Install the Tools

Download and install the Muse Tools. The installer includes MuseIO, MuseLab, and MusePlayer. Everything will be installed in `/Applications/Muse`. NOTE: your bash_profile will be modified to add this directory to your PATH. If you are using another shell such as zsh, you will have to modify the appropriate configuration file yourself.

On Linux, everything will be installed in `$HOME`.

Pair Muse with your computer

Put Muse into Pairing Mode by holding the button down for five seconds until all five LEDs begin flashing on and off in unison. Release the button.

Open the Bluetooth devices menu on your system. With Bluetooth turned on and your computer discoverable, wait for Muse to appear in the list of available devices. When it does, click on it and ask to pair. If you are prompted with a passcode request, accept it. Wait for the pairing process to complete. Once paired, all five LEDs will continue to flash on and off. This will only change once a streaming connection is established.

NOTE: On some systems, when pairing, Muse will show that it is "Connected", and then after a few seconds "Disconnected". This is normal. Pairing is not the same as connecting. Muse will only show as permanently "Connected" once a program connects to it to stream data. More on that soon.

Connect to the Muse

Open a Terminal and enter the following command:

```
muse-io --device MUSE_DEVICE_NAME
```

where MUSE_DEVICE_NAME is the name of the Muse device you previously paired. If you have the latest firmware, this will be something like "Muse-1234".

MuseIO will begin searching for your Muse and then attempt to connect with it. This may take up to 30 seconds.

Congratulations! MuseIO is now connected to Muse and is sending out OSC messages containing Muse data to the default TCP port 5000.

