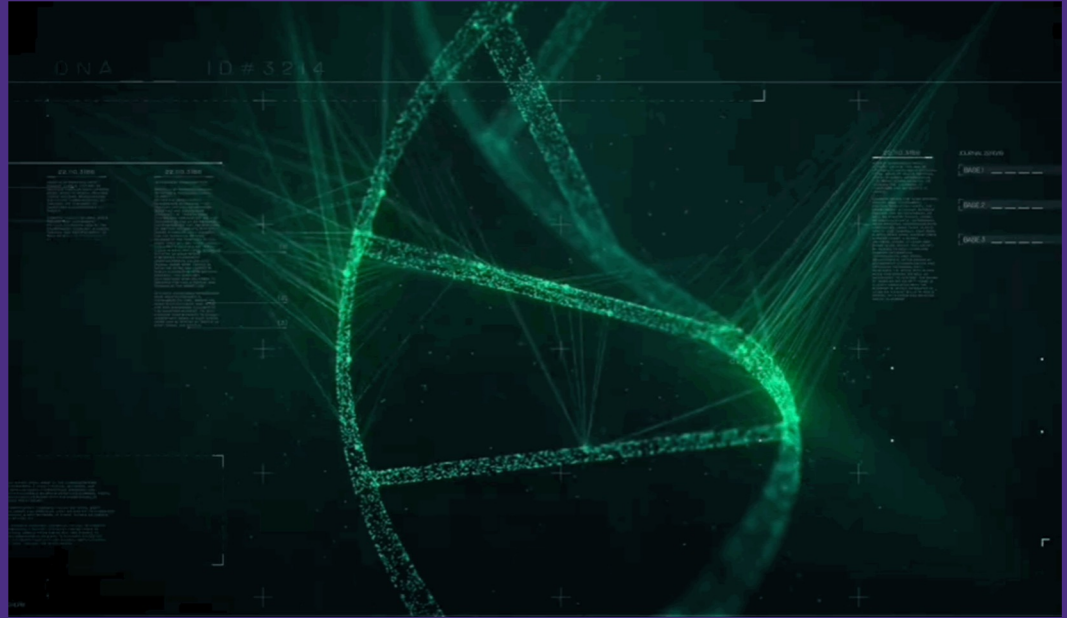# UltraGene

Presented by: Cristian, Dana, KC, Zi

BE BOUNDLESS

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Background

<Problems>
It's hard to understand the meaning behind 23andME gene raw data.

```
# rsid        chromosome      position      genotype
rs12564807   1               734462        AA
rs3131972    1               752721        AG
rs148828841  1               760998        CC
rs12124819   1               776546        AG
rs115093905  1               787173        --
rs11240777   1               798959        AG
rs7538305    1               824398        --
rs4970383    1               838555        CC
rs4475691    1               846808        CC
rs7537756    1               854250        AA
rs13302982   1               861808        GG
rs55678698   1               864490        CC
i6019299     1               871267        CC
rs1110052    1               873558        TT
rs147226614  1               878697        GG
i6019302     1               881843        GG
rs2272756    1               882033        GG
rs67274836   1               884767        AG
i6019303     1               888554        CC
rs13302945   1               889159        CC
i6019304     1               889182        GG
i6019305     1               891343        GG
rs13303106   1               891945        GG
i6019306     1               894379        GG
rs13303010   1               894573        AA
i6019308     1               897792        CC
i6019309     1               898082        AA
rs6696281    1               903104        CC
i6019310     1               905681        CC
i6019311     1               906114        CC
i6019312     1               907666        --
i6060381     1               909238        GG
rs2340592    1               910935        GG
rs13303118   1               918384        GT
rs78164078   1               921071        GG
rs6665000    1               924898        AA
rs2341362    1               927309        CC
```

Background

<Solution>
We provide customer with a platform to conduct searches and comparisons to identify high-risk genes.

