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Computational study of a multi-species predator-prey system in the presence of mutation and natural selection SHENG CHEN, UWE C. TÄUBER, Center for Soft Matter and Biological Physics, Department of Physics, Virginia Tech — With the purpose of studying mechanistic origins of biodiversity, computational experiments are performed on a predator-prey community of two predator species competing for prey. Predator individuals are assigned predation efficiency, for which Darwinian evolutionary adaptation is introduced. Competing for their limited prey drives predators' predation efficiency to optimized high values. This natural selection strongly impacts the population dynamics and evolutionary dynamics so that one predator species will go extinct asymptotically. We emphasize the importance of direct competition between the two predator species to establish stable coexistence for all three species in the system.

Sheng Chen
Center for Soft Matter and Biological Physics, Department of Physics, Virginia Tech

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