Supplementary material

supplementary Fig. 1 Unlike other b-ORs, SgreOR4 is not co-expressed with SNMP1.

(**A**–**B**) Two-color FISH experiments were performed on longitudinal sections through *Schistocerca gregaria* antennae with antisense RNA probes for SNMP1 (A-B, green) and SgreOR4 (A, red) or SgreOR9 (B, red). Cells expressing these SgreOR types are denoted by the dashed circles in A`/A``-B`/B``. The micrographs shown represent single optical planes taken from stacks of confocal images. Cells positive for SgreOR9 co-express SNMP1. By contrast, SgreOR4-positive cells lack co-expression of SNMP1. (**A`**/**A``**-**B`**/**B``**) The areas circumscribed by the dotted boxes in A-B are given in the green or in the red color channel. Scale bars: 10 µm.

supplementary Fig. 2 Expression of the b-OR types SgreOR5, SgreOR6 and SgreOR9 in Orco-positive OSNs of sensilla basiconica.

(**A**-**C**) Using antisense RNA probes for Orco (A-C, green) and SgreOR5 (A, red), SgreOR6 (B, red) or SgreOR9 (C, red), two-color FISH approaches on sections through antennae were conducted. Cells expressing SgreOR5, SgreOR6 or SgreOR9 are situated in the Orco-positive neuron clusters characteristic of sensilla basiconica. (**A`**/**A``-C`**/**C``**) Micrographs showing only the green or the red color channel for the areas marked by the dotted boxes in A-C. (**B**/**B`**/**B``**) represent projections of selected optical planes. Scale bars: 10 µm.

supplementary Fig. 3 SgreOR33, SgreOR45, SgreOR82 and SgreOR67 are not co-expressed with SNMP1.

(**A**–**D**) Two-color FISH was performed on antennal sections using RNA antisense probes for SNMP1 (A-D, green) and SgreOR33 (A, red), SgreOR45 (B, red), SgreOR82 (C, red) or SgreOR67 (D, red). Cells expressing these SgreOR types (denoted by the dashed circles in A`/A``-D`/D``) lack co-expression of SNMP1. (**A`**/**A``**-**D`**/**D``**) The areas circumscribed by the dotted boxes in A-D are given in the green and the red color channel. Scale bars: 10 µm.

supplementary table 1 Sense and antisense primers used for PCR amplification of SgreOR types from antennal cDNA.

SgreOR1 sense: 5'-ATGCATTTCTTCAAAATTTGG-3'

SgreOR1 antisense: 5’-TCATTCATTGAGTCTGGTGAG-3’

SgreOR2 sense: 5’-TTCAACATACTGATGGTGCGG-3’

SgreOR2 antisense: 5’-ATCTCGTATTTGTCTTAGAAC-3’

SgreOR3 sense: 5’- ATGCGGCGCTGGCTGCGGCGG-3’

SgreOR3 antisense: 5’- TCAGTTGCTCGTCCGGATCTG-3’

SgreOR4 sense: 5’-ATGGCCGTGTCGGGAAAGGACTTGC-3’

SgreOR4 antisense: 5’-TTGAAGCACTGTAGAAAGAGCAGAG-3’

SgreOR5 sense: 5’-CACGGACGAGCACAAGAAACT-3’

SgreOR5 antisense: 5’-TAGTGTGTAGAACCAGCCGCC-3’

SgreOR6 sense: 5’-CTGACGCTGGGCTGCGTCGCG-3’

SgreOR6 antisense: 5’-CCCGCATCATCTCCACAAATG-3’

SgreOR7 sense: 5’-GTGAAGGACGTGCGCACGGAGGCAG-3’

SgreOR7 antisense: 5’-CGTGAAGACCGTGTAGGAGGCATTC-3’

SgreOR8 sense: 5’-ATGTTGGACAAGAGAGATACG-3’

SgreOR8 antisense: 5’-TCAAAGCGATGCCAGAGCGCC-3’

SgreOR9 sense: 5’-CATGCTTTGGGTTTTCCTTCC-3’

SgreOR9 antisense: 5’-AATCACCATCCGCGACACCAA-3’

SgreOR14 sense: 5’-ATGGCAGCAGCTGGTCCAGCA-3’

