Anther rubbing, a new movement discovered in plants, promotes prior selfing

February 9 2019

An Erysimum incanum flower opening. This species exhibits anther rubbing. (Credit: Abdelaziz et al. 2019, © The University of Chicago Press)

Most plants have developed mechanisms to prevent self-fertilization and its detrimental effects of inbreeding depression. Traits promoting selfing in plants have been approached mainly from the perspective of a loss of function, or even only considered as a by-product of non-adaptive

evolutionary processes. However, the shift from cross-fertilization to selfing has been identified as one of the most frequent evolutionary transitions. Therefore, adaptive mechanisms actively promoting selfing should be usual in the plant kingdom, but, remarkably, they have not been frequently found.

In "Anther Rubbing, a New Mechanism That Actively Promotes Selfing in Plants", Abdelaziz *et al*. describe anther rubbing, a mechanism based in autonomous, repeated, and coordinated movements of the stamens over the stigma during flower opening that promotes self-fertilization in a Brassicaceae species.

The researchers use time-lapse video and micro-photography to document this novel reproductive mechanism. They also demonstrate experimentally that anther rubbing is sufficient to achieve maximal reproductive output in this plant.

This mechanism is different from the known cases of delayed self-pollination because it assures self-pollination even before the flowers will be exposed to the visit of pollinators.

This work demonstrates that elaborated mechanisms, including continuous and repeated movements, can evolve in plants to promote self-pollination.

Since the evolution of mating systems in plants is a very active research field, this work will establish a new perspective in the study of the evolution of plant diversity and their mating system strategies.

More information: Mohamed Abdelaziz et al, Anther Rubbing, a New Mechanism That Actively Promotes Selfing in Plants, *The American Naturalist* (2018). DOI: 10.1086/700875

Provided by University of Chicago