

Additional File 1

Eurasian spruce bark beetle detects lanierone using a highly expressed specialist odorant receptor, present in several functional sensillum types

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Material included

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Supplementary Table 1. Sequences of primers used to clone the open reading frame of *I. typographus* OR36 from cDNA and for the incorporation of epitope tags and/or restriction sites for ligation into pcDNA5TO expression vector. All DNA sequences are written in the 5' to 3' direction. Gene-specific coding sequence is in black text; V5 epitope sequences is in blue text; restriction enzyme sites are in red text; Kozak sequence is in bold text. For some primers, four to five additional nucleotides are included on the 5' end of restriction sites to facilitate efficient digestion.

OR	For amplification of full-length coding sequence	For addition of V5 epitope tags and pcDNA5TO restriction sites
ItypOR36	F: ATGGCGAGTGACGAGT TTATAAAATCCC	F: AGAAT CGGGCCG CACCATG GGCAAGCCTATCCCTAATCCTCTGCTG GGCCTGGACAGCACC GCGAGTGACGAGT TTATA
		R: TTGC GGGCC TTAGTTGTAGTTATTCATC

Supplementary Table 2. Compounds used for characterization of *Ips typographus* odorant receptor 36 (ItypOR36) and the lanierone-responsive olfactory sensory neuron class, including purities, source information, and examples of main biological origins.

Compound	Purity (%)*	Source*	Examples of biological origin
Acetophenone	99	Acros	Beetle, fungi
Amitinol	91	R. U.	Beetle
Anisole	>99	Sigma-Aldrich	Fungi
Benzaldehyde	>99	Kebo	Non-host, fungi
Benzyl acetate	>99	Aldrich	Fungi
(±)-exo-Brevicomin	99	W. F.	Beetle, fungi
(±)-Camphene	95	Aldrich	Host
(±)-Camphor	97	Aldrich	Host, fungi
(+)-3-Carene	99	Aldrich	Host
(±)-Carvone	>99	Fluka	Fungi
(±)-Chalcogran	90	Celamerck, GmbH	Beetle
(±)-1,8-Cineole	99	Aldrich	Host
Citral (E/Z mix)	99	Aldrich	Fungi
(5S,7S)-trans-Conophthorin	94	W. F.	Non-host, fungi
p-Cymene	>99	Acros	Host
2,3-Dihydrobenzofuran	99	Aldrich	Fungi
3,4-Dimethoxytoluene	98	Givaudan-Roure	Host, fungi
Estragole	>99	Aldrich	Host, fungi
4-Ethylguaiaicol	98	Sigma-Aldrich	Fungi
Eugenol methyl ether	>99	Fluka	Host, fungi
(±)-Frontalin	>99	Synergy Semiochemicals	Beetle
Geranyl acetate	97	Aldrich	Fungi
Geranylacetone	>99	Fluka	Non-host, fungi
Hexanal	96	Sigma	Non-host
1-hexanol	>99	Fluka	Non-host, fungi
E2-hexenal	98	Aldrich	Non-host
E2-hexenol	96	Aldrich	Non-host
E3-hexenol	98	Aldrich	Non-host
Z2-hexenol	95	Aldrich	Non-host
Z3-hexenol	98	Aldrich	Non-host
(±)-Ipsdienol	94	Bedoukian	Beetle
(±)-Ipsenol	95	Synergy Semiochemicals	Beetle
(+)-Isopinocamphe	>99	R. U.	Host, fungi

