A NEW SPECIMEN OF ORNITHOMIMID (THEROPODA) FROM DINOSAUR PROVINCIAL PARK PROVIDES UNPRECEDENTED DETAILS IN DINOSAUR PLUMAGE AND FEATHER EVOLUTION

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A newly discovered, articulated partial skeleton of *cf. Ornithomimus* preserved with skin and feathers is compared with other known specimens to gain a better understanding of plumage patterns in *Ornithomimus*. Visible plumage indicates plumaceous feathers along the tail that are slightly more elongate in comparison to those of the remainder of the body. The ventral two thirds of the tail and the region distal to the middle of the femur are devoid of feather structures. The specimen also preserves a skin structure anterior to the femur. This preserved skin, referred to as the anterior femoral web, is a soft tissue structure similar to skin webs in extant birds; however, this is the first report for non-avian theropods. The feather location patterns found in *Ornithomimus* are similar to those found in *Struthio camelus* (ostrich), indicating that this feature may be used in a similar thermoregulatory function.

Feather macro-structure and micro-structure are preserved in extraordinary detail, allowing unprecedented understanding of the evolution of feathers. The feathers are simple branching structures represented by a fully developed rachis and ramus. No indication of barbules are present. Using electron microscopy the internal structure of the feathers were compared to that of several extant species of bird. Internal structural components such as the pith and cortex are distinguishable, and melanosomes and their placement are identifiable. Observed structural components indicate that feathers predating the evolution of avian-theropod flight were designed to be strong and durable, and flight was secondarily adapted from these properties.