

*Supplementary Table 1: Variability of the occipito-atlanto-axial complex in major squamate groups. In total we screened 110 digimorph (Humphries, 2004) microCT datasets for the presence and the morphology of a functional odontoid process (an odontoid process that acts as pivot in turning the head). By looking at sagittal and horizontal microCT slices we classified species into five groups according to the degree of overlap between the odontoid process and the basioccipital (1 (red) = no overlap, no functional odontoid process; 2-4 intermediate forms of overlap and odontoid process morphology; 5 (green) = perfect overlap, elongated odontoid process, see also Figure 5). Number of species analysed: Iguania n=35; Gekkota n=8; Lacertoidea n=8; Scincoidea n=10; Amphisbaenia n=6; Serpentes n=32; Anguimorpha n=11. Data on Rhynchocephalia was taken from Jones et al. (2009).*

<b>Amphisbaenia (n=6)</b>			
species	data source	occipito-axial joint	
<i>Amphisbaena fuliginosa</i>	Digimorph	1	Red
<i>Trogonophis wiegmanni</i>	Digimorph	1	Red
<i>Bipes biporus</i>	Digimorph	2	Orange
<i>Bipes canaliculatus</i>	Digimorph	2	Orange
<i>Rhineura floridana</i>	Digimorph	2	Orange
<i>Diplometopon zarudnyi</i>	Digimorph	3	Yellow

  

<b>Anguimorpha (n=11)</b>			
species	data source	occipito-axial joint	
<i>Heloderma horridum</i>	Digimorph	1	Red
<i>Heloderma suspectum</i>	Digimorph	1	Red
<i>Pseudopus apodus</i>	Digimorph	1	Red
<i>Shinisaurus crocodilurus</i>	Digimorph	1	Red
<i>Lanthanotus borneensis</i>	Digimorph	2	Orange
<i>Varanus exanthematicus</i>	Digimorph	2	Orange
<i>Xenosaurus grandis</i>	Digimorph	2	Orange
<i>Celestus enneagrammus</i>	Digimorph	3	Yellow
<i>Varanus acanthurus</i>	Digimorph	3	Yellow
<i>Elgaria multicarinata</i>	Digimorph	4	Green

  

<b>Gekkota (n=8)</b>			
species	data source	occipito-axial joint	
<i>Eublepharis macularius</i>	Digimorph	3	Yellow
<i>Coleonyx variegatus</i>	Digimorph	4	Green
<i>Gekko gekko</i>	Digimorph	4	Green
<i>Rhacodactylus auriculatus</i>	Digimorph	4	Green
<i>Delma borea</i>	Digimorph	5	Dark Green
<i>Gonatodes albogularis</i>	Digimorph	5	Dark Green
<i>Lialis burtonis</i>	Digimorph	5	Dark Green
<i>Phelsuma lineata</i>	Digimorph	5	Dark Green

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Iguania (n=35)			
species	data source	occipito-axial joint	
<i>Brookesia brygooi</i>	Digimorph	1	Red
<i>Chamaeleo laevigatus</i>	Digimorph	1	Red
<i>Anolis carolinensis</i>	Digimorph	3	Yellow
<i>Leiosaurus catamarcensis</i>	Digimorph	3	Yellow
<i>Physignathus cocincinus</i>	Digimorph	3	Yellow
<i>Plica plica</i>	Digimorph	3	Yellow
<i>Zapsosaurus sceliphros †</i>	Digimorph	3	Yellow
<i>Brachylophus fasciatus</i>	Digimorph	4	Green
<i>Crotaphytus collaris</i>	Digimorph	4	Green
<i>Enyalioides laticeps</i>	Digimorph	4	Green
<i>Gambelia wislizenii</i>	Digimorph	4	Green
<i>Isodontosaurus gracilis †</i>	Digimorph	4	Green
<i>Oplurus cyclurus</i>	Digimorph	4	Green
<i>Phrynosoma platyrhinos</i>	Digimorph	4	Green
<i>Pogona vitticeps</i>	Digimorph	4	Green
<i>Polychrus marmoratus</i>	Digimorph	4	Green
<i>Pristidactylus torquatus</i>	Digimorph	4	Green
<i>Uranoscodon superciliosus</i>	Digimorph	4	Green
<i>Uromastyx aegyptius</i>	Digimorph	4	Green
<i>Urostrophus vautieri</i>	Digimorph	4	Green
<i>Agama agama</i>	Digimorph	5	Dark Green
<i>Basiliscus basiliscus</i>	Digimorph	5	Dark Green
<i>Calotes emma</i>	Digimorph	5	Dark Green
<i>Chalarodon madagascariensis</i>	Digimorph	5	Dark Green
<i>Corytophanes cristatus</i>	Digimorph	5	Dark Green
<i>Dipsosaurus dorsalis</i>	Digimorph	5	Dark Green
<i>Leiocephalus barahonensis</i>	Digimorph	5	Dark Green
<i>Leiolepis belliana</i>	Digimorph	5	Dark Green
<i>Liolaemus bellii</i>	Digimorph	5	Dark Green
<i>Petrosaurus mearnsi</i>	Digimorph	5	Dark Green
<i>Phymaturus palluma</i>	Digimorph	5	Dark Green
<i>Sceloporus variabilis</i>	Digimorph	5	Dark Green
<i>Stenocercus guentheri</i>	Digimorph	5	Dark Green
<i>Uma scoparia</i>	Digimorph	5	Dark Green
<i>Uta stansburiana</i>	Digimorph	5	Dark Green

