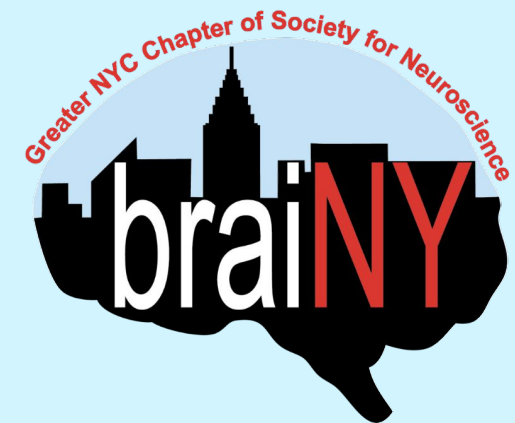


A connection from the hippocampus  
to the anterior olfactory nucleus  
conveys the contextual information  
for odor recall

Agrabawi and Kim

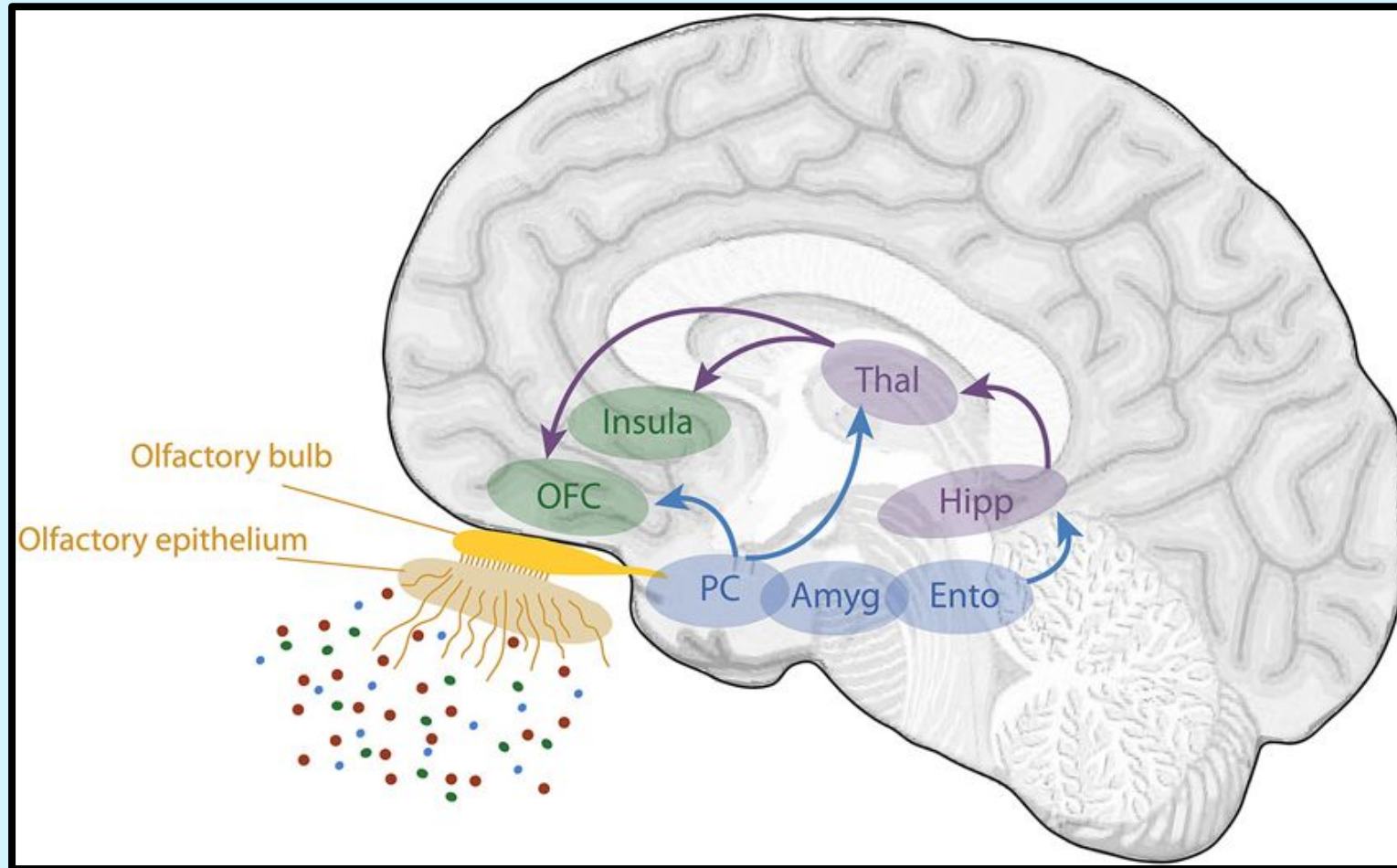
Presented by: Gabi and Sara



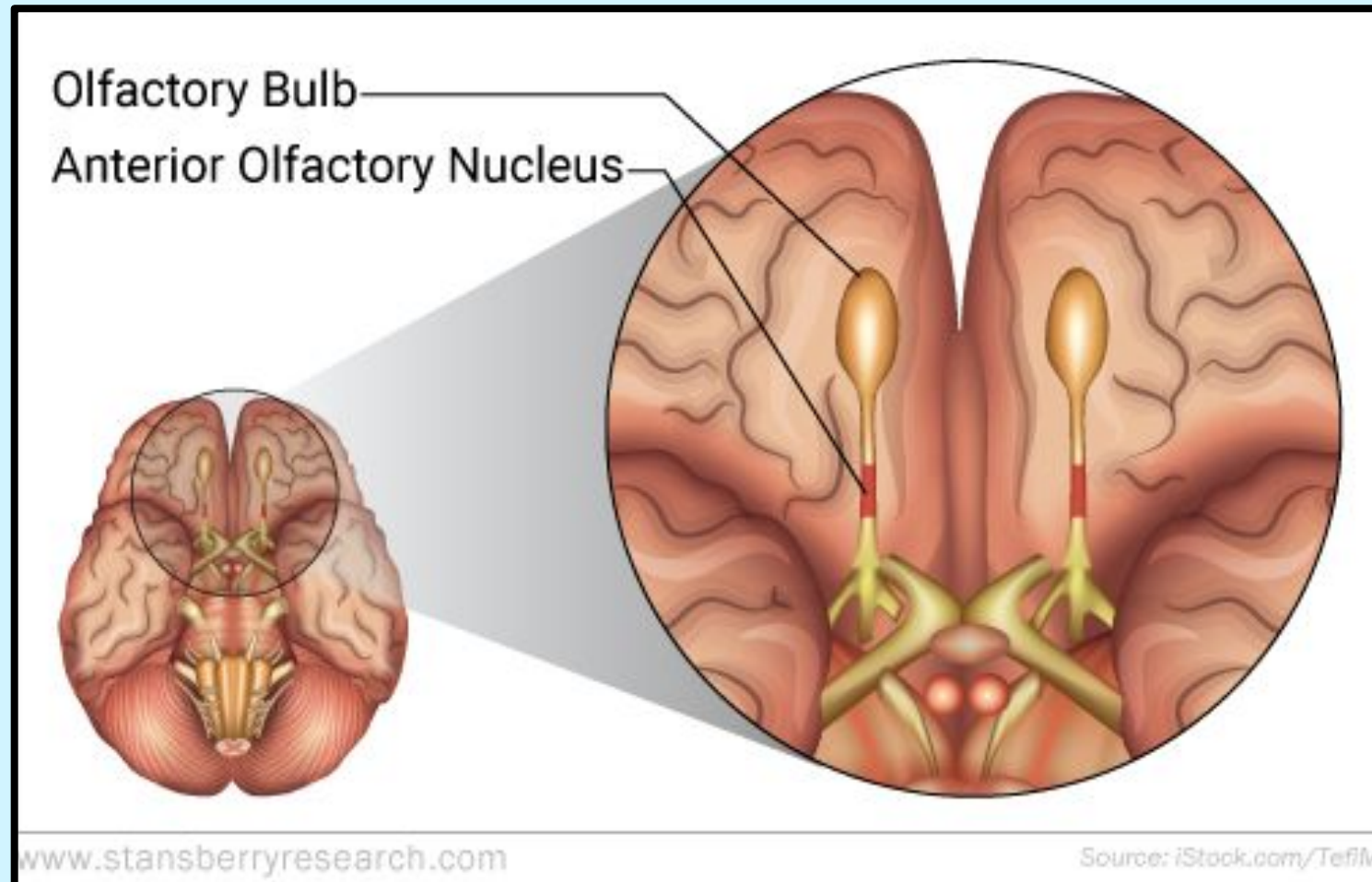
# Reminiscing on a Sensory Experience



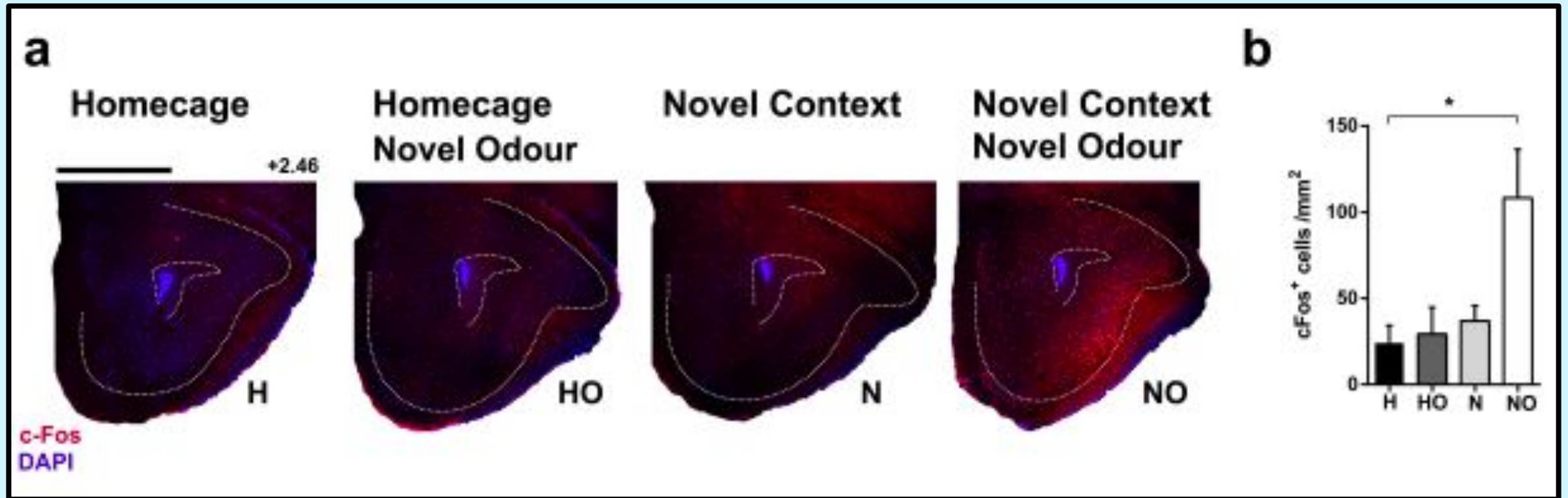
