NIMBioS
National Institute for Mathematical and Biological Synthesis

# NIMBioS Interdisciplinary Seminar

## 3:30 p.m.*, Tuesday, February 18, 2014


## Dr. Kay Holekamp

**Distinguished Professor of Zoology**
**Michigan State Univ.**


### The Evolution of Intelligence


Despite huge metabolic costs of neural tissue, some mammals and birds exhibit relatively large brain:body ratios and relatively sophisticated cognitive abilities. However, it is not clear whether big brains and great intelligence have generally evolved to cope with social complexity, complexity in the physical environment, neither or both. Primatologists have claimed that non-primate animals rarely form aggregations that impose rigorous cognitive demands and that their evolutionary success seldom depends on intelligence. They have therefore concluded that non-primate animals have no need to solve social problems that require knowledge of kinship, rank, or past history of give-and-take, as do many primates. Here I evaluate this assertion in light of recent data from non-primate mammals, focusing in particular on mammalian carnivores. It appears that that there has been remarkable convergence between primates and non-primate mammals with respect to the selection pressures, particularly social complexity, favoring the evolution of intelligence. However, recent data also suggest that the evolution of brains and behavioral flexibility has been considerably less constrained in primates than in mammalian carnivores. Recent work suggests that both social and non-social variables shape brain evolution, as do phylogenetic relationships and recent history.


***Location: Tom Hallam Auditorium, Room 206 at NIMBioS, Claxton Education Bldg, 1122 Volunteer Blvd.***

**Join us for refreshments at 3 p.m. in the Auditorium.*

For more information about this and other NIMBioS Seminars, visit http://www.nimbios.org/seminars

*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.*

THE UNIVERSITY of TENNESSEE KNOXVILLE

NSF