The Mathematical Laws of Morphology and Biomechanics

Tuesday 15th November 2022 noon EST
Virtual Presentation: https://purdue.webex.com/meet/aselvite
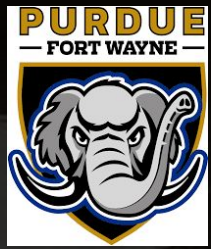
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Born to Run: Experimental Evolution of Exercise Behavior and Physiology in a Vertebrate Model Organism

The overall goals of this experiment were to elucidate how complex traits evolve at multiple levels of organization, ranging from behavior to physiology to morphology to DNA sequences. We also wanted to test the long-standing hypothesis that behavior tends to evolve more rapidly and prior to changes in underlying physiological capacities, a.k.a., the "behavior evolves first" hypothesis. From a starting population of 224 outbred mice, individuals were randomly assigned to one of 4 selectively bred High Runner (HR) lines or one of four non-selected Control (C) lines. Each generation, as sexually mature young adults, mice are given access to wheels attached to ordinary home cages for 6 days. The number of revolutions on days 5 and 6 is used as the selection criterion. The experiment has now surpassed 100 generations. I will review a variety of results covered in more than 160 peer-reviewed publications, all of which can be found at the website https://sites.google.com/ucr.edu/hrmice/home. I will also show some recent results from meta-analyses.