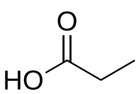
Atlas of odorant response maps (185 odorants)

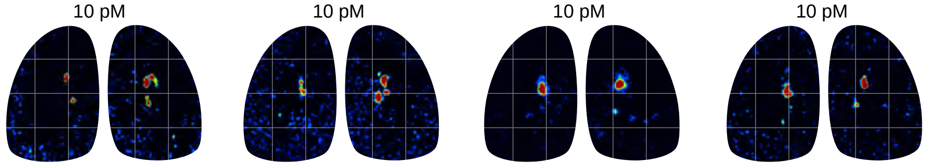
Carboxylic acid

MOUSE 1 | MOUSE 2 | MOUSE 3 | MOUSE 4

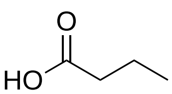
1. Propionic acid (C1)



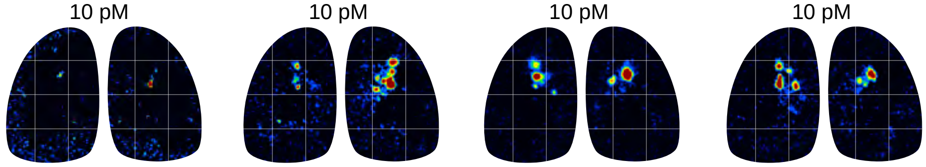
10 pM | 10 pM | 10 pM | 10 pM



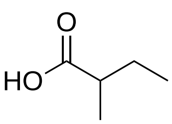
2. Butyric acid (C2)



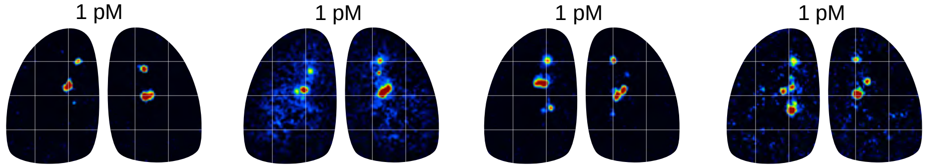
10 pM | 10 pM | 10 pM | 10 pM



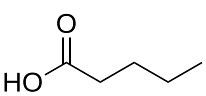
3. 2-methylbutyric acid (C3)



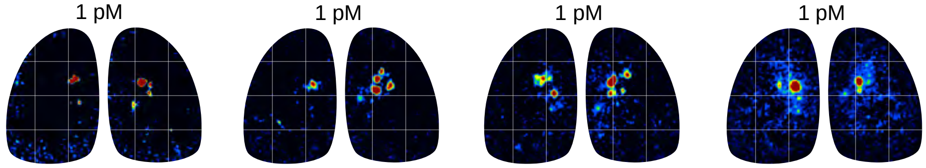
1 pM | 1 pM | 1 pM | 1 pM



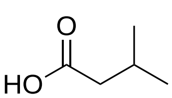
4. Valeric acid (C4)



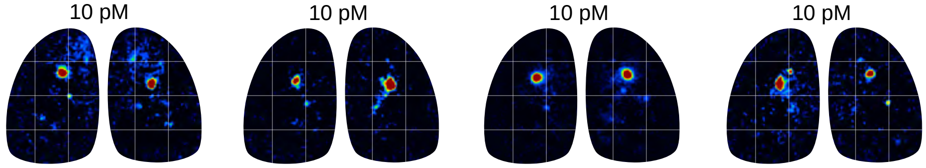
1 pM | 1 pM | 1 pM | 1 pM



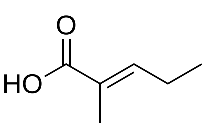
5. Isovaleric acid (C5)



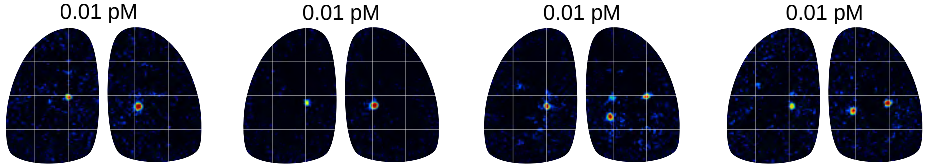
10 pM | 10 pM | 10 pM | 10 pM



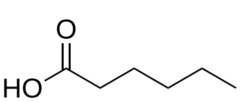
6. 2-methyl-2-pentenoic acid (C6)



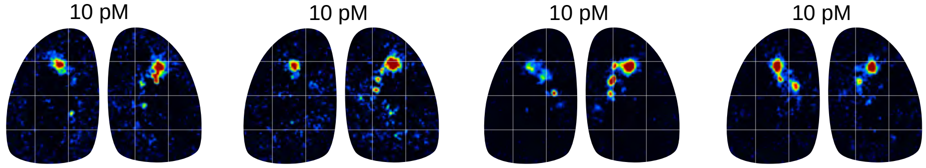
0.01 pM | 0.01 pM | 0.01 pM | 0.01 pM



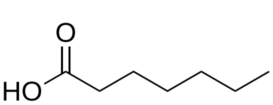
7. Hexanoic acid (C7)



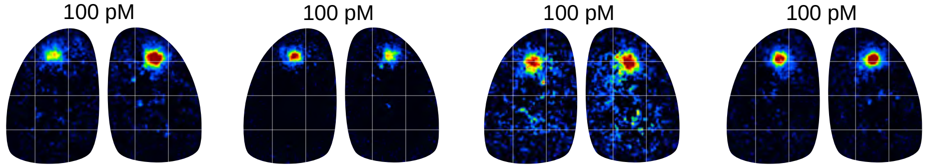
10 pM | 10 pM | 10 pM | 10 pM



8. Heptanoic acid (C8)



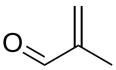
100 pM | 100 pM | 100 pM | 100 pM



Aldehyde

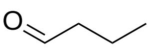
MOUSE 1 MOUSE 2 MOUSE 3 MOUSE 4

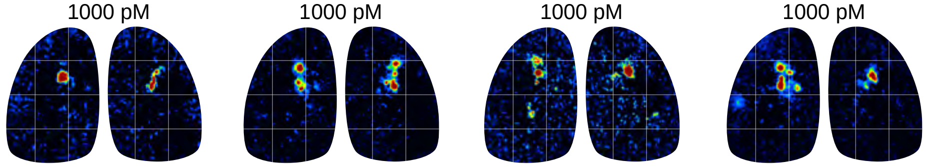
9. Methacrolein (D1)



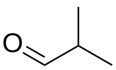
No Response at 1000 pM

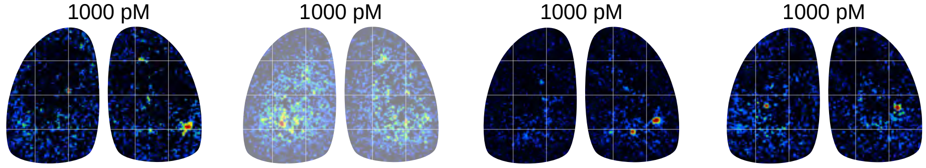
10. Butyraldehyde (D2)



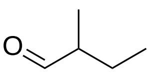


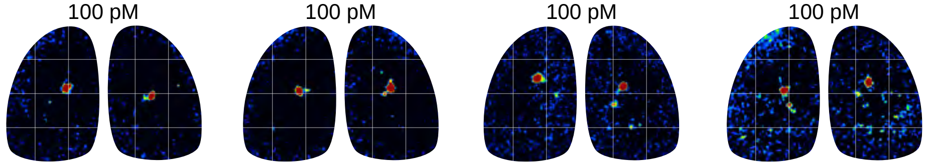
11. Isobutyraldehyde (D3)



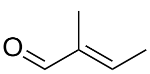


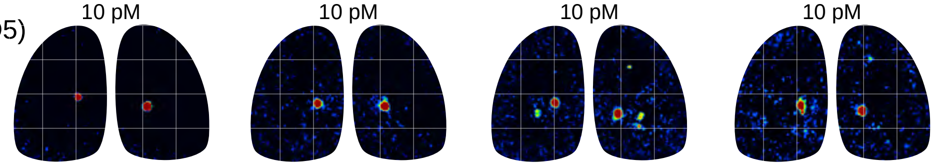
12. 2-methylbutyraldehyde (D4)



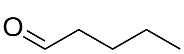


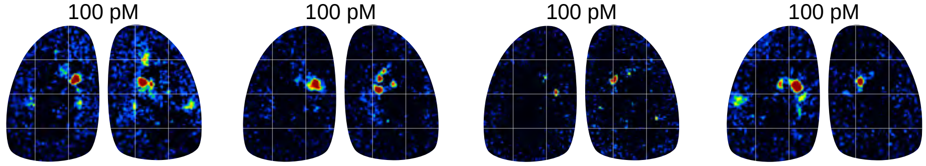
13. trans-2-methyl-2-butenal (D5)



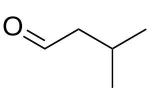


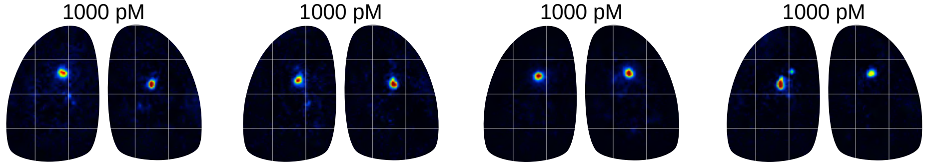
14. Valeraldehyde (D6)



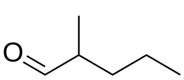


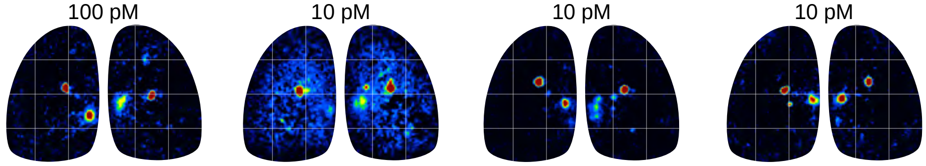
15. Isovaleraldehyde (D7)



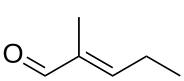


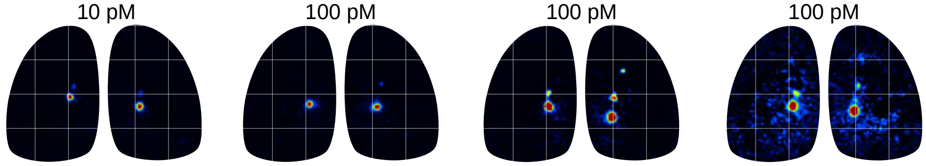
16. 2-methylvaleraldehyde (D8)



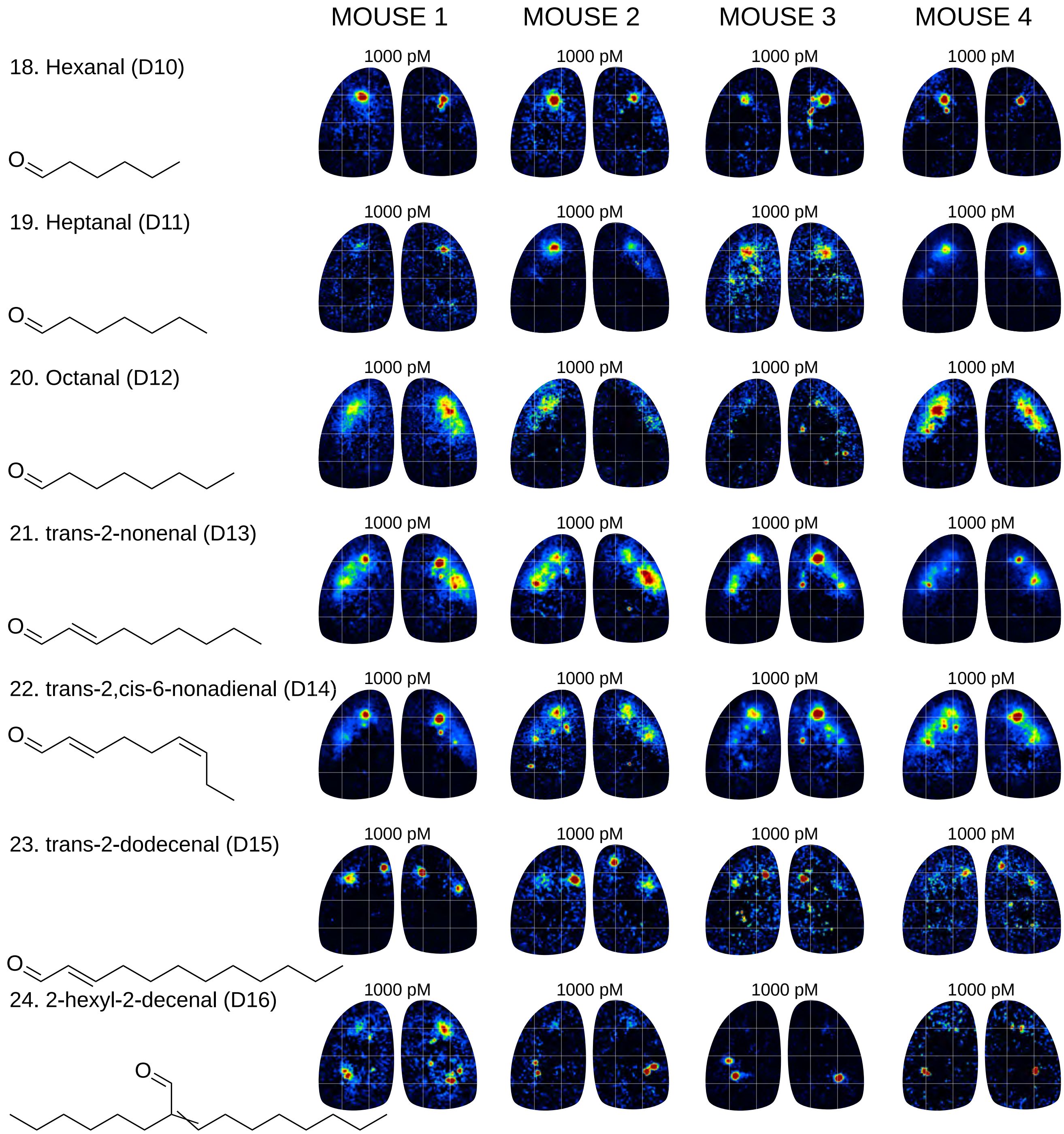


17. 2-methyl-2-pentenal (D9)

