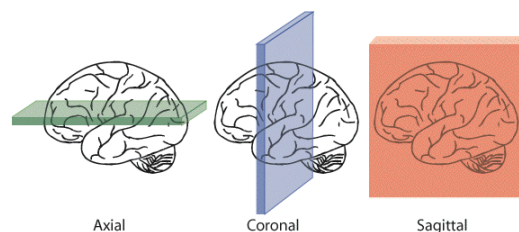


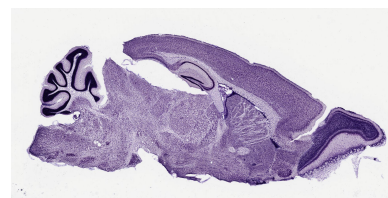
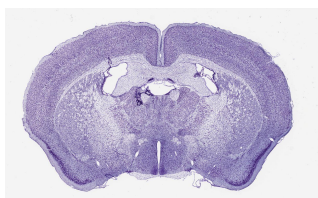
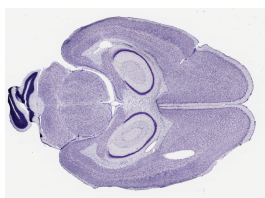
## View Recognition Challenge for the Mouse Brain

The Klarman Cell Observatory (KCO), led by the Chair of the Faculty Aviv Regev, in collaboration with the Macosko's lab (Stanley Center) at the Broad Institute of MIT and Harvard and NEU AI Skunkworks is launching a pedagogical machine learning challenge to recognize the view in slices of the adult mouse brain (*M. musculus* P56). The purpose of the challenge is to pre-screen candidates interested in working as Associate Computational Biologist (RA-equivalent) in the Regev lab.



**The three main anatomical planes exemplified on human brain sketch**

In order to describe the location of structures, mouse brains are often sliced across one of the three main anatomical planes: sagittal, coronal and horizontal (see top-right figure).. Example of slices for adult mouse brains are shown below (source: BrainMaps).



**Horizontal (or axial)**

**Coronal**

**Sagittal**

The challenge consists of recognizing the view (*ie* whether anatomical, coronal or sagittal) in a test set of images which we will not release. Submissions should be accompanied by a Jupyter notebook with a clear explanation of the implemented strategy, and should meet the following criteria:

- We require a classifier written in **Python** that accepts as input a **numpy** tensor of shape **(N, 512, 512, 3)** where **N** is the number of RGB images of size **(512, 512)**.
- The classifier should output a vector of size **(3,)** and **dtype float** containing the probabilities of the image being sliced horizontally, coronally and sagittally respectively..
- The test set will contain images of brains sliced across the three planes as well as images obliquely sliced and non-brain images. We expect the classifier to score low probabilities on the latter two classes.
- The candidate should use as training set publicly available images. We recommend the BrainMaps repository <http://brainmaps.org/index.php?p=speciesdata&species=mus-musculus>.



The challenge will remain active for three weeks since posting date.

Final submissions should be sent to skunkworksneu [skunkworksneu@gmail.com](mailto:skunkworksneu@gmail.com)

Please ask questions that relate to everyone on the NEU AI Skunkworks Slack  
<<https://neuaiskunkworks.slack.com>> or the skonks.com forum <https://www.skonks.com/forum/>

Challenge details <https://www.skonks.com/post/broad-institute-of-mit-and-harvard-and-neu-ai-skunkworks-mouse-brain-challenge>

E-mail final submission and requests for server access to skunkworksneu <[skunkworksneu@gmail.com](mailto:skunkworksneu@gmail.com)>

Please address any other specific question to Tommaso Biancalani <[tbiancal@broadinstitute.org](mailto:tbiancal@broadinstitute.org)>.

The Mouse Brain Challenge is brought to by the Broad Institute of MIT and Harvard and NEU AI Skunkworks.