# The Hippocampus and Episodic Memory



# The Anterior Olfactory Nucleus' Involvement and The Olfactory System

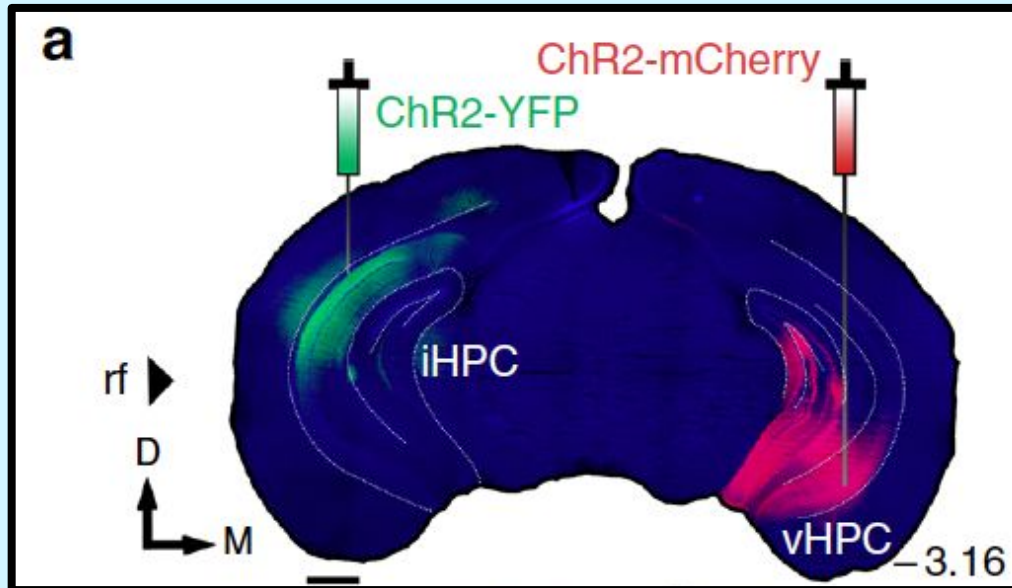


# The AON is a Coincidence Detector



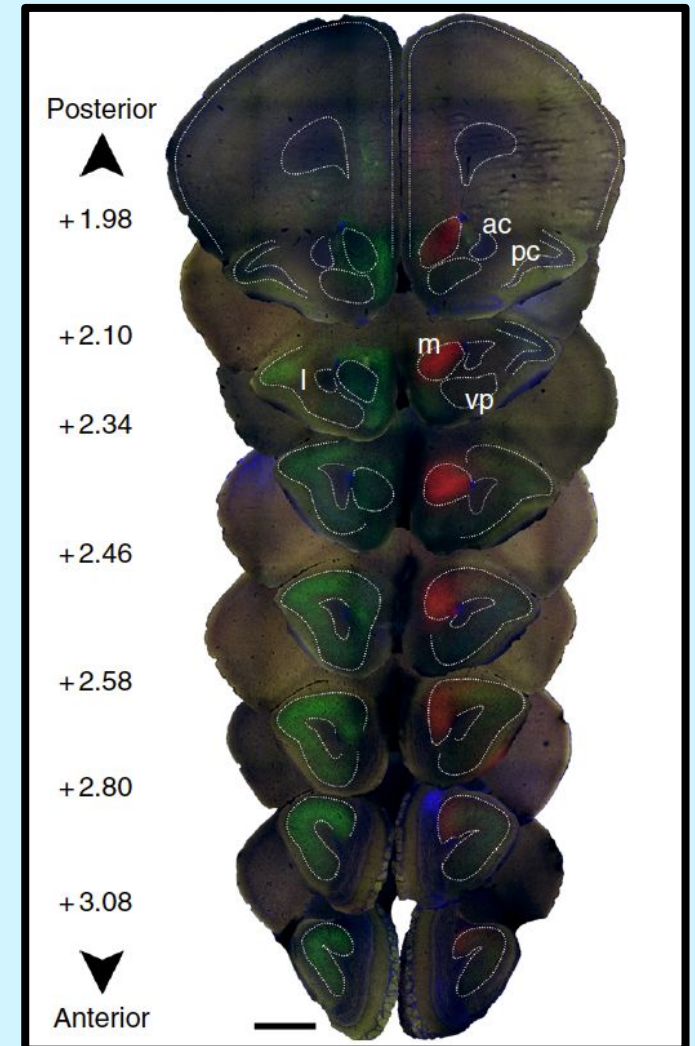


There is a direct connection from the hippocampus (HPC) to the AON

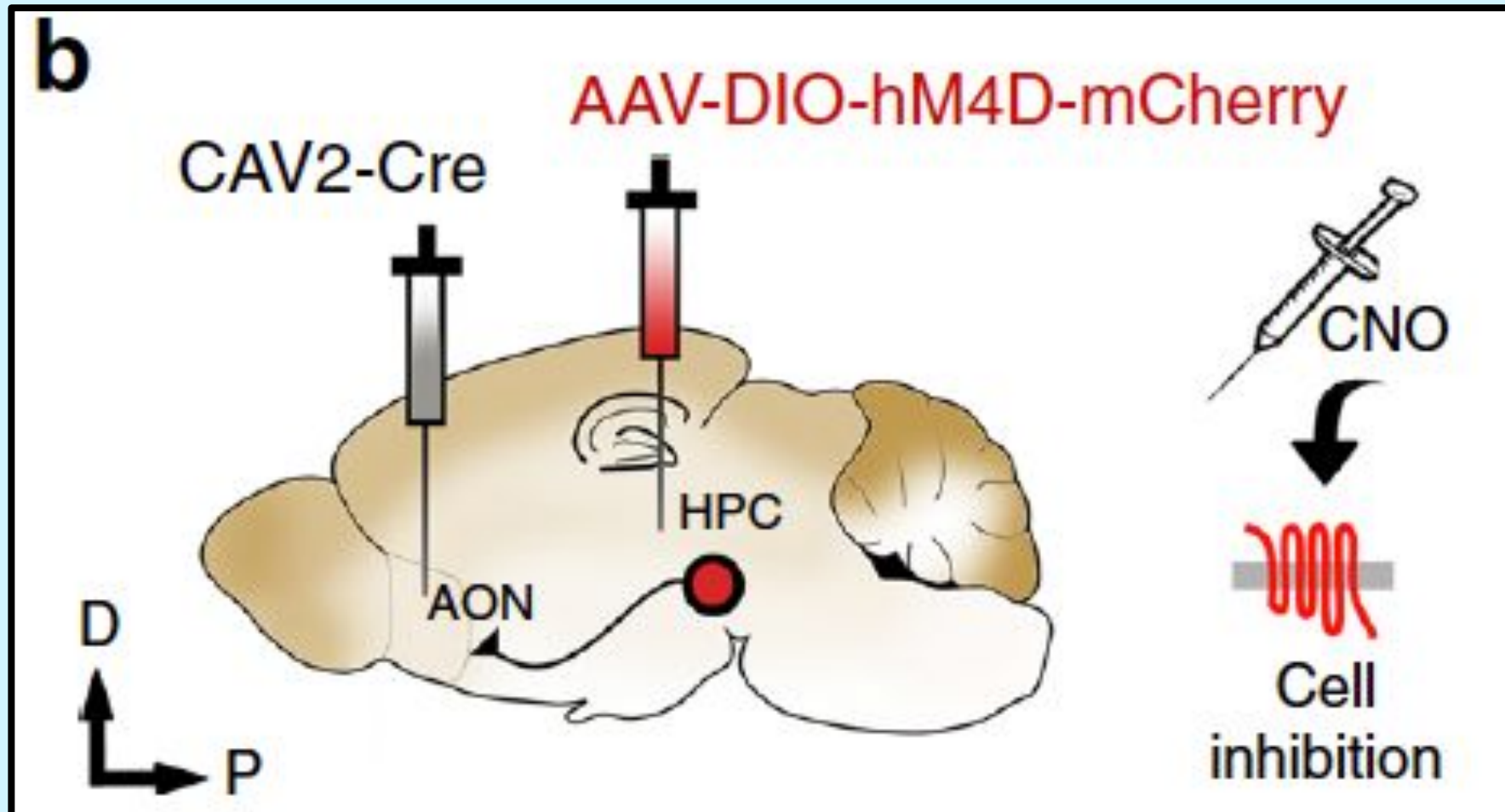


iHPC: Intermediate Hippocampus

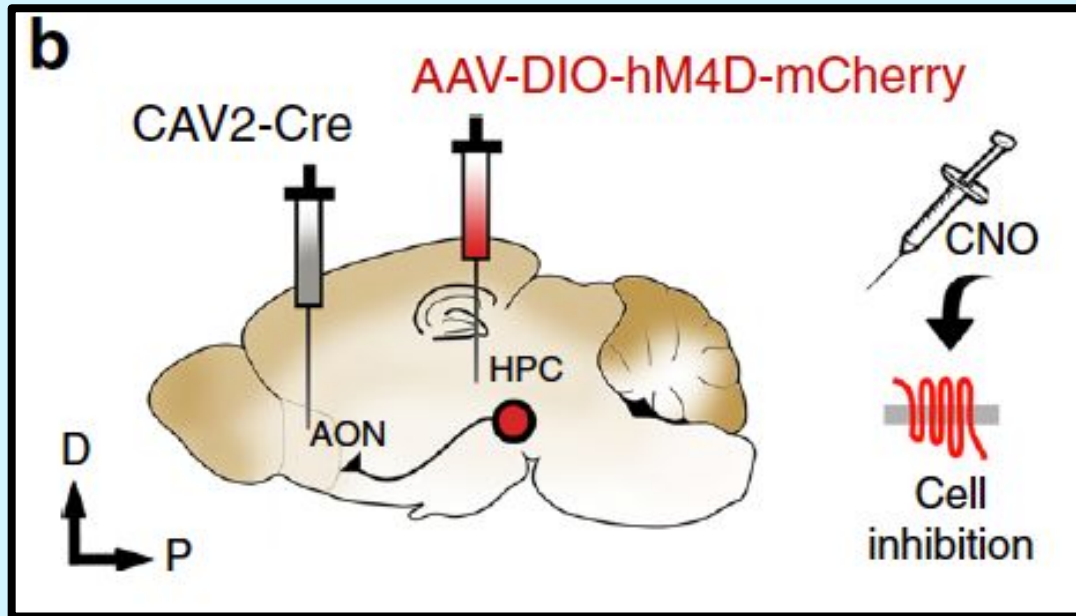