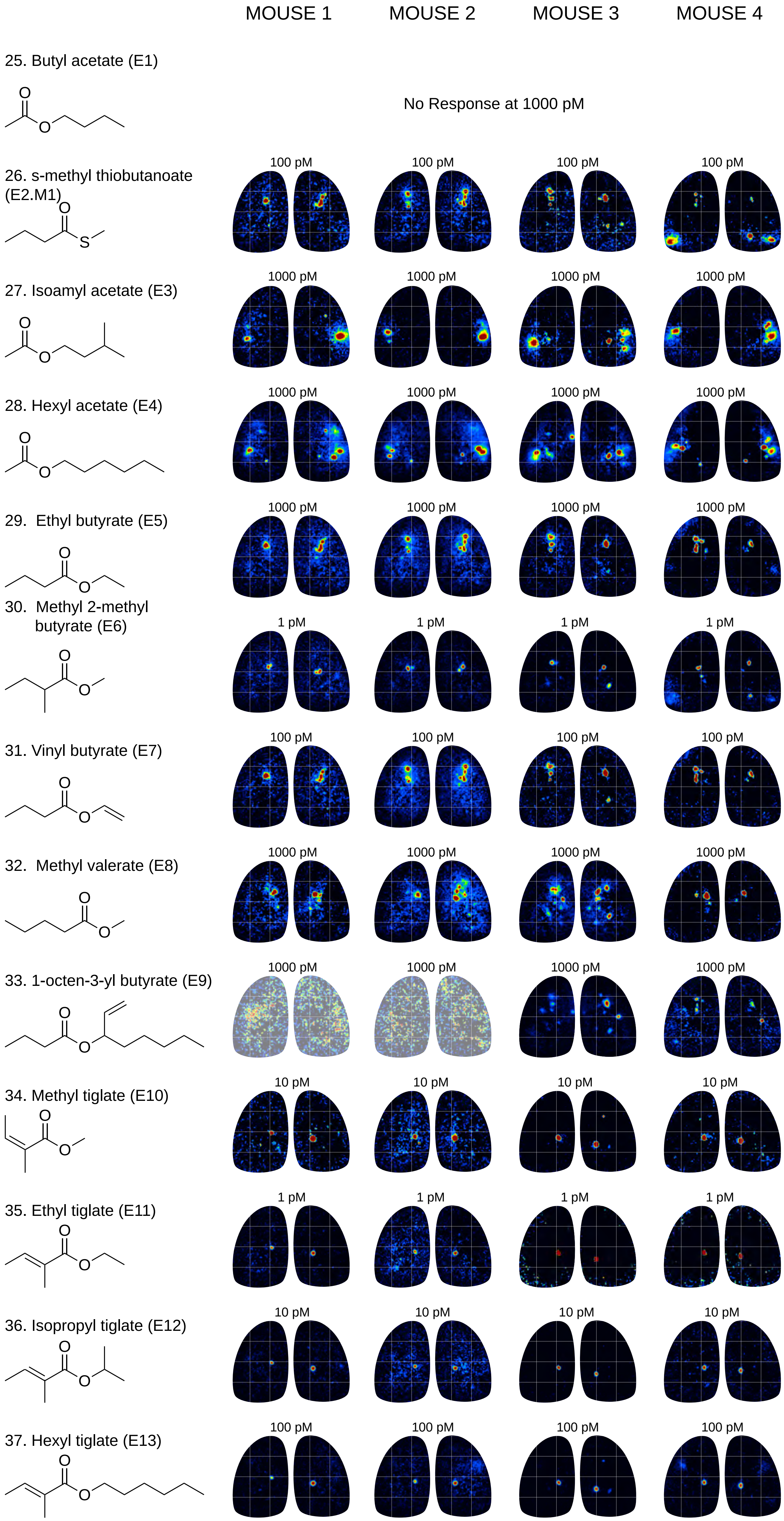




Aldehyde II


MOUSE 1
MOUSE 2
MOUSE 3
MOUSE 4
18. Hexanal (D10)
19. Heptanal (D11)
20. Octanal (D12)
21. trans-2-nonenal (D13)
22. trans-2,cis-6-nonadienal (D14)
23. trans-2-dodecenal (D15)
24. 2-hexyl-2-decenal (D16)
1000 pM
O

Ester

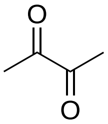


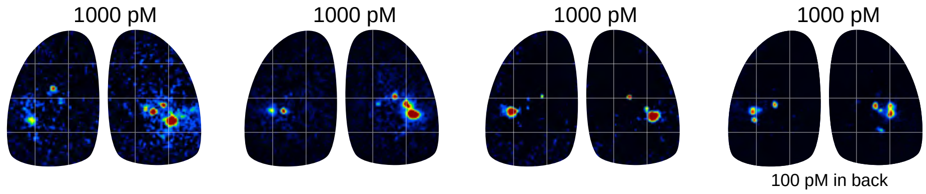
MOUSE 1
MOUSE 2
MOUSE 3
MOUSE 4
25. Butyl acetate (E1)
No Response at 1000 pM
26. s-methyl thiobutanoate (E2.M1)
100 pM
27. Isoamyl acetate (E3)
1000 pM
28. Hexyl acetate (E4)
1000 pM
29. Ethyl butyrate (E5)
1000 pM
30. Methyl 2-methyl butyrate (E6)
1 pM
31. Vinyl butyrate (E7)
100 pM
32. Methyl valerate (E8)
1000 pM
33. 1-octen-3-yl butyrate (E9)
1000 pM
34. Methyl tiglate (E10)
10 pM
35. Ethyl tiglate (E11)
1 pM
36. Isopropyl tiglate (E12)
10 pM
37. Hexyl tiglate (E13)
100 pM

Ketone

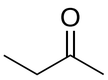
MOUSE 1 MOUSE 2 MOUSE 3 MOUSE 4

38. Diacetyl (K1)



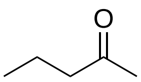


39. 2-butanone (K2)



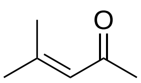
No Response at 1000 pM

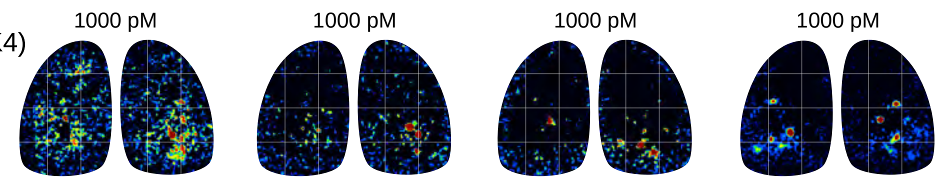
40. 2-pentanone (K3)



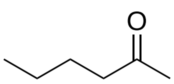
No Response at 1000 pM

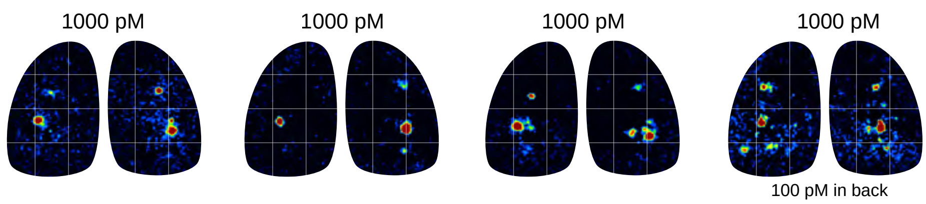
41. 4-methyl-3-penten-2-one (K4)



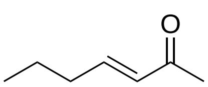


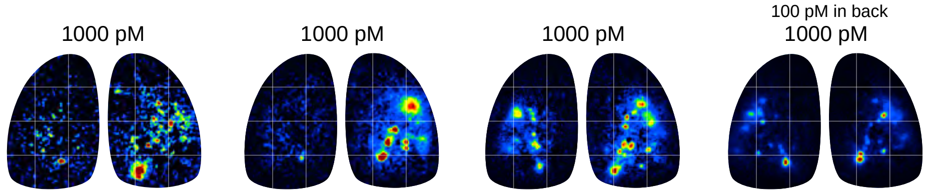
42. 2-hexanone (K5)



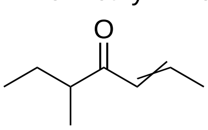


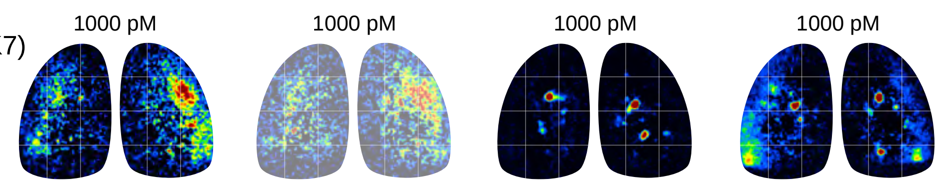
43. 3-hepten-2-one (K6)



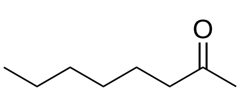


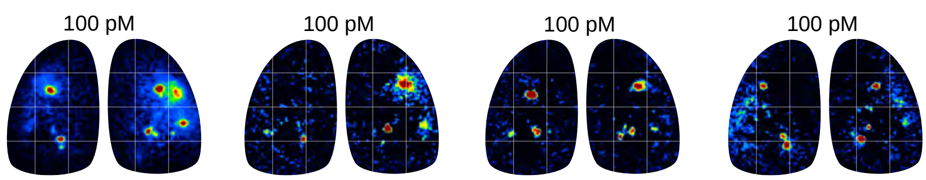
44. 5-methyl-2-hepten-4-one (K7)



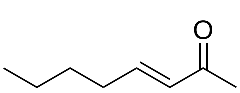


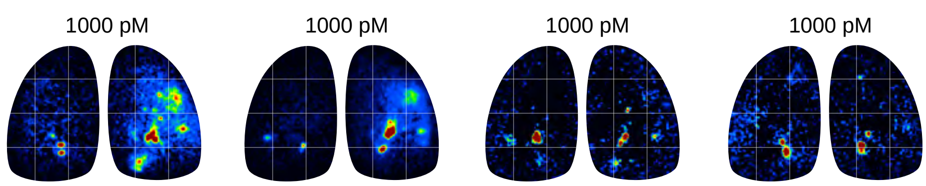
45. 2-octanone (K8)



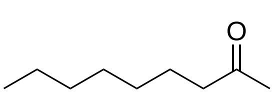


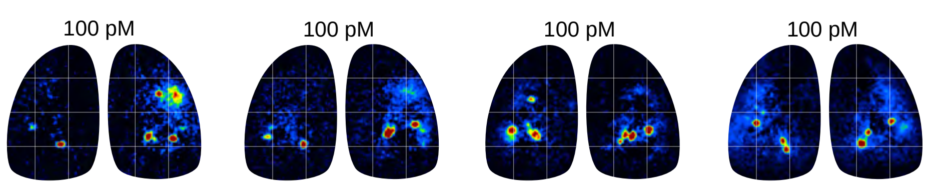
46. 3-octen-2-one (K9)