(-)-Isopinocamphe	>99	R. U.	Host, fungi
Lanierone	>99	Synergy Semiochemicals	Beetle
(-)-Limonene	>99	Fluka	Host
4-Methyl anisole	>99	Fluka	Fungi
(±)-2-Methyl-1-butanol	>99	Aldrich	Fungi
3-Methyl-1-butanol	99	Aldrich	Fungi
(±)-2-Methyl-3-buten-2-ol	>99	Acros	Beetle, fungi
(±)-2-Methylbutyl acetate	>99	SAFC	Fungi
3-Methylbutyl acetate	97	Sigma-Aldrich	Fungi
Myrcene	95	Sigma-Aldrich	Host
<i>E</i> -Myrcenol	>99	Fytofarm	Beetle
(±)-Myrtenol	96	G. B.	Beetle, fungi
(±)-3-Octanol	97	Sigma-Aldrich	Non-host, fungi
(±)-1-Octen-3-ol	98	Janssen Chimica	Non-host, fungi
2-Phenethyl acetate	>99	Aldrich	Fungi
2-Phenylethanol	>99	Sigma	Beetle, fungi
(+)- α -Pinene	98	Janssen Chimica	Host
(-)- α -Pinene	>99	Fluka	Host
(-)- β -Pinene	92	Fluka	Host
(+)-Pinocamphe	84	R. U.	Host, fungi
(-)-Pinocamphe	81	R. U.	Host, fungi
(±)-Sabinene	97	Chemos GmbH	Host, non-host
Styrene	>99	Fluka	Fungi
γ -Terpinene	97	Aldrich	Host
Terpinolene	98	Fluka	Host
(+)- <i>trans</i> -4-Thujanol	97	Sigma-Aldrich	Host, fungi
Toluene	>99	Merck	Fungi
(-)- <i>cis</i> -Verbenol	99	Borregaard	Beetle
(-)- <i>trans</i> -Verbenol	97	SciTech Ltd., Prague	Beetle
(-)-Verbenone	>99	Fluka	Beetle, fungi
4-Vinyl anisole	97	Aldrich	Fungi
VUAA1	98	Sigma-Aldrich	None

* Abbreviations: R. U. = gift from Rikard Unelius (Linnaeus University, Kalmar, Sweden); W. F. = gift from Wittko Francke (University of Hamburg, Germany); G. B. = gift from Gunnar Bergström (University of Gothenburg, Sweden).