vHPC: Ventral Hippocampus



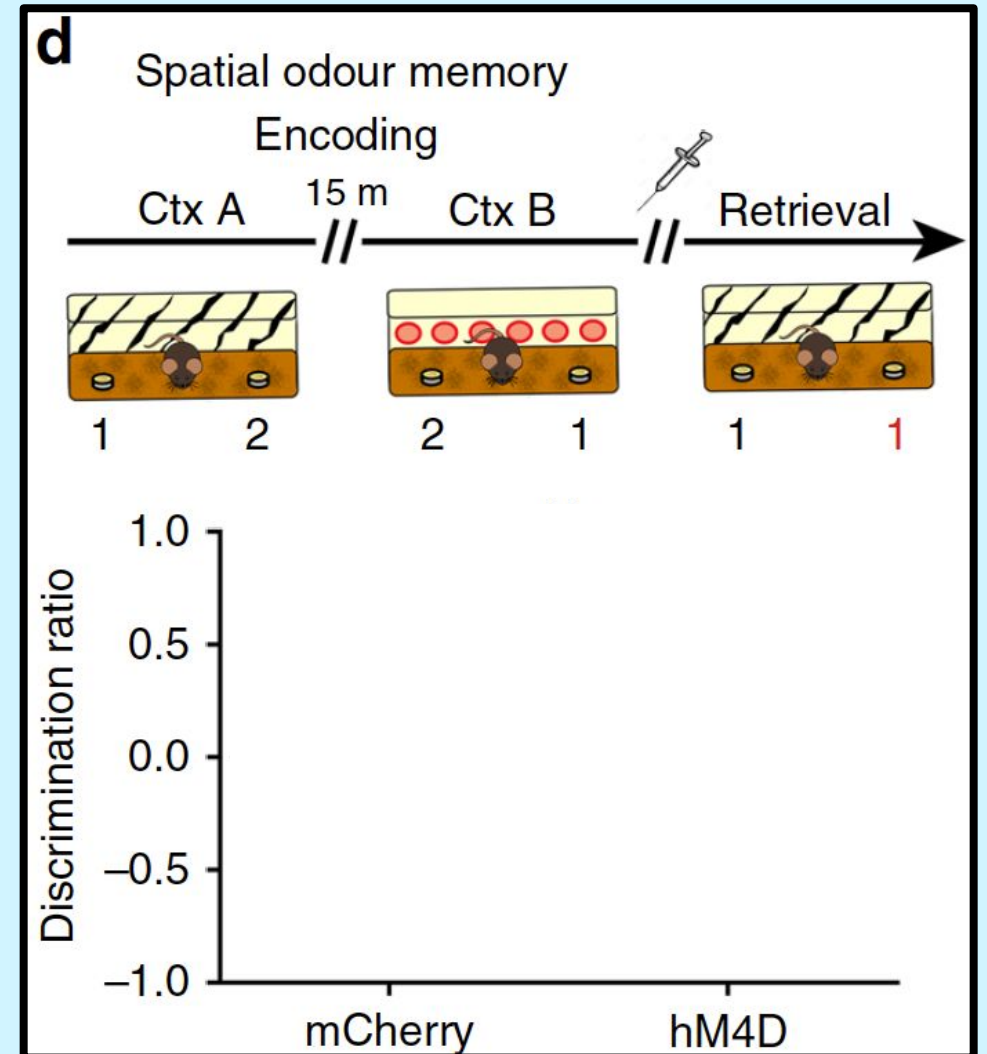
HPC to AON input is required to determine the location of an odor



# HPC to AON input is required to determine the location of an odor

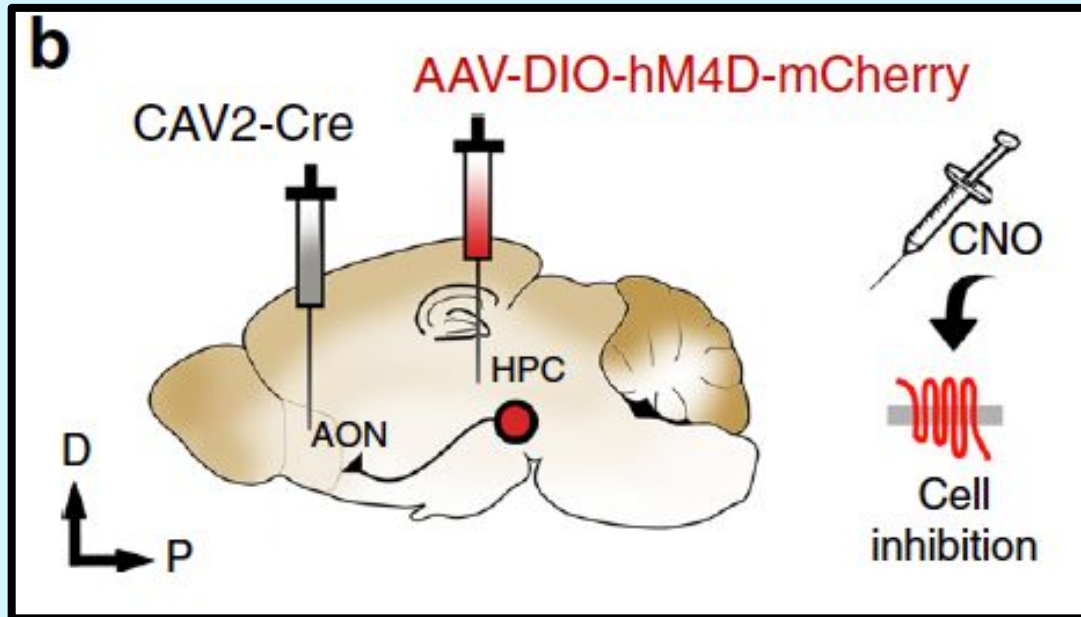


$$\text{Discrimination Ratio} = \frac{(\text{time})_{\text{novel}} - (\text{time})_{\text{familiar}}}{\text{total time}}$$