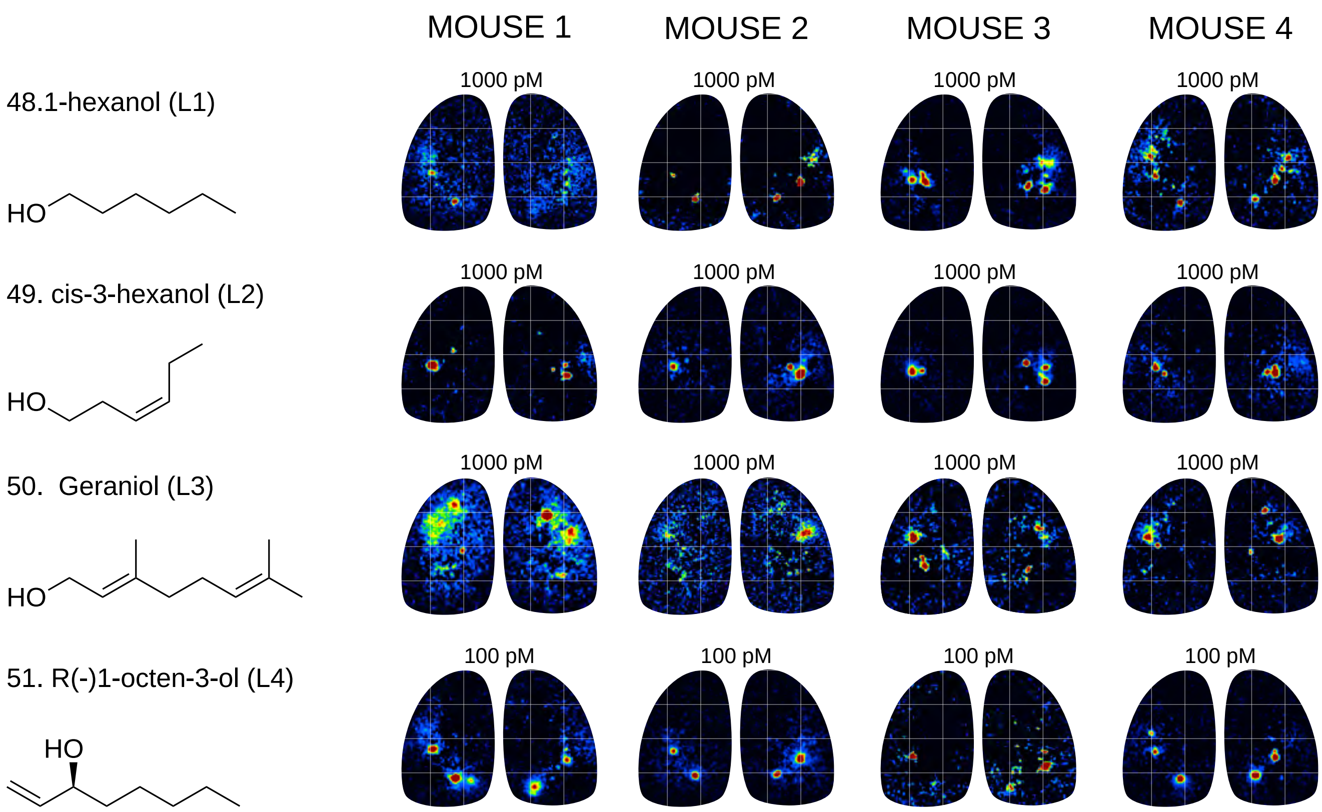


47. 2-nonanone (K10)

