



Mechanisms underlying rapid evolution during invasion

THE CENTER FOR SUSTAINABLE ECOSYSTEM SOLUTIONS PRESENTS:

Dr. Lee Ann Rollins, UNSW Scientia Fellow

Date: Monday 18th June

Time: 16:00 - 17:00

Venue: Building 20 Theatre 5 (20.5)

Refreshments will be provided

ABSTRACT

Invasive species often evolve rapidly in response to novel introduced environments, making them excellent models for the study of evolution. However, there remains an unsolved paradox: how can introduced populations that typically have low genetic diversity respond so quickly to selection? Is this response primarily based on novel mutations or are there other mechanisms (e.g. epigenetic modifications) through which rapid evolution is occurring in these systems? In this seminar, I will describe my research on rapid evolution in Australian invasive species and discuss future directions that aim to improve our knowledge of the fundamental mechanisms driving evolution during invasion. I will describe data from a range-edge population of invasive starlings (*Sturnus vulgaris*) in which we have found evidence of rapid evolution of mitochondrial DNA that is linked to changes in mtDNA copy number. I will also discuss changes in gene expression identified in invasive cane toads (*Rhinella marina*) from original sites of introduction in Australia as compared to range-edge populations. We now are investigating to what degree these changes in gene expression are related to genetic polymorphism, whether they are driven by changes in DNA methylation and the heritability of methylation in this system. Ultimately, we aim to address the possibility that rapid evolution during invasion often may be driven by environmentally induced epigenetic changes.

BIOGRAPHY

Dr. Lee Ann Rollins is a UNSW Scientia Fellow in the Evolution & Ecology Research Centre. Her research uses genetic and epigenetic data to examine population and evolutionary processes. Specifically, she employs molecular techniques to investigate mechanisms underlying rapid evolution often seen in invasive populations, using iconic Australian invaders such as the cane toad and starling as models. She is also interested in using genetic data to improve the management of invasive and conserved species.



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