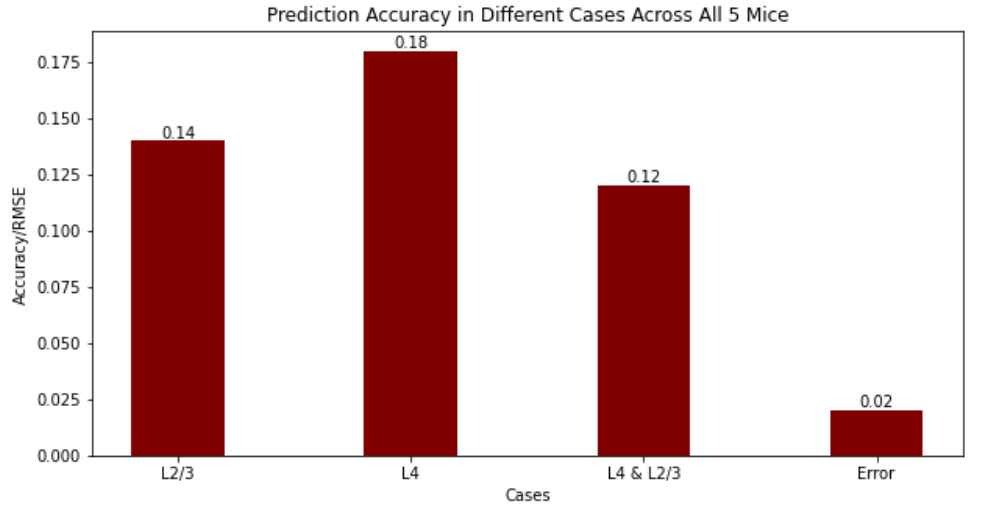
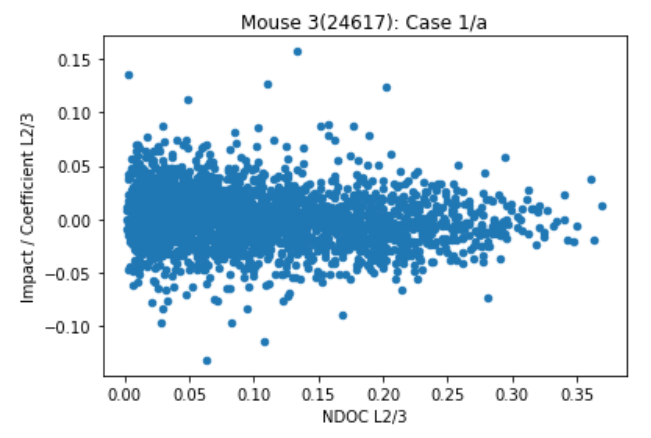
## Pupil Size Prediction Accuracy Across All 5 Mice/Bar-Plot

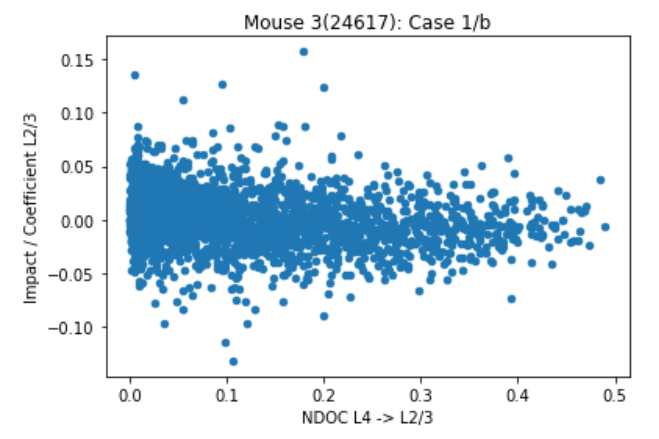


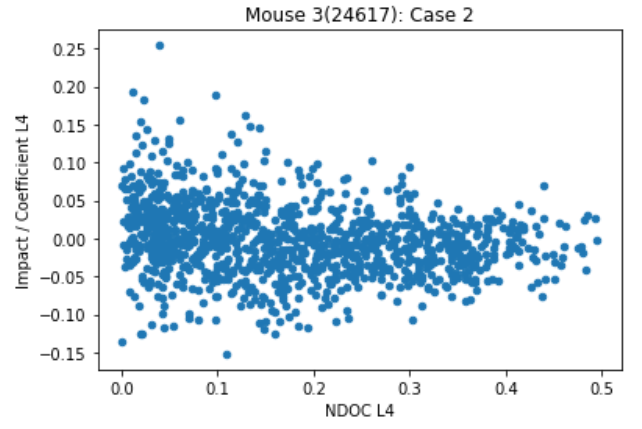
* 12 Fold Cross Validation
* Linear SVR model
* RMSE metric: Calculates the root of squared difference between actual and predicted values. For deep learning techniques the most preferred metric is RMSE. The **lower** the RMSE,the more closely a model is able to predict the actual observations.
* Cases:
  + Case 1: Consider only L2/3 Neurons for the prediction
  + Case 2: Consider only L4 neurons for the prediction
  + Case 3: Consider both L2/3 and L4 neurons for the prediction
* Mean value of each bar across all 5 mice
* Error bar: the standard deviation of the five means

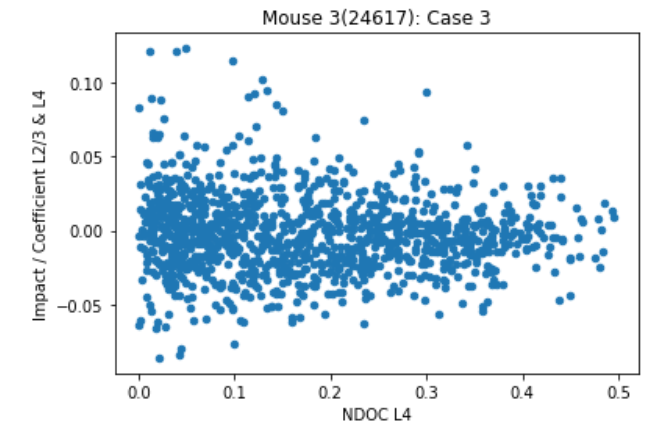
## Impact on prediction-Normalised Degree of Connectivity

### Mouse 3(24617)

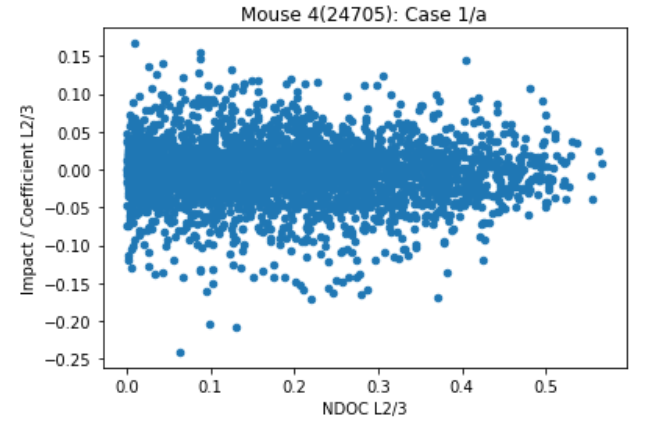


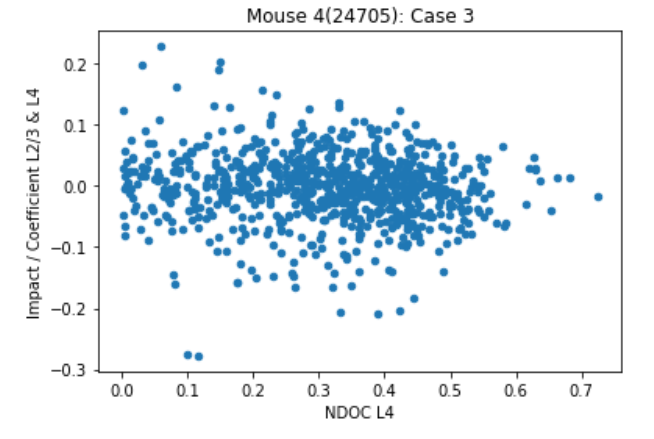
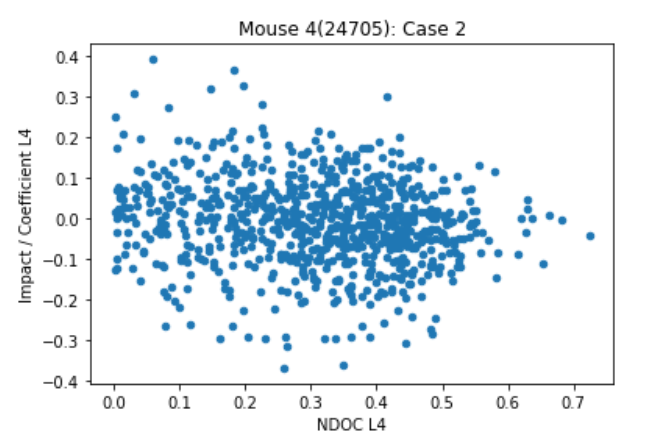
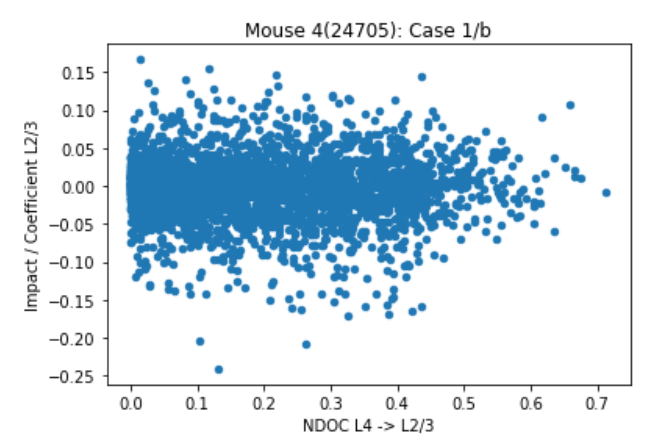




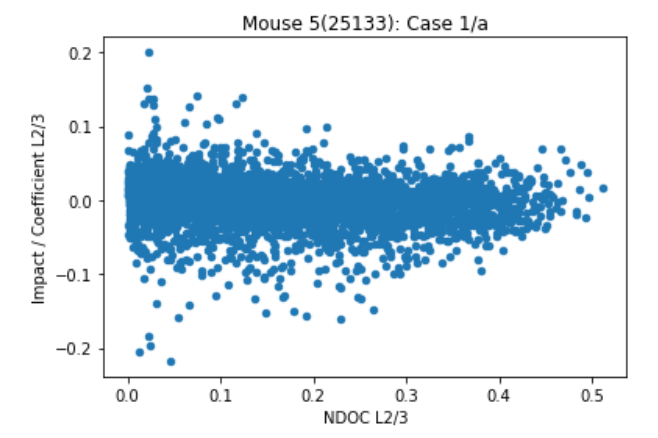


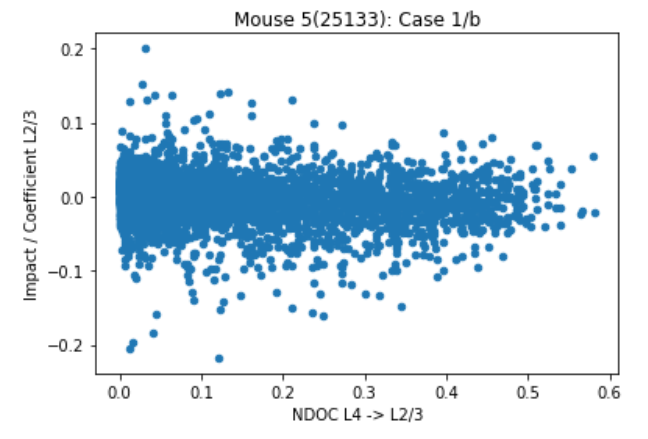
### Mouse 4(24617)

