1	Dual Roles of DEET in Repelling the Common Bed Bug, Cimex lectularius
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5	Supplement Information
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7	Figure legend
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9	Figure S1. Behavior bioassay of bed bugs in response to terpenes/terpenoids. A) Olfactometer
10	bioassay of bed bugs to three doses of (+)-menthone (1%, 5%, 10%); B) Olfactometer bioassay
11	of bed bugs to two doses of citral (1%, 5%, 10%); C) Olfactometer bioassay of bed bugs to two
12	doses of 1S-(+)-3-carene (1%, 5%, 10%); D) Olfactometer bioassay of male bed bugs to three
13	doses of geranyl acetate (1%, 5%, 10%). For each experiment, an asterisk indicates a significant
14	response to the treatment stimulus; χ^2 test with Yates correction for continuity; *P<0.05;
15	**P<0.01 (Siljander et al., 2008). 50 µl treatment stimulus of different doses was applied in each
16	test. The value of n indicates the replicates for the two-choice olfactometer bioassay of
17	individual bed bugs. DMSO was used as the control solvent for each replicate. Numbers in
18	parentheses indicate the number of bed bugs not responding to either test stimulus.
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20	Figure S2. Modulation of DEET on the neuronal responses of bed bug D γ sensilla to
21	aromatic/aliphatic odorants. A) Dose-response curves of ORNs in Dy sensilla to toluene
22	$(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET; B) Dose–response curves of ORNs
23	in D γ sensilla to xylene (1:10 ² v/v) with (solid line) or without (dashed line) DEET; C) Dose–

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24	response curves of ORNs in D γ sensilla to styrene (1:10 ² v/v) (solid line) or without (dashed
25	line) DEET; D) Dose–response curves of ORNs in D γ sensilla to propylbenzene (1:10 ² v/v)
26	(solid line) or without (dashed line) DEET; E) Dose-response curves of ORNs in Dy sensilla to
27	ethylbenzene (1: 10^2 v/v) (solid line) or without (dashed line) DEET; F) Dose–response curves of
28	ORNs in D γ sensilla to 2,4-dimethylhexane (1:10 ² v/v) (solid line) or without (dashed line)
29	DEET. (F-test with Bonferroni correction; mean±SEM., n=6–10; NS, no significance; *P<0.05;
30	**P<0.01; ***P<0.001). The dose-response curve was fitted with the Sigmoidal dose-response
31	model with variable slope using Graphpad Prism 5.
32	
33	Figure S3. No impact of DEET on the neuronal responses of bed bug $D\gamma$ sensilla to amine
33 34	Figure S3. No impact of DEET on the neuronal responses of bed bug D γ sensilla to amine odorants. A) Dose–response curves of ORNs in C sensilla to propylamine (1:10 ² v/v) with (solid
34	odorants. A) Dose–response curves of ORNs in C sensilla to propylamine $(1:10^2 \text{ v/v})$ with (solid
34 35	odorants. A) Dose–response curves of ORNs in C sensilla to propylamine $(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET; B) Dose–response curves of ORNs in C sensilla to
34 35 36	odorants. A) Dose–response curves of ORNs in C sensilla to propylamine $(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET; B) Dose–response curves of ORNs in C sensilla to butylamine $(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET. F-test with Bonferroni
34 35 36 37	odorants. A) Dose–response curves of ORNs in C sensilla to propylamine $(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET; B) Dose–response curves of ORNs in C sensilla to butylamine $(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET. F-test with Bonferroni correction; mean±SEM., n=6–10; NS, no significance; *P<0.05; **P<0.01; ***P<0.001). The
 34 35 36 37 38 39 40 	odorants. A) Dose–response curves of ORNs in C sensilla to propylamine $(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET; B) Dose–response curves of ORNs in C sensilla to butylamine $(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET. F-test with Bonferroni correction; mean±SEM., n=6–10; NS, no significance; *P<0.05; **P<0.01; ***P<0.001). The dose-response curve was fitted with the Sigmoidal dose-response model with variable slope
34 35 36 37 38 39	odorants. A) Dose–response curves of ORNs in C sensilla to propylamine $(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET; B) Dose–response curves of ORNs in C sensilla to butylamine $(1:10^2 \text{ v/v})$ with (solid line) or without (dashed line) DEET. F-test with Bonferroni correction; mean±SEM., n=6–10; NS, no significance; *P<0.05; **P<0.01; ***P<0.001). The dose-response curve was fitted with the Sigmoidal dose-response model with variable slope

Figure S1



