

Talk Title: 3D Imaging and Biomechanics: Using Finite Element Analysis to Assess Feeding Behavior and Performance

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Venue: 216 McNutt Hall

Time: Nov' 6th Thursday, 12:30 to 1:30pm

Abstract:

The development of 3D imaging techniques has given morphologists the ability to visualize and compare structures in exciting new ways. Work in my lab focuses on taking 3D data a step beyond imaging by transforming them into finite element models that serve as the basis of comparative biomechanical analyses. Finite element analysis (FEA) is a technique used by mechanical engineers to predict the deformation of physical systems under specified constraints and loading regimes. FEA is relatively new to functional morphology but clearly can provide a truly novel qualitative, as well as quantitative, perspective on form-function relationships. In this seminar I highlight the power of FEA to address questions about ecomorphology and biomechanics using examples from the feeding systems of two very different kinds of mammals - bats and hyenas. The same types of analyses can be applied with equal ease to any biological system (whole organisms, cells, even molecules) that can be imaged and/or modeled in three dimensions.