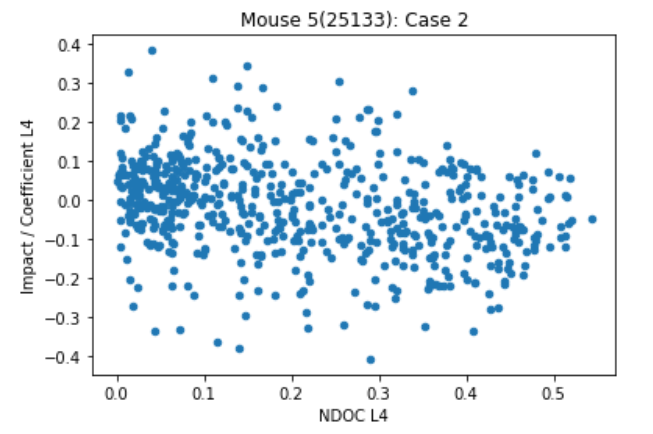




### Mouse 5(24617)

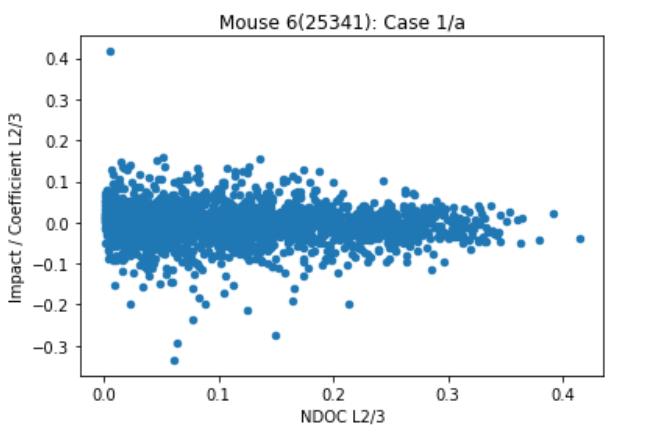


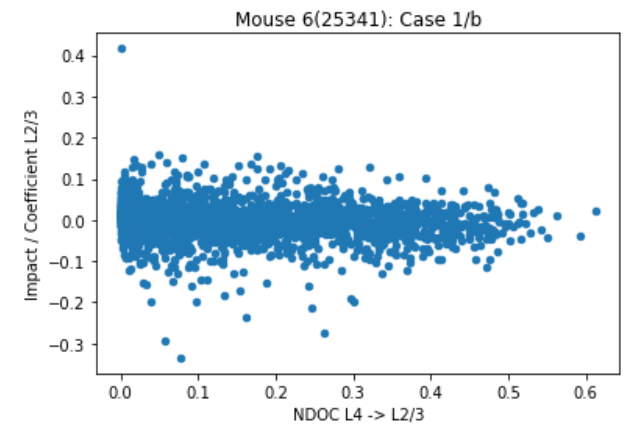


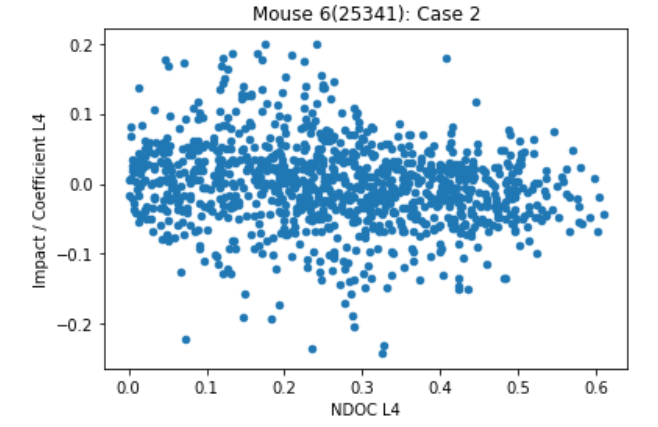


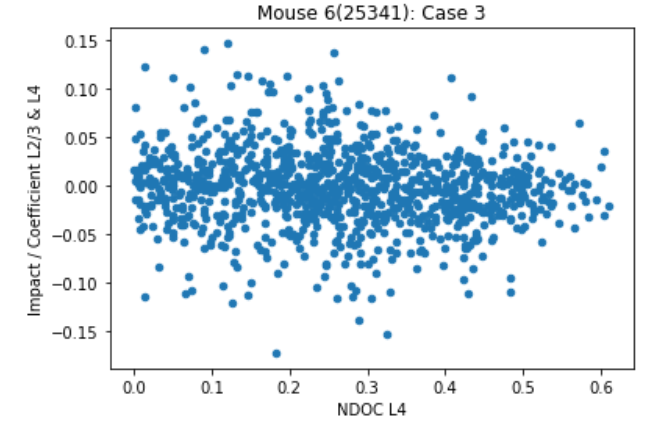


### Mouse 6(25341)

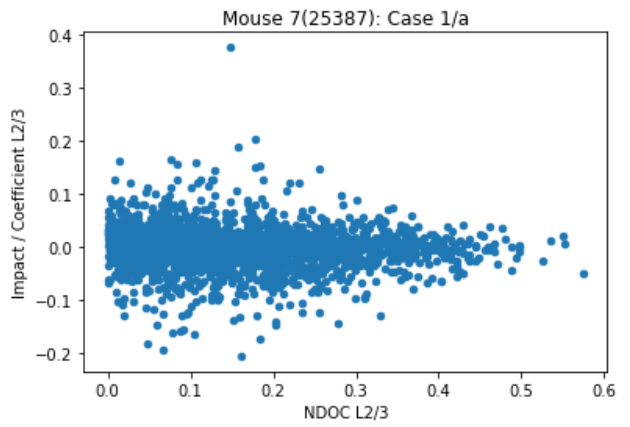


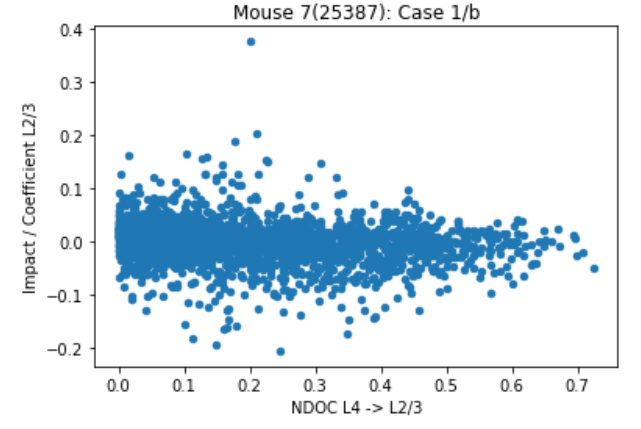


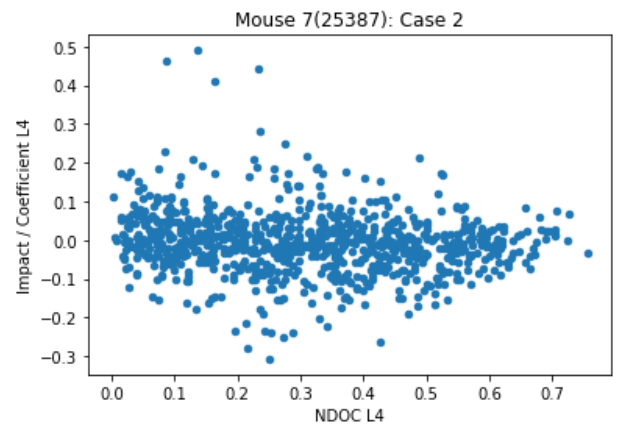


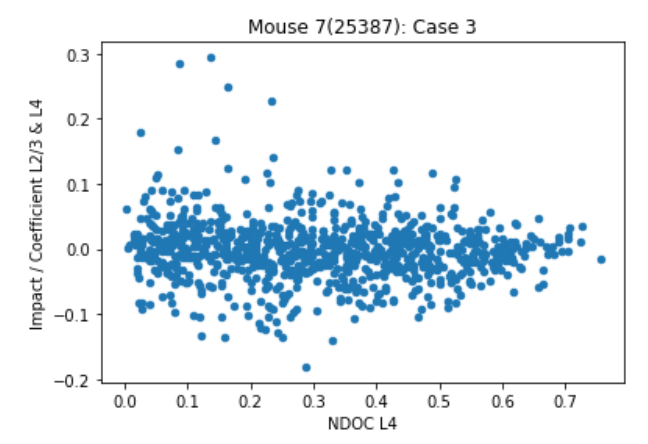


### Mouse 7(25387)



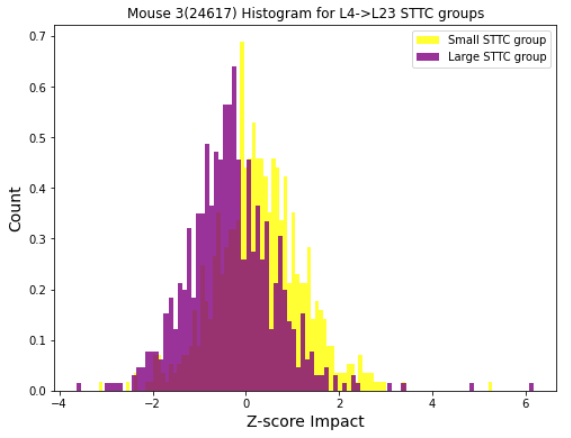




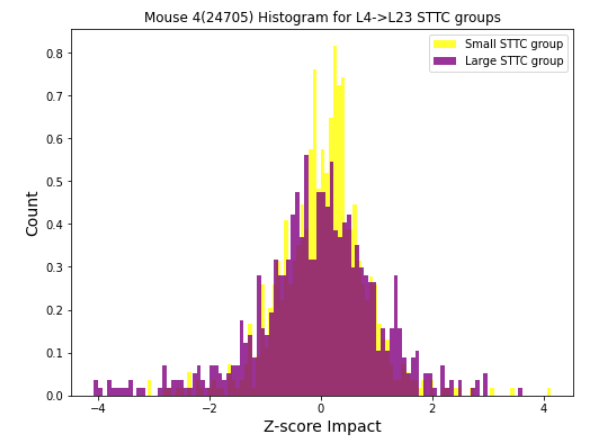


## Histograms

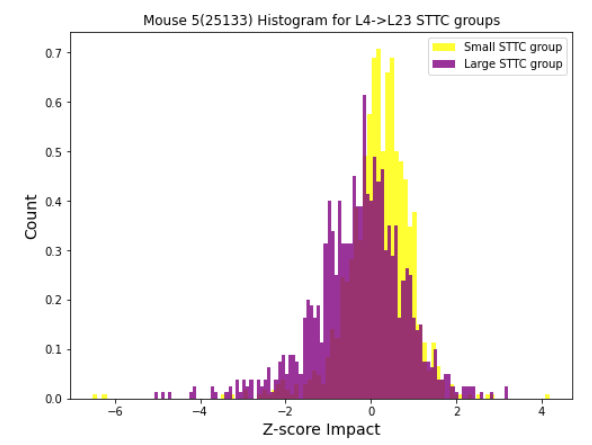
### Mouse 3



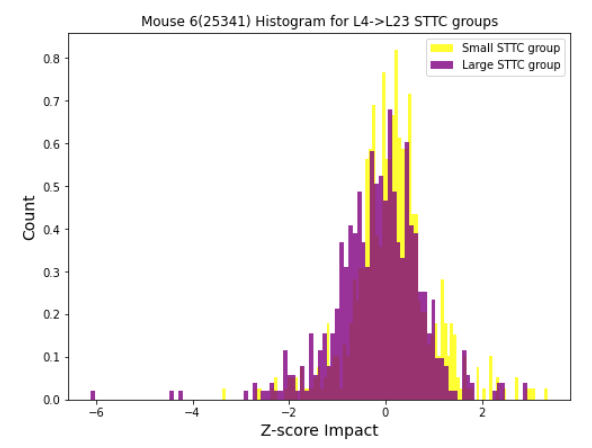
### Mouse 4



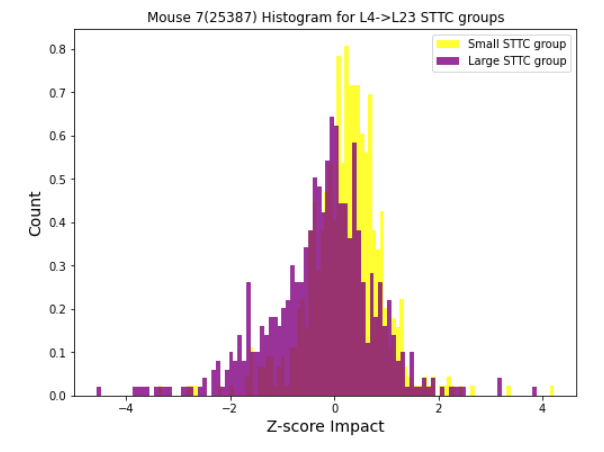
### Mouse 5



### Mouse 6



### Mouse 7



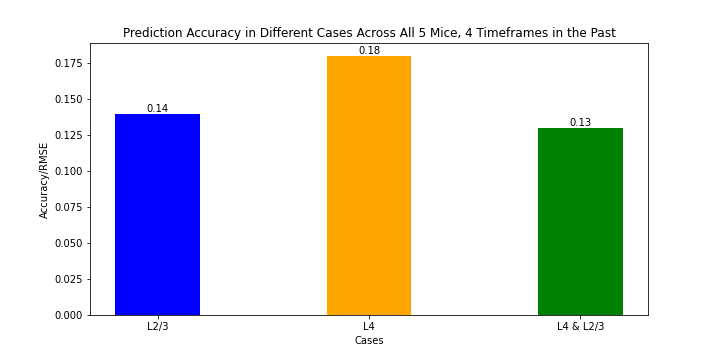
## 

## 

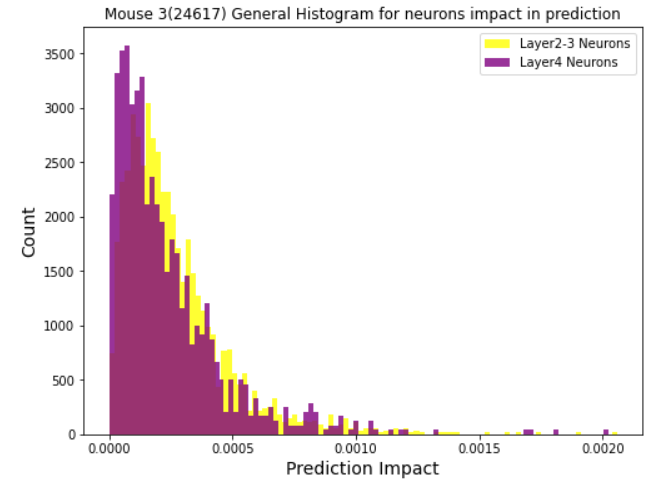