Lacertoidea (n=8)			
species	data source	occipito-axial joint	
<i>Tupinambis teguixin</i>	Digimorph	1	Red
<i>Lacerta viridis</i>	Digimorph	2	Yellow
<i>Callopiastes maculatus</i>	Digimorph	4	Green
<i>Takydromus ocellatus</i>	Digimorph	4	Green
<i>Teius teyou</i>	Digimorph	4	Green
<i>Aspidoscelis tigris</i>	Digimorph	5	Dark Green
<i>Colobosaura modesta</i>	Digimorph	5	Dark Green
<i>Pholidobolus montium</i>	Digimorph	5	Dark Green

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Rhynchocephalia (n=1)		
species	data source	occipito-axial joint
<i>Sphenodon punctatus</i>	Jones et al. (2009)	1

Scincoidea (n=10)		
species	data source	occipito-axial joint
<i>Lepidophyma flavimaculatum</i>	Digimorph	2
<i>Scincus scincus</i>	Digimorph	2
<i>Amphiglossus splendidus</i>	Digimorph	3
<i>Brachymeles gracilis</i>	Digimorph	3
<i>Cordylosaurus subtesselatus</i>	Digimorph	4
<i>Cordylus mossambicus</i>	Digimorph	4
<i>Tiliqua scincoides</i>	Digimorph	4
<i>Zonosaurus ornatus</i>	Digimorph	4
<i>Eugongylus rufescens</i>	Digimorph	5
<i>Sphenomorphus solomonis</i>	Digimorph	5

Serpentes (n=32)		
species	data source	occipito-axial joint
<i>Anilius scytale</i>	Digimorph	1
<i>Anomochilus leonardi</i>	Digimorph	1
<i>Aspidites melanocephalus</i>	Digimorph	1
<i>Boa constrictor</i>	Digimorph	1
<i>Calabaria reinhardtii</i>	Digimorph	1
<i>Casarea dussumieri</i>	Digimorph	1
<i>Cylindrophis ruffus</i>	Digimorph	1
<i>Eryx colubrinus</i>	Digimorph	1
<i>Lichanura trivirgata</i>	Digimorph	1
<i>Loxocemus bicolor</i>	Digimorph	1
<i>Tropidophis haetianus</i>	Digimorph	1
<i>Ungaliophis continentalis</i>	Digimorph	1
<i>Xenopeltis unicolor</i>	Digimorph	1
<i>Causus rhombeatus</i>	Digimorph	2
<i>Leptotyphlops dulcis</i>	Digimorph	2
<i>Naja naja</i>	Digimorph	2
<i>Natrix natrix</i>	Digimorph	2
<i>Python molurus</i>	Digimorph	2
<i>Coluber constrictor</i>	Digimorph	3
<i>Lachesis muta</i>	Digimorph	3
<i>Lampropeltis getula</i>	Digimorph	3
<i>Liotyphlops albirostris</i>	Digimorph	3
<i>Typhlops jamaicensis</i>	Digimorph	3
<i>Agkistrodon contortrix</i>	Digimorph	4
<i>Amphiesma stolata</i>	Digimorph	4
<i>Bothrops asper</i>	Digimorph	4
<i>Laticauda colubrina</i>	Digimorph	4
<i>Lycophidion capense</i>	Digimorph	4
<i>Micrurus fulvius</i>	Digimorph	4
<i>Thamnophis marcianus</i>	Digimorph	4
<i>Typhlops squamosus</i>	Digimorph	4
<i>Xenochrophis piscator</i>	Digimorph	4