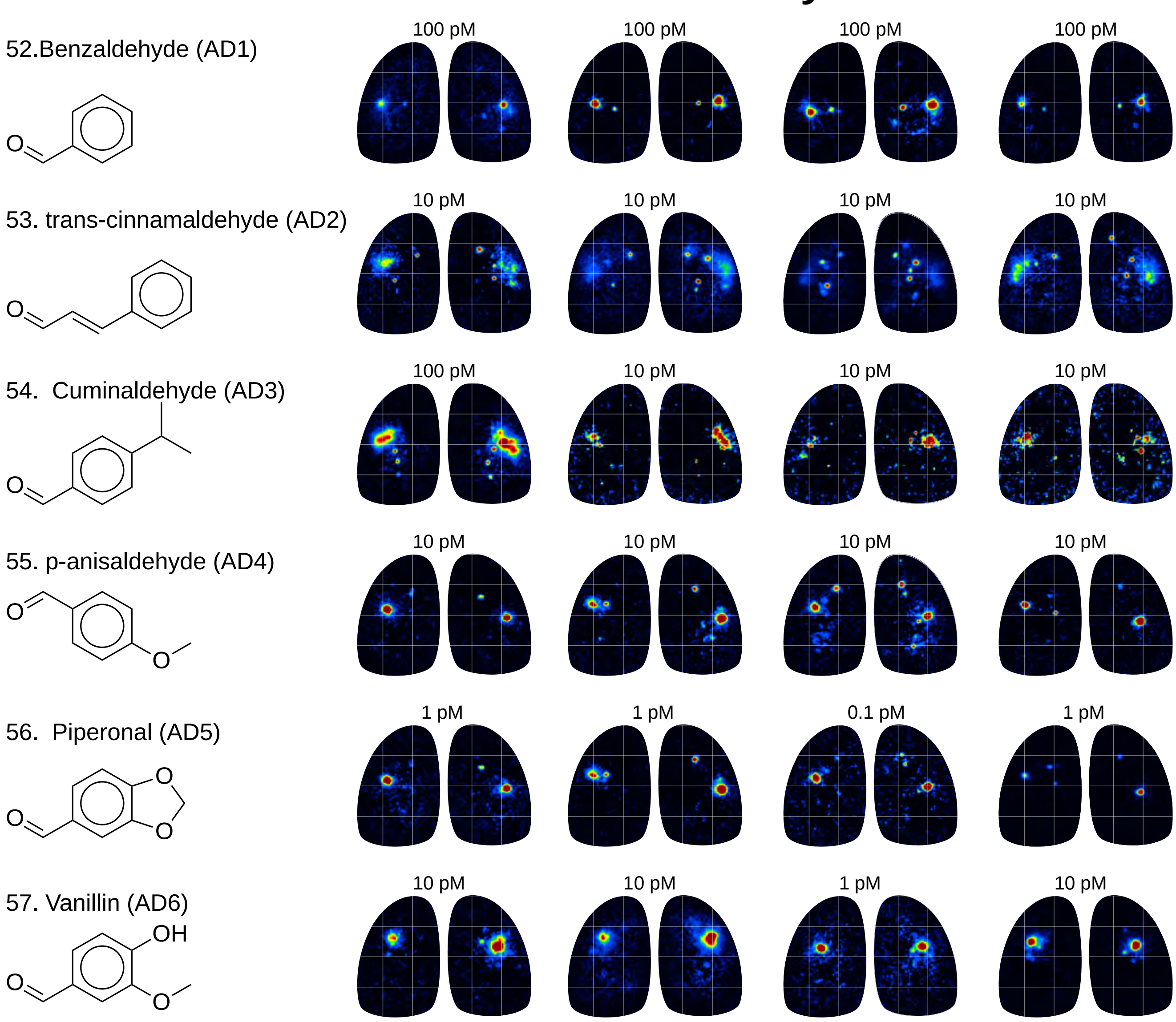




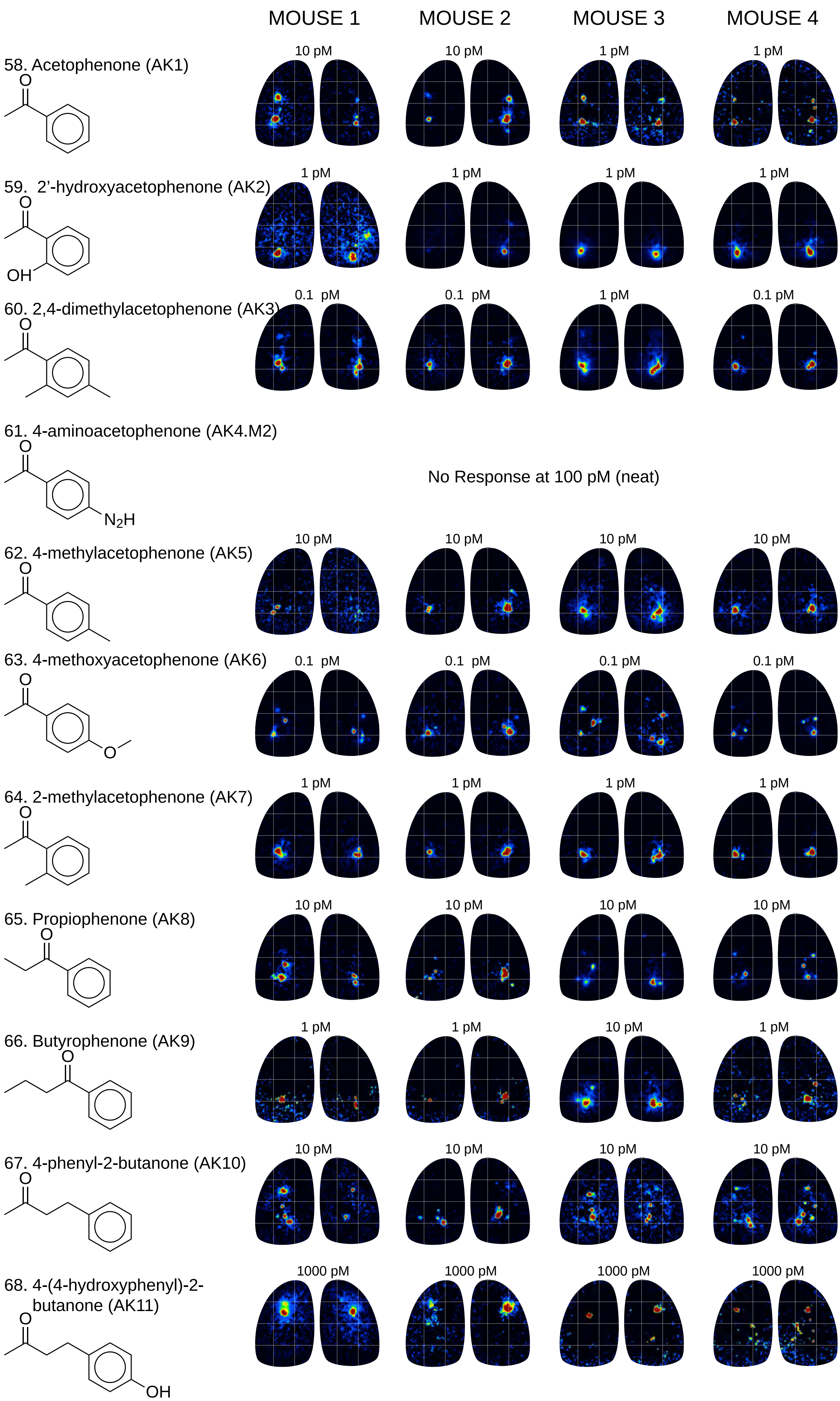
Alcohol



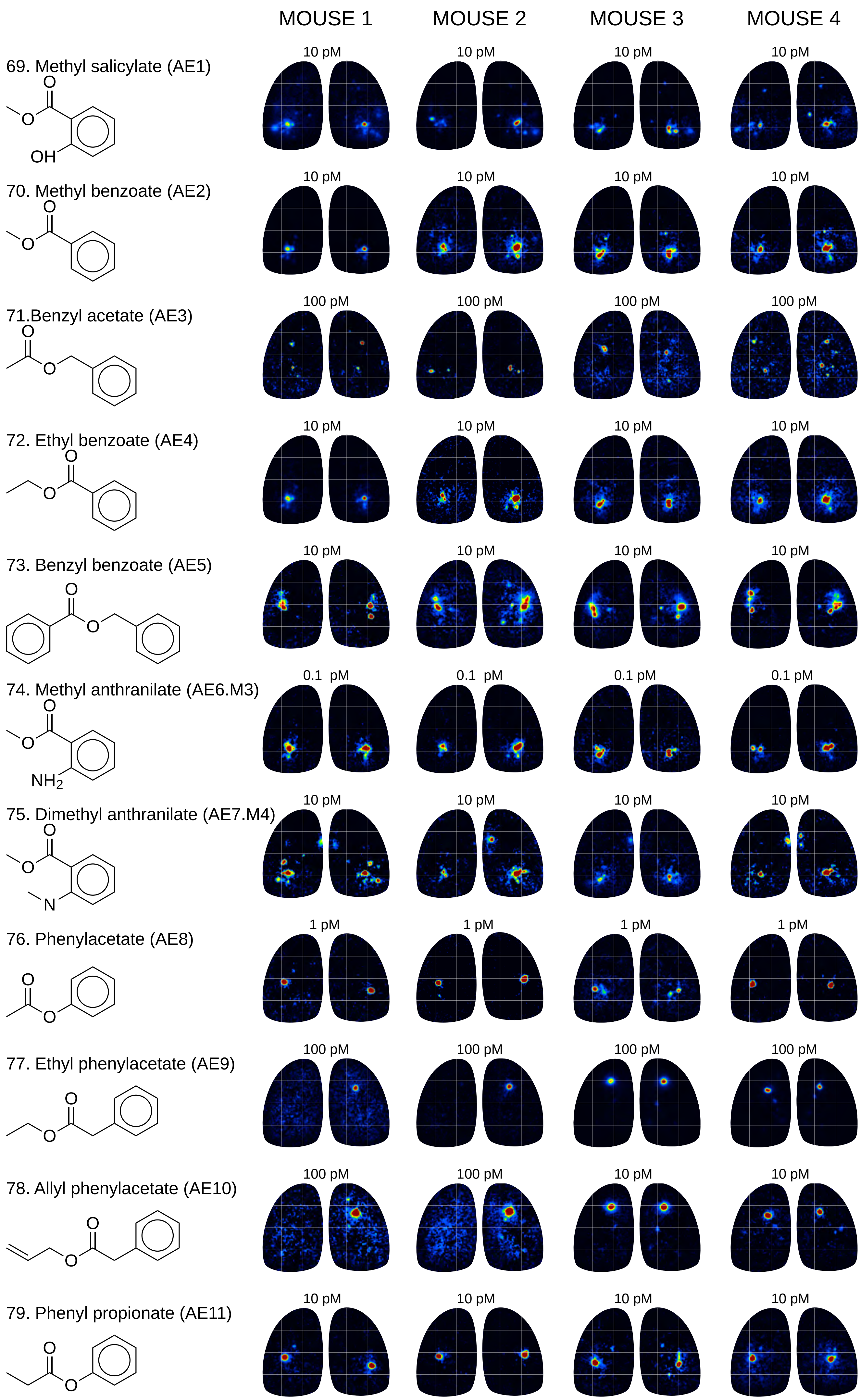
Aromatic Aldehyde



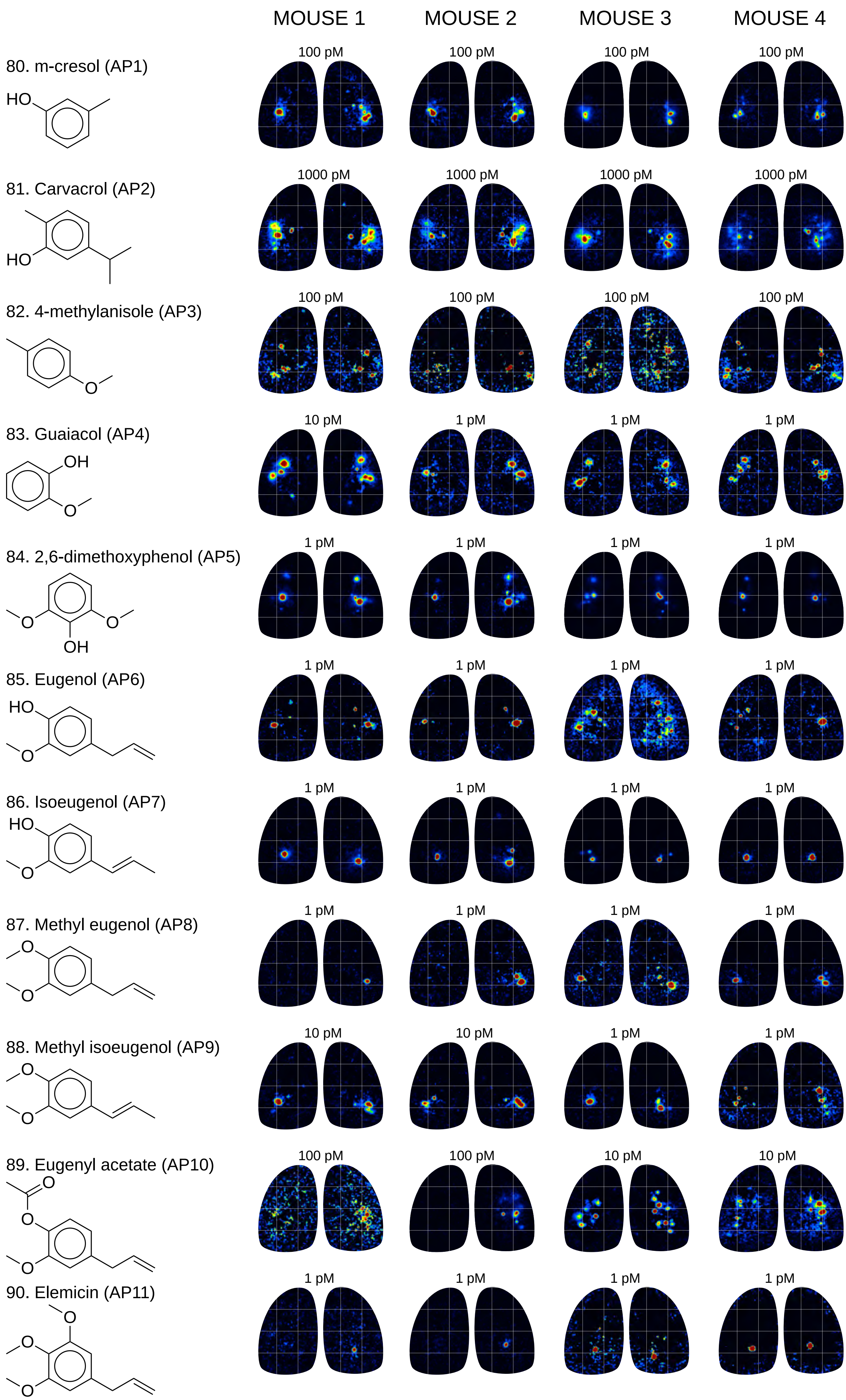
Aromatic Ketone



Aromatic Ester



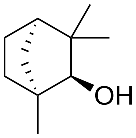
Aromatic Phenol/Methoxy

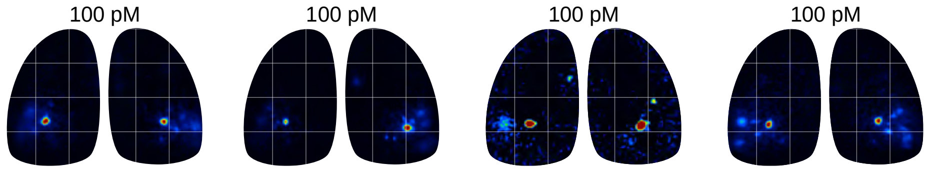


Cyclic Terpenoid I

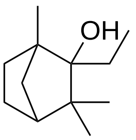
MOUSE 1 | MOUSE 2 | MOUSE 3 | MOUSE 4

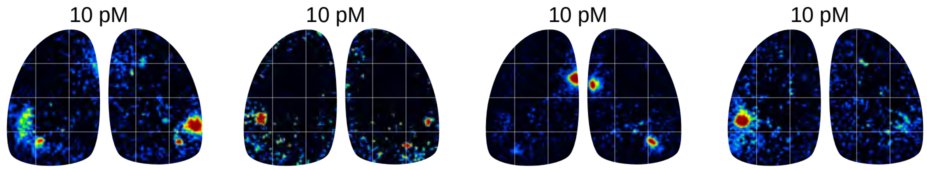
91. Fenchol (CT1)



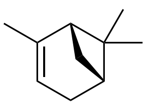


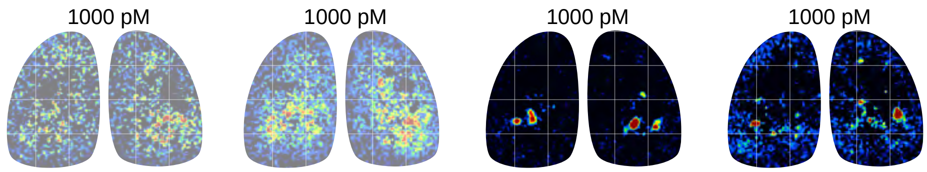
92. 2-ethyl fenchol (CT2)



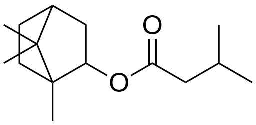


93. α-pinene (CT3)



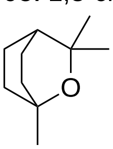


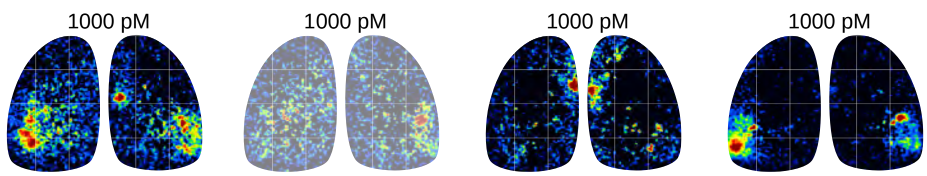
94. Isobornyl isovalerate (CT4.M5)



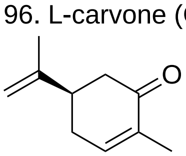
No Response at 1000 pM

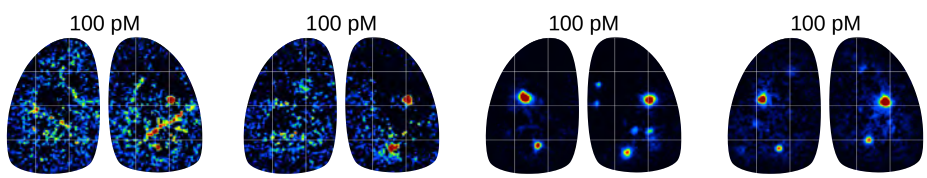
95. 1,8-cineole (CT5)



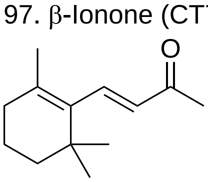


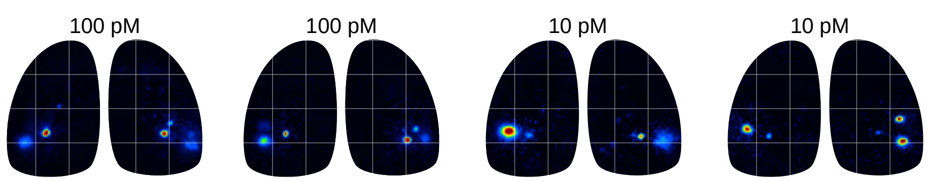
96. L-carvone (CT6)



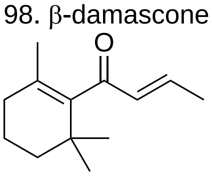


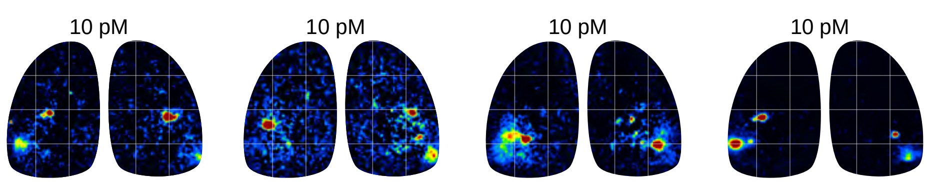
97. β-Ionone (CT7)



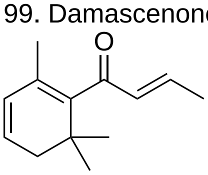


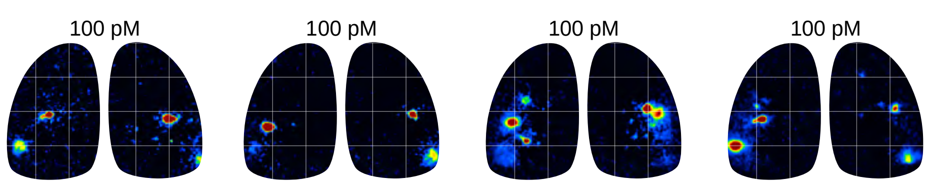
98. β-damascone (CT8)





99. Damascenone (CT9)

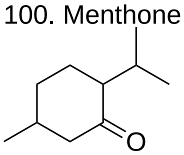




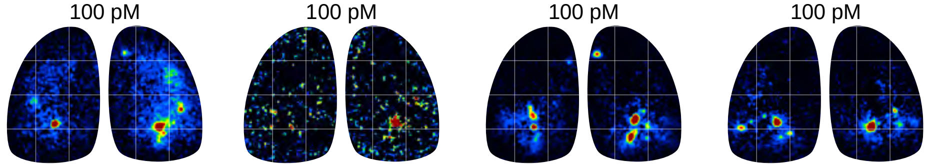
Cyclic Terpenoid II

MOUSE 1 | MOUSE 2 | MOUSE 3 | MOUSE 4

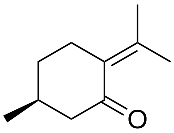
100. Menthone (CT10)



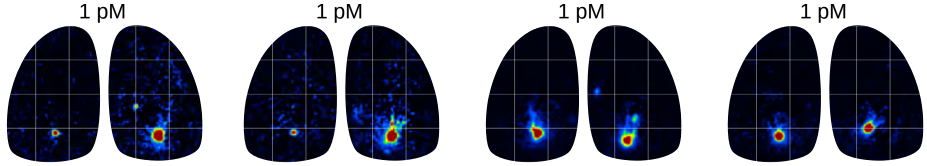
100 pM | 100 pM | 100 pM | 100 pM



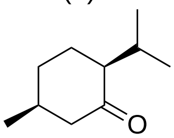
101. (R)-(+)-pulegone (CT11)



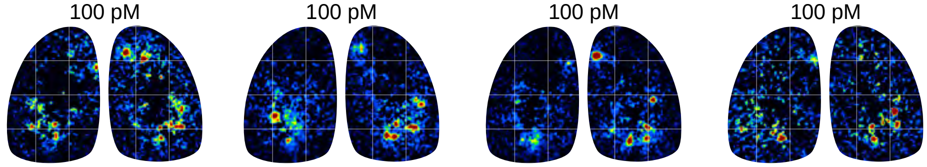
1 pM | 1 pM | 1 pM | 1 pM



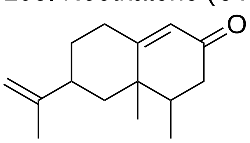
102. (+)-isomethone (CT12)