## 

## 

## History



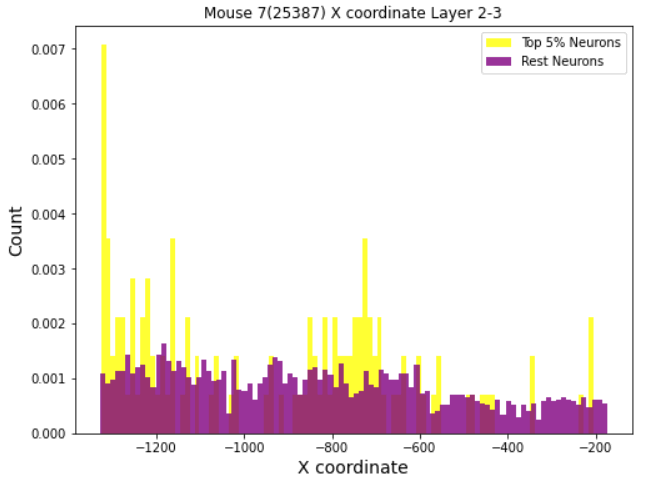
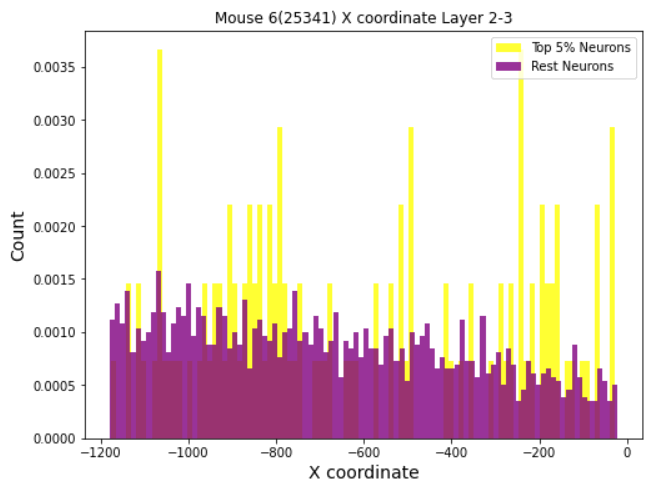
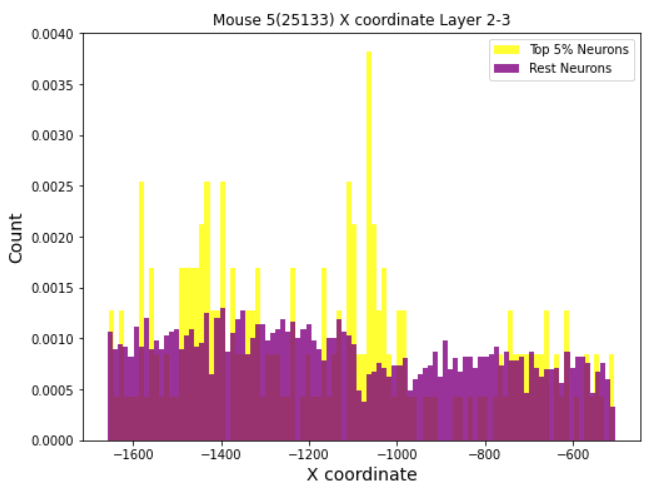
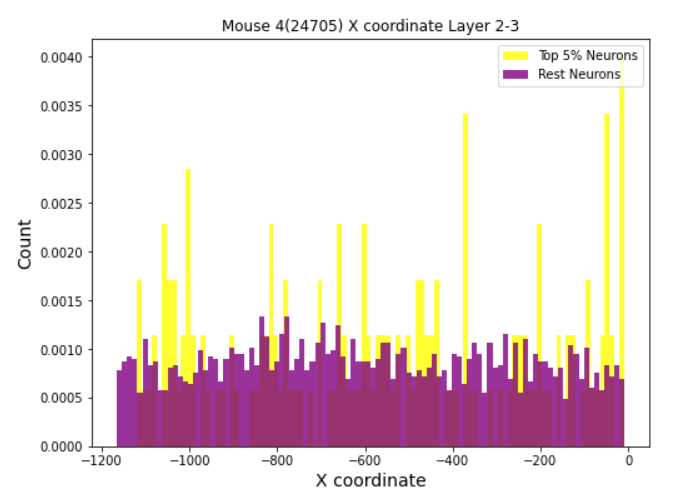
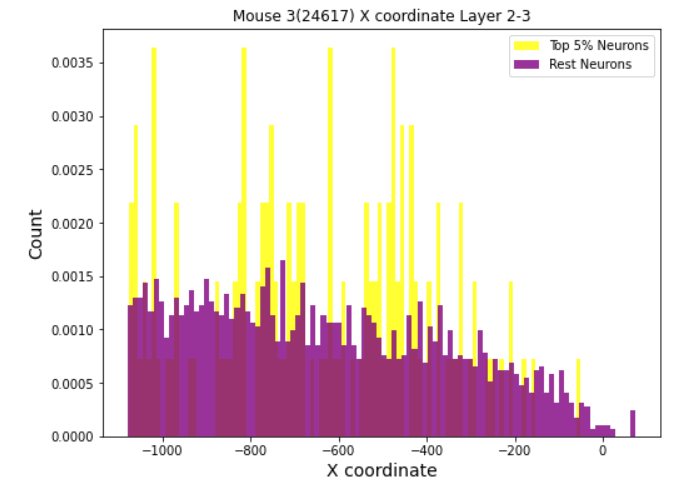
# Explainability



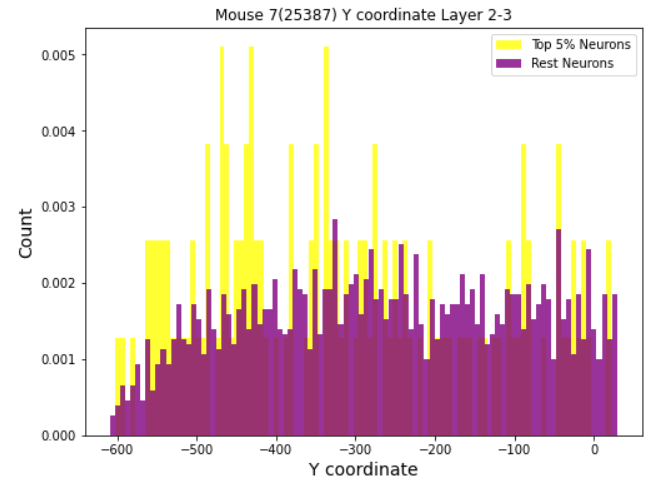
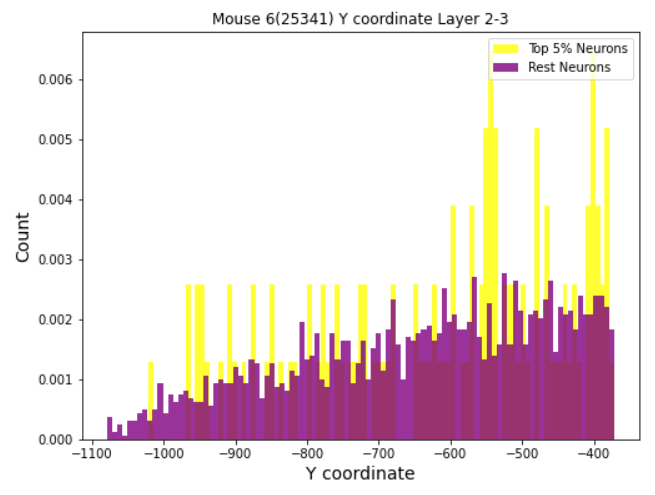
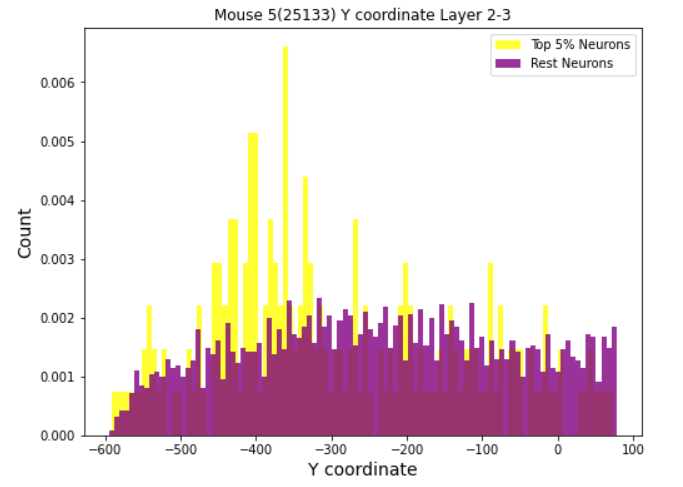
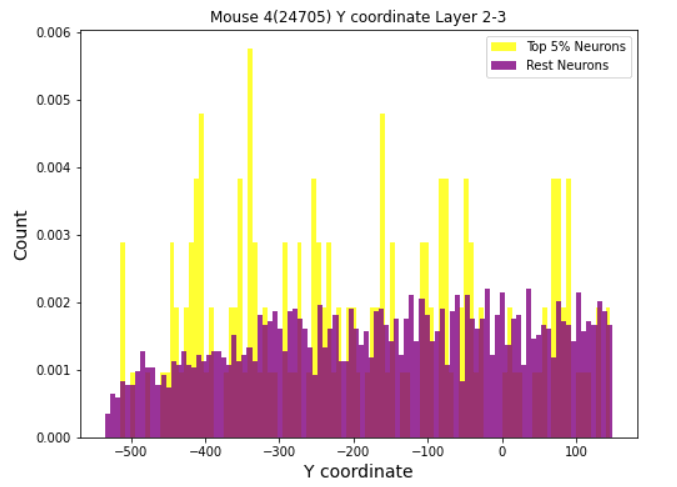
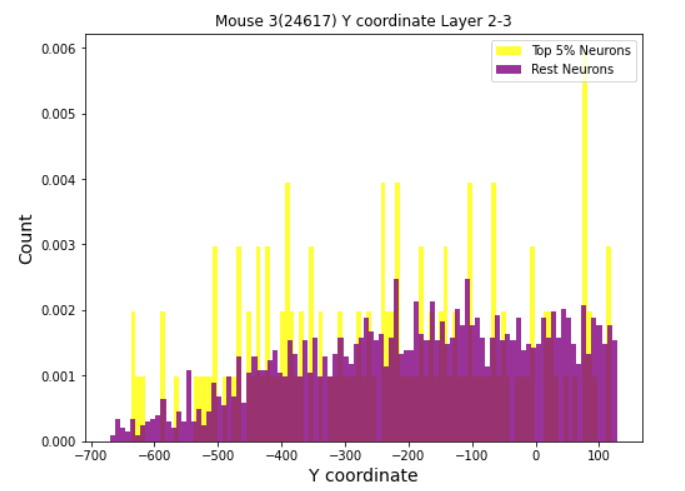
* Using PCA to find the neurons with bigger predicting power
* Splitting the neurons in top 5% neurons in predicting power and the rest of neurons because as we can see in the histogram above the impact values in the plot evolve in a continuum
* Per layer analysis
* xyz coordinates, orientation preference, degree of connectivity, firing rate