>ItpOR36_nt sequence

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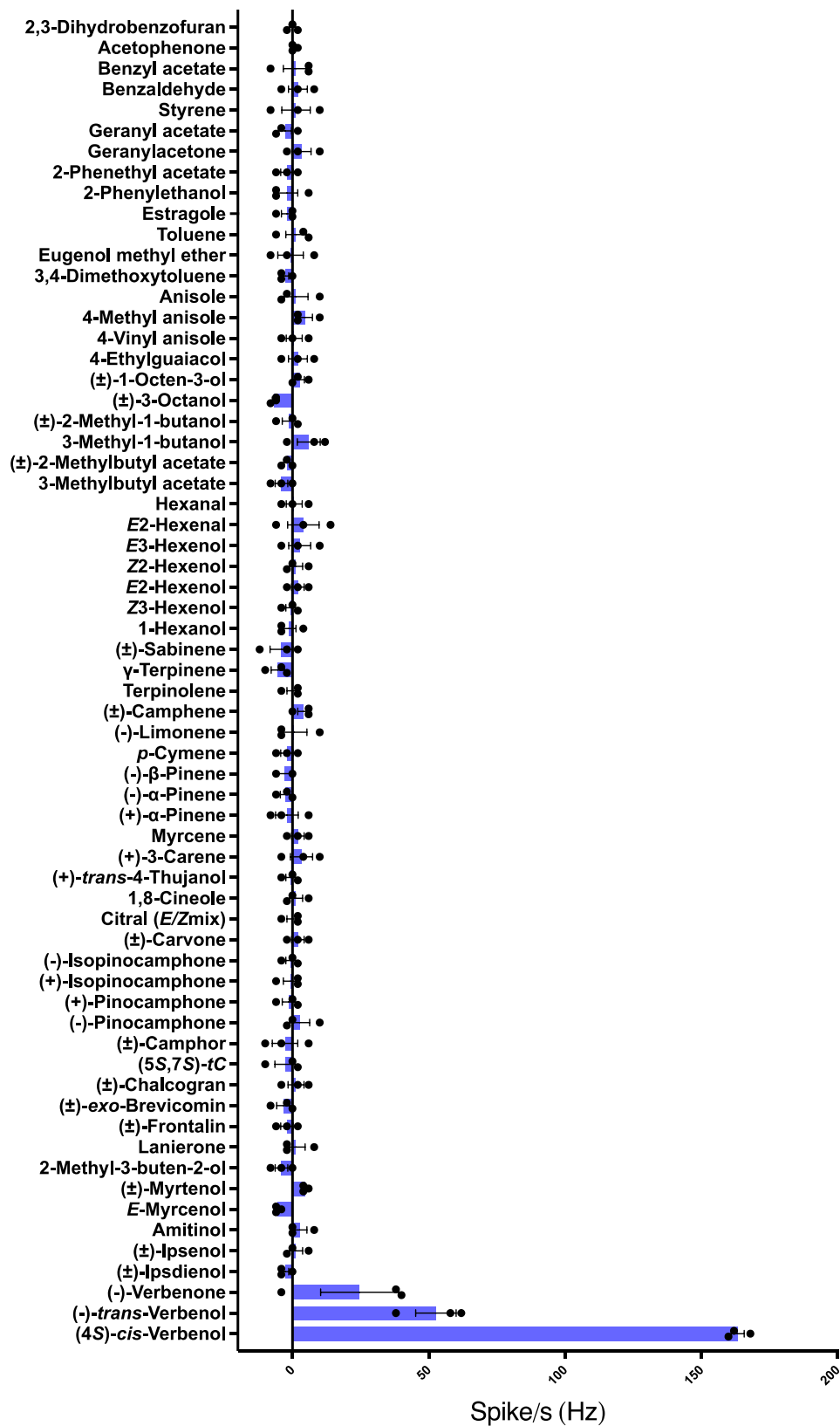
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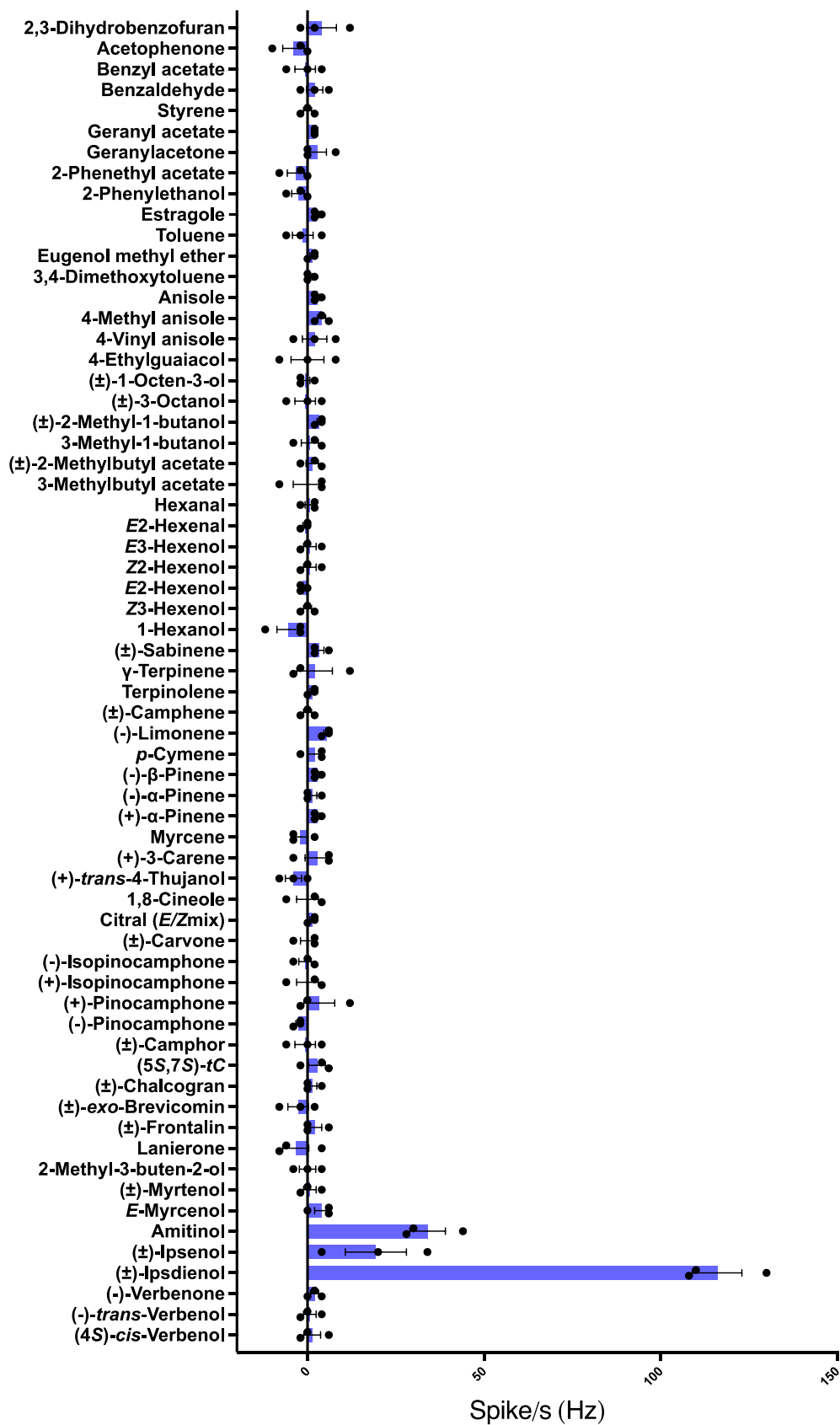
