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Androgen responsiveness to simulated territorial intrusions in Allobates femoralis males: evidence supporting the challenge hypothesis in a territorial frog

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Abstract

Territorial behaviour has been widely described across many animal taxa, where the acquisition and defence of territory are critical for the fitness of an individual. Extensive evidence suggests that androgens are involved in the modulation of territorial behaviour in male vertebrates. A short-term increase of androgen following a territorial encounter appears to favour the outcome of a challenge. The “Challenge Hypothesis” outlines the relationship between androgen and social challenges in male vertebrates. Here we tested the challenge hypothesis in the highly territorial poison frog, Allobates femoralis, in its natural habitat by exposing males to simulated territorial intrusions in the form of acoustic playbacks. We quantified repeatedly androgen concentrations of individual males via a non-invasive water-borne sampling approach. Our results show that A. femoralis males exhibited a positive behavioural and androgenic response after being confronted with simulated territorial intrusions, providing support for the Challenge Hypothesis in a territorial frog.