## Explainability: xyz coordinates

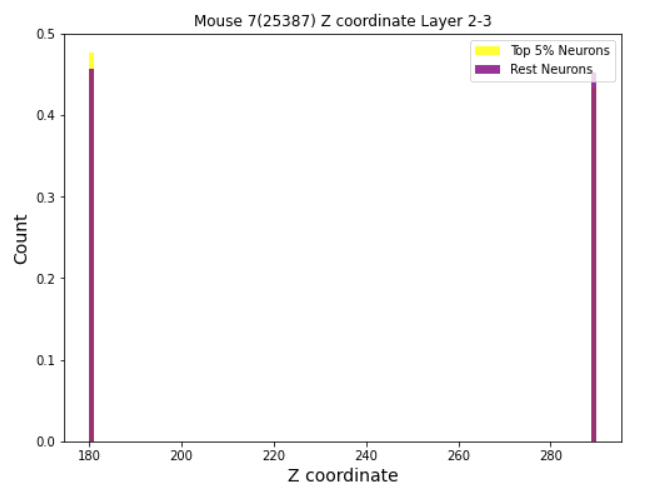
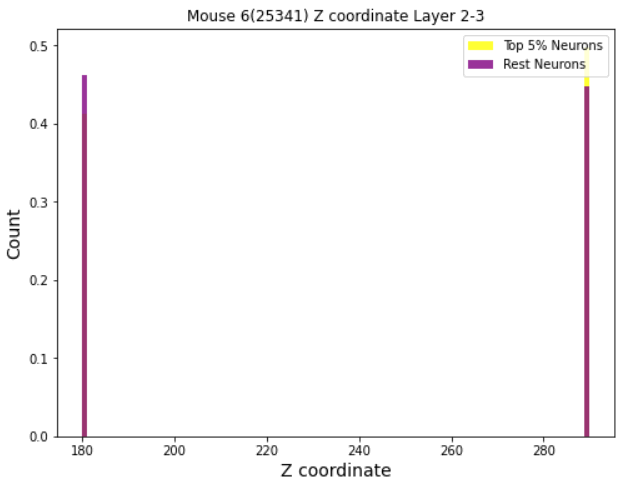
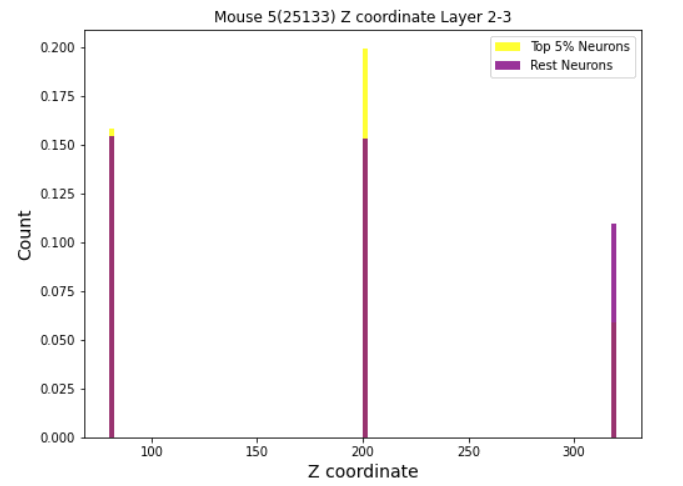
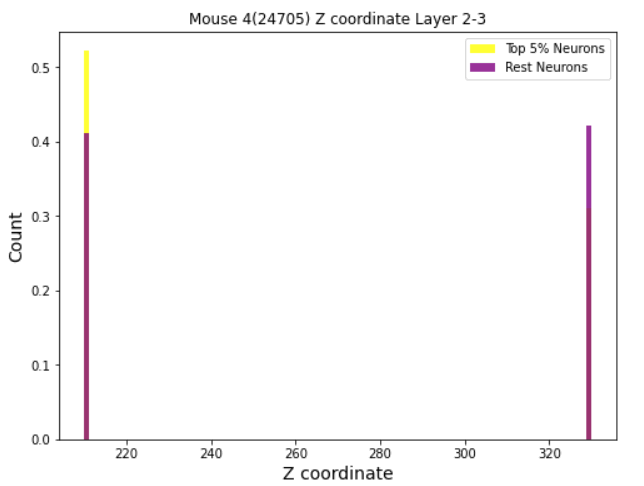
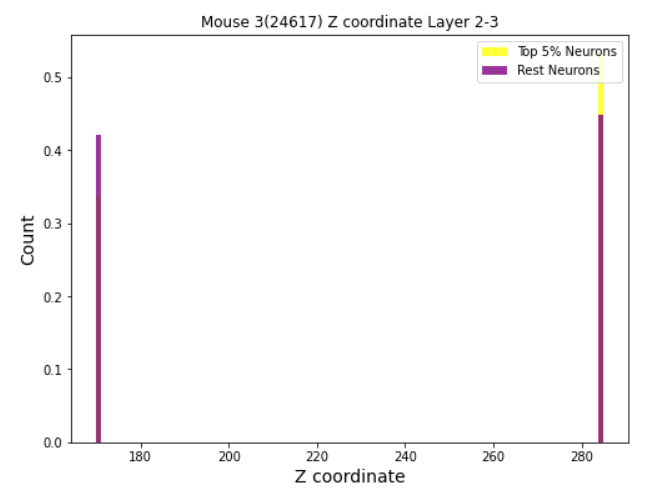
### L23 x coordinate



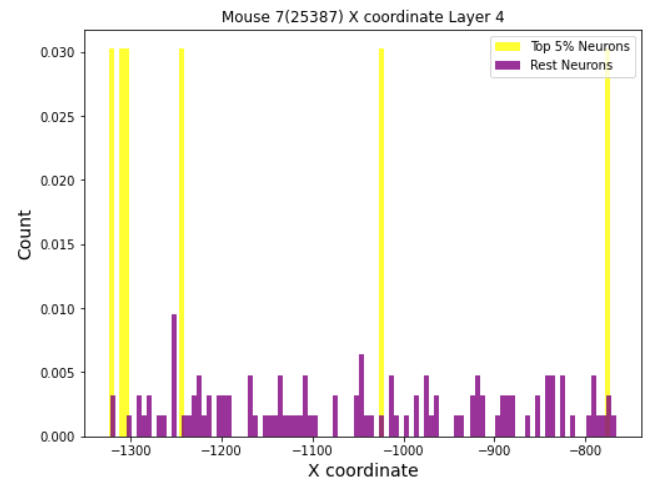
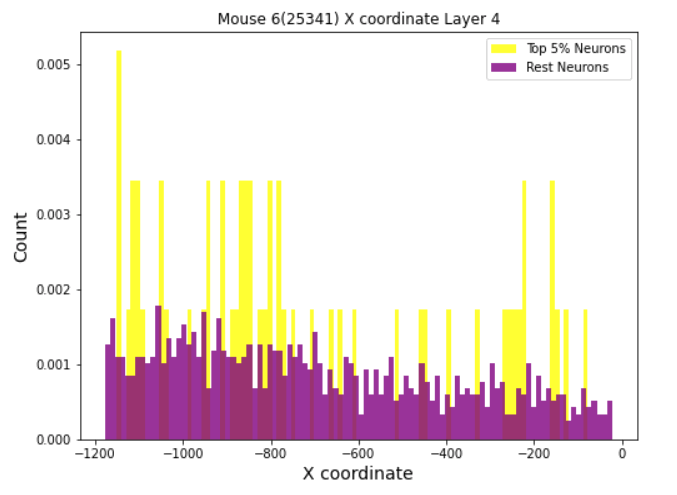
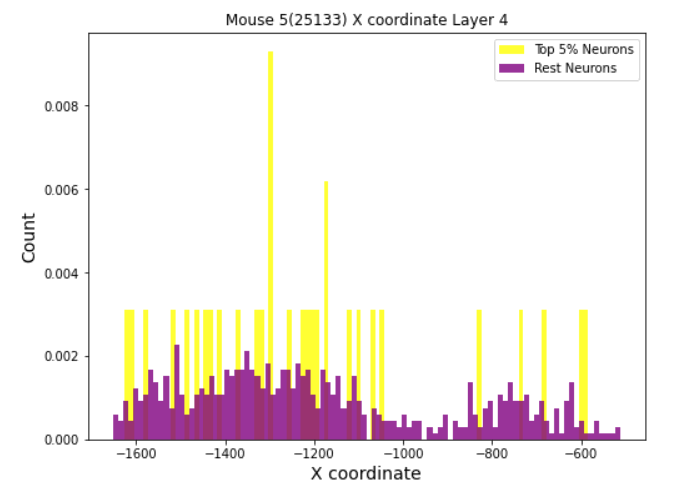
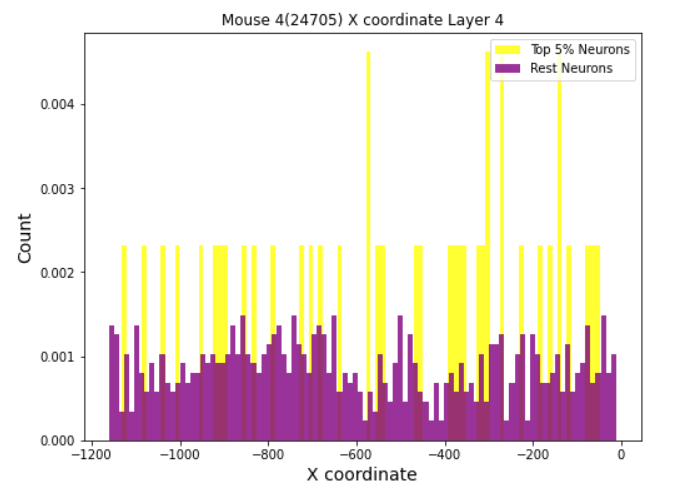
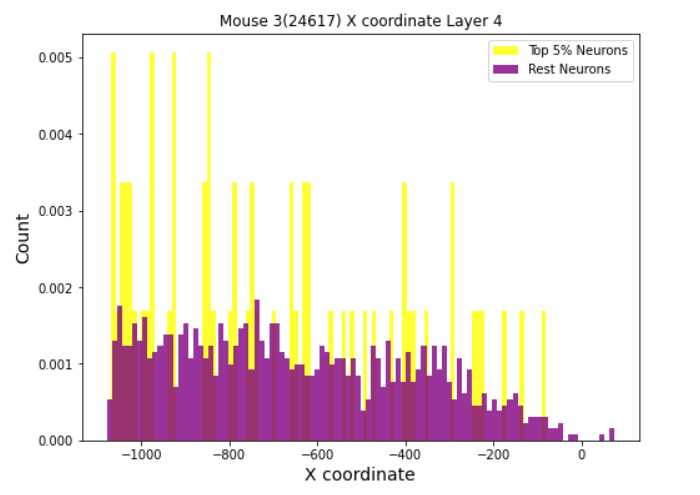
### L23 y coordinate