NOTE: Don't worry about that "OSC error 61" / "TCP connection failure". It just means that nothing is receiving the messages that MuseIO is sending out. That's what MuseLab will do when we start it.
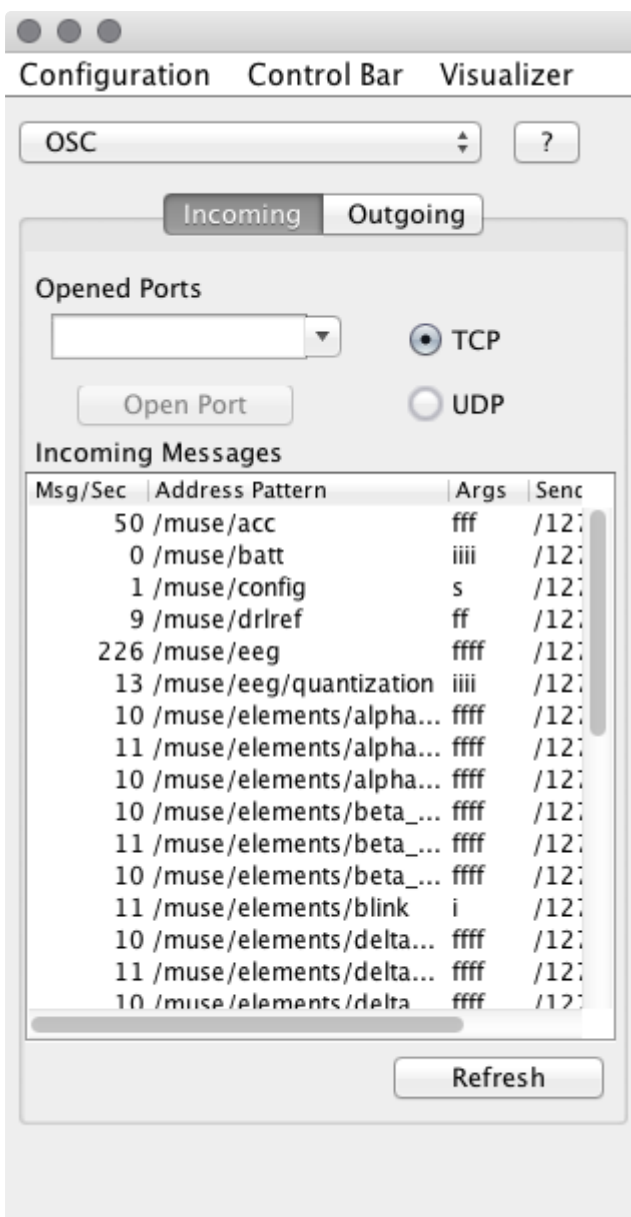
```
~:  $  ⬚




~:  $  ⬚
```
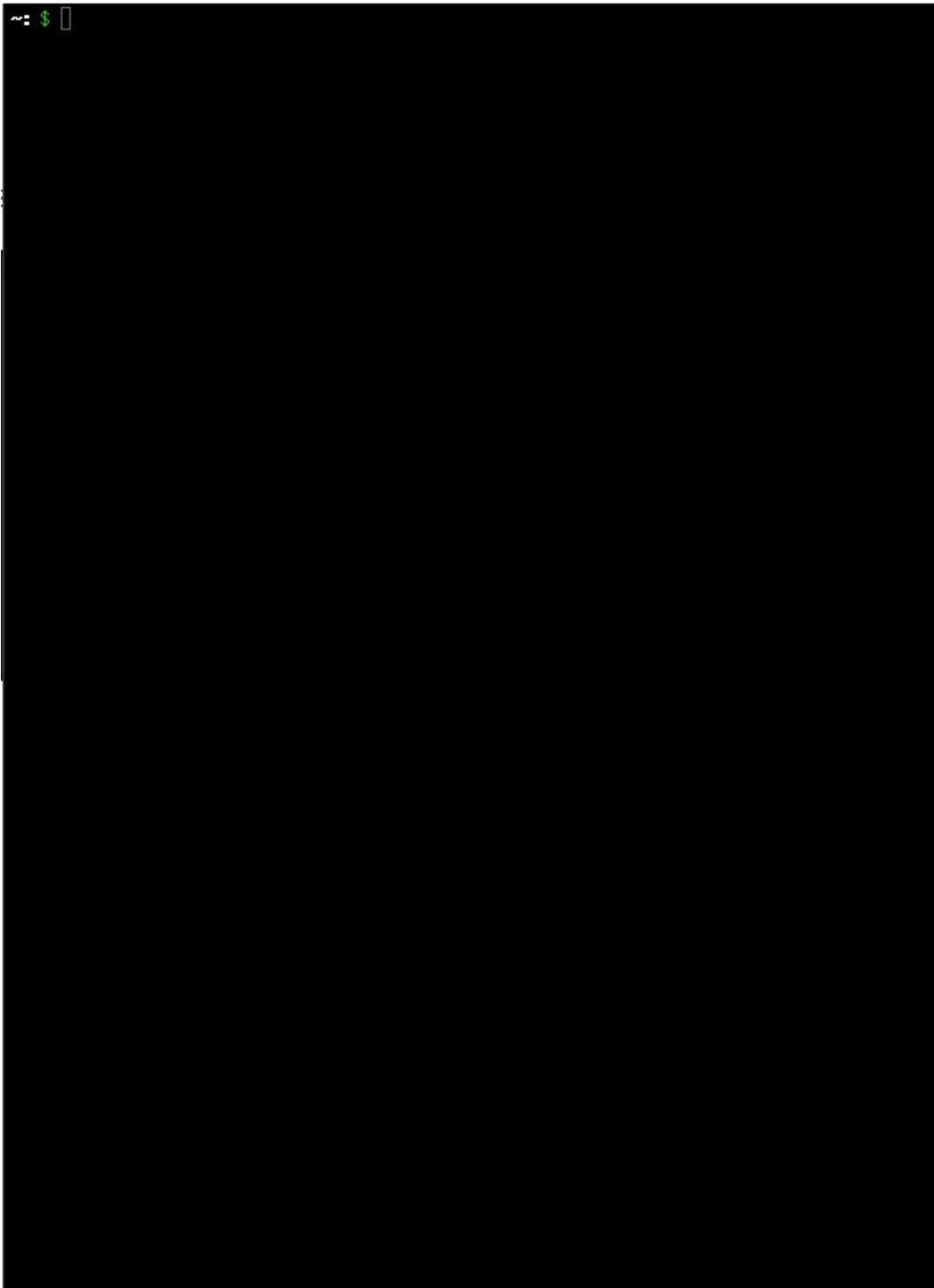
Start MuseLab receiving on TCP port 5000

With the Finder, navigate to `/Applications/Muse`. Double click on the
MuseLab icon.

