Supporting Information

Design of a New Glutamine−Fipronil Conjugate with α-Amino Acid Function and Its Uptake by *A. thaliana* Lysine Histidine Transporter 1 (*AtLHT1*)

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Author Contributions

[§]All authors conceived and designed the study. X.J. and Y.X. contributed equally to this work. X.J. designed, synthesized the compounds and wrote the manuscript. Y.X. and Z.R. performed the biology experiments and HPLC data analyses.

Supporting Information Available：

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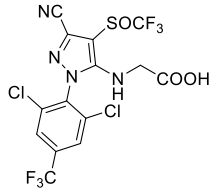
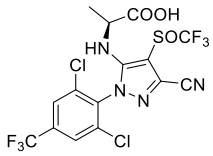
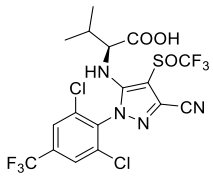
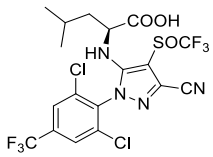
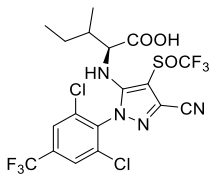
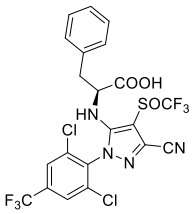
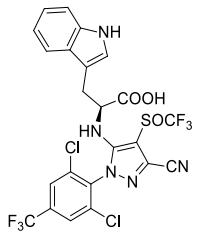
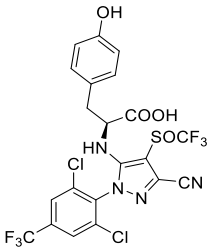
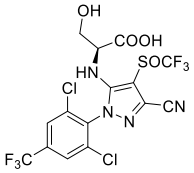
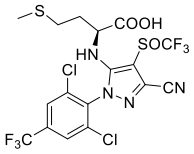
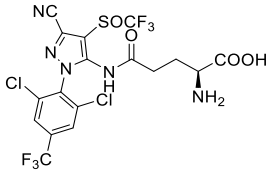
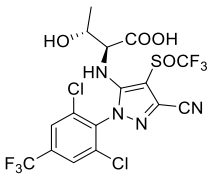
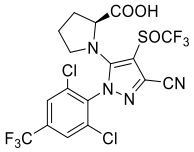
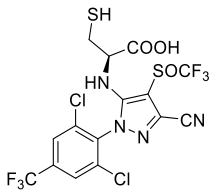
Table S1. Structures and Net Charges of Neutral Amino Acid-Fipronil Conjugates.

Structure	Conjugated Amino Acid	Net Charge[a]
	Glycine (Gly)	Electronegative
	Alanine (Ala)	Electronegative
	Valine (Val)	Electronegative
	Leucine (Leu)	Electronegative
	Isoleucine (Ile)	Electronegative
	Phenylalanine (Phe)	Electronegative

	Tryptophan (Trp)	Electronegative
	Tyrosine (Tyr)	Electronegative
	Threonine (Thr)	Electronegative
	Methionine (Met)	Electronegative
	**Glutamine (Gln)**	**Electroneutral**
	Serine (Ser)	Electronegative
	Proline (Pro)	Electronegative

	Cysteine (Cys)	Electronegative

[a]Net charges were measured at the plant physiology pH 5.6.

Table S2. LC_{50} values of L-GlnF, D-GlnF and fipronil against *Plutella xylostella*

Compound	y = a + bx	LC_{50} (mg L^{-1})[a]	R
L-GlnF	y = 3.81 + 1.61x	5.46	0.99
D-GlnF	y = 2.94 + 2.38x	7.36	0.97
fipronil	y = 4.25 + 1.56x	3.02	0.97

[a]Evaluated by leaf disk dipping assay following procedures in literature.[1]

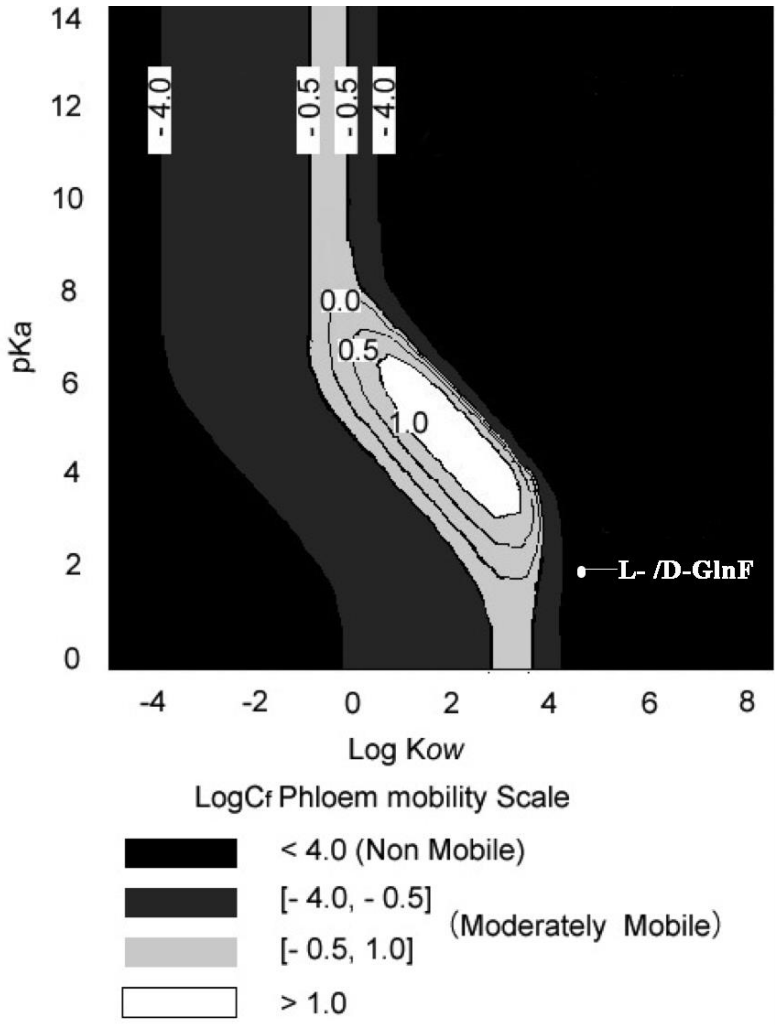


Figure S1. Prediction of phloem mobility of L-/D-GlnF using a Kleier map. L-/D-GlnF is located in the non-phloem mobile area. Log K*ow* and pK_a were calculated by the ACD Laboratories Percepta Program, version 14.0.

References:

(1) Xia, Q.; Wen, Y.; Hao, W.; Li, Y.; Xu, H. β-Glucosidase involvement in the bioactivation of glycosyl conjugates in plants: synthesis and metabolism of four

glycosidic bond conjugates in vitro and in vivo. *J. Agric. Food Chem.* **2014**, *62*, 11037−11046.