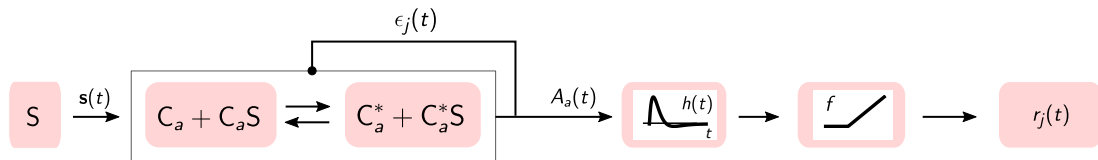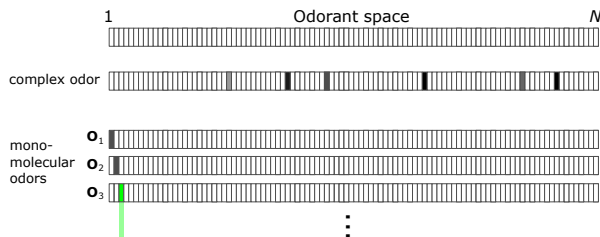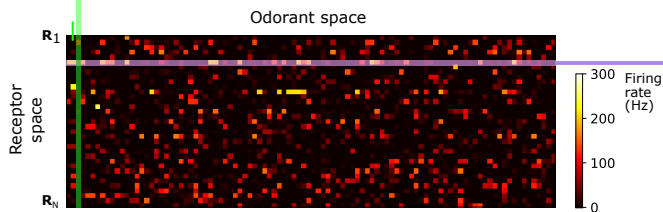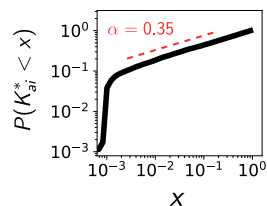**A**

$$A_a(t) = \left(1 + e^{\epsilon_a(t)} \frac{1 + \sum_i^N s_i(t)/K_{ai}}{1 + \sum_i^N s_i(t)/K_{ai}^*}\right)^{-1} \qquad \frac{d\epsilon_a(t)}{dt} = \frac{A_{a0} - A_a(t)}{\tau_a} \qquad r_a(t) = f\left(\int h(\tau - t)A_a(t)d\tau\right)$$

B

Odorant space

complex odor

mono-molecular odors

$\mathbf{O}_1$
$\mathbf{O}_2$
$\mathbf{O}_3$

C

$P(K_{ai}^* < x)$

$\alpha = 0.35$

X

D

Odorant space

Receptor space

$\mathbf{R}_1$

$\mathbf{R}_N$

Firing rate (Hz)

300
200
100
0

E

$\mathbf{R}_5$ $\mathbf{R}_4$

$\mathbf{R}_{30}$ $\mathbf{R}_{14}$