Plants spice up their sex life with defensins

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Since the beginning, plants and animals have deployed various mechanisms to fight pathogens. Proteins have always played an important part in this armoury, and a broad variety of defensin proteins have become part of the immune system of plants, insects and other animals except mammals. Now scientists from Regensburg discovered that those proteins also play a role in the "sex life" during the fertilization process of plants. These findings will be published next week in the online, open access journal *PLoS Biology*.

The research team, led by Dr. Thomas Dresselhaus from the Regensburg Center of Biochemistry and Biophysics, showed that special forms of defensins are released by the egg apparatus in maize to open up potassium-ion channels in the male partner - the pollen tube - resulting in an explosive release of male sperm cells. This process is a pre-requisite for the fertilization that follows.

The findings led to the assumption that the first flowering plants that came into being about 170 million years ago adapted a pathogen-fighting mechanism to promote interaction between male and female cells and release sperm cells for fertilization. These results shed a completely new light on the evolution of processes necessary for the fertilization of flowering plants, and may lead to new possibilities for overcoming the barrier between crops that cannot yet be crossed.

More information: Amien S, Kliwer I, Márton ML, Debener T, Geiger D, et al. (2010) Defensin-Like ZmES4 Mediates Pollen Tube Burst in Maize via Opening of the Potassium Channel KZM1. PLoS Biol

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