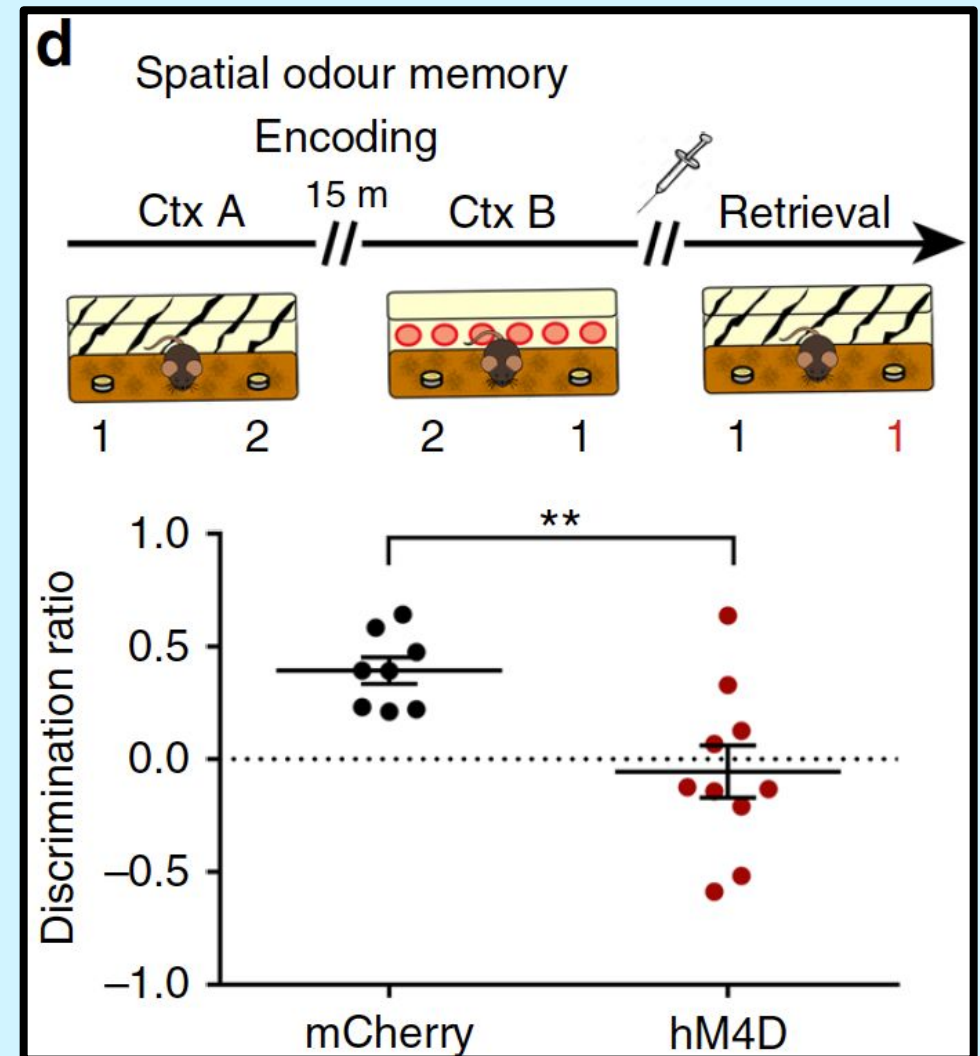




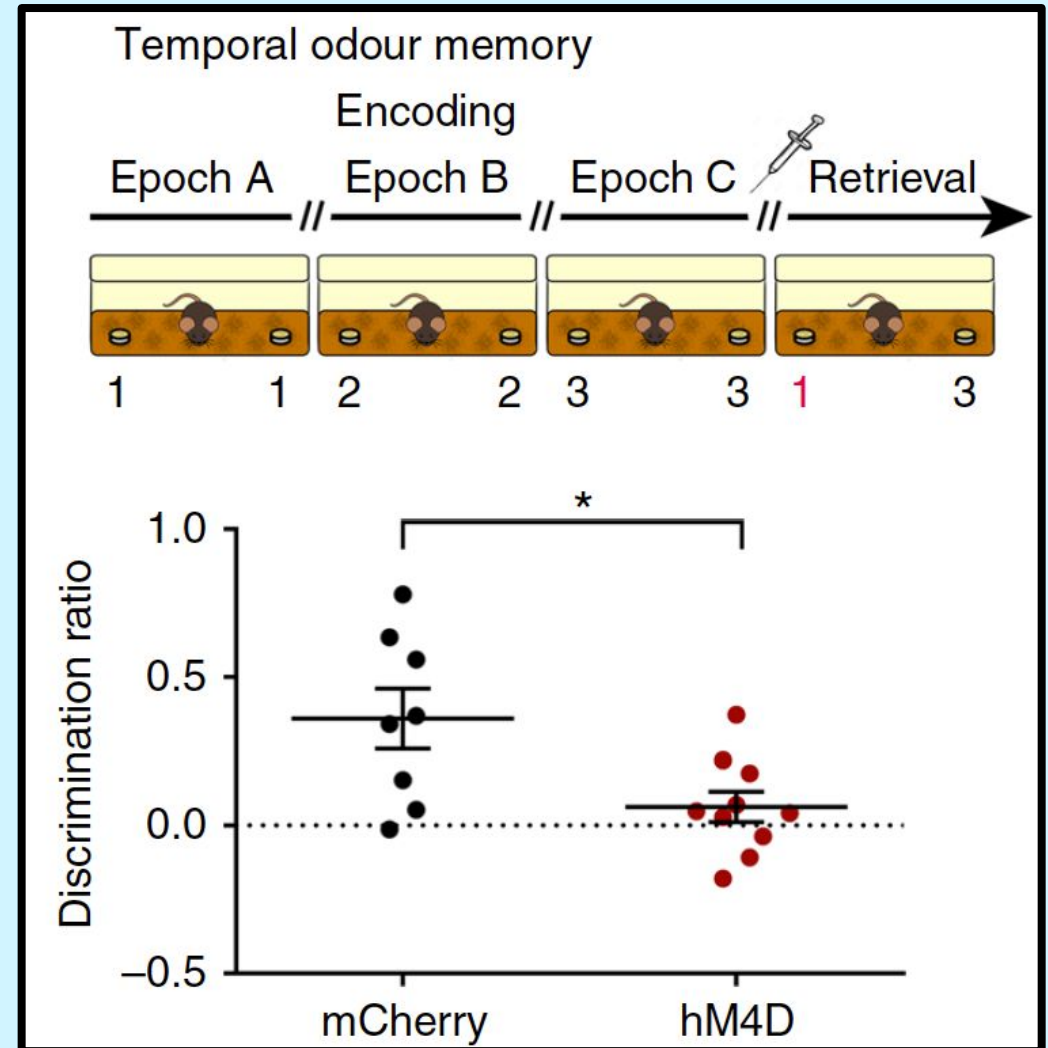
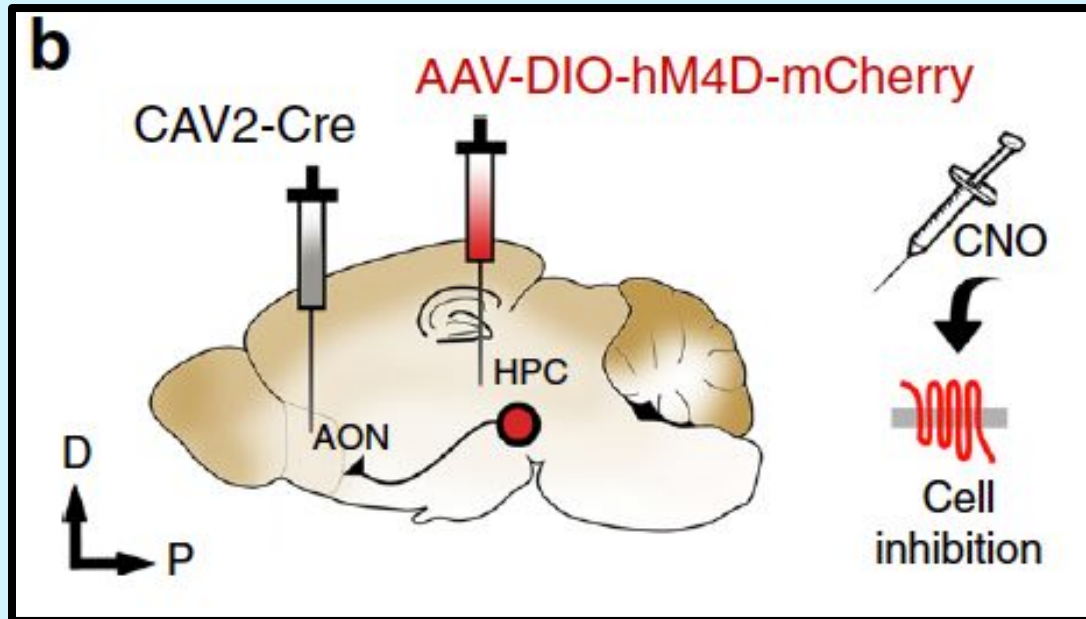
# HPC to AON input is required to determine the location of an odor