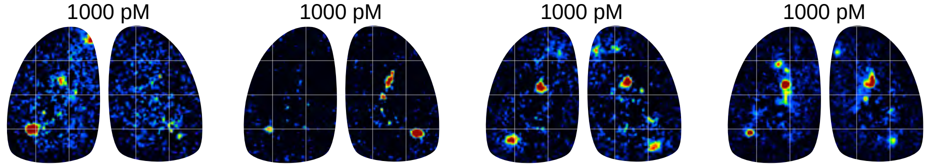
100 pM | 100 pM | 100 pM | 100 pM



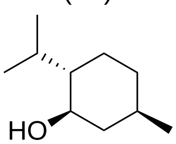
103. Nootkatone (CT13)



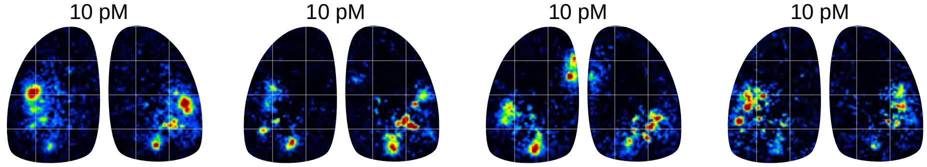
1000 pM | 1000 pM | 1000 pM | 1000 pM



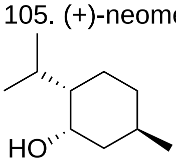
104. (+/-)-menthol (CT14)



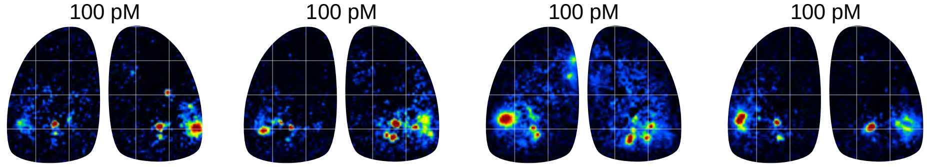
10 pM | 10 pM | 10 pM | 10 pM



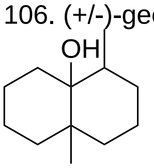
105. (+)-neomenthol (CT15)



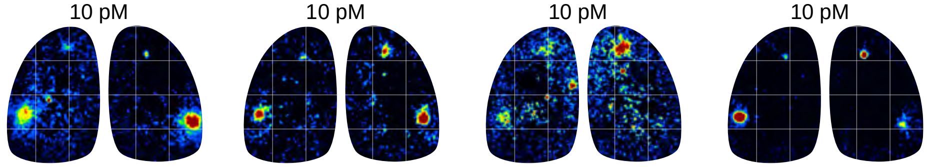
100 pM | 100 pM | 100 pM | 100 pM



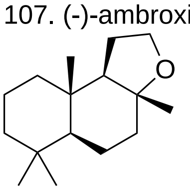
106. (+/-)-geosmin (CT16)



10 pM | 10 pM | 10 pM | 10 pM

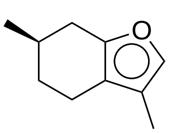


107. (-)-ambroxide (CT17)

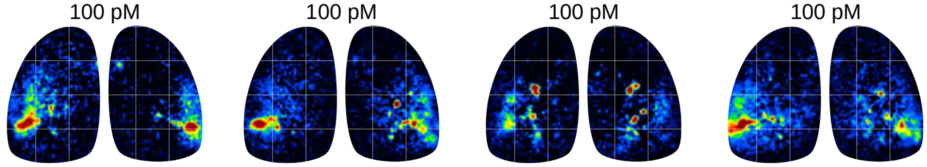


No response at 1000 pM

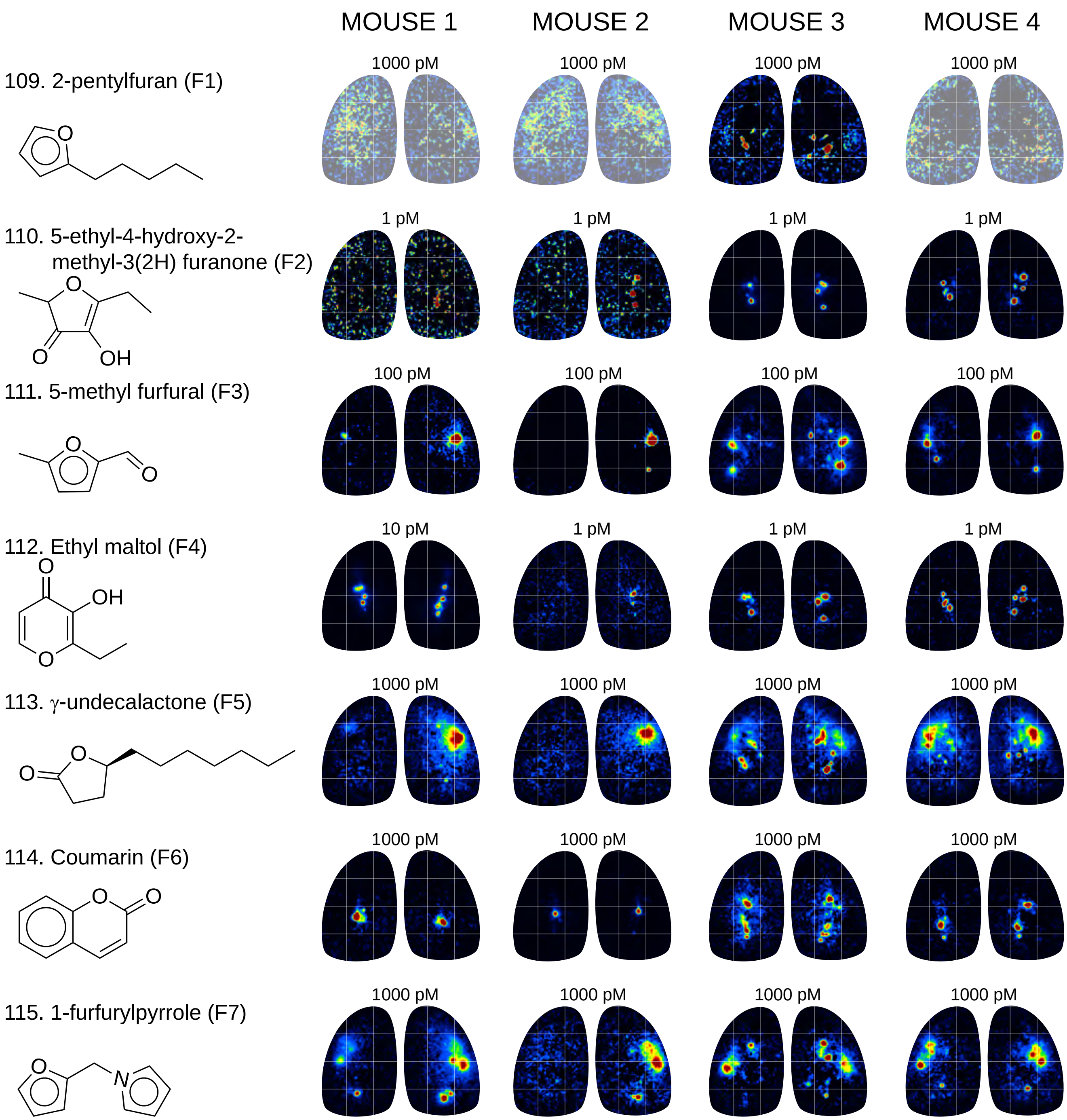
108. (+)-menthofuran (CT18)



100 pM | 100 pM | 100 pM | 100 pM



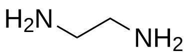
Furan/Pyrone/Lactone



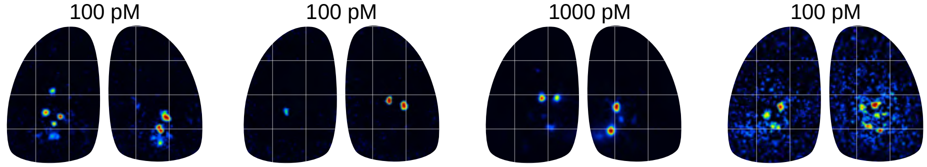
Amine I

MOUSE 1 | MOUSE 2 | MOUSE 3 | MOUSE 4

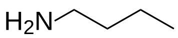
116. Ethylenediamine (N1)



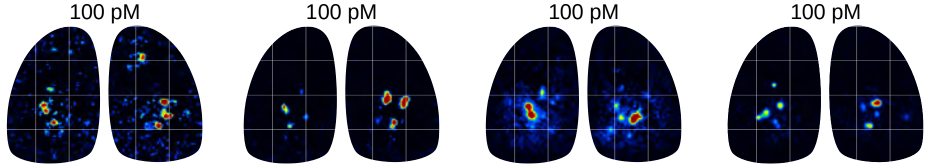
100 pM | 100 pM | 1000 pM | 100 pM



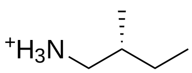
117. Butylamine (N2)



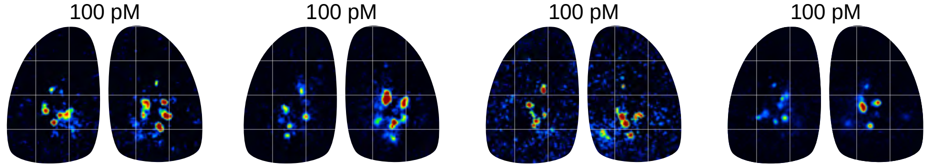
100 pM | 100 pM | 100 pM | 100 pM



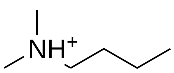
118. 2-methylbutylamine (N3)



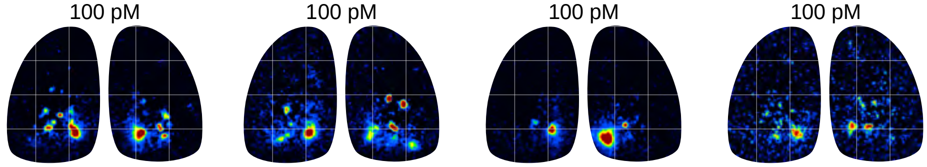
100 pM | 100 pM | 100 pM | 100 pM



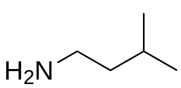
119. N-butyldimethylamine (N4)



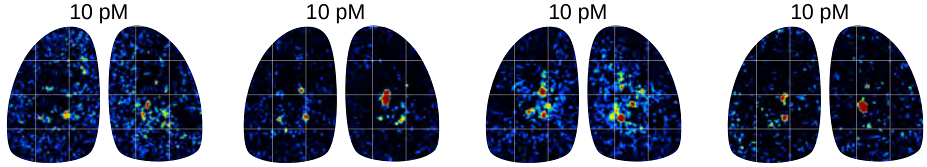
100 pM | 100 pM | 100 pM | 100 pM



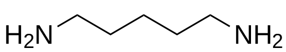
120. Isopentylamine (N5)



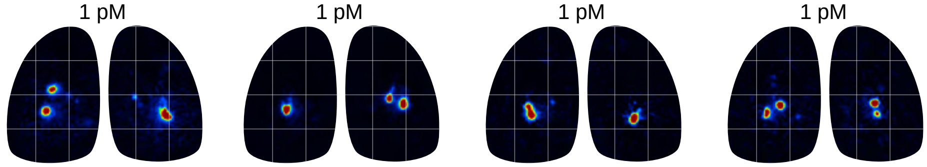
10 pM | 10 pM | 10 pM | 10 pM



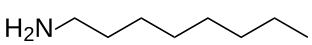
121. Cadaverine (N6)



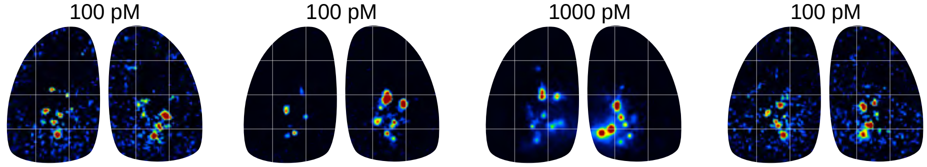
1 pM | 1 pM | 1 pM | 1 pM



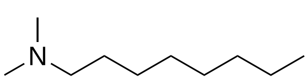
122. Octylamine (N7)



