1. Log into your newly created instance using the ssh command.

ssh [user\_name@ip.address](mailto:user_name@ip.address)

1. Make a new directory with mkdir called “sra\_example”.
2. Were going to start by downloading only 100,000 reads from each metagenome, instead of the whole metagenome – which could be billions of reads long.
   1. Start a new bash script (a bash script is a text file that ends with .sh)

nano sra\_search.sh

* 1. If Nano cannot be found, you will need to install it. The command “yum” is used to install programs on computers running CentOS. Ubuntu uses “apt” instead of “yum” and macs use “brew” but don’t worry, they all have very similar syntax:

sudo yum install nano

* 1. Paste the following command into your text file:

fastq-dump -X 100000 --outdir ~/sra\_example/ --skip-technical

--readids --dumpbase --clip SRR3403834

* 1. Save and exit nano; then run your bash script. It may take a minute to finish, when it does you should see:

Read 100000 spots for SRR3403834

Written 100000 spots for SRR3403834

1. Now that you have downloaded your first metagenome, it’s time to download something to search for. In this example, we will download the genome of crassphage, a virus discovered from SRA metagenomes. The NCBI reference ID for crassphage is “NC\_024711.1”.
   1. Here we use esearch to find the entry for crassphage, efetch to download it and then capture the output with “>” to store it in a text file called “NC\_024711.1.fasta”:

esearch -db nucleotide -query "NC\_024711.1" | efetch -format fasta

> NC\_024711.1.fasta

1. Before we can start bowtie2, we need to convert our fasta file to a bowtie2 index with:

Bowtie2-build NC\_024711.1.fasta crassphage\_index

You should now have several new files that start with crassphage\_index in your current directory

1. Now we can perform our search for crassphage. Bowtie2 will open the fastq file and scan each read for a match to the database from step 5:

bowtie2 -x crassphage\_index --no-unal -S matched\_dna.sam -q sra\_example/SRR3403834.fastq