

Genome Analysis

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Motivation

- Explore basic genomic analysis
- Mitochondrial DNA first part of the human genome to exist
 - 37 genes and 16,600 base pairs
- Give insight into the evolutionary process

Research Questions

- How similar are human mitochondrial DNA sequences to other species'?
- How similar are the proteins expressed in human mitochondrial DNA with other organisms?
- What is GC content of each species mitochondrial DNA?
- What is the GC content of each human chromosome?

Results

- Similarity ranking by mtDNA sequence: ['Human 2', 'Chimpanzee', 'Orangutan', 'Mouse', 'Finch', 'Rat', 'Chicken', 'Horse', 'Pufferfish', 'Pig', 'Opossum', 'Cow', 'Dog', 'Medaka fish', 'Zebrafish', 'D. simulans', 'C. elegans', 'Yeast']
- The mitochondria from all species uses exactly the same proteins as human 1 mitochondria
- The GC content for more evolved species like humans is higher than less evolved species like yeast

Results

- Although species have significant differences, the behavior of their cells are essentially the same
- All life is related