**Week01, Thursday:**

1. Syllabus, Grading.
2. Why do biologists need computer skills?
   1. Data analysis is important
   2. Computer modeling can also be a key application
   3. Datasets are larger than they have ever been
   4. Every study ends up on your computer ultimately
3. Guiding principles for biological computing.
   1. Automation
   2. Reproducibility
   3. Open access
   4. Correctness
4. The hardware that we use.
   1. You have a “local computer” which is sitting in front of you.
      1. Your computer has a CPU
      2. It might have a GPU
      3. It has RAM
      4. It has storage
   2. There is a computing cluster that you can use remotely.
      1. It is just another computer
      2. Usually it has greater capabilities than your local machine
      3. More processors and/or more RAM are the biggest advantages
5. The software.
   1. Lots of software is available
   2. GUI versus command line
6. The types of data.
   1. Large spreadsheets full of data
   2. Databases full of data
   3. Various types of files containing genomic data
   4. They are almost all text files of various kinds
7. Setting up your computing environment (see next page).

More about the UI supercomputers:

See <https://hpc.uidaho.edu/general/Workshops/HPC_Services.html>. There are standalone servers, which are like a single computer that you log into remotely. There is also a computer cluster to which you can submit jobs. Highly parallel jobs will run much faster on the computer cluster.

**How to connect to the Supercomputer:**

***Using a Mac:***

**Step 1:** Open a terminal window. If you don’t see the terminal application, go to the launchpad and use the search box. Then drag it to your action bar.

**Step 2:** Use the ssh command. Type:

**ssh username@jayne.ibest.uidaho.edu**

Your username is the first part of your email address (everything before the @).

**Step 3:** Enter your Vandal password. If it asks any questions, answer “yes”.

**Step 4:** You should see a terminal window with a command prompt that starts with username@jayne ~. If you do, then you successfully logged in.

***Using a PC:***

**Step 1:** Install PuTTY (<https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html>). The 32-bit version is fine.

**Step 2:** Open PuTTY.

**Step 3:** Type **username@jayne.ibest.uidaho.edu** into the Host Name box. Your username is the first part of your email address (everything before the @).

**Step 4:** Enter your Vandal password.

**Step 5:** You should see a terminal window with a command prompt that starts with username@jayne ~. If you do, then you successfully logged in.

***Transferring files:***

**Step 1:** Install FileZilla (<https://filezilla-project.org/download.php?show_all=1>).

**Step 2:** Open FileZilla.

**Step 3:** Type the following values in the appropriate places in the toolbar:

Host: jayne.ibest.uidaho.edu

Username: the first part of your email address before the @

Password: Your Vandal password

Port: 22

**Step 4:** Hit the Quick Connect button.

**Step 5:** The first time you connect, select **File->Copy Current Connection to Site Manager**. Enter a name and press OK. Then the next time you want to connect, you can go to **File->Site Manager**, select your saved connection and hit connect to connect without having to type anything.

***Other Considerations:***

1. If you try to connect from off campus, you might need to connect to the university VPN. The directions for Windows are here: <https://support.uidaho.edu/TDClient/40/Portal/KB/ArticleDet?ID=40>. The directions for Mac are here: <https://support.uidaho.edu/TDClient/40/Portal/KB/ArticleDet?ID=39>.
2. Never use spaces in file or folder names. It will cause more trouble than it’s worth. If you want a space, use an underscore instead.
3. Install a decent text editor on your computer. For Windows, Notepad++ is good. For Mac, Atom is probably a good choice.
4. Be aware that line breaks in text differ between Windows and Linux/Unix, so text files created on Windows might exhibit unexpected behavior (like serious bugs) when they are transferred to a Unix-like operating system.