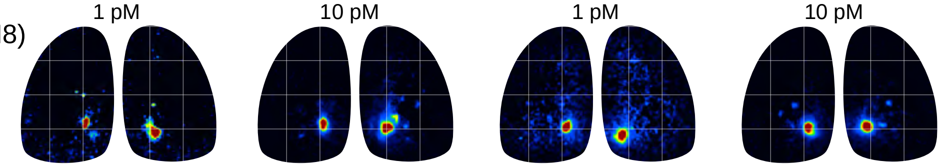
100 pM | 100 pM | 1000 pM | 100 pM



123. N,N-dimethyloctylamine (N8)



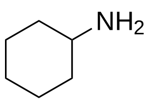
1 pM | 10 pM | 1 pM | 10 pM

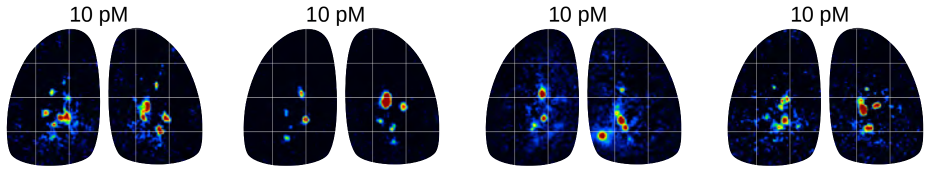


Amine II

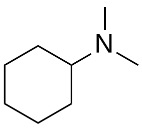
	MOUSE 1	MOUSE 2	MOUSE 3	MOUSE 4

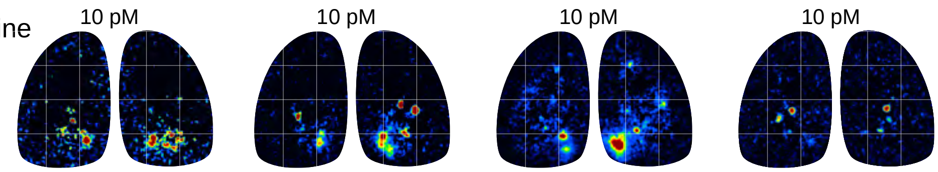
124. Cyclohexylamine (N9)



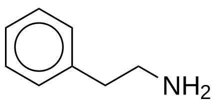


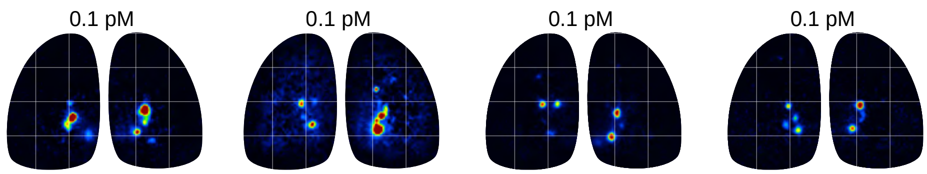
125. N,N-dimethylcyclohexylamine (N10)



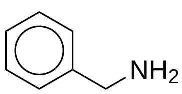


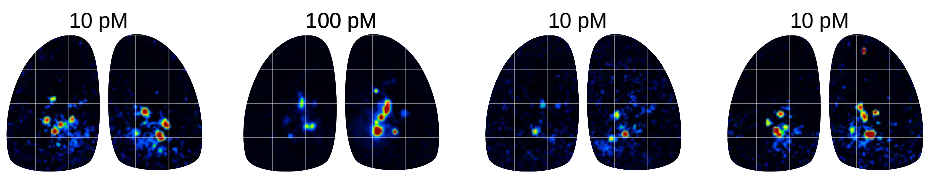
126. Phenethylamine (N11)



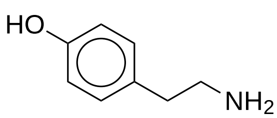


127. Benzylamine (N12)



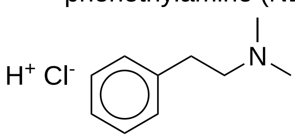


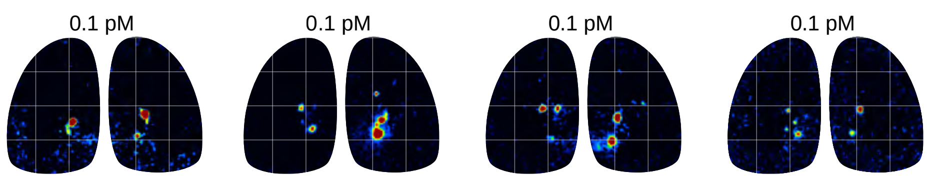
128. Tyramine (N13)



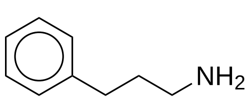
No response at 1000 pM

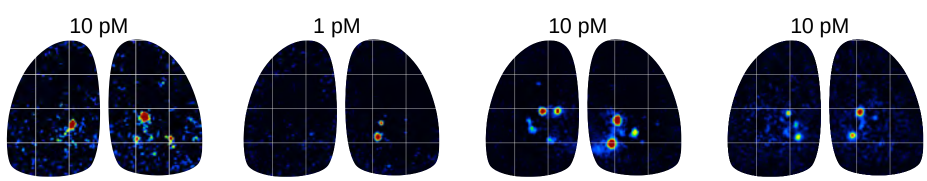
129. N,N-dimethyl-2-phenethylamine (N14)



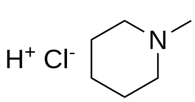


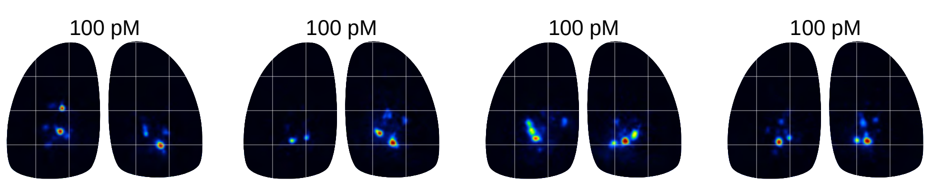
130. 3-phenylpropylamine (N15)



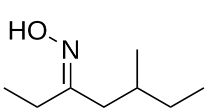


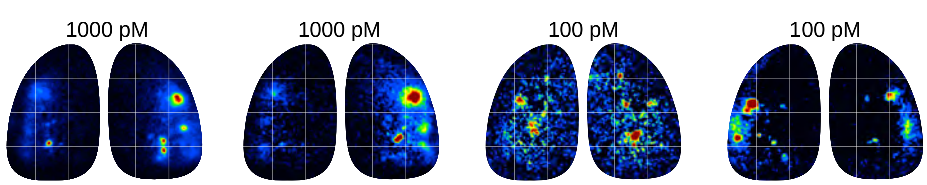
131. N-methyl piperidine (N16)



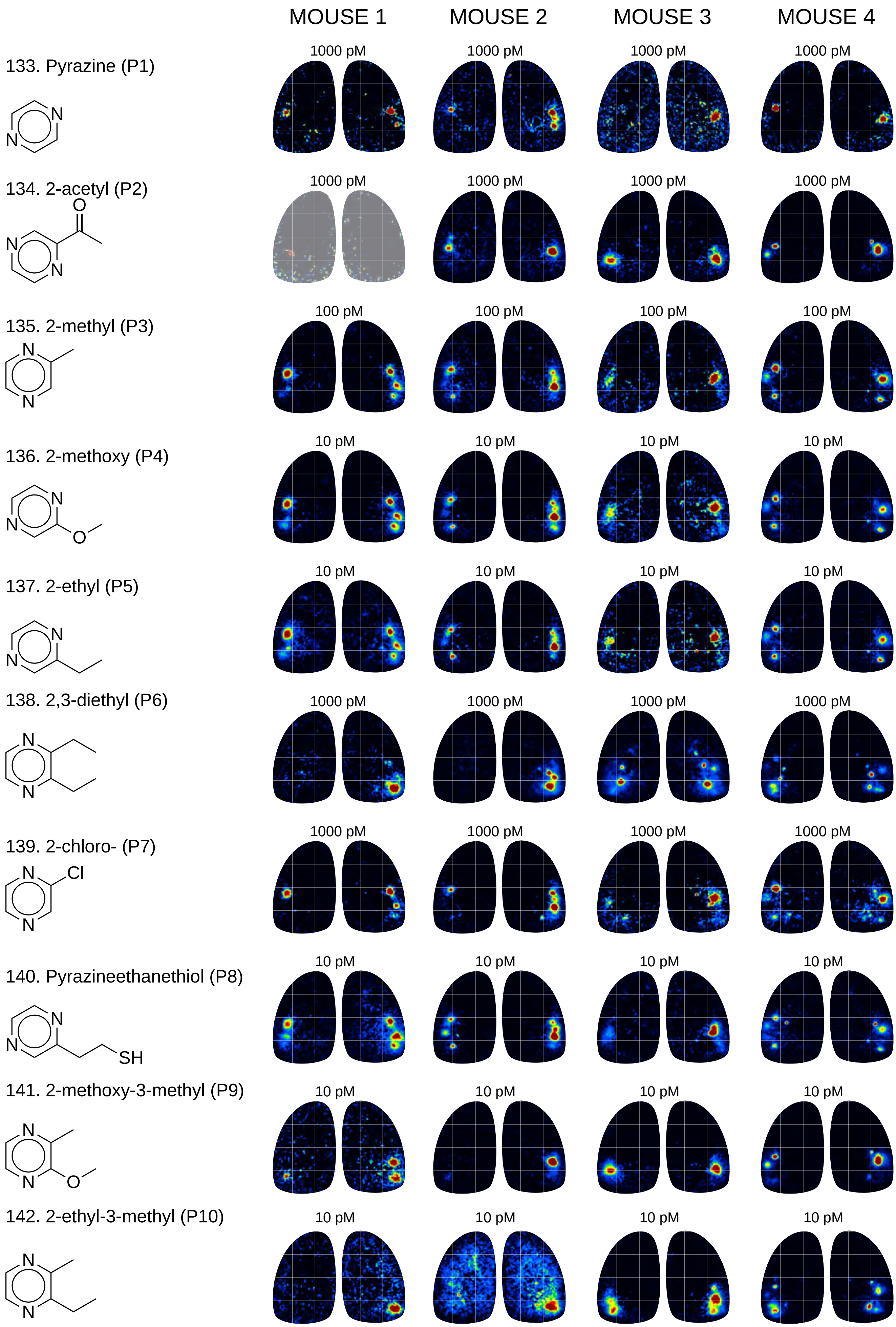


132. 5-methyl heptan-3-one oxime (N17.M8)

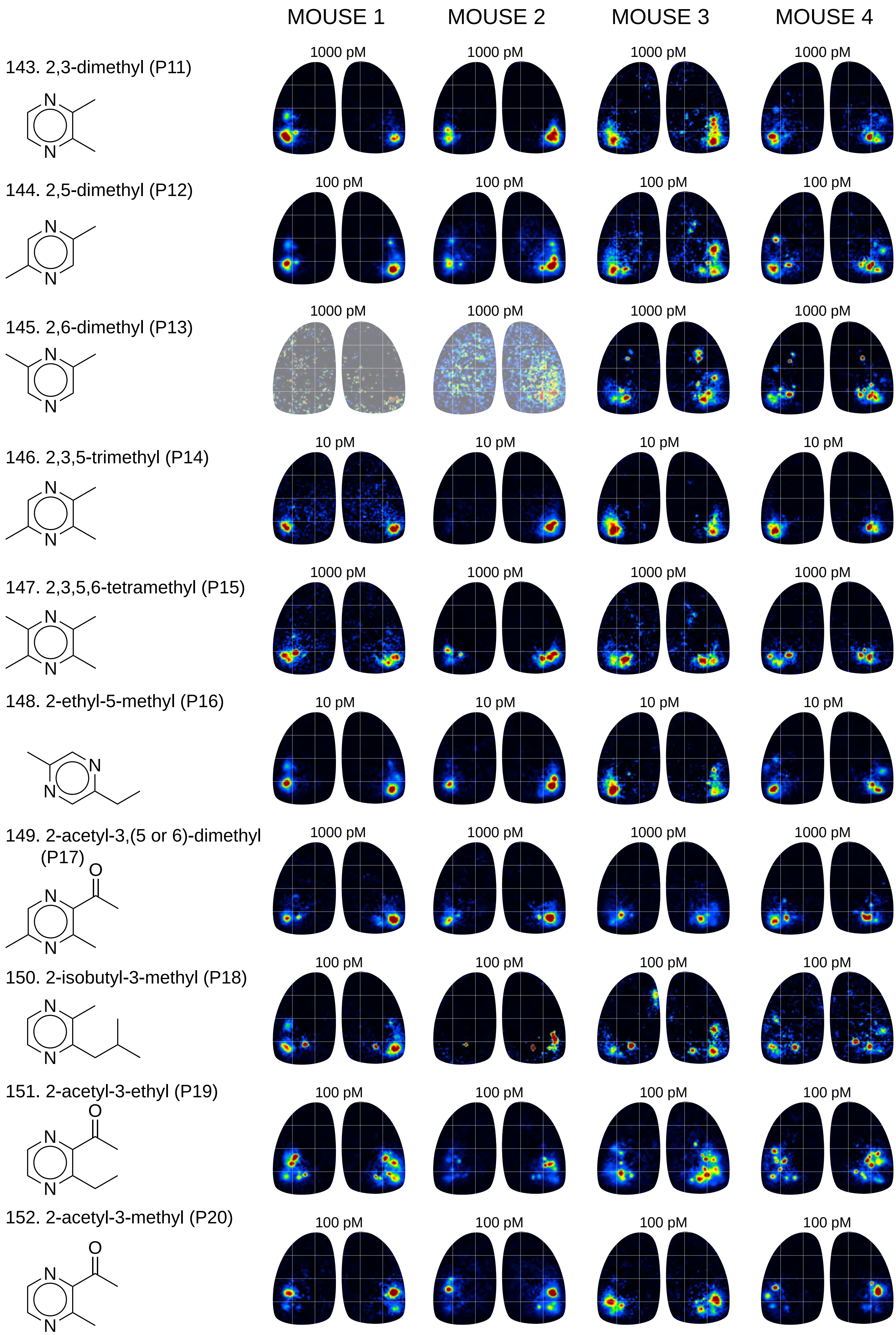




Pyrazine I


MOUSE 1
MOUSE 2
MOUSE 3
MOUSE 4
133. Pyrazine (P1)
1000 pM
134. 2-acetyl (P2)
1000 pM
135. 2-methyl (P3)
100 pM
136. 2-methoxy (P4)
10 pM
137. 2-ethyl (P5)
10 pM
138. 2,3-diethyl (P6)
1000 pM
139. 2-chloro- (P7)
1000 pM
140. Pyrazineethanethiol (P8)
10 pM
141. 2-methoxy-3-methyl (P9)
10 pM
142. 2-ethyl-3-methyl (P10)
10 pM
N
O
Cl
SH

