

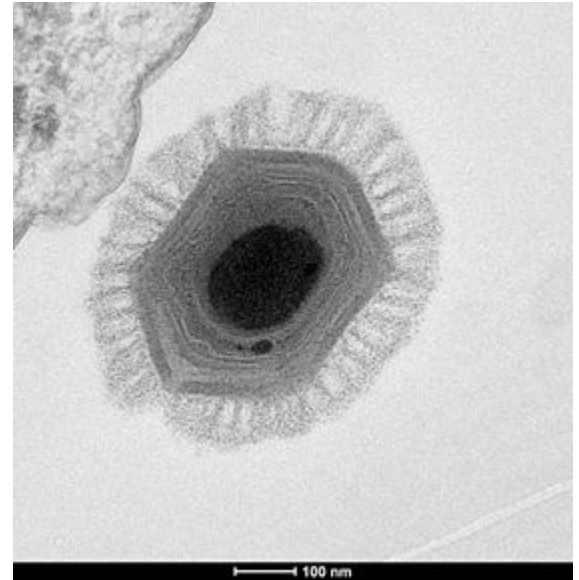
# Megavirus Chiliensis

by

## Nathan Morse

### Introduction

*Megavirus chiliensis* was discovered off the coast of Chile and it can replicate in fresh water. It is a 1,259,197 bp genome that encodes 1,120 proteins, making it the largest known viral genome. The genome has stretches of 6 A's or more, or 6 T's or more, that occur 6,186 times, making it highly susceptible to sequencing errors (Matthieu Legendre, Defne Arslan, Chantal Abergel, and Jean-Michel Claverie). This virus was isolated by co-cultivation with a variety of *Acanthamoeba* laboratory strains and was found to infect amoebas (Wikipedia).



### Methods

*Megavirus Chiliensis*

The entire genome of *Megavirus chiliensis* is in a text file in FASTA format and is 1.3 MB (1,277,254 bytes) in size. This file was downloaded from the National Center of Biotechnology Information (NCBI – <http://www.ncbi.nlm.nih.gov/genome/11798>). The included python program gives helpful information based on the inputted text file (which is the genome of *Megavirus chiliensis*). This information includes analysis on all nucleotides as well as gives a general idea on how large a strand of DNA is in centimeters and meters.

### Results

Nucleotide	Raw Count	Proportion	Percentage (%)
Adenine	471,093	0.37	34.41
Thymine	470,168	0.37	37.34
Cytosine	155,796	0.12	12.37
Guanine	161,956	0.13	12.86

Table 1 shows the individual counts of each nucleotide as well as their proportions and percentages across the genome

### Discussion

Through analysis of the genome of *Megavirus chiliensis* using python programming, it can be proved that the genome is A-T rich, but also very large since it totals 1,259,197 base pairs. In addition, the length of a DNA strand that is 100,000 base pairs is 0.0025 centimeters long, or 0.000025 meters long, which means that the genome of *Megavirus chiliensis* is approximately 12.59 times longer than this (so around 0.00031 meters long).

## References

Legendre Matthieu, Defne Arslan, Chantal Abergel, and Jean-Michel Claverie. "Genomics of Megavirus and the Elusive Fourth Domain of Life." *Communicative & Integrative Biology*. Landes Bioscience, n.d. Web. 20 Sept. 2015.  
<<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3291303/>>.

"Megavirus." *Wikipedia*. Wikimedia Foundation, n.d. Web. 21 Sept. 2015.  
<<https://en.wikipedia.org/wiki/Megavirus>>.

Image of *Megavirus chiliensis* found: <https://en.wikipedia.org/wiki/Megavirus> on 9/21/15