Britton Nelson
Genomics Assignment
April 29, 2019

1. I chose chromosome number 8.
2. Chromosome 8 has over 1400 genes
3. Chromosome 8 has over 140 million bae pairs.
4. Gene ENSG00000178860 which is also known as Musculin
5. This gene encodes for a protein that forms heterodimers with E2A proteins in vivo.
6. Homo sapiens CFTR (CFTR) gene, partial cds
7. It is a membrane protein belonging to the ABC transporter family functioning as a chloride/anion channel in epithelial cells around the body.[1]
8. Cystic Fibrosis
9. Chromosome 7
10. Pongo abelii
11. Sumatran orangutan
12. No, because humans and primates have similar genetics
13. Saimiri boliviensis boliviensis (Bolivian squirrel monkey)
14. 0/120(0%), 1/119(0%)
15. When comparing two sequences sometimes there might be a section that does not completely match. This can be caused by a mutation. A gap penalty is assigned, and this number tell how many gaps occur in the sequence. The lower the number, the closer the match.
16. Mus musculus TAR DNA binding protein (Tardbp), transcript variant 1, mRNA
17. Homo sapiens ubiquilin 2 (UBQLN2), RefSeqGene (LRG_665) on chromosome X
18. Homo sapiens FUS RNA binding protein (FUS), transcript variant 2, non-coding RNA
19. Homo sapiens superoxide dismutase-1 (SOD-1) gene, exon 1 and partial cds
20. amyotrophic lateral sclerosis, Lou Gehrig's disease
21. GenBank is a NIH genetic sequence database that is used to provide up-to-date comprehensive DNA sequence information.
22. cDNA or complementary DNA is synthesized from an mRNA and is usually used to clone eukaryotic genes in prokaryotes. cDNA is commonly synthesized from fully spliced mRNA using enzyme reverse transcriptase.
23. Homo sapiens partial HBB gene for hemoglobin beta chain, exon 1, isolate 04593664
24. Three 5’ to 3’ frames
25. Yes, on sequence 361, and sequence 781
26. Sequence 361 had an G replaced with R.
    a. Sequence 781 had a missing S.
27. fibroblast growth factor receptor 3
28. This protein’s function is to bind acidic and basic fibroblast growth hormone and functions in bone development and maintenance.
29. A mutation in this gene can cause craniosynostosis and several types of skeletal dysplasia
30. I learned to appreciate GenBank for what it is and how important it can be for sharing genetic information for scientists around the world.

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Works Cited

1.Meng, X., Clews, J., Kargas, V., Wang, X. & Ford, R. The cystic fibrosis transmembrane conductance regulator (CFTR) and its stability. *Cellular and Molecular Life Sciences* 74, 23-38 (2016).