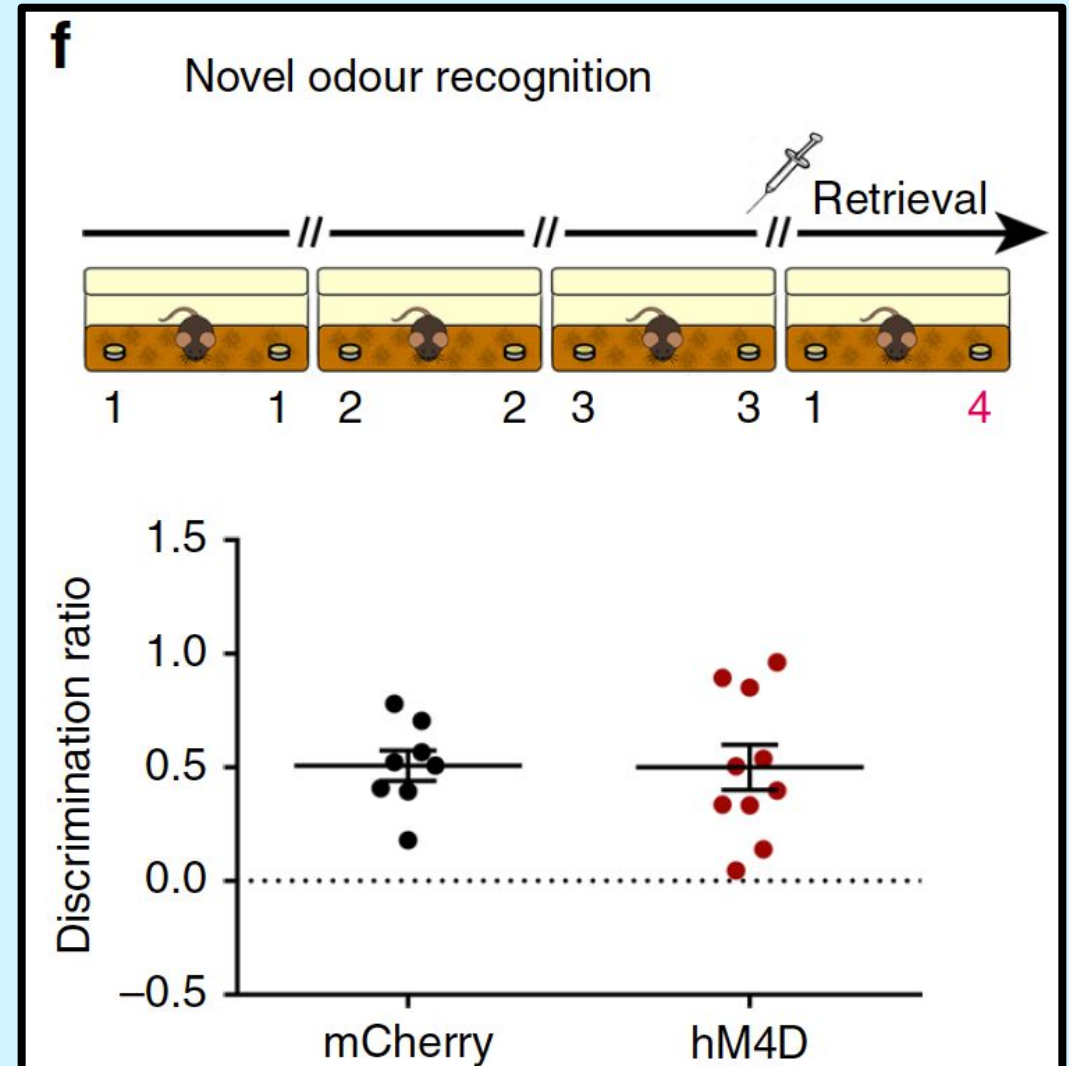
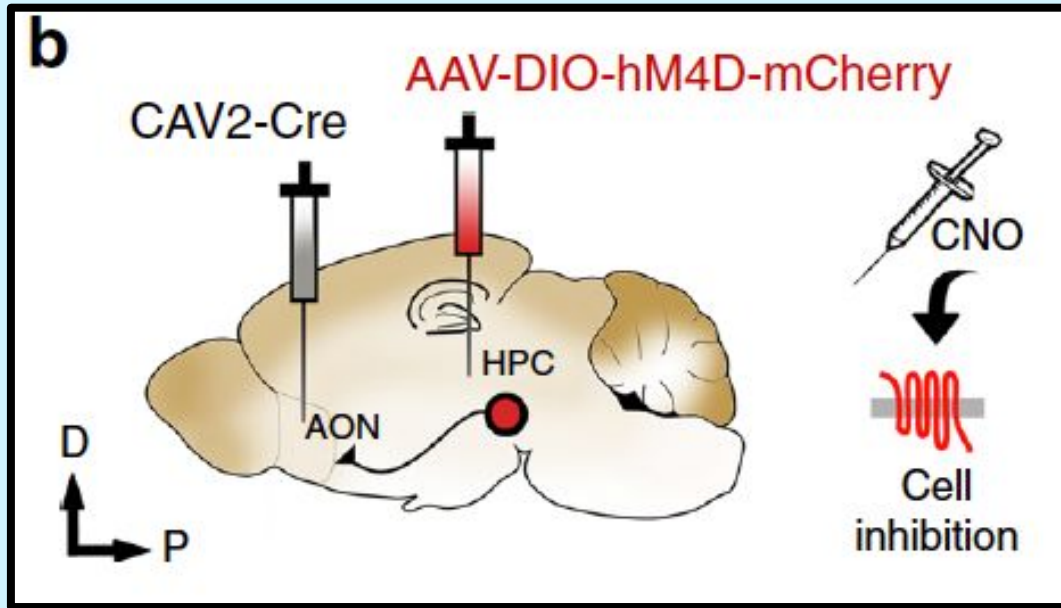
$$\text{Discrimination Ratio} = \frac{(\text{time})_{\text{novel}} - (\text{time})_{\text{familiar}}}{\text{total time}}$$



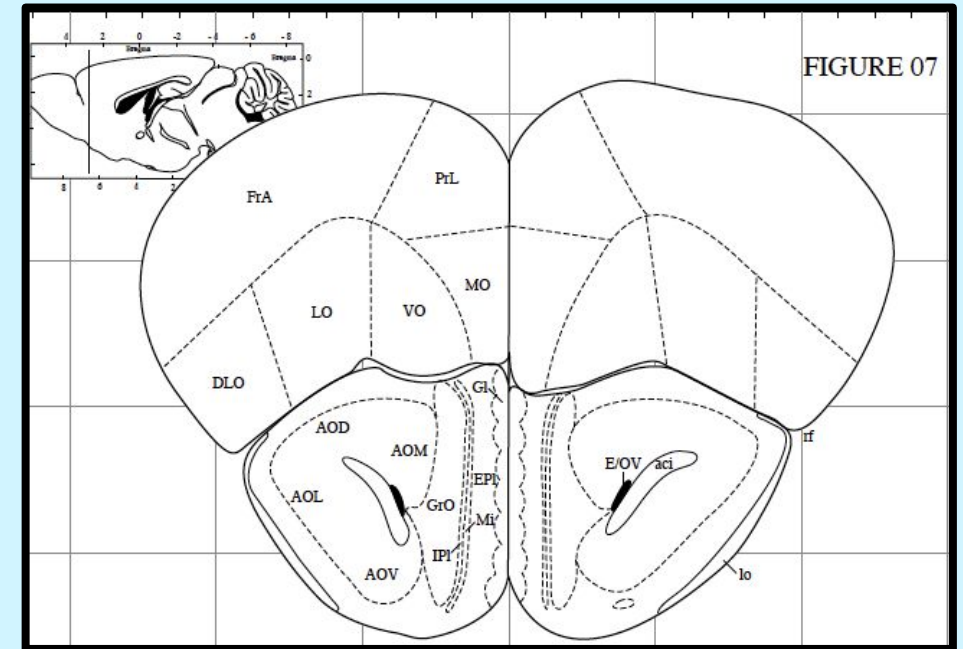
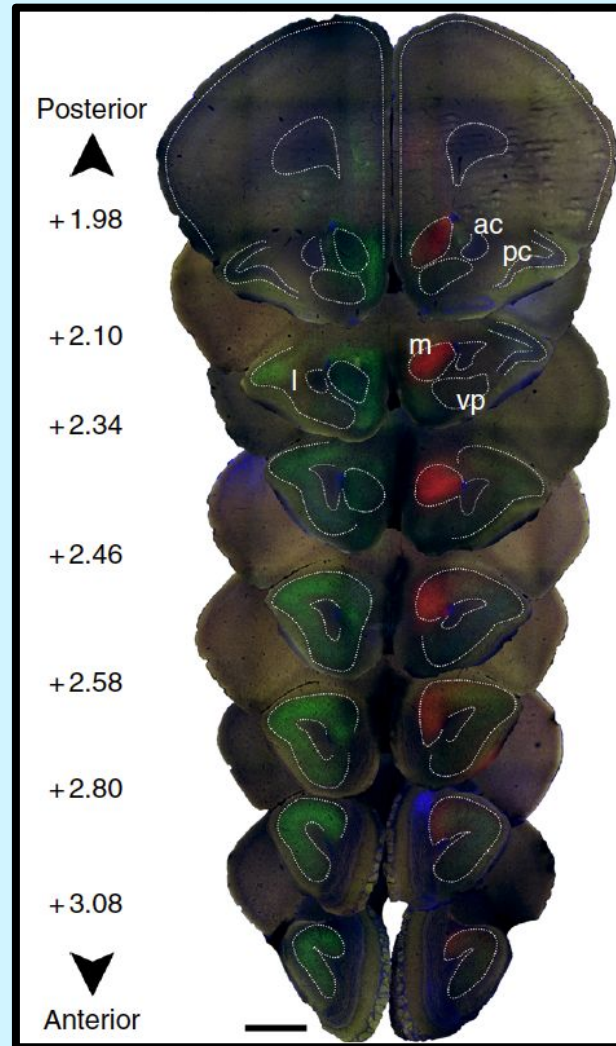
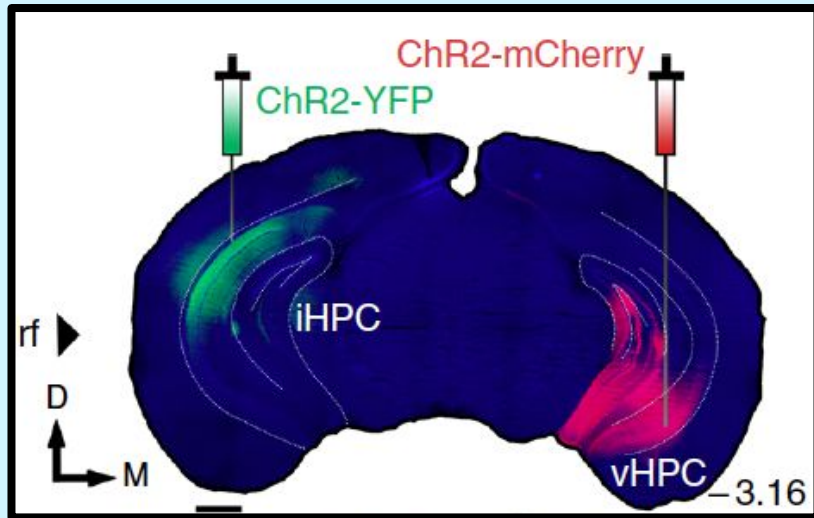
# HPC to AON input is required to determine when an odor is encountered



