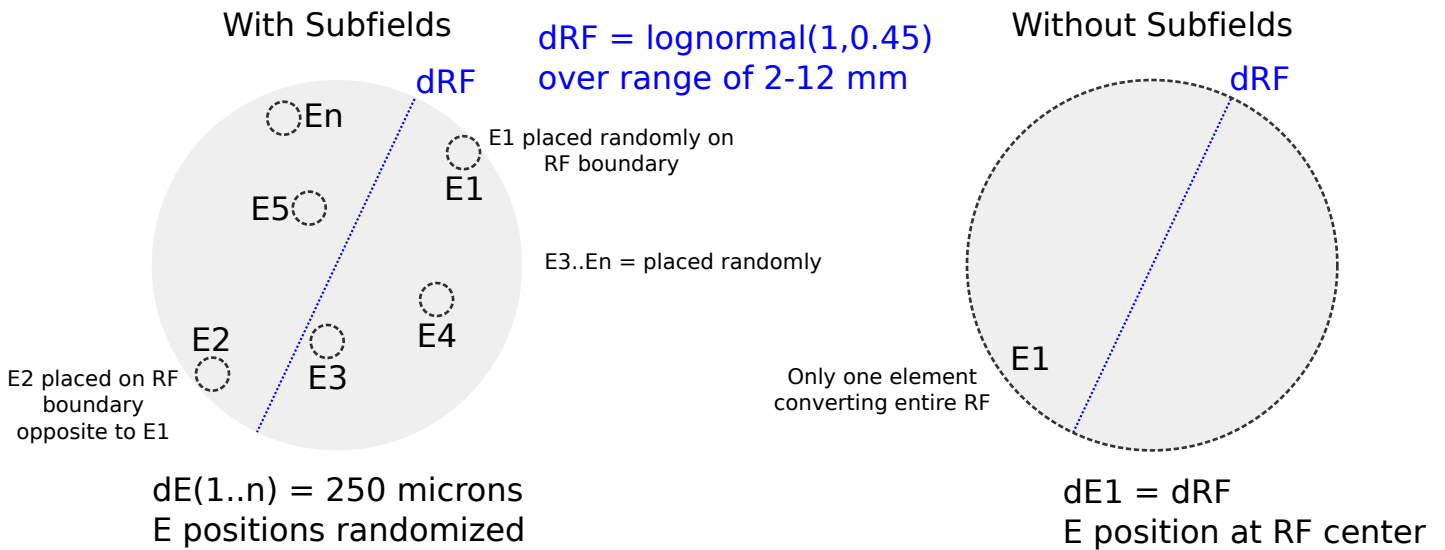


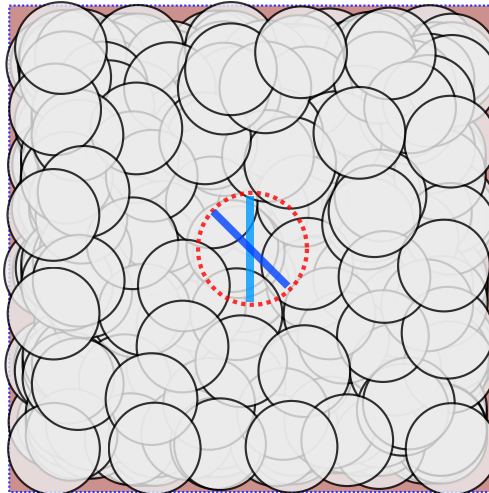
## 1. Receptive field setup



## 2. Population level setup

Virtual Fingertip (2x2 cm, ~400 RFs)

1. generic dRF shown
2. average hexagonal spacing between RF centers = ~1 mm



stimulus @ 0° (initial)  
example stimulus @ delta = 45°

normalization factor (**Nc**):  
# neurons that could be contacted by the stimulus, any part within dotted red ring

## 3. Discrimination Algorithm

- #1. For Unit 1..i; for Element 1..n:  $A(1..i)@0^\circ = 1$  if  $A(Ei,1) \parallel A(Ei,2) \dots \parallel A(Ei,n) = 1$  --- (see Eq. 1 in Methods)
- #2. rotate stimulus counter-clockwise about its midpoint by  $\text{delta} = 0.5^\circ$
- #3. For Unit 1..i; for Element 1..n:  $A(1..i)@delta^\circ = 1$  if  $A(Ei,1) \parallel A(Ei,2) \dots \parallel A(Ei,n) = 1$
- #4. if  $\text{Hamming distance}(A@0^\circ, A@delta^\circ) \geq 0.05 * Nc$   
discrimination = delta° (done)
- #5. else return to #2