

**Mesozoic vertebrates from Pakistan:
Recent advances in discoveries of Cenozoic vertebrates from Balochistan and
Sulaiman basins (Pakistan): Paleobiogeographic affinity**

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The vertebrates of Indo-Pak created major insights into the paleobiogeography of the Indo-Pak subcontinent due to its present connection with Asia (Northern hemisphere) and past, especially Triassic–Jurassic, connection with Gondwana (Southern hemisphere). The Triassic strata of Pakistan have not yielded any vertebrates so far while the Jurassic has produced body fossils of titanosauriforms/early titanosaurs (*Brohisaurus kirthari*) and a footprint of a sauropod, tracks of a couple of small theropods (*Himalayadrinda potwari*) and trackways of a herd of titanosauriforms/early titanosaurian sauropods, *Malakheliasaurus mianwali*, confronted by a large theropod, *Samanadrinda surghari*. The Cretaceous of Pakistan yielded body fossils of the titanosaurian sauropods *Khetranisaurus barkhani*, *Sulaimanisaurus gingerichi* and *Pakisaurus balochistani* (pakisaurids), and *Marisaurus jeffi*, *Balochisaurus malkani* and *Maojandino alami* (balochisaurids), *Nicksaurus razashahi* (saltasaurids), *Gpsaurus pakistani* and *Saraikimasoom vitakri* (gpsaurids), theropods – the abelisaurian *Vitakridrinda sulaimani* and the noasaurian *Vitakrisaurus saraiki*, the mesoeucrocodyles *Pabwehshi pakistanensis* and *Induszalim bala* (induszalimids) and *Sulaimanisuchus kinwai* (sulaimanisuchids), mesocrocodyles (*Khuzdarcroco zahri*), flying reptile/pterosaur saraikisaurids (*Saraikisaurus minhui*), fishes (*Karkhimachli sangiali*), and trackways of titanosaurs (*Pashtosaurus zhobi*). Besides diverse postcranial remains and osteoderms, the cranial fossils include two skulls of titanosaurs and two rostra and anterior mandibles of mesoeucrocodyles, dentaries of pterosaurs and a theropod braincase. The Mesozoic vertebrates show closer affinity to Gondwana than Laurasia. Recently, Balochistan Basin for the first time yielded the Early Eocene vertebrate giant baluchitherid *Pakitherium shagalai*. Previously, Sulaiman basin is famous for baluchitheres, whales, proboscidean and other mammals and some reptiles. Despite severe security disturbance, the recent geological and paleontological exploration in Sulaiman Basin yielded Latest Cretaceous dinosaurs, mesoeucrocodyles and pterosaurs, Early Eocene cyonids (*Bolanicyon shahani*), Middle Eocene basilosaurids (*Sulaimanitherium dhanotri*), the Oligocene baluchitherid *Buzdartherium gulkirao*, the eucrocodyle *Asifcroco retrai*, and the Miocene proboscidean *Gomphotherium buzdari*. The Cenozoic vertebrates show Eurasian affinity and migrated from Eurasia to the Indo-Pak subcontinent or vice versa via Western and Northern Indus Suture, after the collision of the Indo-Pak subcontinent with Asia occurring at the terminal Cretaceous.