In the Opened Ports text box, enter the appropriate port. Select the appropriate
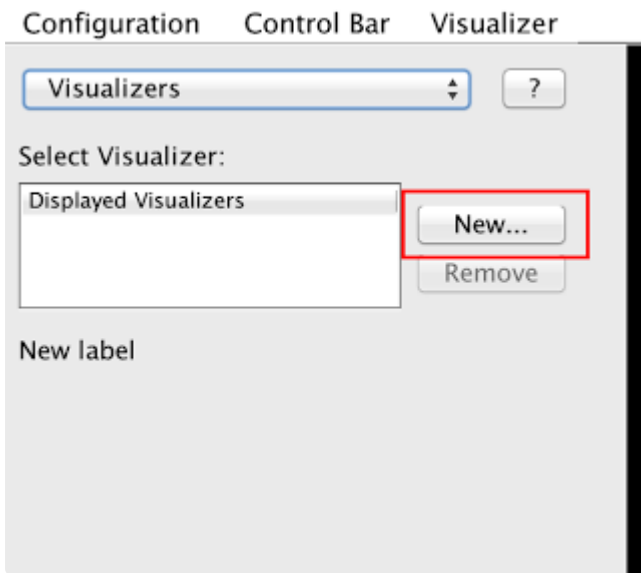protocol using the radio buttons and Click **Open Port**.
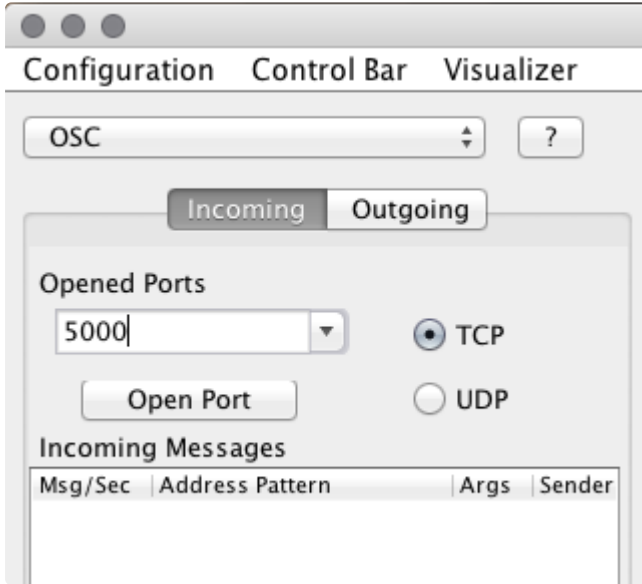
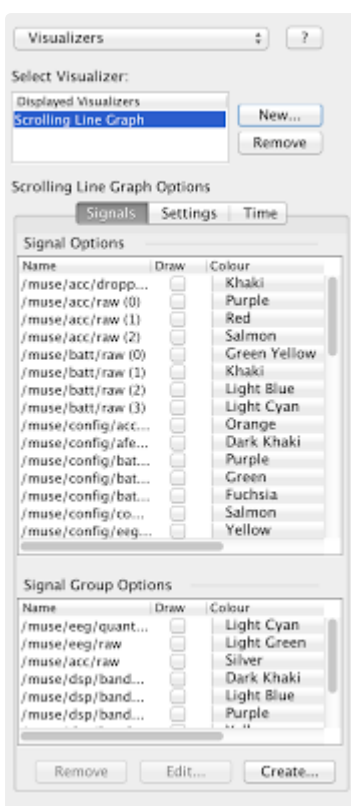You should see the incoming messages listed below a few seconds later.

