



NIMBioS

National Institute for Mathematical
and Biological Synthesis



NIMBioS Interdisciplinary Seminar

Dr. Arik Kershenbaum
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3:30 p.m.**, Tuesday, October 2, 2012

Hallam Auditorium, Room 206
Claxton Education Building, 1122 Volunteer Blvd.

“Analyzing sequences in animal vocal communication”

As far as we know, no animal species apart from humans has true language abilities. However, recent research has indicated that more species than expected possess some of the linguistic abilities necessary for the development of language. Vocal syntax, once observed only in birds, has now been shown in cetaceans, bats, rodents, primates and hyraxes. Some of the varied mathematical techniques used to uncover syntactic structure in animal vocalizations will be discussed, including signal processing algorithms for the extraction of frequency modulated tonal elements, machine learning algorithms for classifying vocal elements into “syllables,” and techniques borrowed from bioinformatics for characterizing and comparing such syllable streams. With examples from the rock hyrax, bottlenose dolphin and pilot whale, these techniques are uncovering surprising linguistic abilities among animals, which may shed light on the apparently unique evolution of our own language.

****Join us for refreshments at 3 p.m. *in the 1st floor visitor breakroom.***

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The National Institute for Mathematical and Biological Synthesis (NIMBioS) brings together researchers from around the world to collaborate across disciplinary boundaries to investigate solutions to basic and applied problems in the life sciences. NIMBioS is sponsored by the National Science Foundation, the U.S. Department of Homeland Security, and the U.S. Department of Agriculture with additional support from The University of Tennessee, Knoxville.