



Technology Offer

## A genetically conserved and transferable defense mechanism protects plants from herbivores

Ref.-No.: 1602-6322-LI

---

### **A genetically conserved and transferable defense mechanism protects plants from herbivores**

#### Background

Plants are at the bottom of the terrestrial food chain and constantly under attack by herbivores and various pathogens. While the function of nonhost resistance against pathogens is well evaluated, little is known about nonhost resistance against herbivores despite its agricultural importance. Current control strategies include insecticidal sprays and ectopic expression of insecticidal proteins, both having considerable ecological drawbacks. There is hence a need for means and methods to improve plant protection against herbivores such as leafhoppers or planthoppers.

#### Technology

Insects selecting a plant host follow complex behavioral responses to physical and chemical characteristics, including long-range olfactory and visual cues as well as short-range chemotactic and gustatory cues. Scientists at the Max-Planck-Institute for Chemical Ecology have identified a new defense metabolite in tobacco that protects against leafhoppers, and have discovered how to reconstitute it in vitro and engineer the compound in crop plants, demonstrating that it confers resistance to the herbivores. This finding reveals a conserved mechanism of nonhost resistance that can be exploited for the protection of crop plants. In addition, it is likely that the identified compound can result in resistance against all insects that feed by a pierce-sucking mode or that oviposit eggs into leaves, thereby providing a novel mechanism of plant protection against herbivores.

**We are looking for licensing partners and in respect to adaptation to specific settings collaboration partners to the MPI to further develop this technology.**

#### Patent Information

Patent application was filed.

#### Literature

Bai Y. *et al.* Natural history-guided omics reveals plant defensive chemistry against leafhopper pests. **Science**. 2022 Feb 4;375(6580):eabm2948.  
doi: 10.1126/science.abm2948

#### Contact

Dr. Dieter Link  
Senior Patent- & License Manager  
Biologist  
Phone: +49 (0)89 / 29 09 19 - 28  
eMail: dieter.link@max-planck-innovation.de