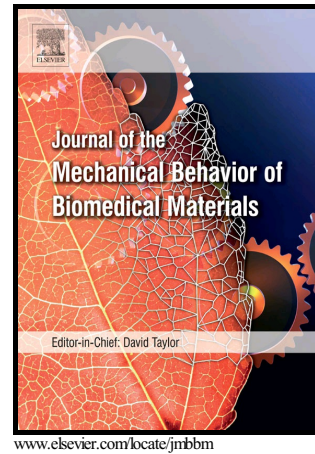


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## **A comparative analysis of the avian skull: Woodpeckers and chickens**

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### **ABSTRACT**

Woodpeckers peck at trees without any reported brain injury despite undergoing high impact loads. Amongst the adaptations allowing this is a highly functionalized impact-absorption system consisting of the head, beak, tongue and hyoid bone. This study aims to examine the anatomical structure, composition, and mechanical properties of the skull to determine its potential role in energy absorption and dissipation. An acorn woodpecker and a domestic chicken are compared through micro-computed tomography to analyze and compare two- and three-dimensional bone morphometry. Optical and scanning electron microscopy with energy dispersive X-ray spectroscopy are used to identify the structural and chemical components. Nanoindentation reveals

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