|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#** | **Odorant** | **Conc. (M)** | **Error**  **ratio** | **Median**  **ORS corr.** | **Mediolateral (μm)** | **Anteroposterior (μm)** |
| 1 | benzaldehyde | 7.7E-11 | 0.00 | 1.00 | 1448.3 ± 76.9 | 1298.4 ± 82.4 |
| 2 | elemicin | 5.3E-12 | 0.00 | 1.00 | 1011.6 ± 80.9 | 753.2 ± 126.7 |
| 3 | vanillin | 2.6E-11 | 0.07 | 1.00 | 1249.6 ± 54.8 | 1651 ± 75.9 |
| 4 | trans-2-dodecenal | 7.6E-10 | 0.00 | 1.00 | 514.9 ± 54.2 | 2117.5 ± 179.5 |
| 5 | ethyl phenylacetate | 7.0E-11 | 0.00 | 1.00 | 884 ± 50.5 | 1911.9 ± 118.9 |
| allyl phenylacetate | 1.1E-10 | 0.00 | 1.00 |
| 6 | phenylacetate | 3.2E-12 | 0.00 | 0.99 | 1375.6 ± 93.3 | 1103.4 ± 111.8 |
| phenyl propionate | 1.4E-11 | 0.00 | 0.99 |
| 7 | heptanoic acid | 6.9E-11 | 0.00 | 0.97 | 1026.6 ± 60.5 | 2132.8 ± 54.7 |
| heptanal | 2.1E-9 | 0.00 | 0.95 |
| 8 | methional | 1.2E-11 | 0.00 | 1.00 | 1680.2 ± 99.6 | 1144.1 ± 91.3 |
| 9 | 3-mercaptohexyl acetate | 3.7E-12 | 0.00 | 0.97 | 1316.2 ± 170.4 | 1244.5 ± 67.3 |
| 10 | trans-2-methyl-2-butenal | 1.3E-11 | 0.00 | 0.95 | 700.8 ± 79.3 | 1103.7 ± 113.9 |
| 2-methyl-2-pentenal | 5.5E-11 | 0.00 | 0.95 |
| methyl tiglate | 1.0E-11 | 0.00 | 0.95 |
| ethyl tiglate | 2.3E-12 | 0.00 | 0.95 |
| isopropyl tiglate | 2.1E-11 | 0.00 | 0.95 |
| hexyl tiglate | 4.0E-10 | 0.00 | 0.95 |
| 11 | isovaleric acid | 8.7E-12 | 0.00 | 0.92 | 973.5 ± 32.4 | 1696.9 ± 138 |
| isovaleraldehyde | 3.7E-9 | 0.00 | 0.92 |
| 12 | 2'-hydroxyacetophenone | 5.4E-12 | 0.00 | 0.86 | 1258.5 ± 66.8 | 444 ± 68.9 |
| 13 | pyrazine | 1.5E-9 | 0.03 | 0.91 | 1618 ± 54.2 | 1154.8 ± 117.4 |
| 14 | 2-isobutyl-3-methoxypyrazine | 2.7E-11 | 0.04 | 0.91 | 1007.4 ± 93.9 | 503.6 ± 80.8 |
| (R)-(+)-pulegone | 7.1E-13 | 0.04 | 0.91 |
| 15 | 4-(4-hydroxyphenyl)-2-butanone | 4.2E-10 | 0.02 | 0.84 | 1202.5 ± 92.4 | 1771.8 ± 66.1 |
| 16 | 2,4,5-trimethylthiazole | 4.5E-12 | 0.04 | 0.91 | 1242.6 ± 128.3 | 460.8 ± 106.6 |
| ethyl-2,5-dihydro-4-methylthiazole | 3.4E-10 | 0.04 | 0.91 |
| 17 | 4-methoxy-2-methyl-2-butanethiol | 2.5E-12 | 0.07 | 0.98 | 1633.1 ± 116.8 | 853.6 ± 107.1 |
| 2-methyl-3-tetrahydrofuranthiol | 2.3E-10 | 0.07 | 0.98 |
| 18 | isoeugenol | 7.6E-13 | 0.05 | 1.00 | 1162.9 ± 86.7 | 746.2 ± 105.4 |
| 19 | menthone | 2.8E-10 | 0.05 | 0.85 | 1058.4 ± 76.9 | 701.8 ± 93.8 |
| 20 | 2-hexanone | 1.0E-9 | 0.11 | 0.94 | 1372 ± 98.3 | 945.6 ± 105.8 |
| 21 | acetophenone | 1.4E-11 | 0.02 | 0.83 | 1317.2 ± 81.1 | 776.9 ± 61.6 |
| 2-methylacetophenone | 1.2E-12 | 0.02 | 0.83 |
| 22 | methyl eugenol | 2.1E-12 | 0.13 | 0.90 | 1491.6 ± 107 | 771.2 ± 103.5 |
| 23 | 2-methylbutyraldehyde | 7.8E-11 | 0.16 | 0.87 | 928.6 ± 38.7 | 1497.3 ± 126.9 |
| 2-methylvaleraldehyde | 1.3E-10 | 0.16 | 0.87 |
| methyl 2-methylbutyrate | 1.6E-10 | 0.16 | 0.87 |
| 24 | hexanal | 7.2E-10 | 0.18 | 0.97 | 1047.7 ± 63.7 | 1977.8 ± 66 |
| 25 | fenchol | 5.3E-10 | 0.16 | 0.98 | 1251 ± 109.5 | 795.9 ± 76.9 |
| 26 | 5-methylfurfural | 4.9E-10 | 0.19 | 1.00 | 1465 ± 67.1 | 1153.3 ± 380.5 |