SgreOR14 antisense: 5’- CCGCCACGAAGGACTCCCTGG-3’

SgreOR15 sense: 5’- ATGTGCTTCGGCCTGTCCAAC-3’

SgreOR15 antisense: 5’-ATGTGCTTCGGCCTGTCCAAC-3’

SgreOR17 sense: 5’-ATGGACCGTGACTTCAGAGAG-3’

SgreOR17 antisense: 5’-CTAGTCATCCTTAAAGTTTCG-3’

SgreOR31 sense: 5’-ATGGCAGACTACGTACACCGT-3’

SgreOR31 antisense: 5’- CTAGGCCGGCGCCTGGTTCATG-3’

SgreOR33 sense: 5’-ATGTGGAGACCGCCATGGATC-3’

SgreOR33 antisense: 5’-GTCATTCACCTGGCGGAGGAG-3’

SgreOR35 sense: 5’-ATGAACGCCCCGCGTTCTGGCC-3’

SgreOR35 antisense: 5’-ATGAATATTTCGTACACGACC-3’

SgreOR39 sense: 5’-ATGTCCGTAGAACCAGACCAG-3’

SgreOR39 antisense: 5’-TCAGCGATCGCTCATCTGGCG-3’

SgreOR41 sense: 5’-ATGATTACTATCGGATCCAGCGCAA-3’

SgreOR41 antisense: 5’-AAGATTTCTCATCTGCCGTAGGAG-3’

SgreOR43 sense: 5’-ATGGTGGCTATCGGATCACGT-3’

SgreOR43 antisense: 5’-GGGCGGCAGAAGACCTGGCGC-3’
SgreOR45 sense: 5’-ATGGCGCAGACGAACAGGAAG-3’
SgreOR45 antisense: 5’-TCCGCGGTGTAGTTCGTTGCG-3’
SgreOR47 sense: 5’-ATGGACTGGGATCCACAGAGA-3’
SgreOR47 antisense: 5’-TCAGCGGCCAGTGAAGTTCTG-3’
SgreOR49 sense: 5’-ATGGGCTGCGATCTGGAAGAGACG-3’
SgreOR49 antisense: 5’-TCAACGACCGTTGAAGTTCTG-3’
SgreOR51 sense: 5’-ATGGGCTGGGATTCGCAAGAAGATC-3’
SgreOR51 antisense: 5’- GCAGCAGCTGAGCGCTGATGGTG-3’
SgreOR53 sense: 5’-GTGGCGCACATCGCCGTCGCC-3’
SgreOR53 antisense: 5’-ACAAGTGTACGAAGTCGTGCC-3’
SgreOR57 sense: 5’-ATGGAAAAGCAGAAAGGGAGG-3’
SgreOR57 antisense: 5’-TGCATCTGGCTGAGCAGGGCG-3’
SgreOR67 sense: 5’-GGTGCGCGCTCTACCTTCCA-3’
SgreOR67 antisense: 5’-CTCATTTGACCAACAATGCC-3’
SgreOR70 sense: 5’-ATGAAGGATAATTTGTCCTGG-3’
SgreOR70 antisense: 5’-GTGTTGGCTGTGAATTAGTGA-3’
SgreOR76 sense: 5’-ATGTCGAAGGTCTCAGAAGCAG-3’
SgreOR76 antisense: 5’-TGGCGGTGAGCAGCAGGGGCC-3’
SgreOR82 sense: 5’-CATCTTGCTTTCAACAGCGGC-3’
SgreOR82 antisense: 5’-TCTCGATCACAAATCCCAGGC-3’
SgreOR83 sense: 5’-ATGACGACCACAGCACAGGAA-3’
SgreOR83 antisense: 5’-TCTCACAACCGTCGCTTGCG-3’
SgreOR84 sense: 5’-ATGGGTCTCTGGCAGCCGCGA-3’
SgreOR84 antisense: 5’-GCATCTGCTTGGACAGTGTGC-3’
SgreOR86 sense: 5’-ATGGAGCAACCGCCGGCGGAC-3’
SgreOR86 antisense: 5’-CCCAGCCGCAGCTGAAGGCGG-3’
SgreOR93 sense: 5’-ATGGAGCTGGTAAAGCGTGAG-3’
SgreOR93 antisense: 5’-GATCCATTCAGCACCTGCACA-3’
SgreOR94 sense: 5’-ATGGCGCTGGCGCTCAGTGAC-3’
SgreOR94 antisense: 5’-CCAGGAGGCTCCTCTTGAAGC-3’
SgreOR97 sense: 5’-CAGGTGTCGACAATGGTGGCCTCT-3’
SgreOR97 antisense: 5’-GAGAGTTTGCAGGTTTTCCCCACAG-3’
SgreOR99 sense: 5'-CGACGAGAGCAAGAAGCAGCC-3'

