How to Become a Twitter Developer

1. Go to this link --> <https://developer.twitter.com/en/apply-for-access>
2. Click “apply for access”
3. Input personal twitter credentials (note, if you don’t want to use your personal account feel free to make an new one specific for this project. I used my own, but it is totally up to you what you feel comfortable with)
4. Follow written instructions past this point. Enter data below in relevant application fields and proceed as instructed on the site.

**Core Use:**Use the twitter API to identify people that have been vaccinated and interact with them using our University Clinical Trial Account to ask them for saliva donations to help further our understanding of the immune response. These saliva donations will be analyzed for the presence of neutralizing antibodies against COVID19.  **It is difficult to find many people local to Northern California that have participated in the global vaccine efforts, and as we can ship saliva testing kits across the country we are hoping to use Twitter to identify these people and expand the size of our study**. A large problem with COVID-19 protection is that an intramuscular vaccination may not elicit the same antibody production in the nasopharyngeal cavity as it does in the blood. We are seeking to answer this question using the saliva of vaccinated individuals searching for levels of IgA and IgG. By recruiting people from Twitter we can tap into the extensive virtual network of the USA and make our study more representative of the population it aims to serve.

**Analysis:**Analyses will be conducted using python scripting searching for key words in tweets (e.g. #AstraZeneca, “I got vaccinated today”, #Moderna). Tweets containing these key words will be read to determine if the results of the query search contain Twitter Users that have actually participated in a vaccine study. If these users have or tweeted they have, we will reach out to them and see if they are willing to participate in our saliva study outlined above. No contact will be initiated past this point, and no further analysis will be performed. No repository of tweets will be kept, and no tweets will be displayed off Twitter.

**Tweeting, liking, retweeting:**We will interact with users only if they have publicly stated they have been vaccinated. This public announcement, by law, means that the stated personal health information is no longer protected under HIPAA, and we can use this information to contact them as long as it is in line with Twitter’s policy. We will not be liking or retweeting any user tweets from this developer account. We will be replying to them via our University Clinical Trial Account to see if they are willing to spend 5 minutes to donate a saliva sample towards our study which is a fully IRB approved and has institutional backing.

**Display:**We will display no content off of twitter and hold no repository of tweets. Tweet information is for the furthering of our academic endeavors only.

Please let me know specifically which areas need further addressing. I have attached photos to further explain the experimental design and specifics of our study.

Thank you for your consideration.

**IRB approved language followed by Lay Language in Bold**

The disease COVID19 that is caused by the virus SARS-CoV-2 that has emerged as a global threat to humanity is predominantly transmitted from person to person by tiny droplets expelled in a sneeze or cough, as examples. Some persons who test positive for COVID19 do not show any symptoms of the disease, whereas others develop severe disease that requires hospitalization and even use of a ventilator to aide in breathing. The goal of our study is to understand the antibodies (produced by immune effector cells) that are present in the saliva of COVID19 patients who exhibit an array of symptoms as well as those who have received a vaccination against SARS-CoV-2, so that we can better understand the neutralizing antibody that is produced as a consequence of infection or vaccination. Also, we aim to understand if the neutralizing antibody produced as a result of primary infection or vaccination is sufficient to prevent reinfection and virus transmission of SARS-CoV-2 upon secondary exposure to the virus.

**Bottom Line: As a team, we are operating under the base assumption that everyone has been making way too many assumptions about antibodies. Specifically, which antibody types are most important and where we should be looking for them. When people have focused in on just a couple types of antibodies, they’re missing a lot of the nuance of the immune response. We want to change that and we are going to look at the antibodies from your saliva samples with high resolution tools, and compare these secreted antibodies to the antibodies that circulate in the blood.**

1. If you get an email that contains the text listed below, they need more information. When Pai got this email he just copied and pasted the application text from step 4 and responded to the email which worked for him (which is weird because it is the same stuff…). If this does not work, let us know and we can try and figure out what happened

Text, letter

Description automatically generated

1. If/ when you are approved, be sure to write down your confidential key credentials. We will need to input these into the python code so you can run the script. Create a new project and name it something meaningful (i.e. ‘covid19salivastudy’)
2. Navigate to the ‘keys and tokens’ tab at the top of the screen under your project name
3. Generate ‘access token and secret” keys and write these down. They will be important!
4. You are done with the developer part of this. Congratulate yourself and pat yourself on the back. If you make it this far on your own, that is a great first step! We will need to meet again on Zoom to discuss setting up the python environment on your computer and show you how to run the code from the command line. This will be some work, but it will be fun and allow you to start experimenting with the python script. The steps are a little bit complex and will take some time to explain, so I will wait until we have the developer part down. In the meantime, I have attached a link below that has some helpful exercises. They are fun, pretty easy, and will help you understand some of the basics of what is happening when you are looking at more complex code. No pressure to try it, but if you are interested and bored it could be a good place to start.

<https://www.learnpython.org/>