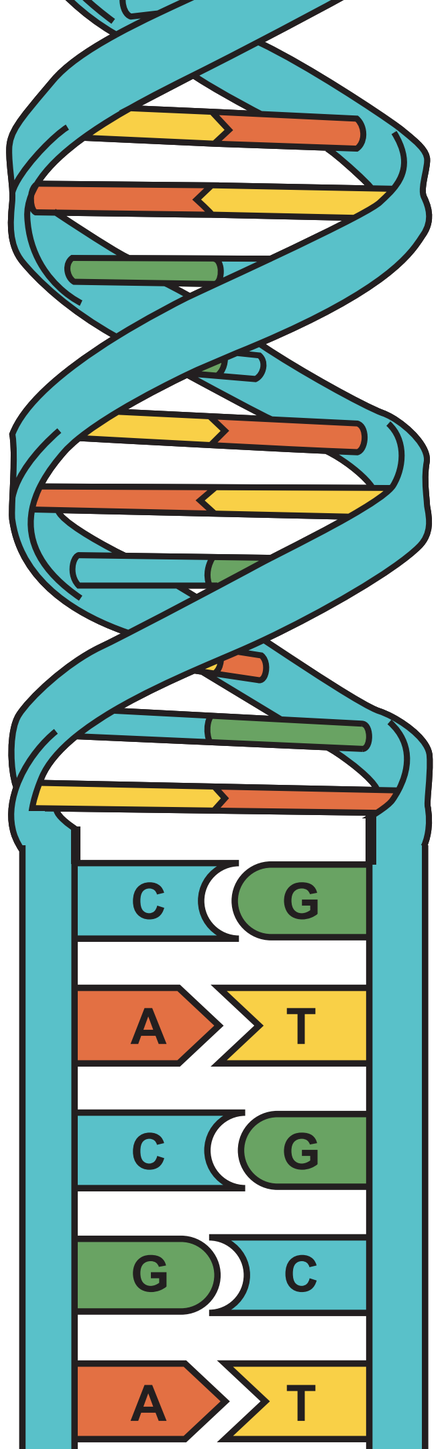


GENOME DETECTIVE ?

A PROJECT BY FATIMA, YASHFEEN, RUBAB AND ZUHAIR

THE PROBLEM STATEMENT

In the realm of bioinformatics, several challenges persist.
Firstly, the absence of user-friendly tools for comparing gene sequences hinders researchers' ability to efficiently analyze genetic data.
Secondly, conventional methods of disease detection often rely on time-consuming diagnostic procedures, leading to delays in identifying potential genetic disorders.
Lastly, the lack of intuitive visualization techniques for genetic sequences complicates the interpretation of genomic data.

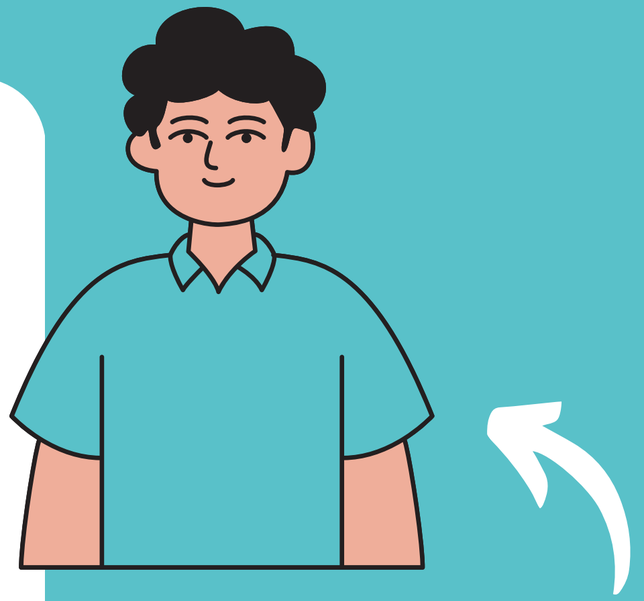
OUR APPROACH

- Develop a comprehensive software tool, GenomeDetective, to tackle these challenges head-on.
- Integrate data structures to enable gene sequence comparison, disease detection, and sequence visualization.
- Prioritized user-friendly interfaces and intuitive functionalities to empower researchers and healthcare professionals in their genetic analysis endeavors.

