	00001	000
<i>A. portentosus</i>	00000	00002	11001	00002	01010	00100	00000	10000	00000	01111	00100	000
<i>C. zoui</i>	01000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>U. comahuensis</i>	00000	00122	10100	11102	01010	00010	00010	00010	00010	11001	01001	000
<i>Confuciusornis sanctus</i>	11000	00112	10100	10100	10100	10100	01100	00000	00000	11001	00100	000
<i>R. ostromi</i>	00000	00112	10100	10100	10100	10100	00000	00000	00000	00000	11001	010
<i>Struthiomimus altus</i>	00000	01000	00011	00011	00100	00000	00000	00110	00100	01000	00103	000
<i>Gallimimus bullatus</i>	00000	01000	00011	00011	00100	00001	00000	00110	00100	01000	00103	000
<i>Garudimimus brevipes</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>P. polyodon</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>Harpymimus okladnikovi</i>	00010	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>Troodon formosus</i>	00000	10000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>S. mongoliensis</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>Byronosaurus jaffei</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>Saurornithoides junior</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>S. youngi</i>	01000	00002	10001	00003	00001	10000	00001	11000	00000	00000	00010	001
<i>Segnosaurus galbinensis</i>	00010	00002	10000	00002	10000	10000	00000	00000	00000	00000	00002	100
<i>E. andrewsi</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>A. elesitaiensis</i>	00000	10002	10000	11002	11002	10000	00001	00000	00000	00000	00002	100
<i>Tyrannosaurus rex</i>	00000	01001	00010	00001	01101	10000	00001	00100	00000	01000	00100	000
<i>Albertosaurus libratus</i>	00000	01001	00010	00001	01100	10000	00001	00000	00100	01000	00100	000
<i>Adasaurus mongoliensis</i>	00000	00002	11101	10002	01001	10000	00000	00000	00000	00000	00000	000
<i>Utahraptor ostrrmaysorum</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>Saurornitholestes langstoni</i>	00000	10000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>Achillobator giganticus</i>	00000	00002	10001	11001	01001	10100	00001	11000	00000	00000	00000	000
<i>Dromaeosaurid IGM100/1015</i>	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	00000	000
<i>S. milleni</i>	01000	00002	11001	01003	01001	10000	00000	00000	00000	11000	00000	000
<i>S. changi</i>	01000	00002	11001	11003	01001	10000	00001	11000	00000	01000	00000	000
<i>M. zhaoianus</i>	11001	11012	11100	11103	01001	10(12)11	00001	11100	00000	01110	11111	001



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