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David Kraines and **Vivian Kraines*** (krainesv@meredith.edu). *Natural Selection of Strategies for the Iterated Prisoner's Dilemma.*

The existence of cooperative behavior in a competitive environment has intrigued researchers since the time of Darwin. Evolutionary game theory, and particularly the Iterated Prisoner's Dilemma, has provided a mathematical model that gives insight into this question. In simulated interactions of stochastic memory-one strategies, Nowak and Sigmund discovered that cooperative agents using a Pavlov (Win-Stay Lose-Switch) type strategy eventually dominate a random population. The presenters show that such strategies emerge more directly from a deterministic dynamical system based on Darwinian natural selection. They generalize their results to higher memory strategies both in the synchronized and the alternating Prisoner's Dilemma. (Received October 02, 2000)