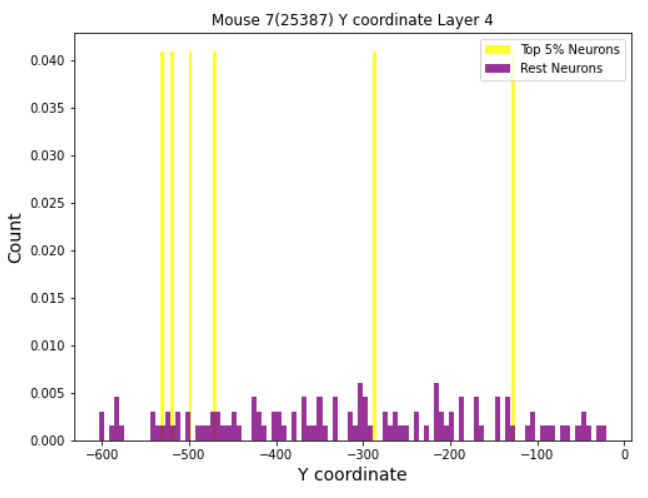
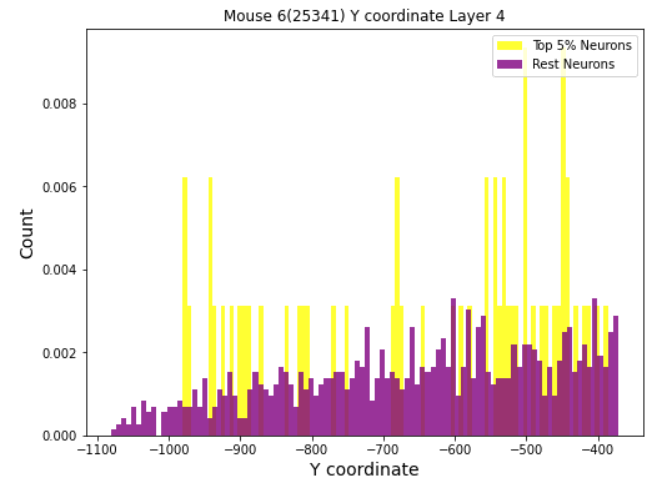
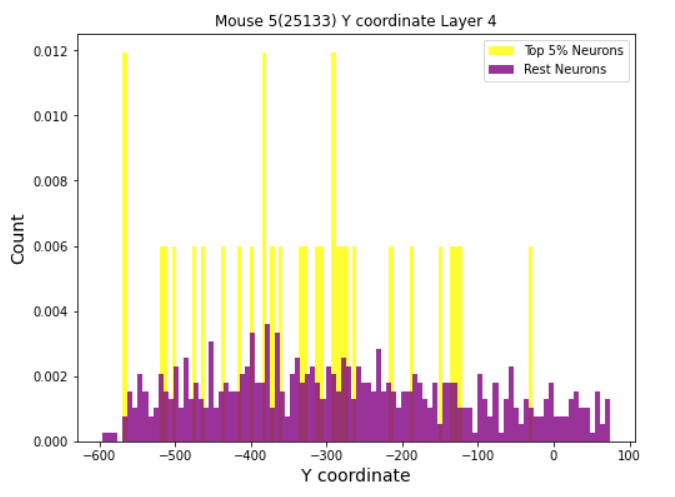
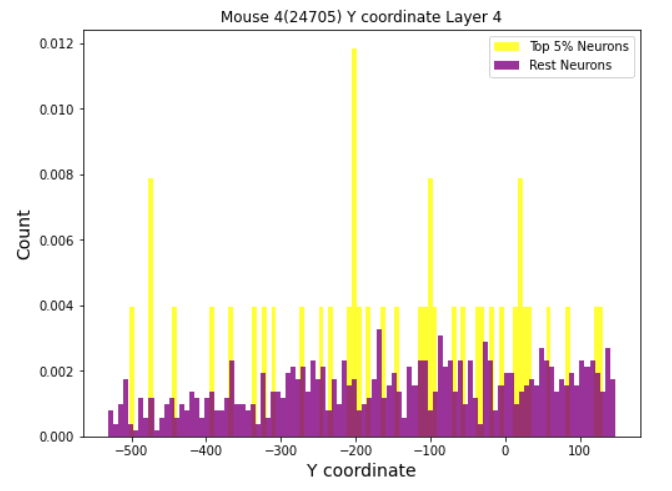
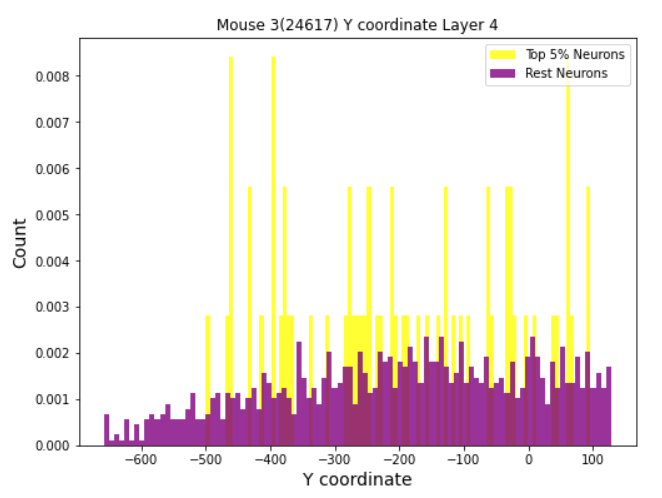
### L23 z coordinate



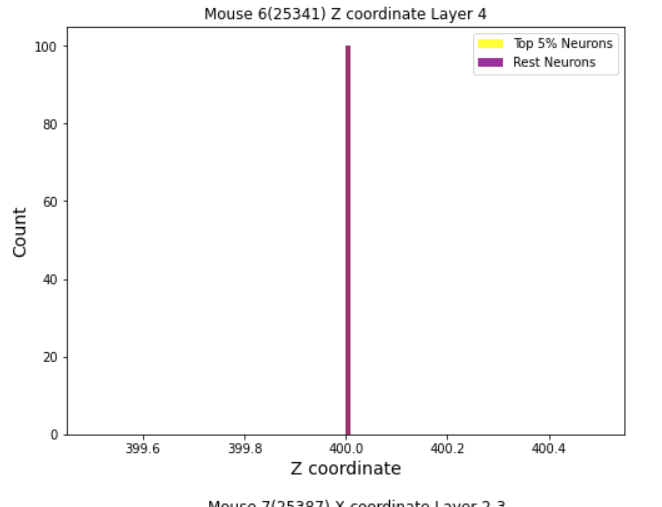
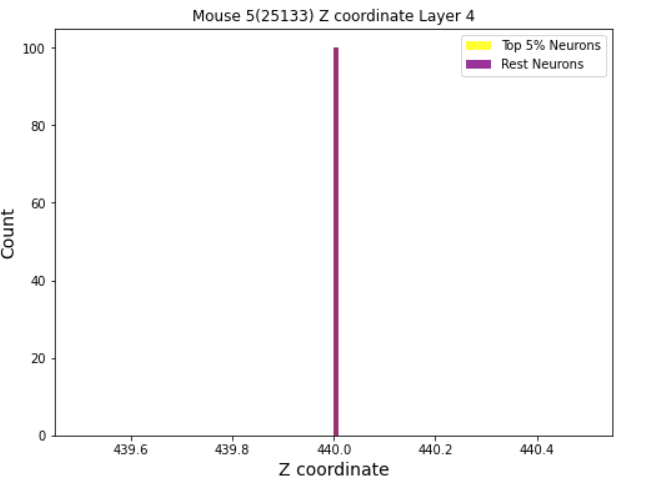
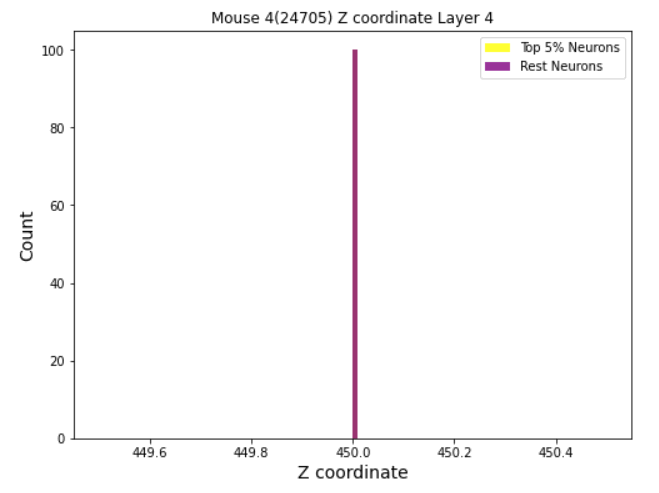
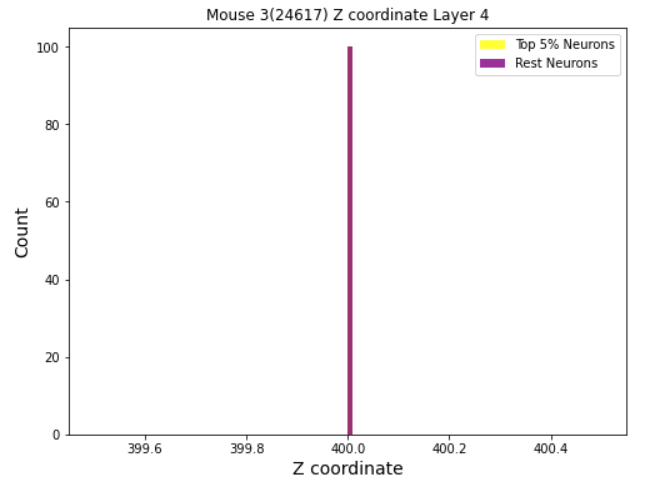
### L4 x coordinate



### L4 y coordinate

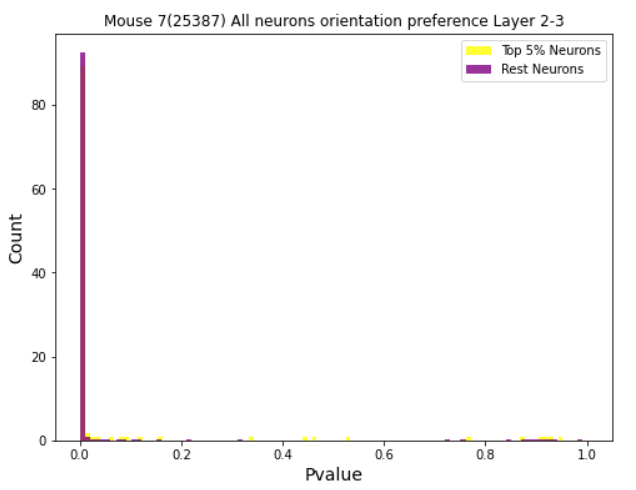
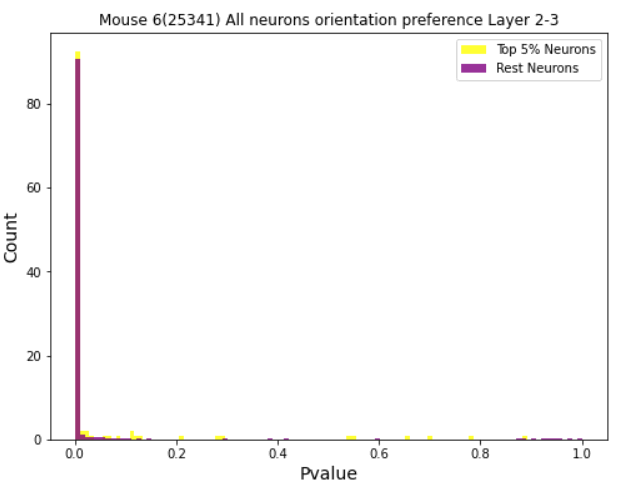
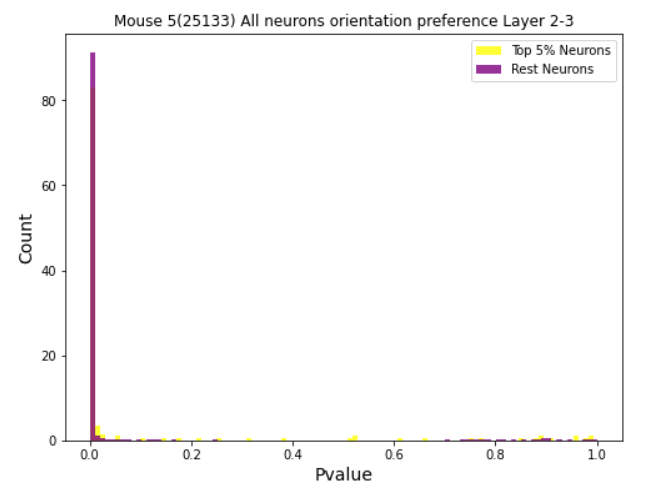
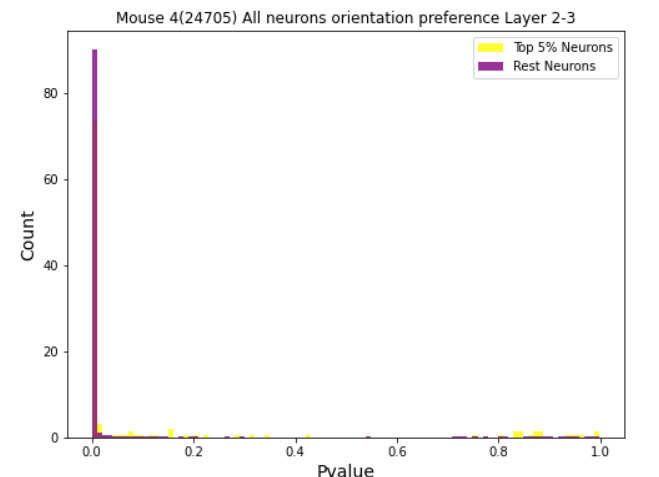
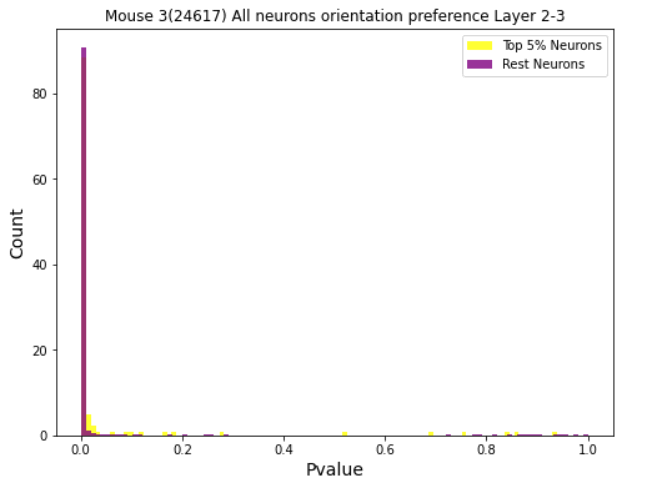


