

Sexual conflict among the lichen tuft moths.

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Insect species display extraordinary variation in male genital morphology therefore; genital evolution is rapid and divergent. Previous assumptions for diversification in genital morphology were based on species isolation and pleiotropy, but subsequent comparative research has failed to support these hypotheses. Recent comparative and experimental research has proposed sexual selection to be the most likely driver of rapid and divergent evolution of genitalia, either via sperm competition, cryptic female choice, or sexual conflict. Sexual conflict may drive genital evolution through opposing selection of male and female reproductive strategies as genital adaptations that allow males a competitive advantage may consequently reduce female fitness leading to an evolutionary arms race via sexually antagonistic co-evolution (SAC). Lichen tuft moths of the genus *Izatha* (Lepidoptera: Oecophoridae) are excellent candidates for exploring the potential for sexual conflict to drive genital evolution, as some males have detachable spines (deciduous cornuti) which are ejected into the female reproductive tract during their first mating, apparently causing damage. Some species lack deciduous cornuti, but have permanently attached sclerotised teeth on the phallus, whilst others lack these structures all together. Here I present a molecular and morphological phylogenetic analysis of the genus that provides insight into the evolution of these complex genitalic adaptations. Genital complexity appears to have evolved along multiple paths, via the modification of different genital structures. *Izatha* therefore may represent an ideal model for the study of genital evolution.