# HPC to AON input is NOT required to distinguish between novel odors



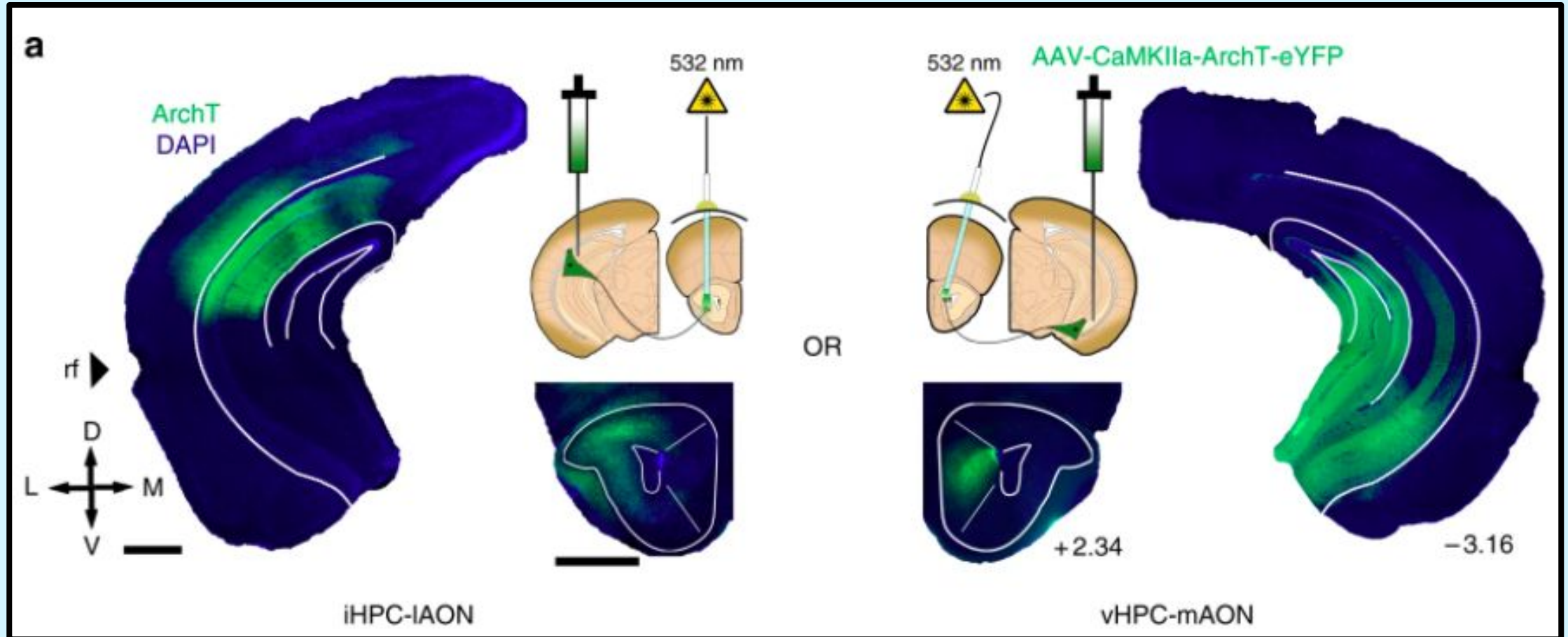
# HPC-AON projections are topographically organized



The Mouse brain in Stereotaxic Coordinates  
(by Paxinos and Franklin)

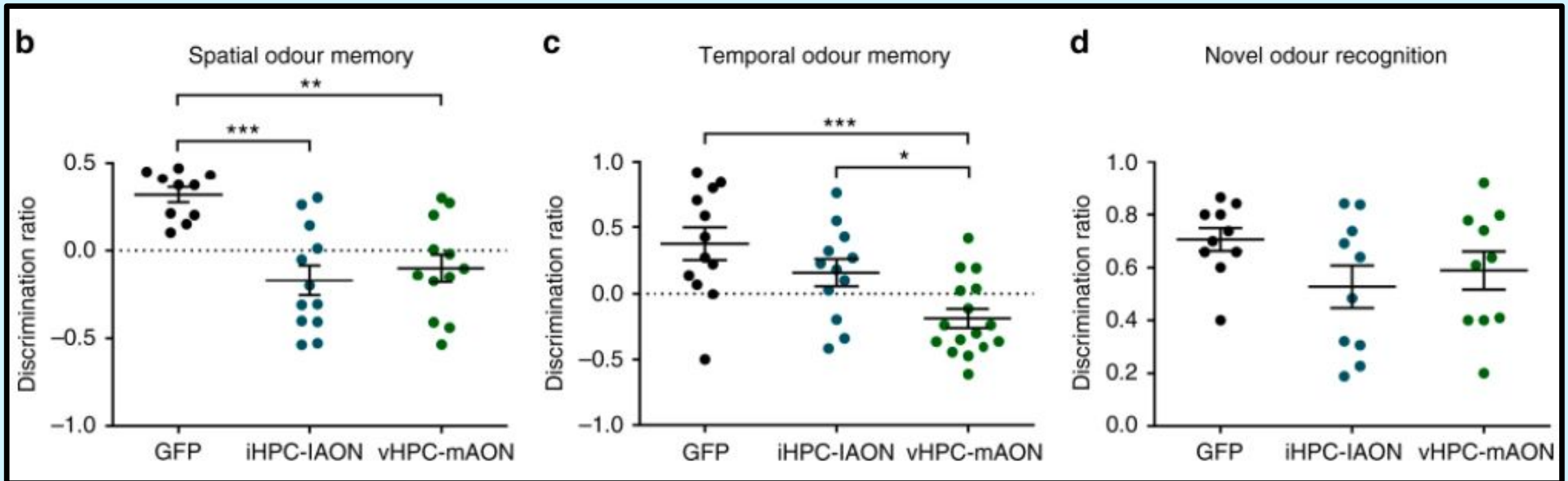


# Selectively inhibiting the AON connections from the intermediate (iHPC) and ventral (vHPC) hippocampus

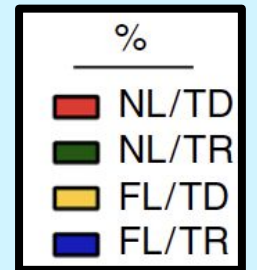
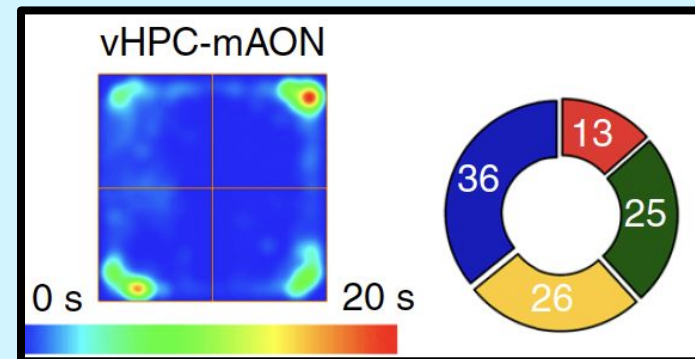
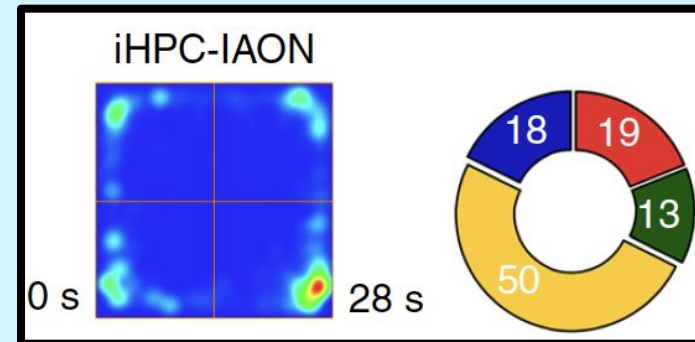
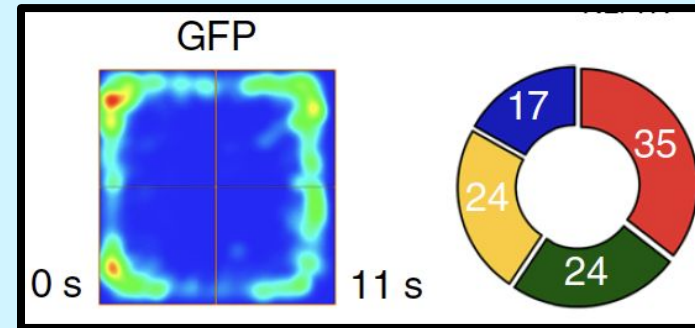
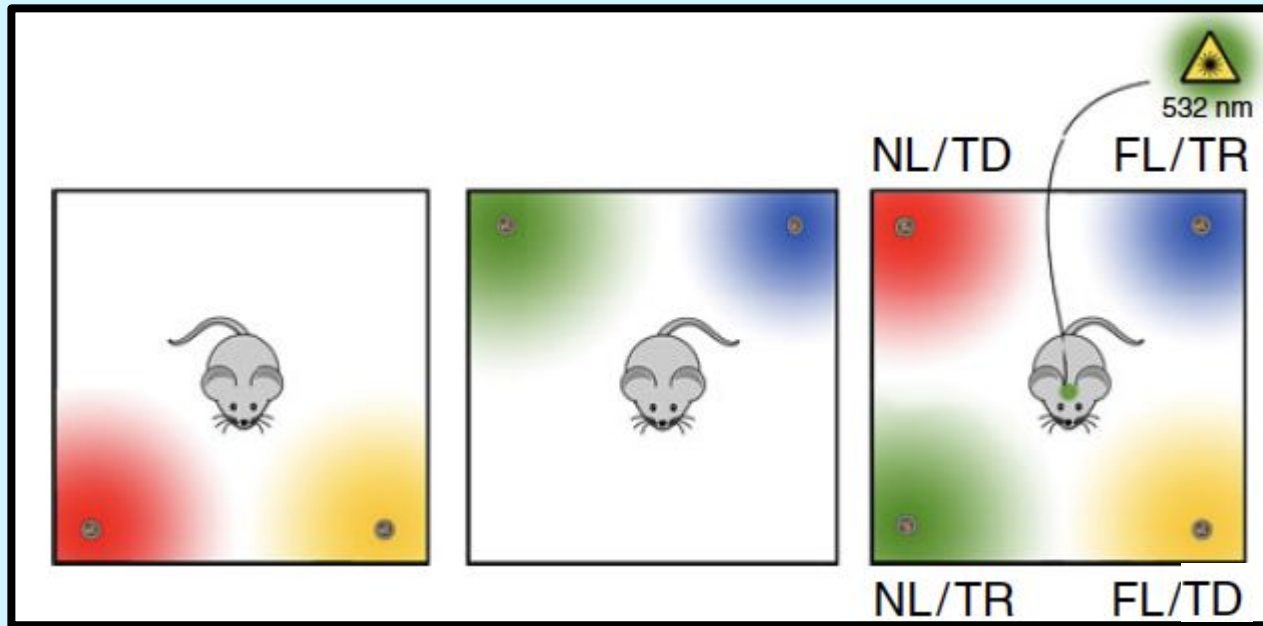