### L4 z coordinate

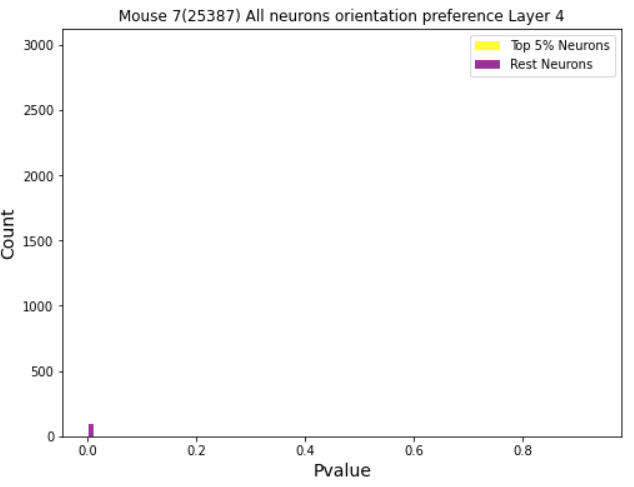
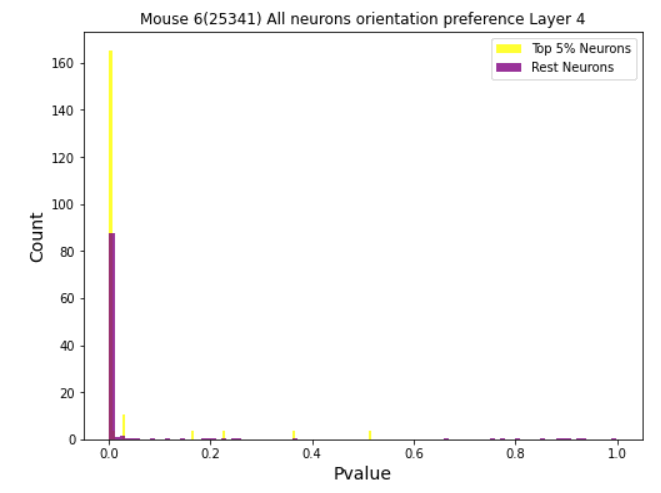
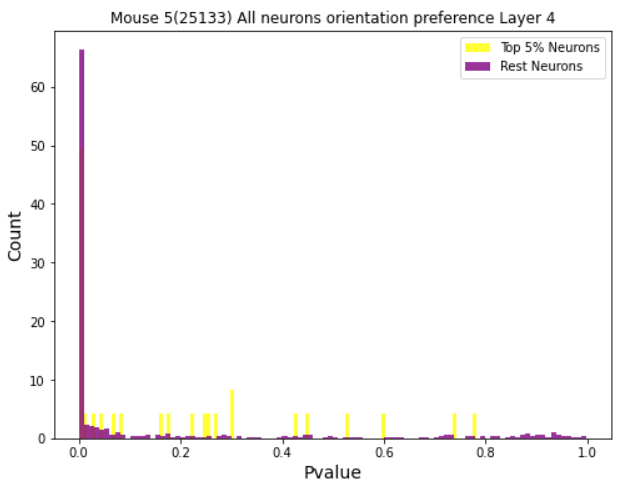
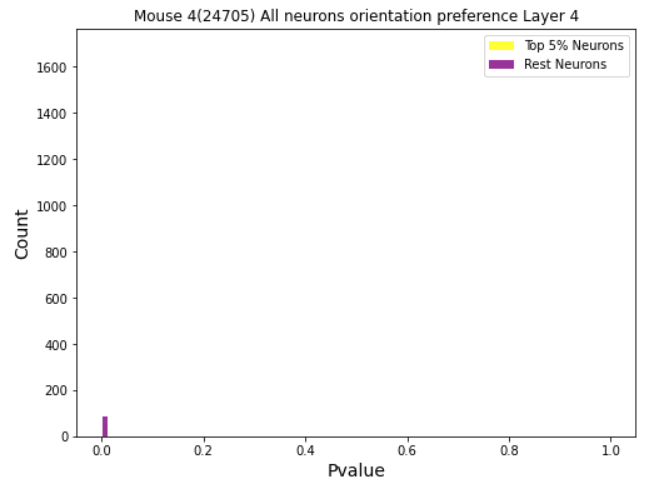
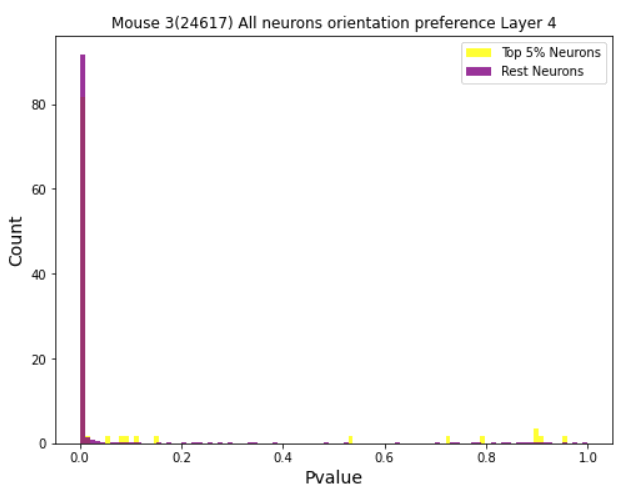


## Explainability: All neurons orientation preference

### Layer 2-3

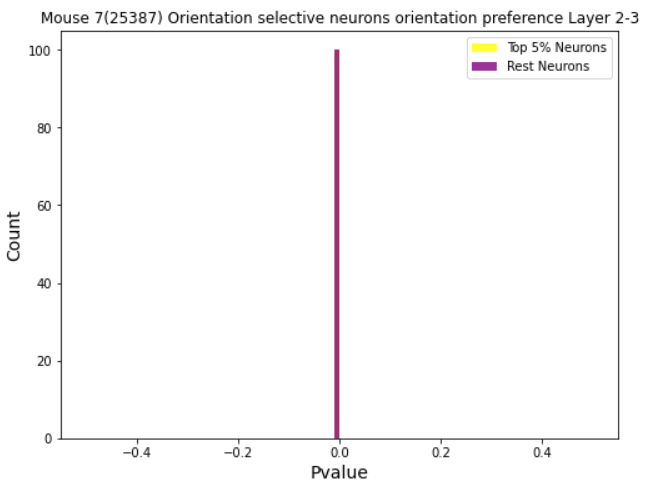
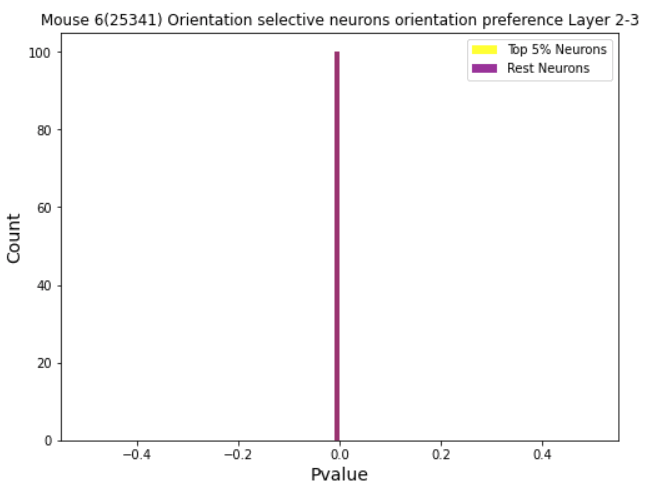
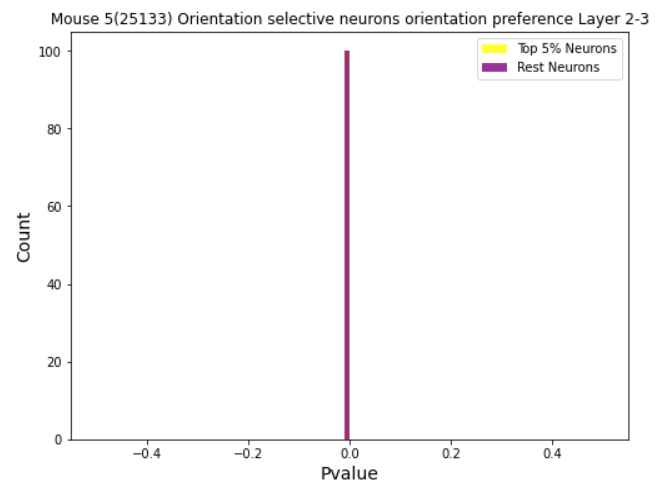
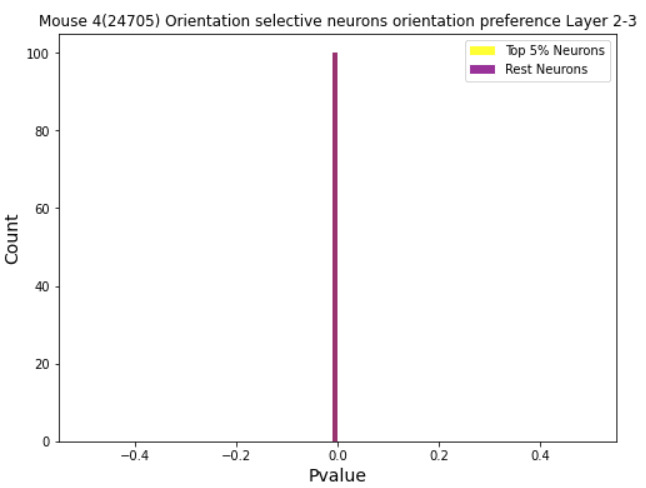
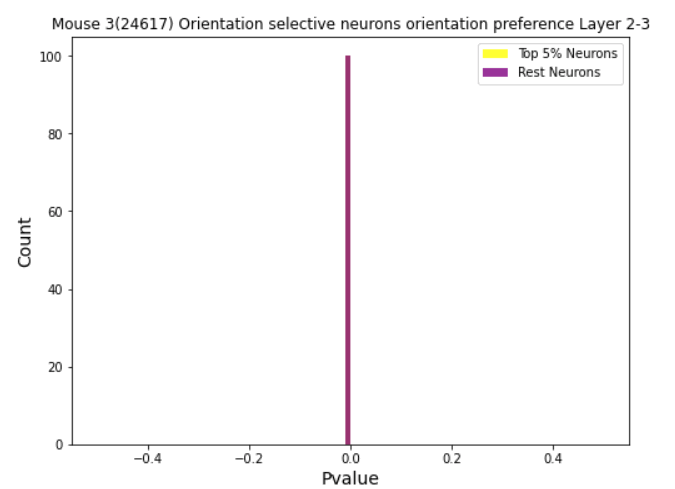