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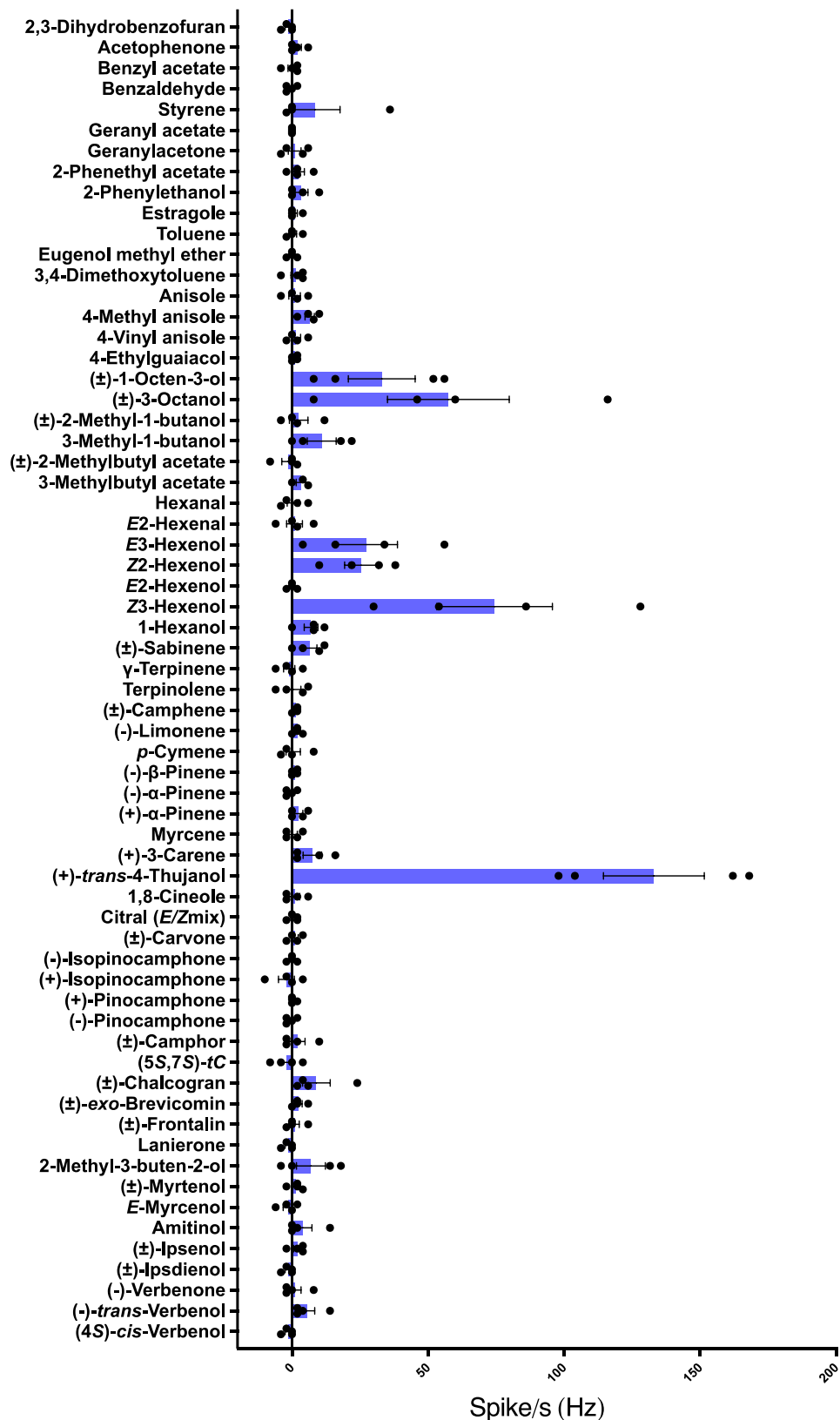
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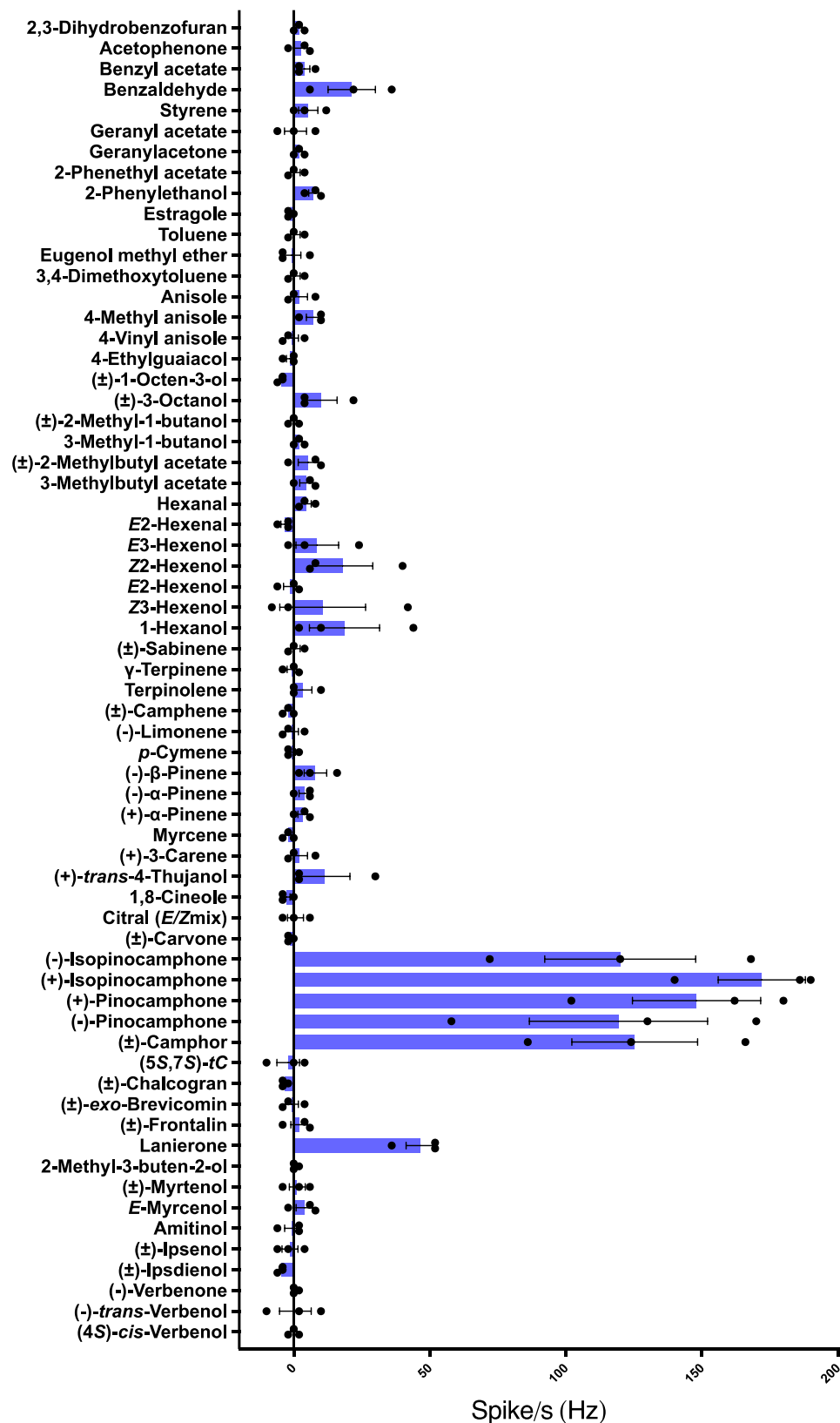
Supplementary Figure 1. Response spectra of the (4S)-cis-verbenol A-neuron OSN class (N=3) at the 10 μ g dose. Error bars show SEM; black dots represent individual data points.