Create a Scrolling Line Graph

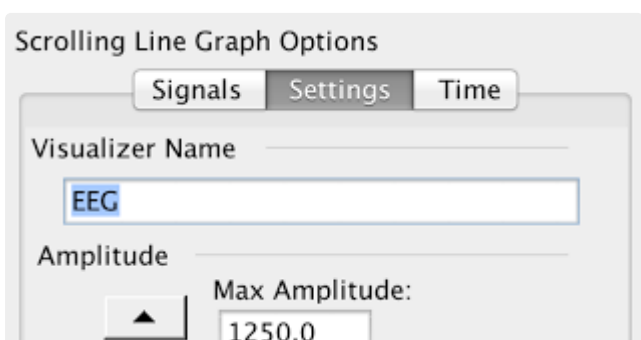Click on the dropdown menu in the sidebar and select **Visualizers**.

Click on **New…**, select **Scrolling Line Graph**, and click **Finish**.

The sidebar will then display a list of all the data streams available for plotting on this new graph.


Click on **Settings** and change the name of the graph to **EEG**.

Add Muse data streams to the graph

In the **Signal Group Options** box, check the **Draw** box for **/muse/eeg/raw**.

Live EEG data will start to be plotted. Click on the plot area and use the up arrow key to zoom into the graph The default graph scale is zoomed far out, so the EEG data will look small at first. Note the occasional large spikes in the waveforms – those are blinks. Go ahead, try a blink or two!
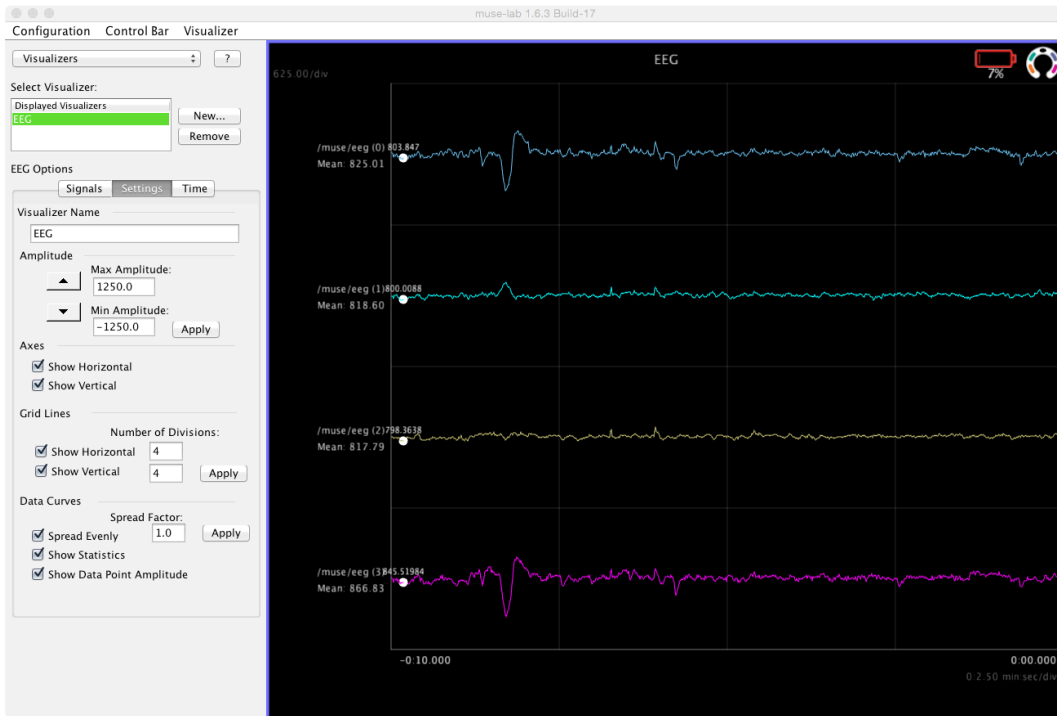

