Do the sexes of the desert moss *Syntrichia caninervis* differ in desiccation tolerance?
A leaf regeneration assay

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Disparate sex ratios are a widespread pattern in dioecious bryophytes, with female-biased ratios especially prevalent in arid environments. The absence of male plants in environments experiencing high desiccation pressure prompted the hypothesis that male plants may be less desiccation tolerant than female plants in the desert moss *Syntrichia caninervis*. This hypothesis was investigated by exposing detached leaves to consecutive wet/rapid-dry treatments and monitoring viability, protonemal emergence time, shoot production, growth rate of secondary protonemata, and microbial infection frequency over a 56-d period. The desiccation treatment consisted of exposure of mature 1-yr-old leaves to zero, two, four, and six wet/rapid-dry cycles. Hydrated leaves were then allowed to regenerate. Desiccation stress level was significantly correlated to reduced protonemal emergence, reduced growth rates, and reduced shoot production. Female detached leaves produced protonemata more quickly, and these protonemata grew twice as rapidly and eventually produced more shoots than male detached leaves. Male leaves were also more subject to mortality and microbial infection, although these trends were not statistically significant. No sex x desiccation stress interactions occurred in the stress responses measured. The disparity in growth rates between female and male leaf regeneration, under both stressed and nonstressed conditions, may play a significant role in male rarity. We conclude (i) that the leaf regeneration assay works well as a response variable for desiccation tolerance (DT) studies and (ii) that sex-based DT, at least with respect to responses to rapid drying cycles in the lab, while not indicated in *Syntrichia*, may yet operate under field conditions.