



# Aubrey Gorbman

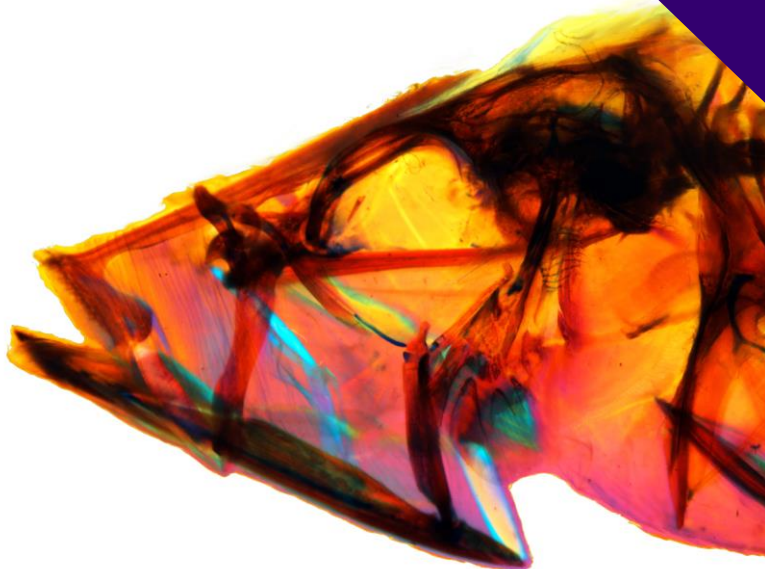
## Endowed Biology Seminar

By: Dr. Mark Westneat

The University of Chicago | Professor, Department of Organismal Biology and Anatomy  
<https://westneatlab.uchicago.edu/>

### Phylogenetics, Biogeography and Evolutionary Biomechanics in Coral Reef Fishes

**Monday, December 2, 2019 | 12:00pm**  
**HCK 132 Refreshments at 11:45am**



Resolving the grand Tree of Life is one of the great scientific endeavors of our time. Particularly for fishes, of course! We will explore recent advances in detailed, species-rich phylogenetic trees for some of the most iconic reef fish groups of our oceans and highlight emerging biogeographic patterns that they reveal. Within these phylogenies, the evolution of feeding and swimming in fishes has driven a spectacular evolutionary radiation into a diversity of body forms.

Coral reef fishes have evolved a wide array of skull mechanisms and locomotor strategies that are excellent systems for biomechanical analysis. Computational biomechanical models enable the calculation of muscle mechanics, illustrate the force transfer through levers and linkages, predict kinematic motions, and compute force and speed performance in a wide range of species. Data sets for biomechanics come to life in the context of phylogenetic trees, yielding a new picture of the evolutionary history of function in some of the most diverse fish families in the world. Integrating phylogenetics and biomechanics shows us that diversification often happens in a pattern of local phylogenetic divergence that produces, at a higher level, a global pattern of repeated convergence in form and function, a major theme in the evolution of fishes.