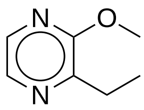
Pyrazine II


MOUSE 1
MOUSE 2
MOUSE 3
MOUSE 4
143. 2,3-dimethyl (P11)
1000 pM
1000 pM
1000 pM
1000 pM
144. 2,5-dimethyl (P12)
100 pM
100 pM
100 pM
100 pM
145. 2,6-dimethyl (P13)
1000 pM
1000 pM
1000 pM
1000 pM
146. 2,3,5-trimethyl (P14)
10 pM
10 pM
10 pM
10 pM
147. 2,3,5,6-tetramethyl (P15)
1000 pM
1000 pM
1000 pM
1000 pM
148. 2-ethyl-5-methyl (P16)
10 pM
10 pM
10 pM
10 pM
149. 2-acetyl-3,(5 or 6)-dimethyl (P17)
1000 pM
1000 pM
1000 pM
1000 pM
150. 2-isobutyl-3-methyl (P18)
100 pM
100 pM
100 pM
100 pM
151. 2-acetyl-3-ethyl (P19)
100 pM
100 pM
100 pM
100 pM
152. 2-acetyl-3-methyl (P20)
100 pM
100 pM
100 pM
100 pM

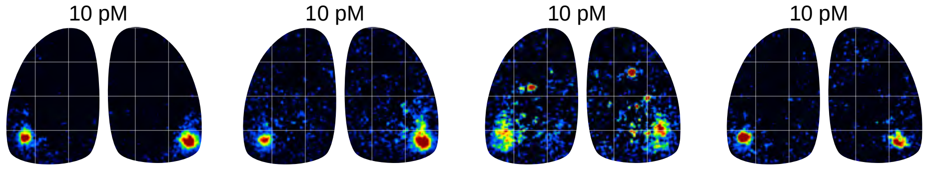
Pyrazine III

MOUSE 1 | MOUSE 2 | MOUSE 3 | MOUSE 4

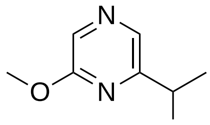
153. 2-ethyl-3-methoxy (P21)



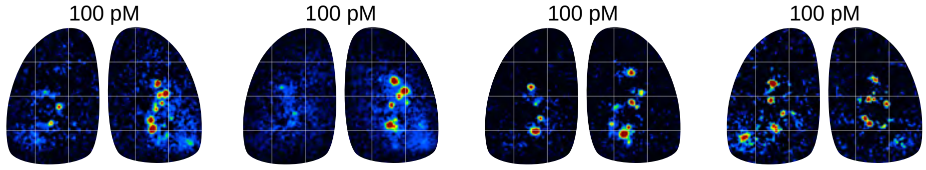
10 pM | 10 pM | 10 pM | 10 pM



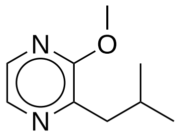
154. 2-methoxy-3(5 or 6)-isopropyl (P22)



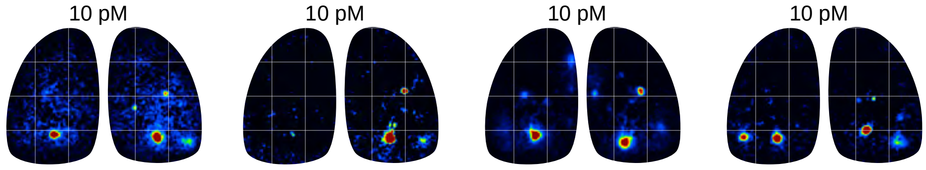
100 pM | 100 pM | 100 pM | 100 pM



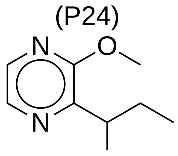
155. 2-isobutyl-3-methoxy (P23)



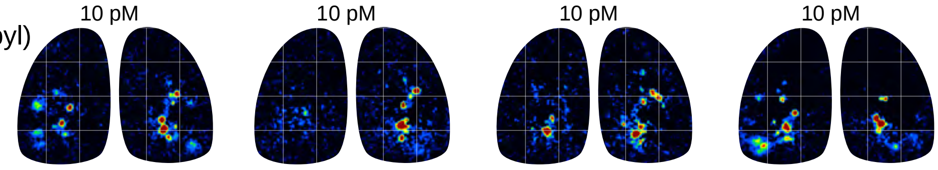
10 pM | 10 pM | 10 pM | 10 pM



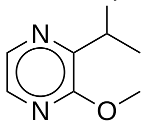
156. 2-methoxy-3-(1-methylpropyl) (P24)



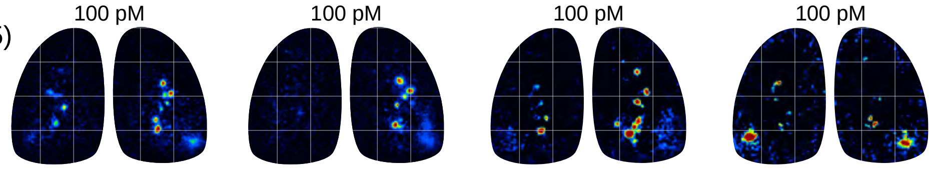
10 pM | 10 pM | 10 pM | 10 pM



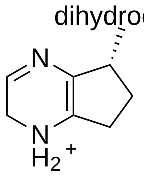
157. 2-isopropyl-3-methoxy (P25)



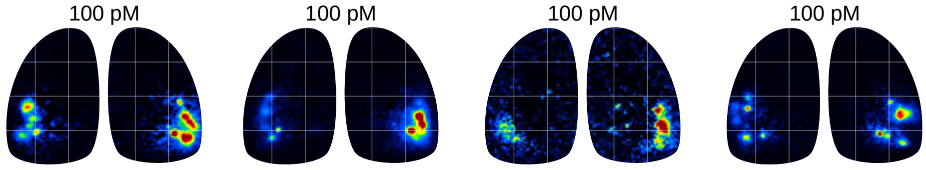
100 pM | 100 pM | 100 pM | 100 pM



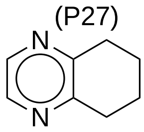
158. 5H-5-methyl-6,7-dihydrocyclopenta[b] (P26)



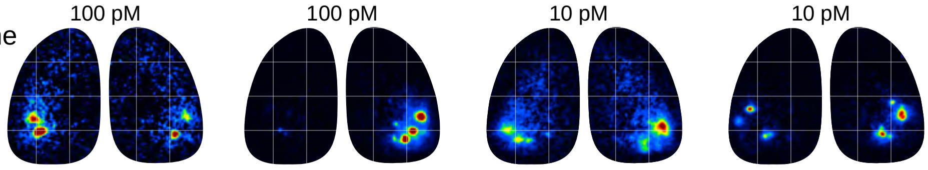
100 pM | 100 pM | 100 pM | 100 pM



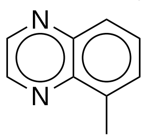
159. 5,6,7,8-tetrahydroquinoxaline (P27)



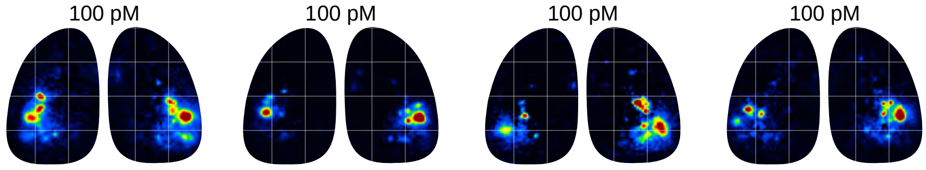
100 pM | 100 pM | 10 pM | 10 pM



160. 5-methylquinoxaline (P28)

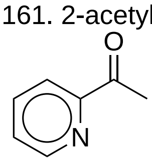


100 pM | 100 pM | 100 pM | 100 pM

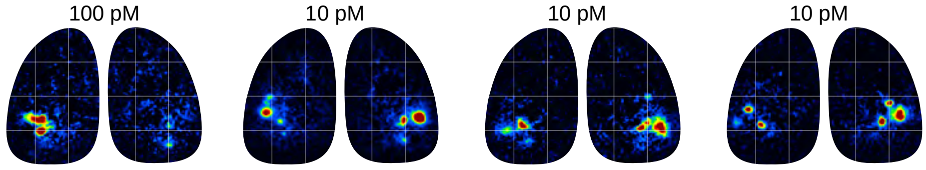


Pyrrole/Pyridine

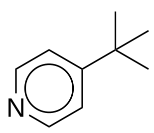
161. 2-acetylpyridine (NS1)



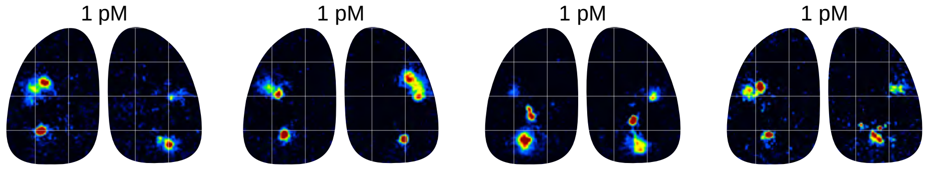
100 pM | 10 pM | 10 pM | 10 pM



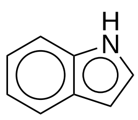
162. 4-tert-butylpyridine (NS2)



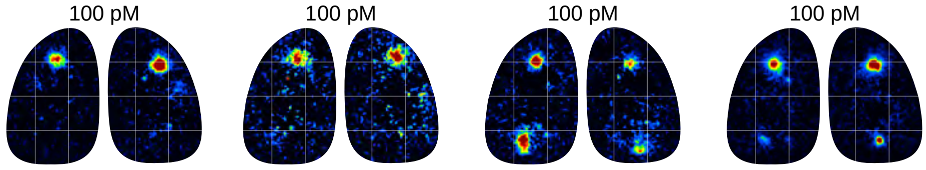
1 pM | 1 pM | 1 pM | 1 pM



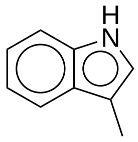
163. Indole (NS3)



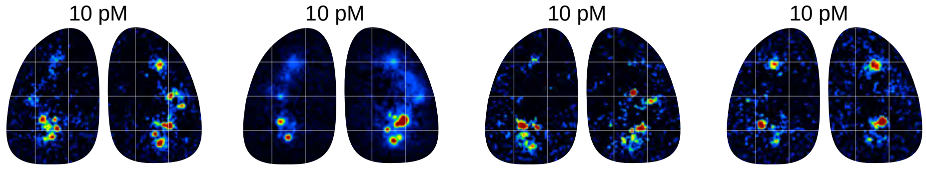
100 pM | 100 pM | 100 pM | 100 pM



164. 2-methylindole (NS4)



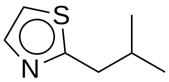
10 pM | 10 pM | 10 pM | 10 pM

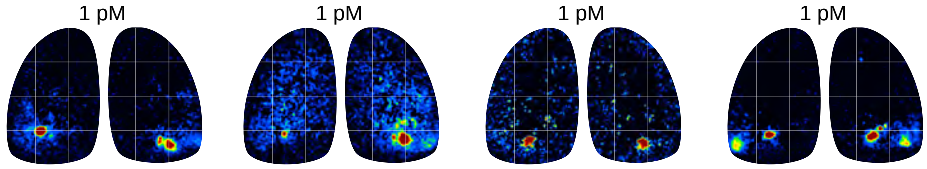


Thiazole/Thiane

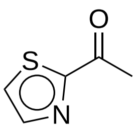
MOUSE 1 MOUSE 2 MOUSE 3 MOUSE 4

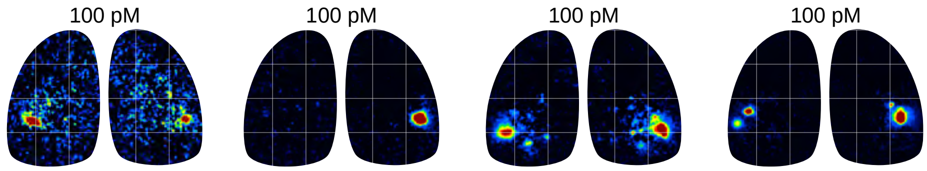
165. 2-isobutylthiazole (NS5)



