

Abstract Submitted
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Masters of defence: biomechanics of stinging nettles¹ KAARE H. JENSEN, Technical University of Denmark, JAN KNOBLAUCH, Washington State University — The techniques employed by plants and animals to defend themselves are very varied. Some involve extremely refined armaments. Stinging nettles employ hollow needle-like stinging hairs constructed from silica, the mineral from which we make glass, and they are filled with poison. The hairs are remarkably rigid and rarely break. Yet the tip is so sharp that the slightest touch cuts human skin, and so fragile that it breaks at that touch and releases poison into the wound. How the seemingly antagonist mechanical functions of rigidity and fragility are achieved, however, is unknown. We combine experiments on real and synthetic stingers to elucidate the poison injection mechanism. The design of plant stingers is compared to other natural systems and optimal stinging strategies are discussed.

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