

The title of my thesis

Any short subtitle

My Name
Master's Thesis Spring 2016



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My Name

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Abstract

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Introduction

Chapter 1

Background

1.1 DNA

Deoxyribonucleic acid (DNA) is a molecule which allows living creatures and viruses to store and pass on genetic information. **How/What is stored**

The DNA of an individual is made up by two complementary strands of nucleotides bound together in a double helix, where the nucleotides can contain the bases Adenine, Cytosine, Guanine or Thymine. Complementary in this context means that instead of one singular sequence of bases DNA is made up by a sequence of paired bases, A's with T's and C's with G's, called *base pairs*. **Reverse**

The size of DNA varies across species, from a couple of thousand basepairs (kb) in some viruses to several hundred billion basepairs (gb) in larger, more complex organisms. The human genome comes in at the higher end of this range, with a length of roughly 3 gb. As DNA consists of discrete units, the bases A, C, T and G, the genome of an organism can be represented by a text string. A continuous sequence of bases is called a *contig*, several contigs combined is a *scaffold* which again can be fused to *chromosomes* which makes up the *genome* of an organism.

Genes/trash DNA

1.1.1 Genomic variations

Over the span of time DNA is subject to change. Through random mutations and recombination a genetic sequence can be changed either within an individual or as a product of reproduction. The fact that these changes are able to survive and propagate through generations leads to a genepool where even though the DNA comes from a common ancestor, different individuals will have different variants of the original sequence. These variations form the basis for the division into species, but even within species a lot of natural variation will occur.

The least complex of these variations are *Single Nucleotide Polymorphisms*