Add graphs for accelerometer and alpha session scores

Now repeat the same process as above but with **/muse/acc** and **/muse/elements/alpha_session_score**:

- Create a new **Scrolling Line Graph**
- Rename it
- Add the appropriate data stream

Make sure to click on each graph and use the up/down arrows to scale it up or down to a point where you can easily see changes in it. For example, **/muse/elements/alpha_session_score** To play around with the session scores, try closing your eyes and relaxing for about ten seconds, then open your eyes. You should see the scores increase when you closed your eyes and decrease shortly after you opened them. ranges from 0 to 1, so make sure the scale (displayed in the top right corner of each graph) is appropriate (it starts way out at 5000 units/division).

You should end up with something like the example on the right.
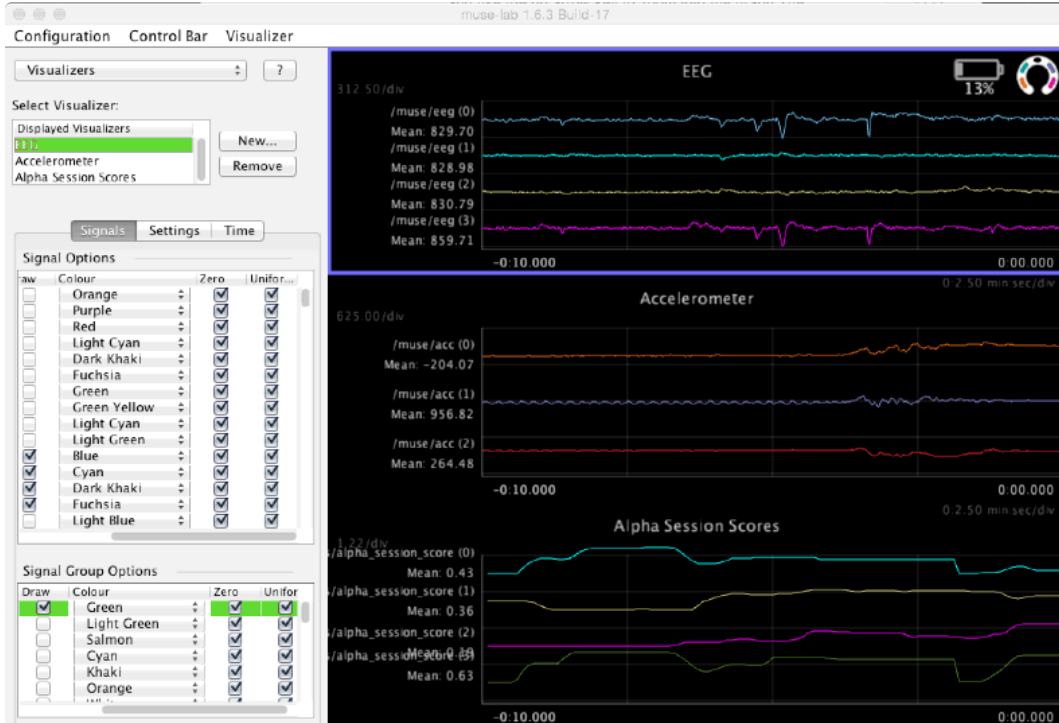
Record some data

Select **Recording** from the dropdown menu in the sidebar.

Choose a storage location and a filename and hit record. All the data from MuseIO will be recorded, not just the data that you are plotting.

When you are finished recording, click **Stop**.

Convert your recording to a different file format

MuseLab records data in the .muse file format. To convert to a variety of other file formats or to replay Muse data from a recording over OSC to another program (say, to look at some data you recorded a while ago with MuseLab) you must use MusePlayer.

Open a Terminal or Command Prompt and enter the following command.

```
muse-player-f path/to/recording.muse -C recording.csv
```

For more information on how Muse data is stored, check out the File Formatssection.

Go forth and explore!

You now know everything you need to know to get started using the Muse Research Tools to experiment with Muse! Have at it!