| Table S2. Diagnostic odorants and concentrations for functionally identified glomeruli.  *Error ratio: Incidence of mismatch between strongest-activated glomeruli and glomeruli with most correlated odorant response spectra (ORS) across 2 OBs, divided by all potential 2-OB comparisons.*  *Median ORS corr.: Median ORS correlation coefficient across all strongest-activated glomeruli.* | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **#** | **Odorant** | **Conc. (M)** | **Error**  **ratio** | **Median**  **ORS corr.** | **Mediolateral (μm)** | **Anteroposterior (μm)** | |
| - | 2,3,5-trimethylpyrazine | 1.3E-11 | 0.12 | 0.74 | - | - | |
| - | p-anisaldehyde | 7.6E-12 | 0.21 | 0.93 | - | - | |
| - | piperonal | 1.8E-12 | 0.21 | 0.93 | - | - | |
| - | cadaverine | 2.4E-12 | 0.23 | 0.98 | - | - | |
| - | furfuryl mercaptan | 3.0E-12 | 0.24 | 0.92 | - | - | |
| - | difurfuryl disulfide | 3.5E-13 | 0.24 | 0.92 | - | - | |
| - | 2-methyl-2-pentenoic acid | 4.2E-14 | 0.25 | 0.93 | - | - | |
| - | 2-methylpyrazine | 7.3E-11 | 0.26 | 0.85 | - | - | |
| - | 2-chloropyrazine | 1.9E-9 | 0.26 | 0.85 | - | - | |
| - | damascenone | 1.6E-10 | 0.29 | 0.76 | - | - | |
| - | N,N-dimethyloctylamine | 3.4E-11 | 0.32 | 1.00 | - | - | |
| - | beta-damascone | 9.8E-12 | 0.32 | 0.81 | - | - | |
| - | 2-ethyl-5-methylpyrazine | 1.5E-11 | 0.36 | 0.74 | - | - | |
| - | 3-(methylthio)-1-hexanol | 6.4E-9 | 0.39 | 0.89 | - | - | |
| - | benzyl benzoate | 4.2E-11 | 0.39 | 0.82 | - | - | |
| - | 4-methylthiazole | 7.6E-10 | 0.39 | 0.87 | - | - | |
| - | eugenol | 7.2E-13 | 0.40 | 0.59 | - | - | |
| - | 2-methylbutyric acid | 5.5E-12 | 0.43 | 0.95 | - | - | |
| - | beta-ionone | 7.1E-11 | 0.43 | 0.73 | - | - | |
| - | L-carvone | 9.9E-11 | 0.43 | 0.66 | - | - | |
| - | 2-methoxy-3-methylpyrazine | 4.5E-11 | 0.45 | 0.88 | - | - | |
| - | 4-methylacetophenone | 6.9E-12 | 0.48 | 0.81 | - | - | |
| - | N,N-dimethyl-2-phenethylamine | 5.0E-13 | 0.50 | 0.75 | - | - | |
| - | N-methyl piperidine | 2.0E-10 | 0.50 | 0.99 | - | - | |
| - | 1,3,5-undecatriene | 4.6E-9 | 0.50 | 0.55 | - | - | |
| - | 2-methyl-2-thiazoline | 1.2E-9 | 0.52 | 0.83 | - | - | |
| - | 4-methoxyacetophenone | 4.6E-13 | 0.54 | 0.83 | - | - | |
| - | 2,6-dimethoxyphenol | 2.3E-12 | 0.54 | 1.00 | - | - | |
| - | isopentylamine | 3.2E-11 | 0.55 | 0.67 | - | - | |
| - | nootkatone | 9.4E-10 | 0.57 | 0.97 | - | - | |
| - | champignol | 4.0E-10 | 0.59 | 0.50 | - | - | |
| - | 2-acetyl-3,(5 or 6)-dimethylpyrazine | 1.8E-9 | 0.59 | 0.42 | - | - | |
| - | (+)-menthofuran | 2.3E-10 | 0.59 | 0.61 | - | - | |
| - | 2-ethyl-3-methoxypyrazine | 3.9E-11 | 0.61 | 0.51 | - | - | |
| - | 2-octanone | 1.4E-10 | 0.66 | 0.62 | - | - | |
| - | furfuryl methyl sulfide | 1.2E-9 | 0.67 | 0.20 | - | - | |
| - | geraniol | 1.2E-9 | 0.67 | 0.29 | - | - | |
| - | butyrophenone | 1.8E-11 | 0.70 | 0.50 | - | - | |
| - | 4-methylanisole | 9.1E-11 | 0.75 | 0.00 | - | - | |
| - | benzyl acetate | 1.4E-10 | 0.86 | 0.15 | - | - | |
| Table S3. Additional odorants and concentrations eliciting consistently sparse activation. | | | | | | |