### Layer 4

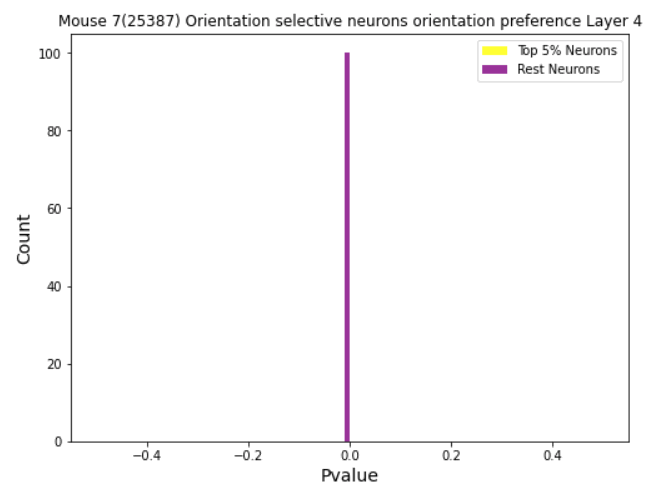
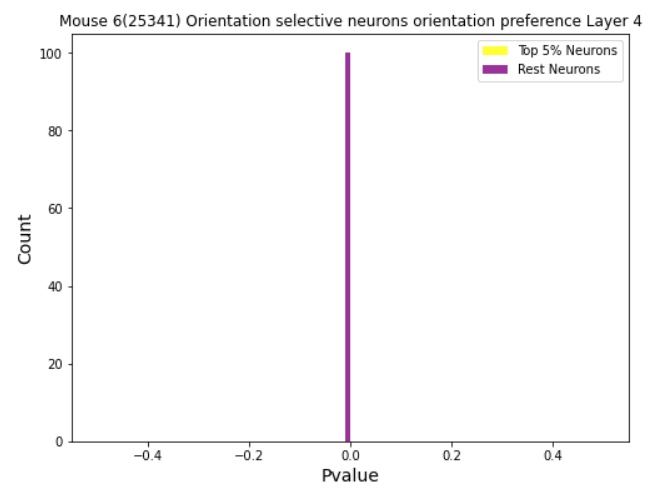
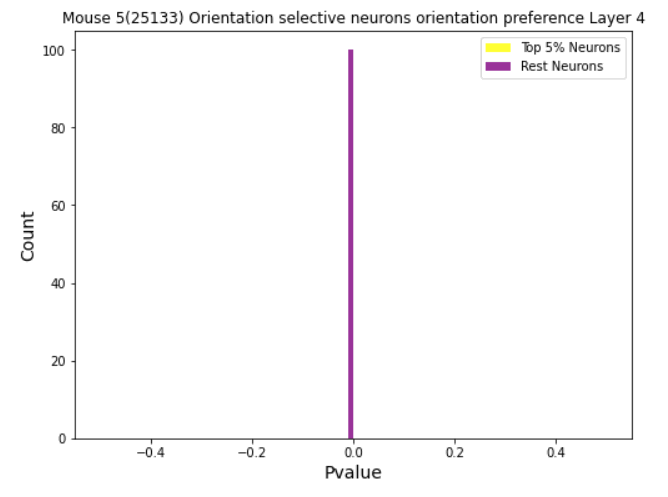
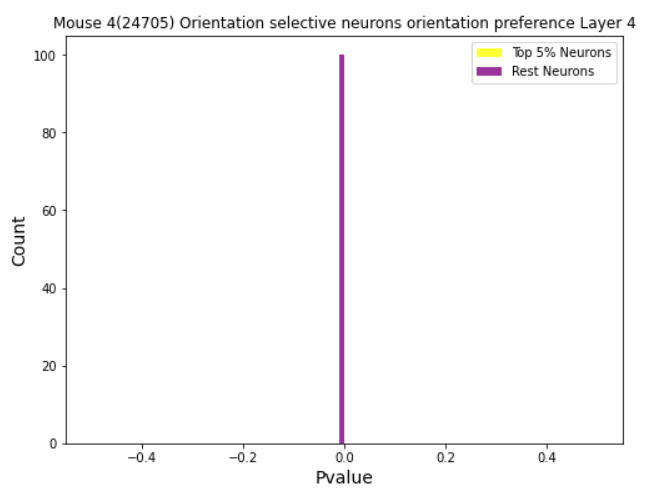
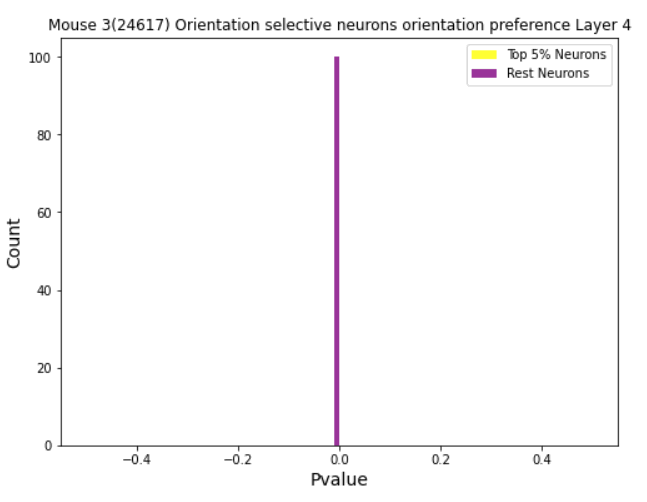


## Explainability: All neurons orientation preference

### Layer 2-3

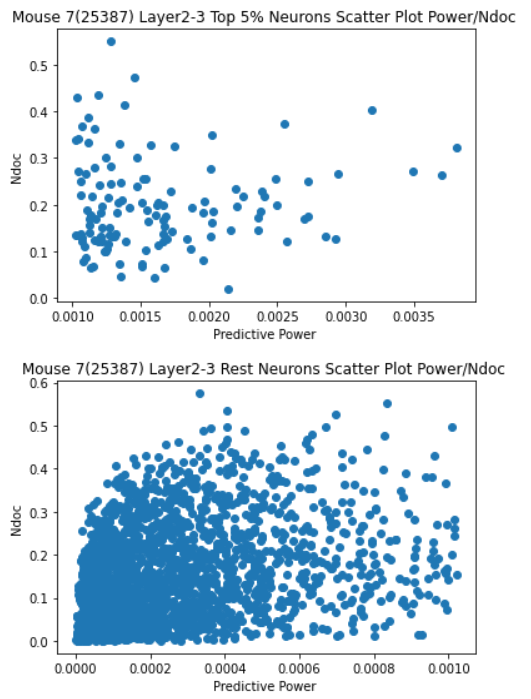
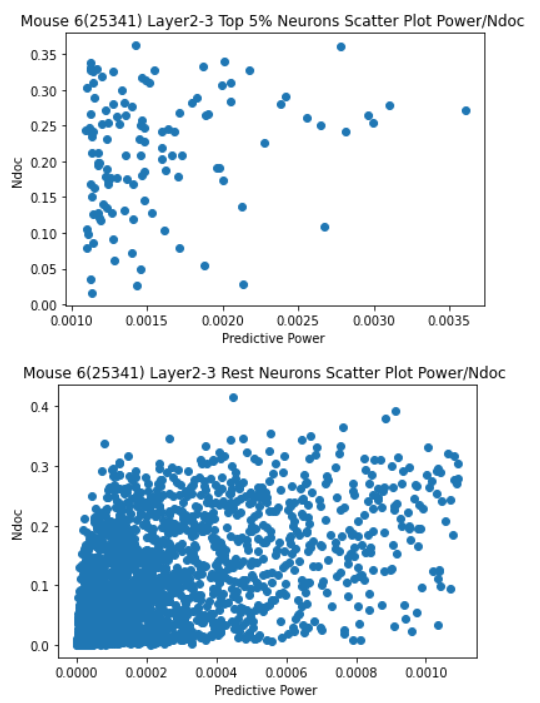
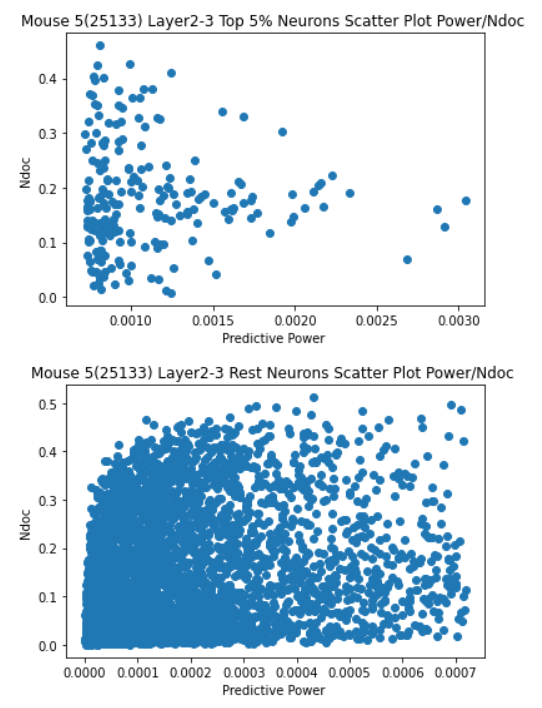
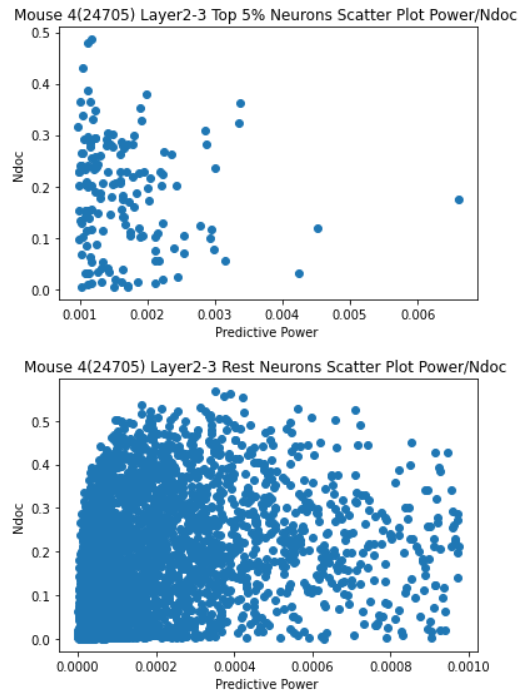
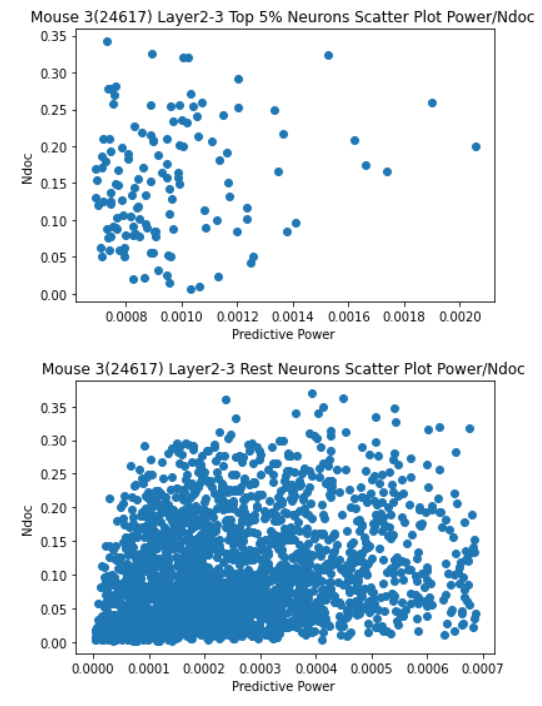


