

1145-92-2044

**Heather Z Brooks\*** (hbrooks@math.ucla.edu), **Nina H Fefferman**, **Maryann E Hohn**, **Candice R Price**, **Ami E Radunskaya**, **Suzanne S Sindi**, **Nakeya D Williams** and **Shelby N Wilson**. *Parasites and the Evolution of Sociality: How Social Complexity and Grooming Efficiency Affect the Selective Pressures on Group Organization.*

Individuals who live in close, collaborative social groups are susceptible to infectious diseases such as pathogens and parasites. Ectoparasites are a particularly interesting case because social grooming (allogrooming) reduces the parasite load of one individual while potentially exposing both the groomer and groomee to additional transmission. Using an agent-based model that shows parasite spread based on individual behavior in a dynamic network, we model the interactions between social organization and allogrooming efficiency to consider whether or not certain physiological or energetic expenditures may have been required to allow the evolution/existence of increasingly complex social systems. Conversely, we explore whether social complexity may have been an adaptation to alleviate burdens of allogrooming under parasitic threat. We also consider the role of social position for individuals (where status is often correlated with frequency of allogrooming) and contextualize the fitness consequences for individuals in both high and low ranking positions as they feed back to determine the fitness of the whole population. (Received September 24, 2018)