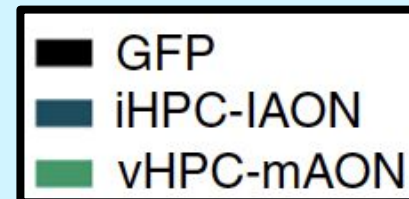
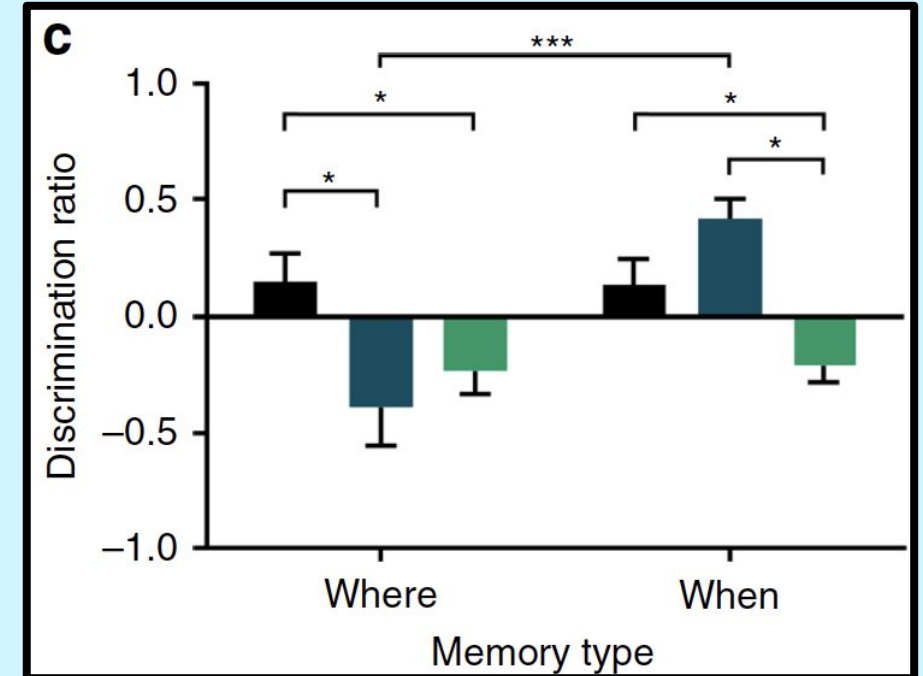
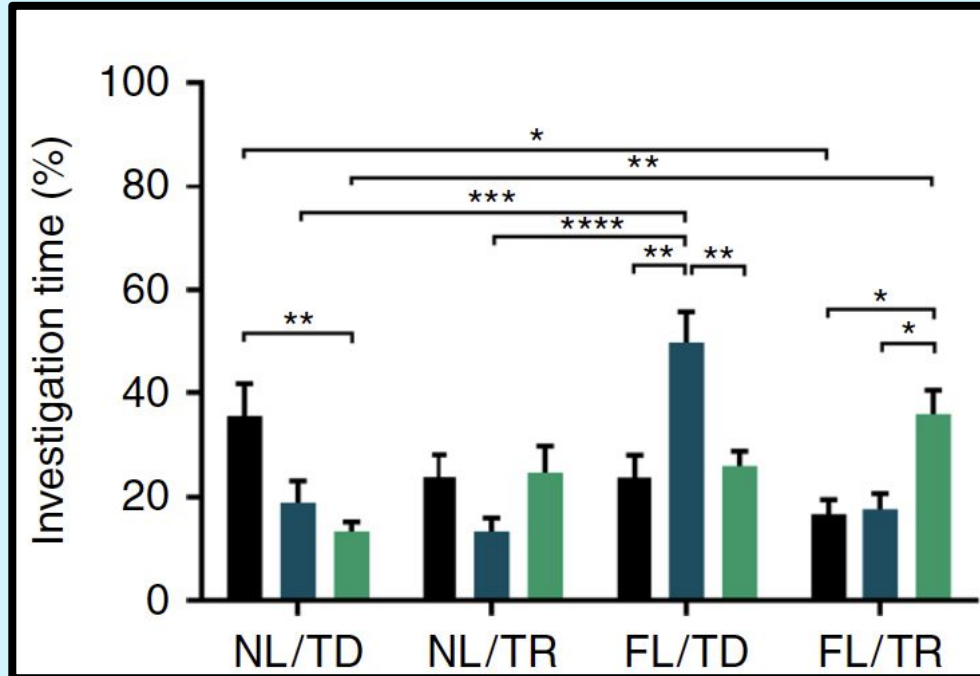
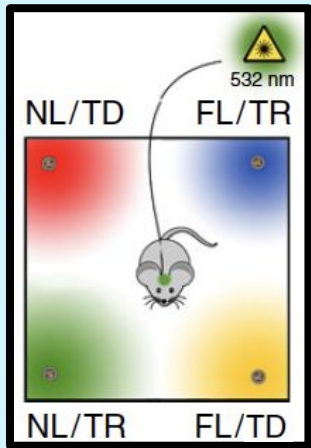
# Spatial and temporal information is transmitted along separate HPC-AON pathways



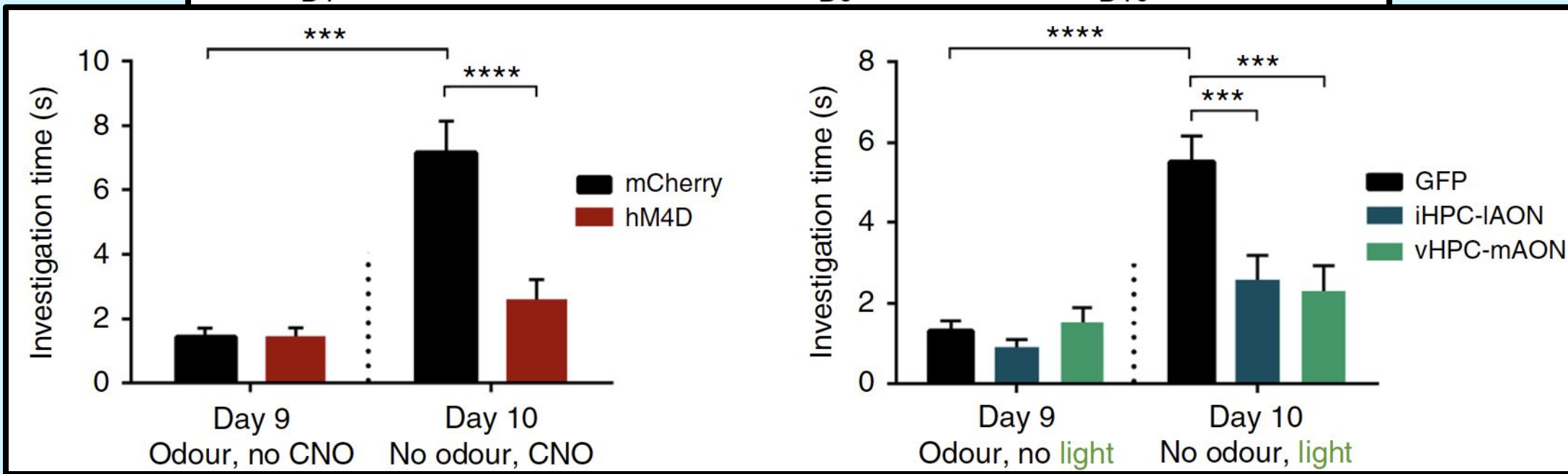
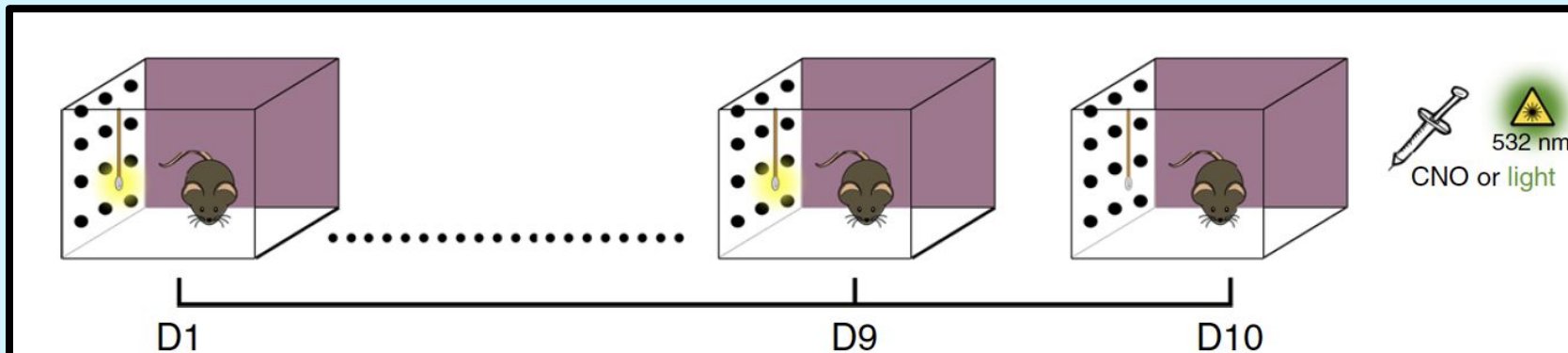
# HPC-AON pathways contribute distinct spatiotemporal information during episodic memory recall