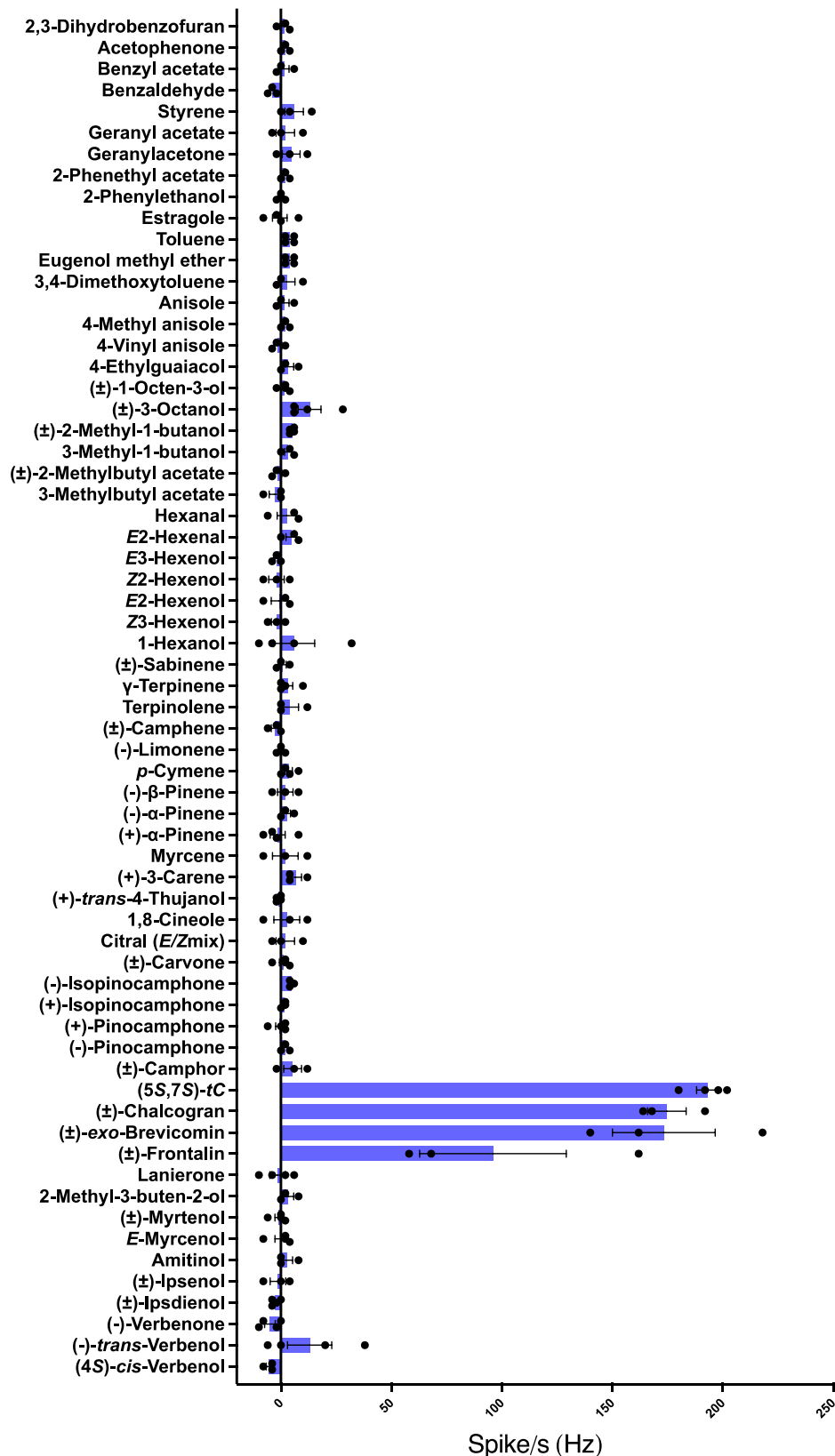
Supplementary Figure 2. Response spectra of the ipsdienol A-neuron OSN class (N=3) at the 10 µg dose. Error bars show SEM; black dots represent individual data points.