SgreOR99 antisense: 5'-GTCTGCAGCAAGCCGACCATC-3'

SgreOR100 sense: 5’-GTCCAGGATCTGGTGAGTCCC-3’

SgreOR100 antisense: 5’-CCCACTGAGAACTCCAGG GGC-3’

SgreOR105 sense: 5’-TCCTTTTCCCTGGACGGGCACCGCC-3’

SgreOR105 antisense: 5’-TCAGTGACGTGATGCCGCACTTTTA-3’

supplementary table 2 Length of coding sequences of the identified SgreORs.

length of coding sequence [bp]	number of SgreOR sequences
> 1000	68
801 - 1000	14
501 - 800	19
300 - 500	18

supplementary table 3 GenBank accession numbers of SgreOR sequences.

SgreOR type	GenBank accession number
SgreOR1	KY964918
SgreOR2	KY964919
SgreOR3	KY964920
SgreOR4	KY964921
SgreOR5	KY964922
SgreOR6	KY964923
SgreOR7	KY964924
SgreOR8	KY964925
SgreOR9	KY964926
SgreOR10	KY964927
SgreOR11	KY964928
SgreOR12	KY964929
SgreOR13	KY964930
SgreOR14	KY964931
SgreOR15	KY964932
SgreOR16	KY964933
SgreOR17	KY964934
SgreOR18	KY964935
SgreOR19	KY964936
SgreOR20	KY964937
SgreOR21	KY964938
SgreOR22	KY964939

SgreOR23	KY964940
SgreOR24	KY964941
SgreOR25	KY964942
SgreOR26	KY964943
SgreOR27	KY964944
SgreOR28	KY964945
SgreOR29	KY964946
SgreOR30	KY964947
SgreOR31	KY964948
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SgreOR114	KY965031

