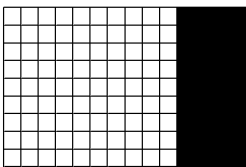
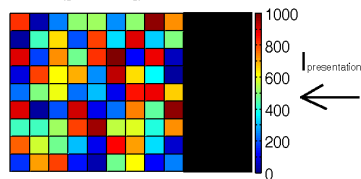


a Create Odor 1

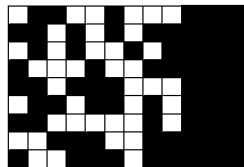
1) Sample 1/3 of glomeruli to be non-activatable (NA) (ie. non-responsive to odors at any concentration)



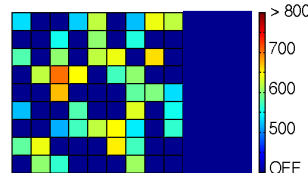
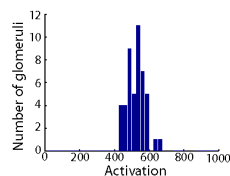
2) Sample concentration thresholds (T_i) for each activatable glomerulus
 $T_i = U([0, 1000])$



3) ON glomeruli have concentration thresholds below the intensity of the presented odor ($I_{\text{presentation}}$)



4) Sample mean activation intensity of each ON glomerulus:
 $I_{\text{base}} = N(I_{\text{presentation}}, 50)$



b Create Odor 2

5) Create new odors that are 90% similar to Odor 1: $P(\text{change}) = 0.1$

Non-activatable (NA)

ON

OFF

$$P(\text{NA} \rightarrow \text{NA}) = 1/3$$

$$P(\text{ON} \rightarrow \text{NA}) = 1/3$$

$$P(\text{OFF} \rightarrow \text{OFF}) = 1/3$$

$$P(\text{NA} \rightarrow \text{ON}) = 2/3$$

$$P(\text{ON} \rightarrow \text{ON}) = 2/3$$

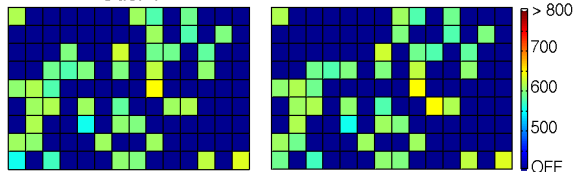
(new I_{base})

(new I_{base})

Example of an odor that is 90% similar to Odor 1

Odor 1

Odor 2



c Create trials of Odor 1

6) Add noise to create trials-to-trial variability

Non-activatable (NA)

ON

OFF

$$I_{\text{trial}} = U([0, 1000])$$

$$I_{\text{trial}} = N(I_{\text{base}}, 5)$$

$$I_{\text{trial}} = U([0, 1000])$$

Example of 2 trial presentations of Odor 1

Trial 1

Trial 2