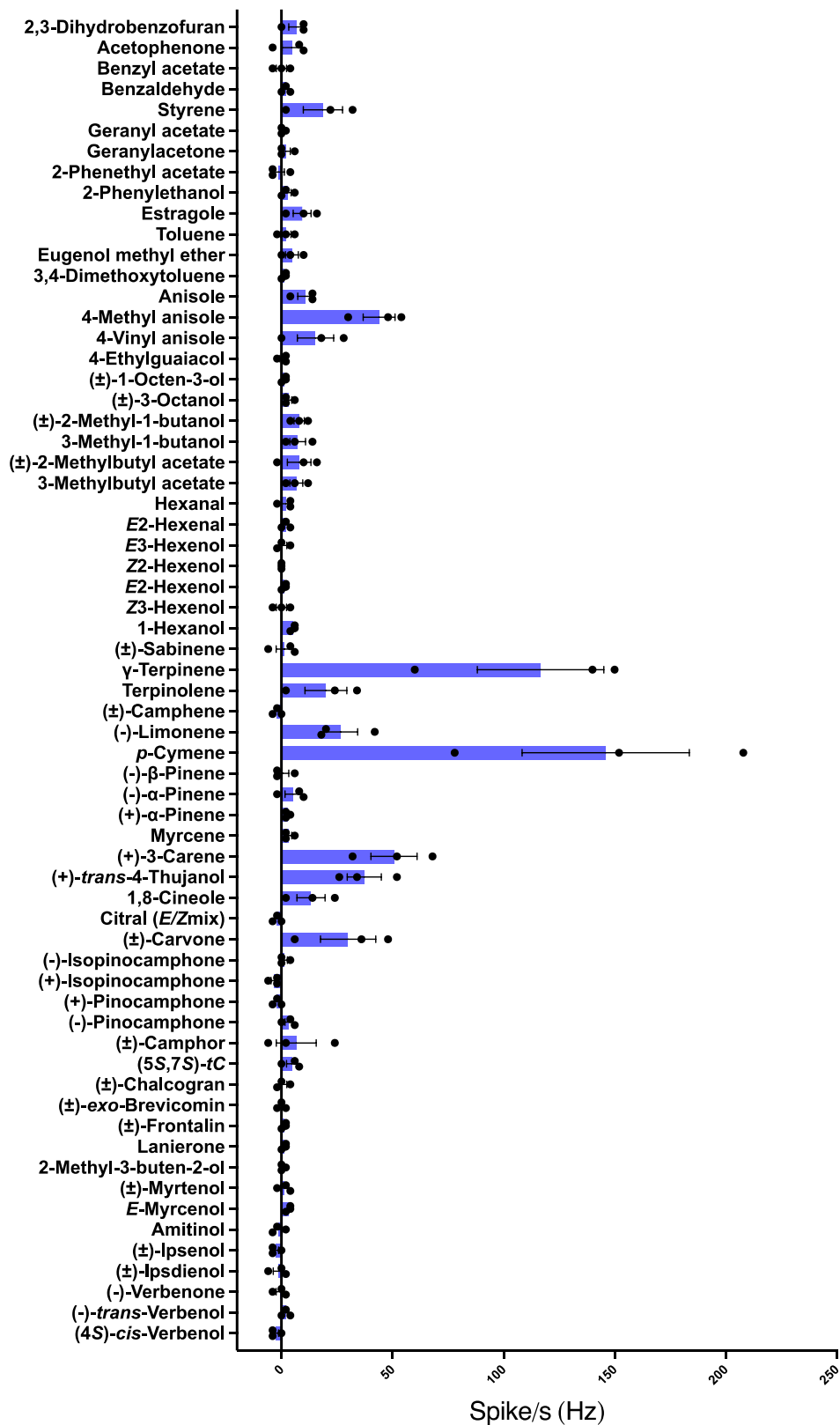
Supplementary Figure 3. Response spectra of the (+)-*trans*-4-thujanol A-neuron OSN class (N=4) at the 10 μ g dose. Error bars show SEM; black dots represent individual data points.