SgreOR115	KY965032
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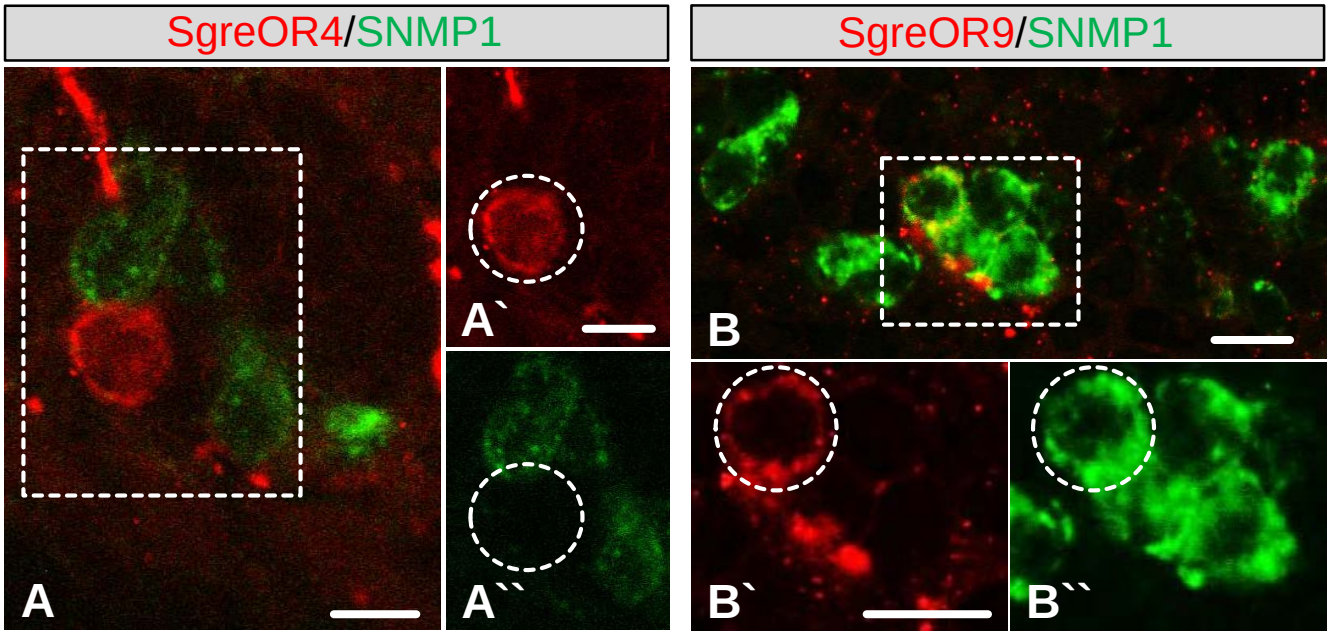
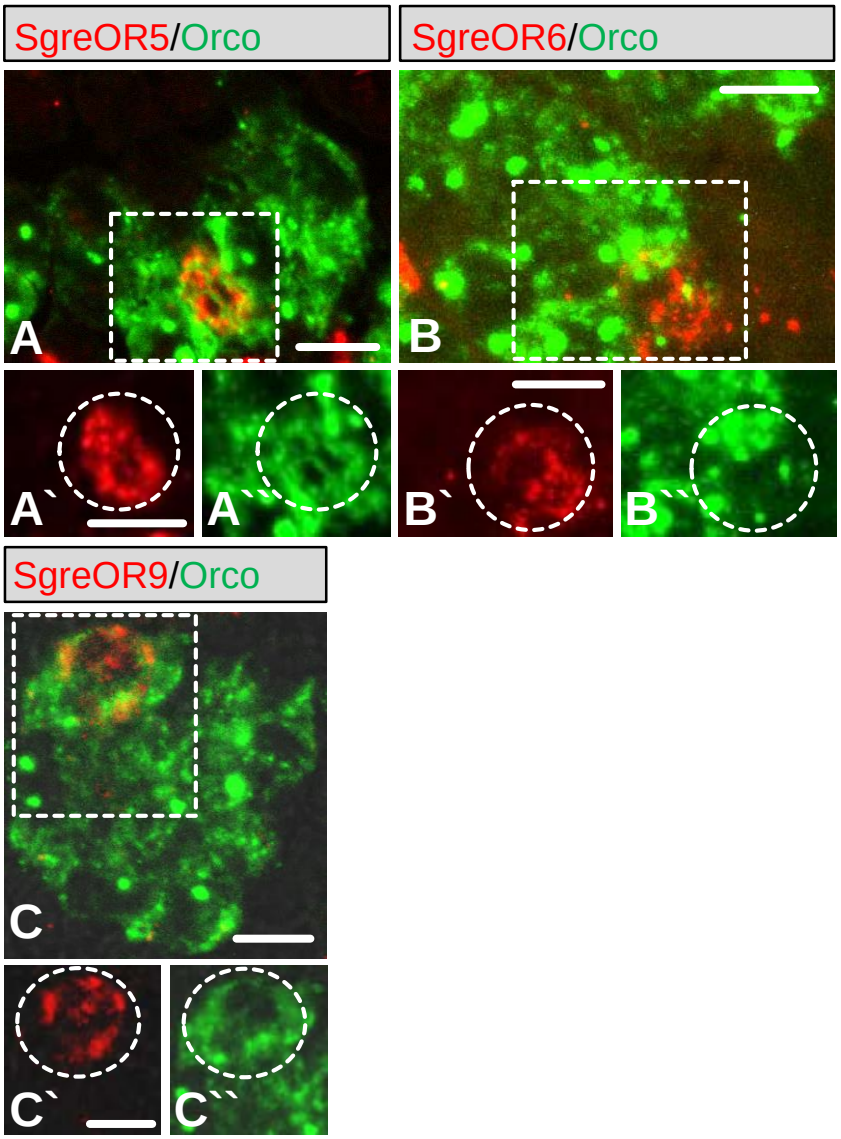
SgreOR118	KY965035
SgreOR119	KY965036

supplementary Fig. 1



supplementary Fig. 2



supplementary Fig. 3