The Pterosaur Database

Darwinopterus modularis

Holotype ZMNH M8782 Referred specimen YH-2000

This is a Middle Jurassic Pterosaur from Linglengta, Jianchang County, Liaoning Province, Tiaojishan Formation. It shows a long tailed pterosaur with a skull and neck region that is distinctly pterodactyloid.The pterodaur does not fit into the current classification and so it has been placed as an intermediate form between Rhamphorhynchoidea and Pterodactyloidea. Examination of key features places this pterosaur generally within the Pterodactyloids, but Rhamphorhynchoid features complicate the classification.

This pterosaur has been placed in a classification group called Monofenestrata. This includes Darwinopterus and also encompasses all of the Pterodactyloidea.

Lü J. Unwin D. M., Jin X., Liu Y. and Ji Q., 2009, Evidence for modular evolution in a long-tailed pterosaur with a pterodactyloid skull. Proceedings of the Royal Society B. Published on line 14 Oct 2009.

Abstract
The fossil record is a unique source of evidence for important evolutionary phenomena such as transitions between major clades. Frustratingly, relevant fossils are still comparatively rare, most transitions have yet to be documented in detail and the mechanisms that underpin such events, typified by rapid large scale changes and for which microevolutionary processes seem insufficient, are still unclear. A new pterosaur (Mesozoic flying reptile) from the Middle Jurassic of China, Darwinopterus modularis gen. et sp. nov., provides the first insights into a prominent, but poorly understood transition between basal, predominantly long-tailed pterosaurs and the more derived, exclusively short-tailed pterodactyloids. Darwinopterus exhibits a remarkable 'modular' combination of characters: the skull and neck are typically pterodactyloid, exhibiting numerous derived character states, while the remainder of the skeleton is almost completely plesiomorphic and identical to that of basal pterosaurs. This pattern supports the idea that modules, tightly integrated complexes of characters with discrete, semi-independent and temporally persistent histories, were the principal focus of natural selection and played a leading role in evolutionary transitions.