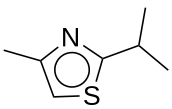


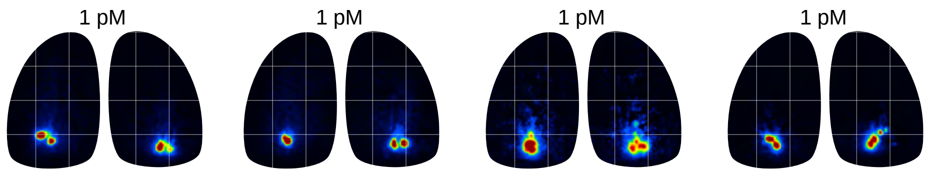
166. 2-acetylthiazole (NS6)



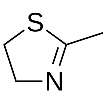


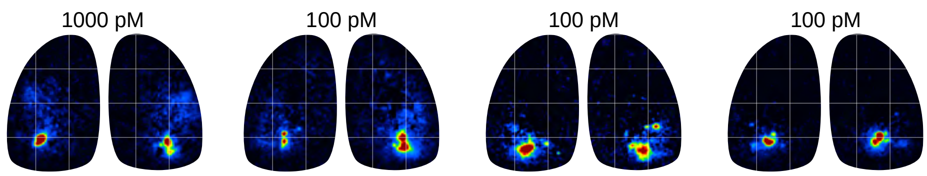
167. 2-isopropyl-4-methyl thiazole (NS7)



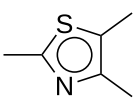


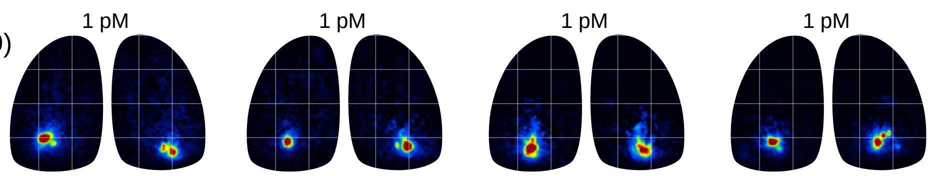
168. 2-methyl-2-thiazoline (NS8)



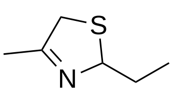


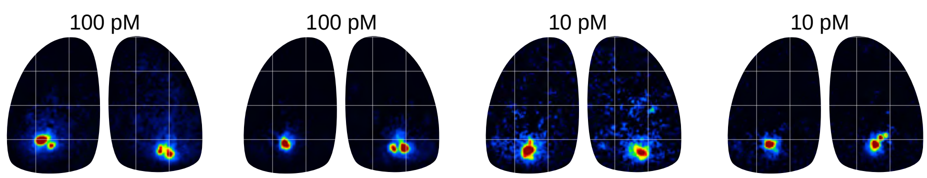
169. 2,4,5-trimethylthiazole (NS9)



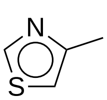


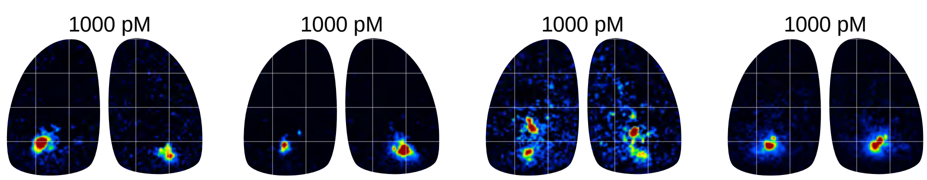
170. Ethyl-2,5-dihydro-4-methyl thiazole (NS10)



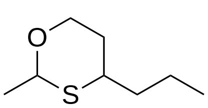


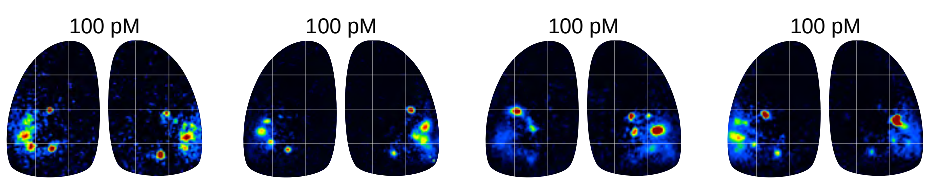
171. 4-methylthiazole (NS11)





172. 2-methyl-4-propyl-1,3-oxathiane (NS12.M9)

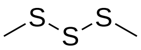




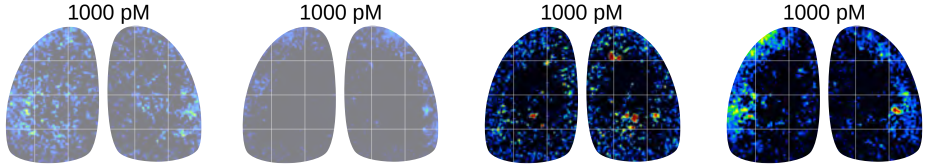
Sulfide/Thiol

	MOUSE 1	MOUSE 2	MOUSE 3	MOUSE 4

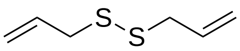
173. Dimethyl trisulfide (S1)



1000 pM | 1000 pM | 1000 pM | 1000 pM

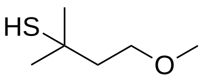


174. Allyl disulfide (S2)

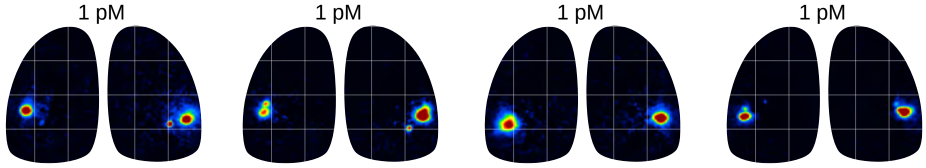


No response at 1000 pM

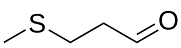
175. 4-methoxy-2-methyl-2-butanethiol (S3)



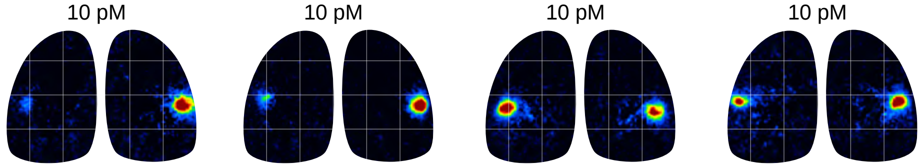
1 pM | 1 pM | 1 pM | 1 pM



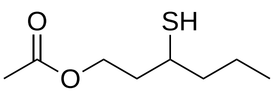
176. Methional (S4.M10)



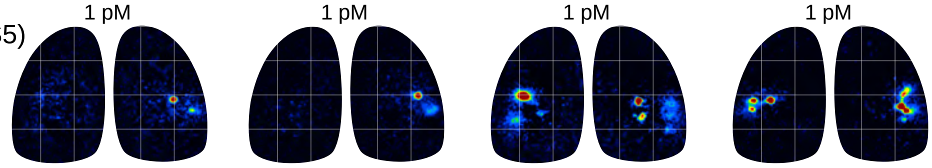
10 pM | 10 pM | 10 pM | 10 pM



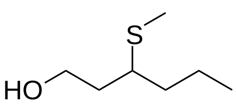
177. 3-mercaptohexyl acetate (S5)



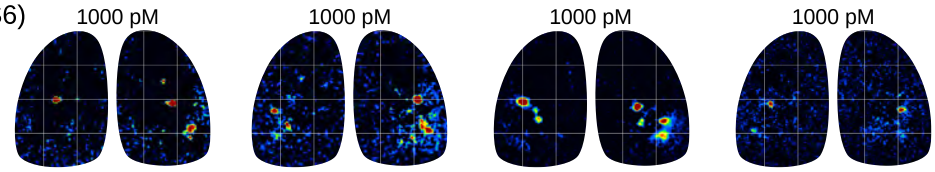
1 pM | 1 pM | 1 pM | 1 pM



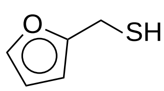
178. 3-(methylthio)-1-hexanol (S6)



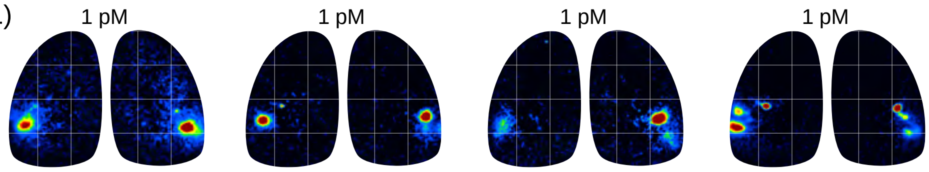
1000 pM | 1000 pM | 1000 pM | 1000 pM



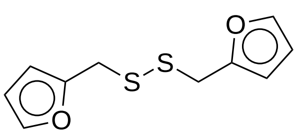
179. Furfuryl mercaptan (S7.M11)



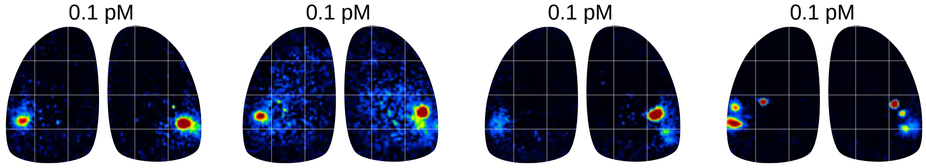
1 pM | 1 pM | 1 pM | 1 pM



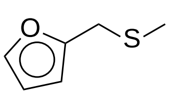
180. Difurfuryl disulfide (S8.M12)



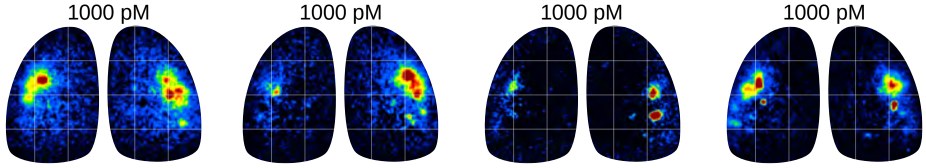
0.1 pM | 0.1 pM | 0.1 pM | 0.1 pM



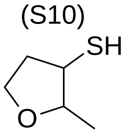
181. Fufrfuryl methyl sulfide (S9.M13)



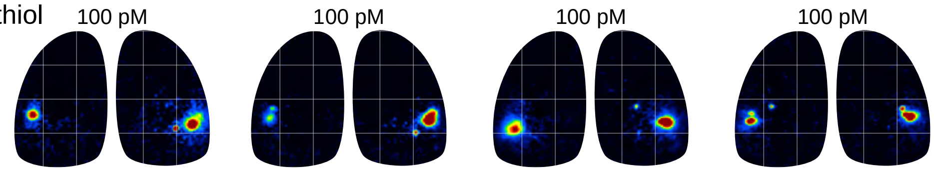
1000 pM | 1000 pM | 1000 pM | 1000 pM



182. 2-methyl-3-tetrahydrofuranthiol (S10)



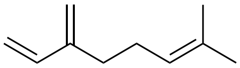
100 pM | 100 pM | 100 pM | 100 pM



Alkene

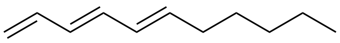
MOUSE 1 MOUSE 2 MOUSE 3 MOUSE 4

183. Myrcene (ENE1)

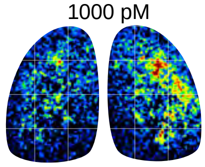


No response at 1000 pM

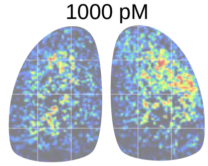
184. 1,3,5-undecatriene (ENE2)



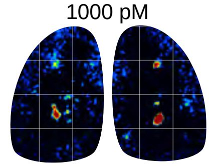
1000 pM



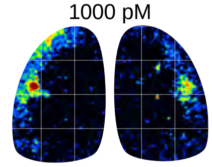
1000 pM



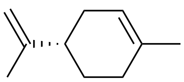
1000 pM



1000 pM



185. (R)-+-limonene (ENE3)



No response at 1000 pM

Supplementary File 2. Functional Atlas of Sensory Inputs to the Dorsal Mouse Olfactory Bulb. Compilation of olfactory sensory neuron response maps to the 185-odorant panel imaged in each of four OMP-IRES-tTA; TetO-GCaMP6s mice. See Methods for details of odorant presentation, imaging and map generation. Each map is scaled to its own maximum (mean of highest 65 pixels) and clipped at $\Delta F=0$. Concentrations are given as estimated delivered concentration to the mouse nose, rounded to the nearest order of magnitude to allow for deviations from ideal behavior of the odorant in its solvent. See Supplementary File 1 for more precise estimates of delivered concentration. Grid overlay is for facilitating visual comparison across maps. Odorants are grouped by major structural features and are numbered in order of presentation in Main figures and Supplementary File 1. Letter-number identifier matches that in Fig. 5A and in Supplementary File 1. Maps with no measured response in any glomerulus of a given mouse are shown at 50% opacity. Odorants failing to evoke a response in all four mice are indicated with text.