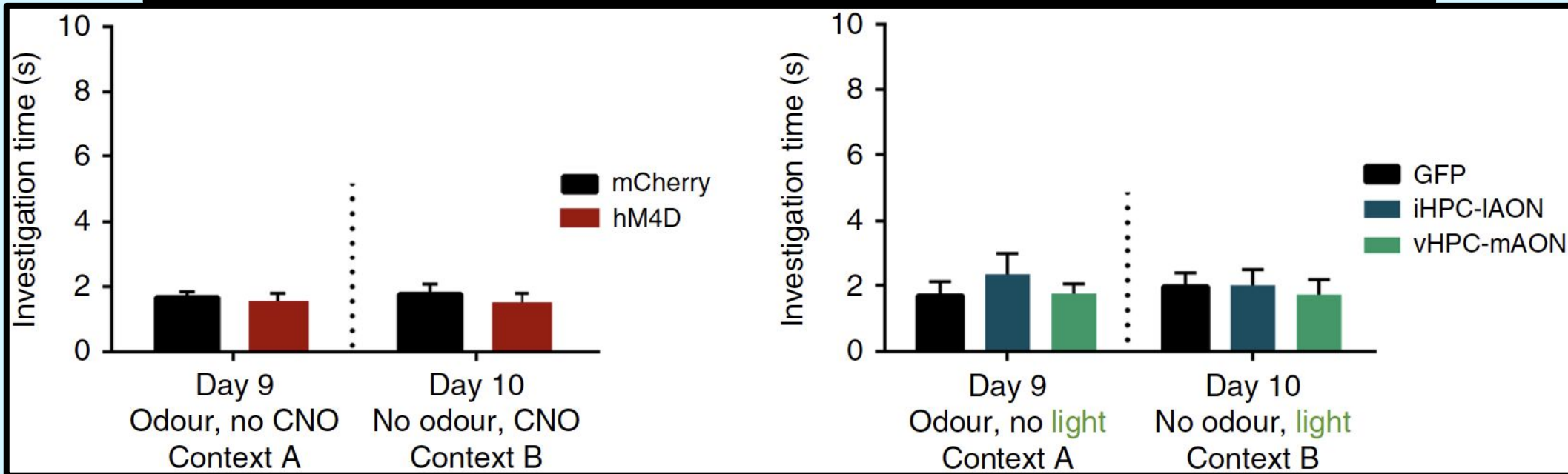
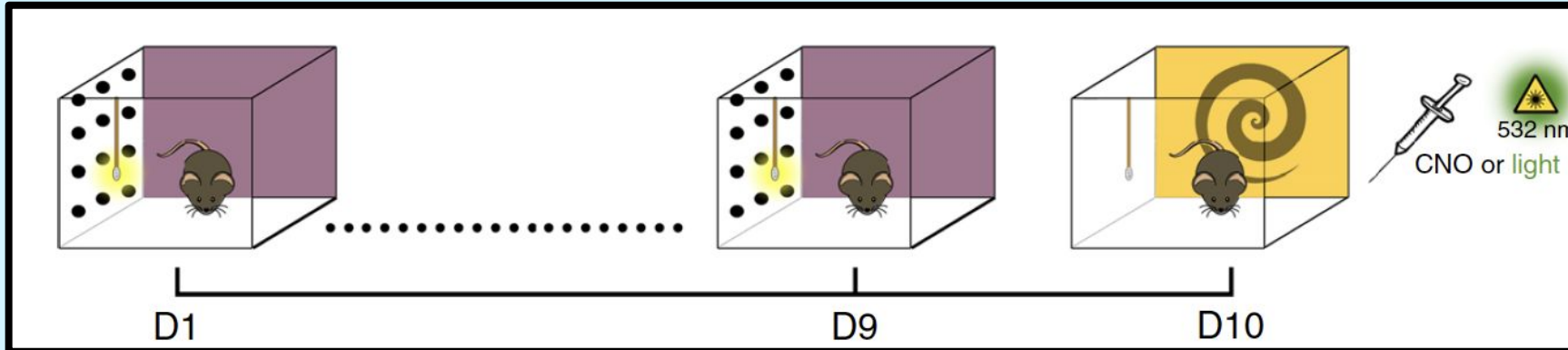
# HPC-AON pathways contribute distinct spatiotemporal information during episodic memory recall



# The HPC-AON circuit is necessary for context-driven odor recall

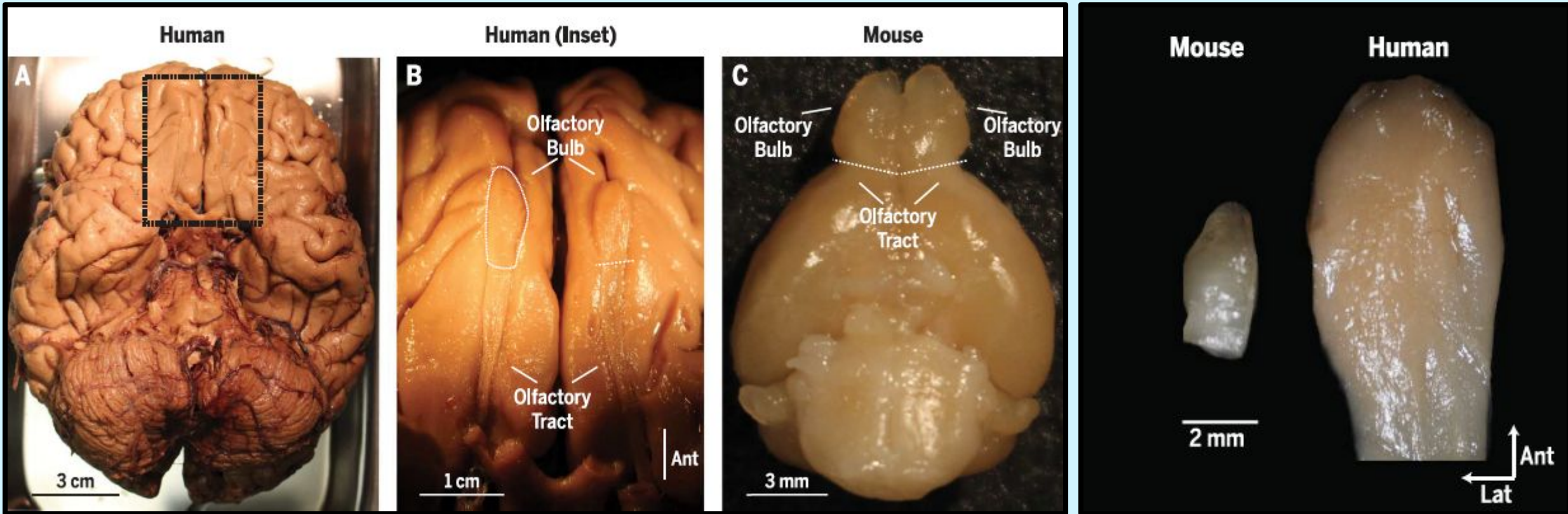


# The HPC-AON circuit is necessary for context-driven odor recall

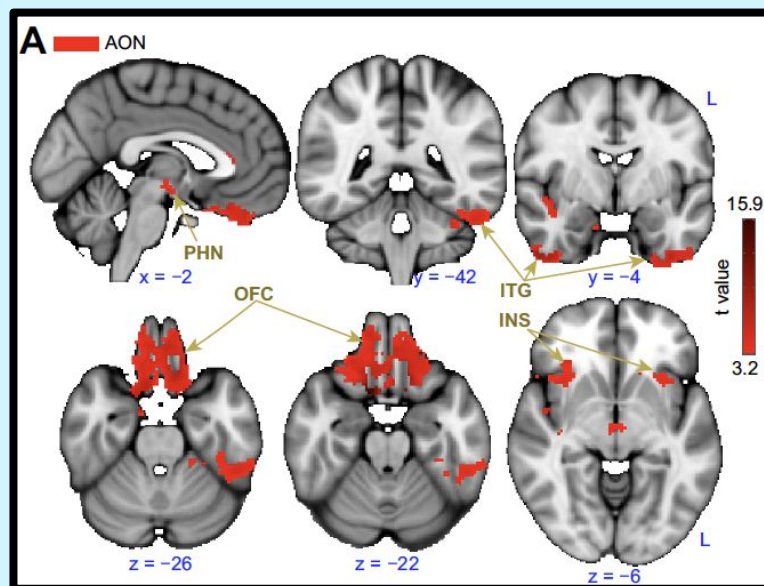




# Is the HPC-AON connection conserved in humans?



# Is the HPC-AON connection conserved in humans?



**Table 1.** Summary of functional connectivity results.

Label	Volume (mm <sup>3</sup> )	
	Overlap	AON
Frontal Orbital Cortex	2592	3000
Frontal Medial Cortex	992	1120
Cingulate Gyrus	2760	200
Insular Cortex	384	496
Subcallosal Cortex	3632	616
Caudate	136	120
Paracingulate Gyrus	1336	-
Parahippocampal Gyrus	296	-
Temporal Pole	328	-
Putamen	1368	-
Hippocampus	1176	-
Amygdala	2120	-
Accumbens	336	-

THANK YOU

A connection from the hippocampus to the anterior olfactory nucleus conveys the contextual information for odor recall

Agrabawi and Kim

Presented by: Gabi and Sara

