Daniel Bolnick, Ph.D.

Professor at University of Connecticut
Storrs, CT, US

Professor Bolnick is an expert on how evolution maintains genetic variation within species.

Biography

Daniel Bolnick is interested in how evolution maintains genetic variation within species. Natural selection is usually thought of as a filtering process that removes all but the most-fit variants within a population, thus reducing variation. Yet, most natural populations of organisms harbor substantial genetic diversity. Bolnick?s research explores several possible solutions to this paradox. For instance, he has shown that when animals compete strongly for a variety of food sources, individuals who use atypical foods tend to escape the ill effects of competition, thereby favoring dietary diversity and any genetic traits that create this diversity. Recently, his work has focused on how parasites and their hosts co-evolve, and how their antagonism shapes variation in host immunity. As with competition, rare types can gain an advantage, for instance when hosts fail to recognize parasites with rare molecular fingerprints, those atypical parasites are maintained in their population. This curiosity-driven work on the evolutionary ?arms race? between hosts and parasites has led his lab into studying how vertebrates? immune response can inflict self-damage, such as severe fibrosis. This scar tissue formation is the basis of several severe human diseases, but in the fish this fibrosis is an adaptive defense against parasites.

Areas of Expertise

Speciation, Host-parasite Interactions, Ecology, Evolutionary Biology, Immunology, Biostatistics

Education

University of California - Davis
Ph.D Population Biology

Williams College
B.A.

Accomplishments

The David Star Jordan Prize
2015 The prize is international in scope and presented approximately every three years to a young scientist (40 years of age or less) who is making novel innovative contributions in one or more areas of Jordan?s interest: evolution, ecology, population and organismal biology.

George Mercer Award
2005 Awarded by the Ecological Society of America for an outstanding ecological research paper published within the past two years by a younger researcher (less than 40 years old).