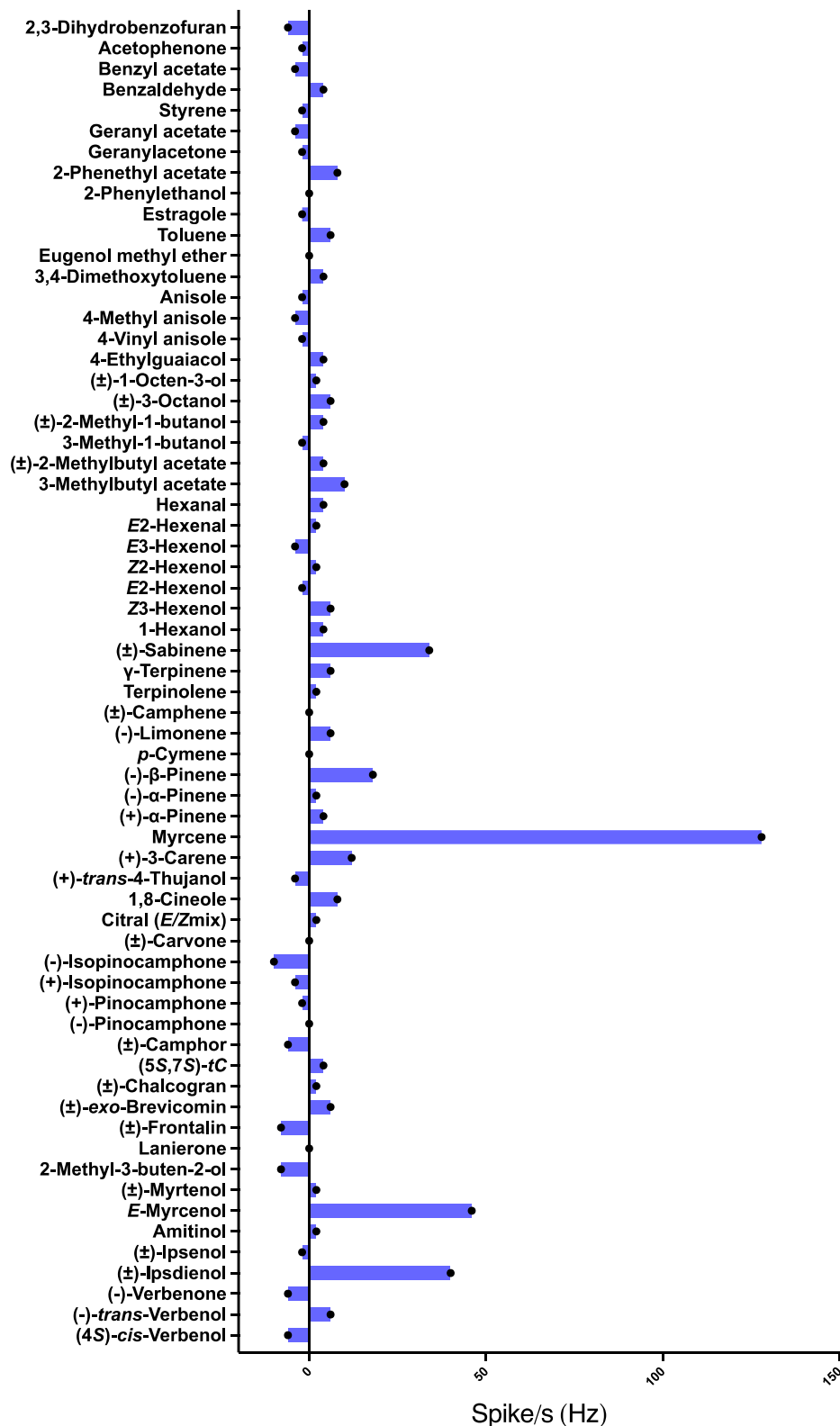
Supplementary Figure 4. Response spectra of the (+)-isopinocampone A-neuron OSN class (N=3) at the 10 µg dose. Error bars show SEM; black dots represent individual data points.



Supplementary Figure 5. Response spectra of the (5S,7S)-trans-conophthorin A-neuron OSN class (N=3-4) at the 10 µg dose. Error bars show SEM; black dots represent individual data points.



Supplementary Figure 6. Response spectra of the *p*-cymene A-neuron OSN class (N=3) at the 10 µg dose. Error bars show SEM; black dots represent individual data points.



Supplementary Figure 7. Response spectra of the myrcene A-neuron OSN class (N=1) at the 10 µg dose. Black dots represent individual data points.