

Sex life of plants reveals conflicts between the sexes

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The pollen grains of male plants live in great competition. A grain of pollen that succeeds in manipulating the flower's pistil can emerge victorious from the struggle. This is shown by new research from Lund University in Sweden.

Associate Professor *Ísa Lankinen* and doctoral candidate *Josefin Madjidian* work at the Division of Plant Ecology at Lund University. They are studying sexual conflicts and pollen competition among plants. Their research shows that conflicts between the sexes do arise.

“We have shown that some grains of pollen can influence the pistil in ways that give an advantage. But at the same time this strategy is to the detriment of the plant,” says *Ísa Lankinen*.

When pollen grains from different individuals land on the surface of a pistil, competition arises over which pollen grains will have the opportunity to fertilize the ovule in the pistil. This ovule is hidden at the very bottom of the pistil. Pollen grains need to have a pollen tube that can quickly penetrate the surface of the pistil and grow down to the ovule.

Lankinen and *Madjidian* have examined a North American flower plant called *Collinisa heterophylla*. Normally, pollen grains in this species sit and wait on the pistil for several days before the pistil surface can be penetrated. However, research shows that some pollen grains can influence the surface in a way that allows their own pollen tubes to

successfully penetrate the pistil ahead of other pollen tubes. This means that they can be the first to reach the ovule in the pistil.

This manipulation on the part of the pollen grain constitutes an advantage for the individual [pollen grain](#), but at the same time it has a negative effect on the total number of seeds that are formed. It might be said that the pistil marshals countermeasures to try to prevent this manipulation, which can lead to an arms race between the sexes. This research study offers indirect evidence of such a race, but the researchers are not yet in a position to say exactly what it looks like.

“It can be difficult to discover sexual conflicts such as these and to pinpoint the properties that are involved. Generally speaking, female plants can affect pollen competition by developing longer pistils or larger receptive area of the pistil, for example, but here we would guess that the explanation has to do with how the chemistry of the pistil influences pollen,” says [Ísa Lankinen](#).

More information: These research findings are published in the scientific journal *PLoS ONE*

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