NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

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Hosted by Prof Antonia Monteiro

The evolution of inter-sexual mimicry and female-limited polymorphisms in damselflies

By **Beatriz Willink**

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About the Speaker

Beatriz Willink received her PhD in 2018 from Lund University, Sweden. She was then awarded an "International Postdoctoral Grant" from the Swedish Research Council (2021-2024), to investigate the genetic basis inter-sexual mimicry in pond damselflies. This postdoctoral research was hosted by Stockholm University, Sweden, and the National University of Singapore. Beatriz is now starting as a Research Fellow at the National University of Singapore.

Phenotypic polymorphisms provide a unique opportunity to study how novel traits evolve, and how they map to underlying genotypes. My research bridges phylogenetic and genomic approaches to understand the evolution of inter-sexual mimicry, a complex phenotypic polymorphism where some individuals of one sex gain a fitness advantage because they resemble the opposite sex. In pond damselflies (family Coenagrionidae), male-coloured females obtain a frequency-dependent advantage of reduced male-mating harassment, and thus persist as a stable polymorphism with non-mimicking females. My research shows that inter-sexual mimicry has originated multiple times across this diverse insect group, in response to ecological conditions that increase the rate of pre-mating interactions and thus the intensity of sexual conflict. In the Forktail damselflies (genus Ischnura), inter-sexual mimicry has evolved in association with a novel genetic sequence that is uniquely present in male-mimicking females, and which carries a molecular signature of the frequency-dependent process that maintains the polymorphism locally. In the near future, I plan to expand this multifaceted research agenda to investigate the function of the newly uncovered male-mimicry locus. This new research direction will advance damselflies as study systems for integrative research, linking the origin, function, and developmental basis of evolutionary innovations.