### Layer 4

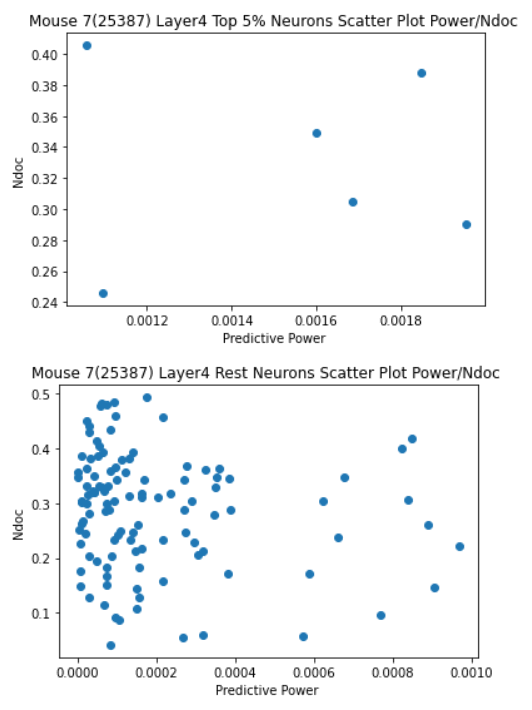
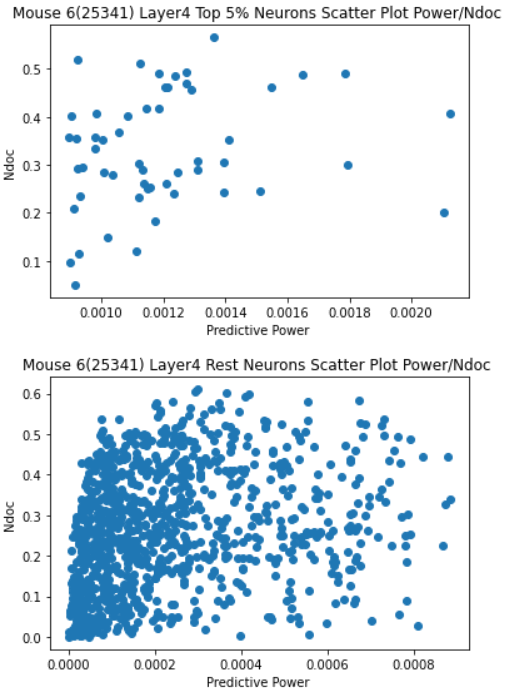
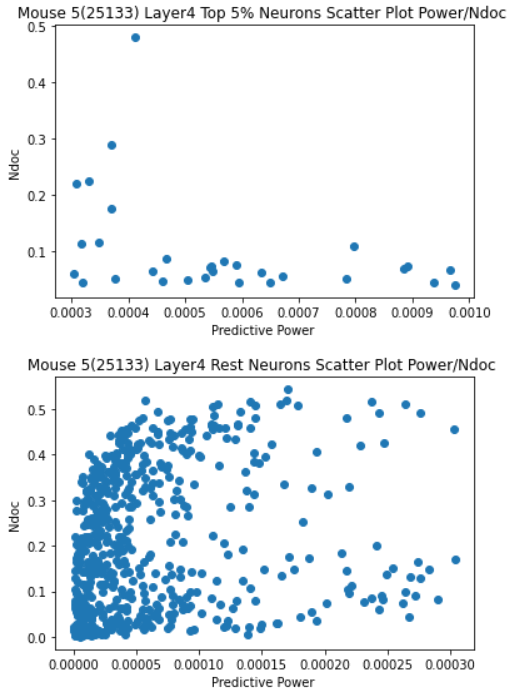
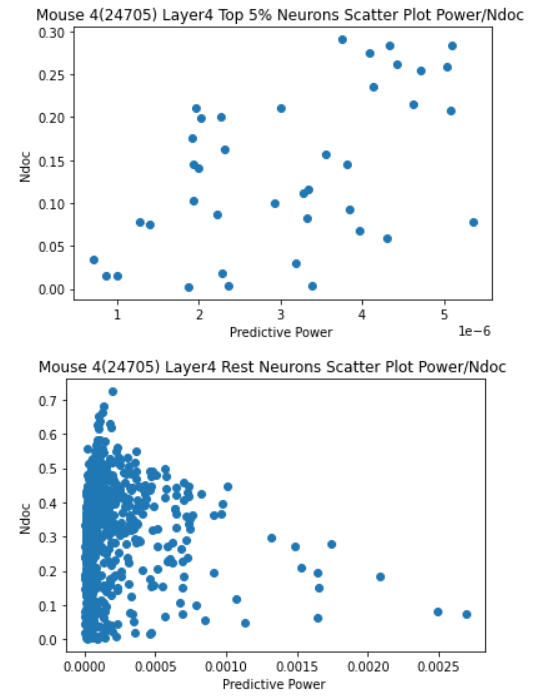
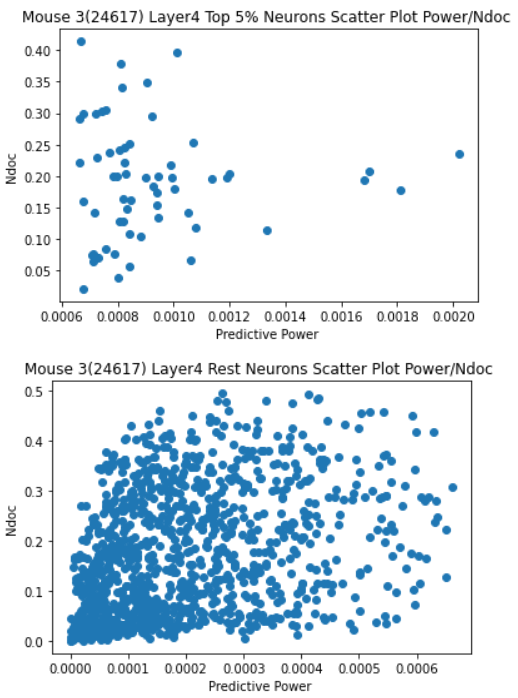


## Explainability: Degree of Connectivity Top5% vs Rest Neurons

### Layer 2-3

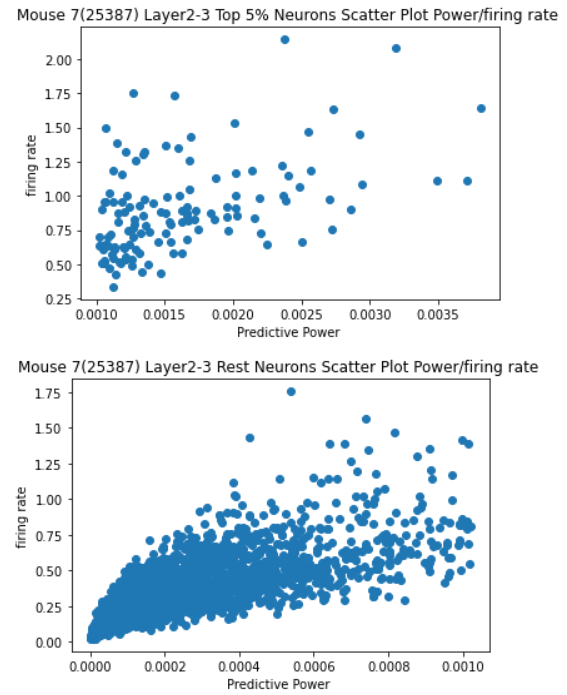
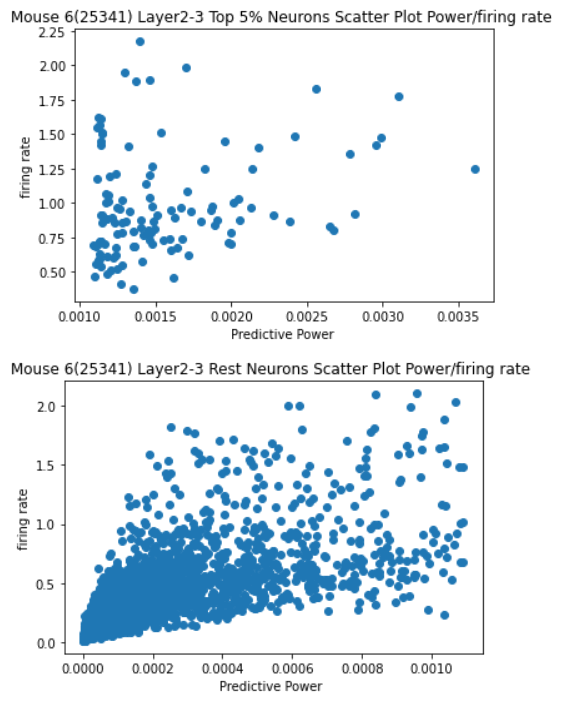
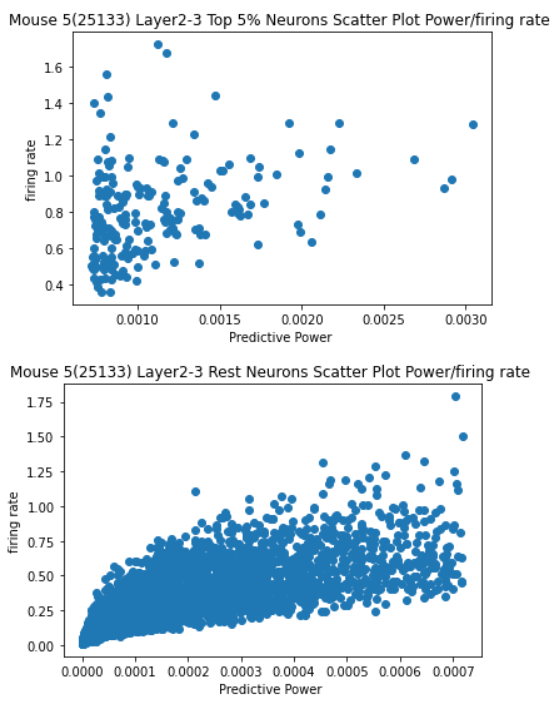
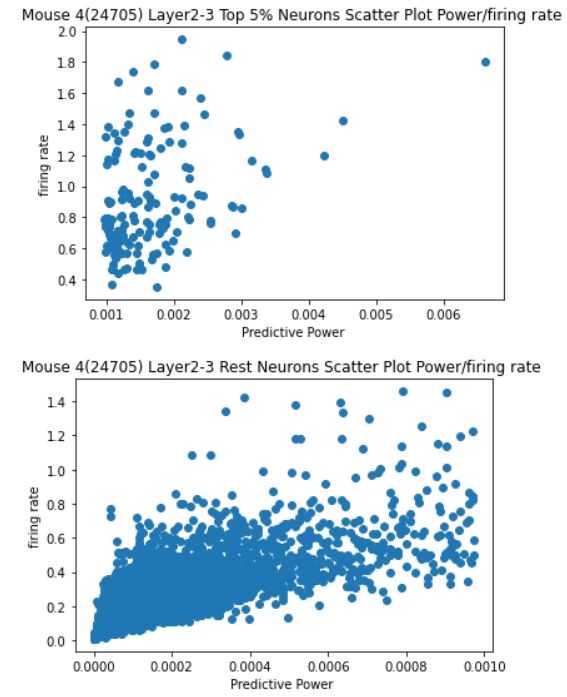
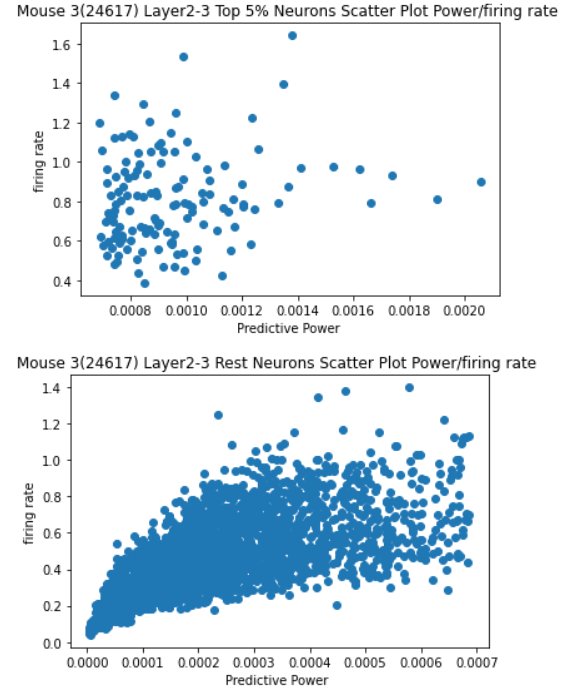


### Layer 4



## Explainability: Firing Rate Top5% vs Rest Neurons

## Layer 2-3



## Layer 4

