Anastasia Smith

1. I selected chromosome 17.
2. Chromosome 17 encodes for more than 16,000 genes.
3. It has about 80 million base pairs.
4. One gene that this chromosome encodes for is known as BRCA-1 gene.
5. This is a tumor suppressor gene. However, when in the proto-oncogene phase, the normal function of the gene is to repair breaks in double stranded DNA, caused by ultraviolet radiation.

BLAST assignment

6. CF(cystic fibrosis) transmembrane conductance regulator, promoter region is the top predicted sequence match.
7. The cystic fibrosis transmembrane conductance regulator (CFTR) is the protein that this gene transcribes. The function of the CFTR protein is within the cell membrane, it performs facilitated transportation of substances across the cell membrane. This cell membrane protein is used specifically in epithelial cells, and functions as a gated chloride ion channel.
8. There are 1500 different known mutations that can occur with this particular region of genes, the most common is a deletion of phenylalanine at position 508.
9. Chromosome 7
10. *Pan paniscus*
11. Bonobo
12. It does not surprise me, after researching the images online, the bonobo looks very anatomically similar to *homo sapiens*
13. *Sapajus Apella* -Pin Monkey
14. 1/119 Gaps
15. A gap occurs from an insertion, or deletion in DNA.
16. Tar DNA bind protein (TARDBP). The protein encoded by this gene is a repressor protein, which represses transcription of HIV-1.
17. UBQLN-2 gene. Plays an important role in protein degradation. Assist protease in targeting misfolded, or malfunctioning proteins for degradation.
18. FUS- RNA binding protein variant 2. This gene encodes for a protein which is a component of the heterogeneous nuclear ribonucleoprotein complex. This complex functions in mRNA splicing.
19. Superoxide dismutase-1 (SOD-1) gene encodes for an enzyme which breaks down superoxide radicals by binding to metals such as copper, or sinc.
20. ALS- Amyotrophic lateral sclerosis. The common name of the disease is Lou Gehrig's disease.
21. A gene bank is a collection of genetic material. In plants the seeds are preserved for sequencing, in animals the gonads are taken, and preserved. Genbank is an online resource which has annotated collections of genetic sequencing from japanese, and european continents.

22. cDNA is a copy of the mRNA strand, and is produced by reverse transcriptase. This is carried out by DNA polymerase enzymes.
23. Partial HBB gene for beta hemoglobin chain, exon 1
24. Frame 3
25. Yes, the sequences vary
26. 781, nucleotide 3
27. Fibroblast growth factor receptor 3 isoform 1 precursor binds to fibroblast growth factors. This plays a role in cell signaling, and bone development.
28. Mutations in this gene lead to craniosynostosis, and variations of skeletal dysplasia.
29. I learned how to use the blast tool. I learned how to take a nucleotide sequence and use online resources to generate information like what genes this code for, what location on the chromosome these genes might reside in, what proteins are typically encoded by the genes, and what disease is usually caused by mutations in that particular gene sequence.

Stephen F. Altschul, Thomas L. Madden, Alejandro A. Schäffer, Jinghui Zhang, Zheng Zhang, Webb Miller, and David J. Lipman (1997), "Gapped BLAST and PSI-BLAST: a new generation of protein database search programs", Nucleic Acids Res. 25:3389-3402.