

Mathematical Biology Seminar
Wednesday, March 16th, 2022
Speaker: Dr. Alex Capaldi,
Associate Professor, Valparaiso University



Title: Could Dogs Have Been Self-Domesticated via Natural Selection?: A Simulation Story

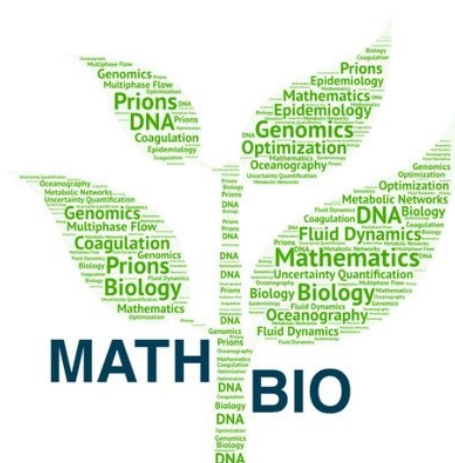
Time: 11am (PST)

Zoom Link:

<https://ucmerced.zoom.us/j/98050375649>

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Abstract: Wolves are among the earliest known animals to be domesticated. However, the mechanism by which gray wolves were domesticated into modern dogs is still unknown. The prevailing domestication hypothesis is that humans selectively bred the gray wolves that were more docile. However, there is a more recent hypothesis which states that wolves which were less hostile towards humans would essentially domesticate themselves by naturally selecting for such wolves because of the availability of food near human settlements. Simulating the process would help demonstrate whether it was possible dogs were domesticated simply via natural selection. Therefore, we present an agent-based model of evolution of a single trait, a measure of human tolerance, in wolves to test the plausibility of the natural selection process. We use fecundity and mortality rates from the literature and use Hartigan's Dip Test for Unimodality to measure if and when divergence of populations occurred. We conclude that our model indicates the natural selection hypothesis is plausible within realistic time constraints.



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