WHAT DOES GENOME DETECTIVE OFFER?

Genome Detective primarily offers three main features :

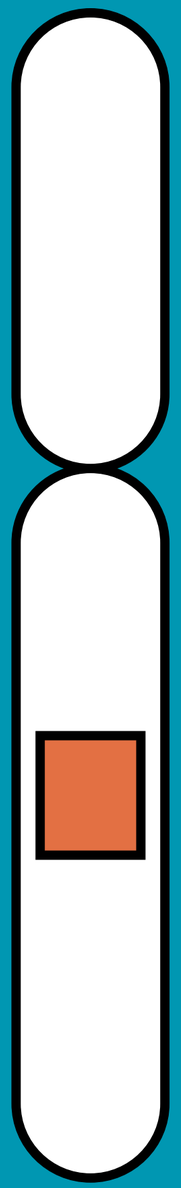
- Gene Comparator
- Disease detection of diseases caused by mutations
- Sequence Logo



UNDERSTANDING GENETIC DATA?

In gene data, the nucleotides adenine (A), cytosine (C), guanine (G), and thymine (T) occur in various combinations to form specific codons

These codons, consisting of three nucleotides each, encode for individual amino acids. Amino acids, in turn, serve as the fundamental building blocks for proteins.



1) DISEASE DETECTION

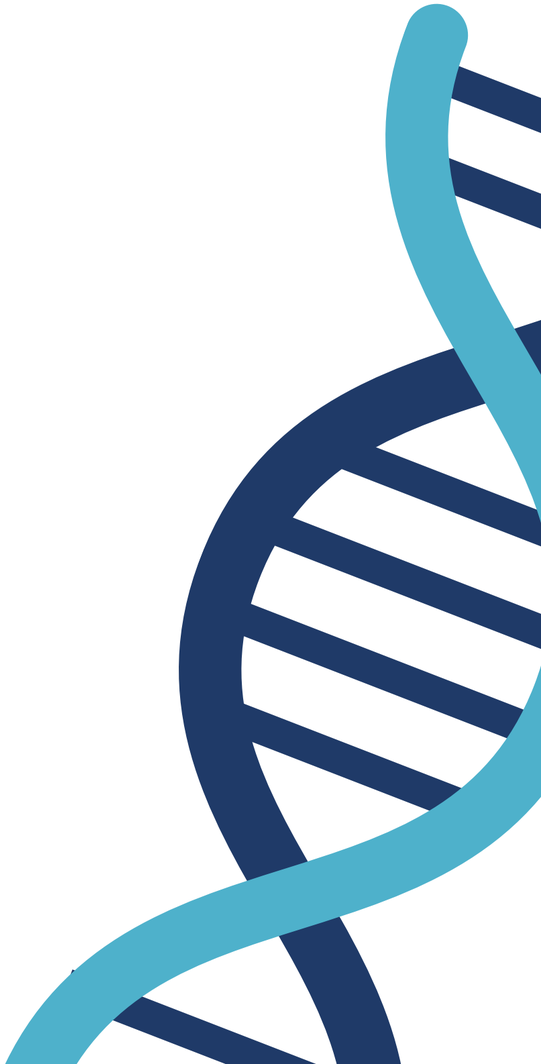
Changes or mutations in codons, which are not intended, can disrupt the normal functioning of proteins, leading to various diseases.

Our disease detection feature identifies 10 such diseases including Sickle Cell Anemia, Cystic Fibrosis and Huntingtons

2) GENE COMPARATOR

The gene comparator analyzes genetic sequences to identify similarities in codons.

Its useful in facilitating cross-species genetic analysis, allowing researchers to compare genetic sequences across different species.



3) SEQUENCE LOGOS

In the sequence logo, we map each amino acid to its frequency. Moreover, we can also map certain patterns of amino acids to frequencies as well; these have an immense impact on the protein’s function.