QIIIME2 notes for absolute beginners

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**Some general notes on installing and using QIIME2:**

QIIME2 is a program that can be used to turn sequencing reads into desired data. It is a **command line program** that can be accessed through the computer terminal (that black screen with the blinky cursor that hackers use), and it runs on **python** (a programming language, similar to R). If you would rather stay away from python, there is something called DADA2 that runs in R and is supposed to handle raw sequencing reads. You can look into it, but for now I’m just trying to learn qiime, cause that seems like what most people do? Another note, I am using a mac, **QIIME2 will not run on windows**, but if you have a windows machine you can create a virtual box (a computer INSIDE the computer) that runs linux (the other, other operating system) for free, thanks linux! I tried this once and it’s tricky but you can figure it out! Then you can just run through the linux install instructions on the QIIME2 website.

Before you start, just know that lots of things will go wrong. That’s okay! **Stay positive.** Just read your error message and use google to try and solve your problem, likely someone out there has had the same problem. I have found these tutorials to be very thorough and helpful, but I ran into a lot of problems that were not described in the tutorials. Also note that this process may take a very long time, you may have to do a lot of independent learning, and there may be no one around to help you, cause this stuff is pretty niche. All in all I spent WEEKS learning this stuff, so buckle up.

**The first step** to using QIIME2 is making sure you have anaconda or miniconda downloaded.

Anaconda automatically contains more scientific packages and data science tools, but takes up more disc space. Miniconda and Anaconda are package managers for python (and more). Python will be installed when you install one of these programs. I chose to install Anaconda.

You can go through the tutorials on the Miniconda or Anaconda support pages to make sure you are familiar with using these programs before attempting to install QIIME2. Importantly, you should go through the **conda** tutorial <https://conda.io/projects/conda/en/latest/user-guide/getting-started.html>

as conda will be the main command used to access anaconda through the terminal or shell.

Familiarize yourself with QIIME2 core concepts <https://docs.qiime2.org/2020.2/concepts/>, install QIIME2 (see notes below), and run through the QIIME2 tutorials.

**Installing QIIME2:**

<https://docs.qiime2.org/2020.2/install/native/#install-qiime-2-within-a-conda-environment>

Some problems I had in installation, for example:

Before I could use the code in the installation instruction above (for mac), I had to install wget.

$ conda install wget

While installing, the blast2.6.0 package failed to install (faulty internet connections?). I am not sure why, but I just ran the installation code again and it worked.

Activate the environment with

$ conda activate qiime2-2020.2

You will move from the base environment to the qiime2 environment you just created, for example:

(base) Pauls-MacBook-Pro:~ paulmetzler$ conda activate qiime2-2020.2

(qiime2-2020.2) Pauls-MacBook-Pro:~ paulmetzler$

And test with

$ qiime --help

You should see a list of commands you can use in qiime

Did it work? Congratulations, you are using QIIME2! Now run through the QIIME2 tutorials on the website to make sure you are familiar with QIIME2 before analyzing your own data. This may take a while, good luck!