Matches with AI and experiment.

	position	Alt	Ref	Functional score
0	37,807,852	G	T	-0.46
1	37,807,852	G	T	-0.46

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User Story

Michael got his genetic report from 23andMe and is eager to find out his personal genetic information and family genetic history.
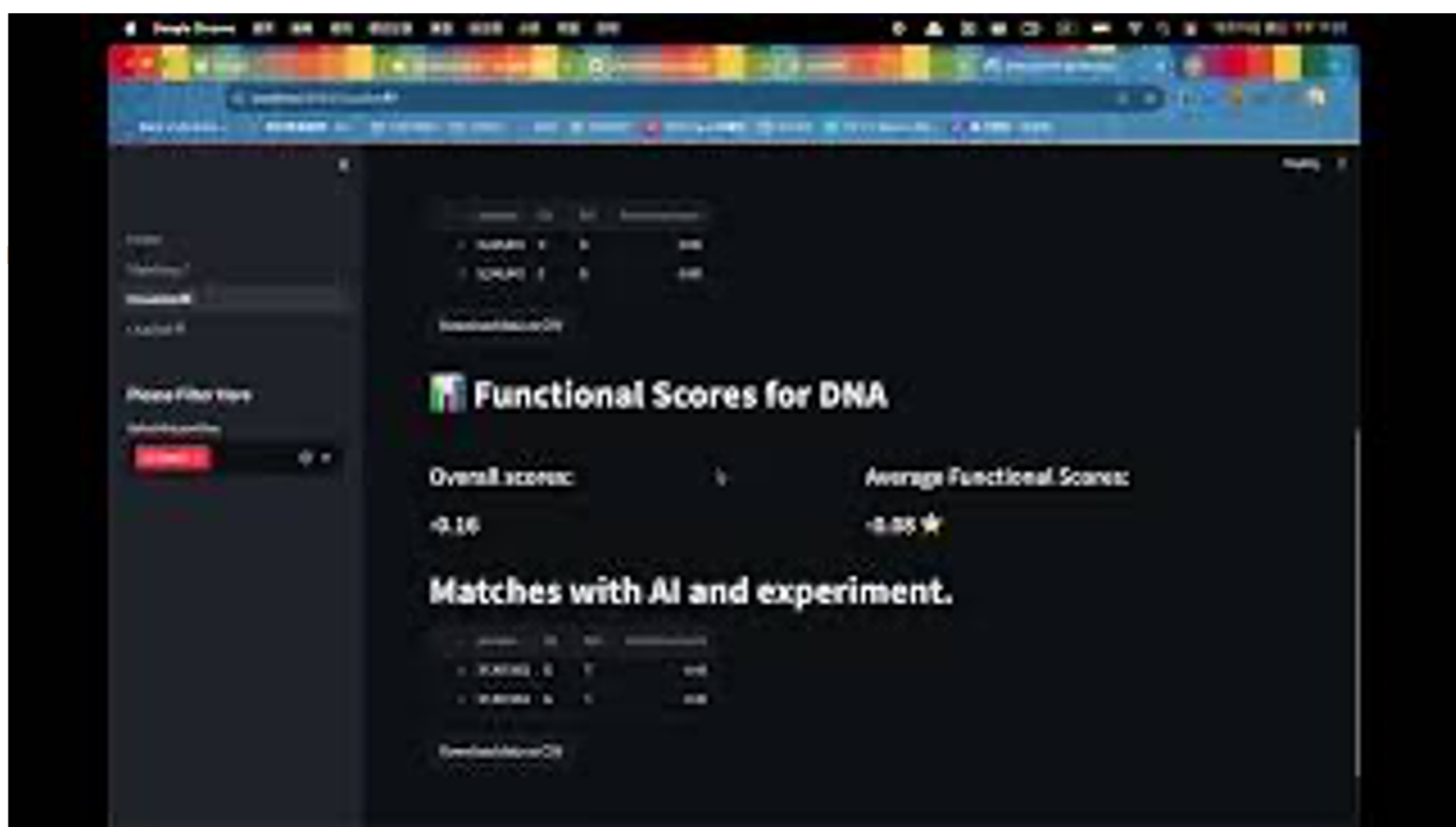
UltraGene can simplify the complexity of genetic analysis, uncover potential genetic anomalies in a user-friendly manner.

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Functional Scores for DNA

Overall scores:

Average Functional Scores:

-0.16

-0.05 ★

Matches with AI and experiment.
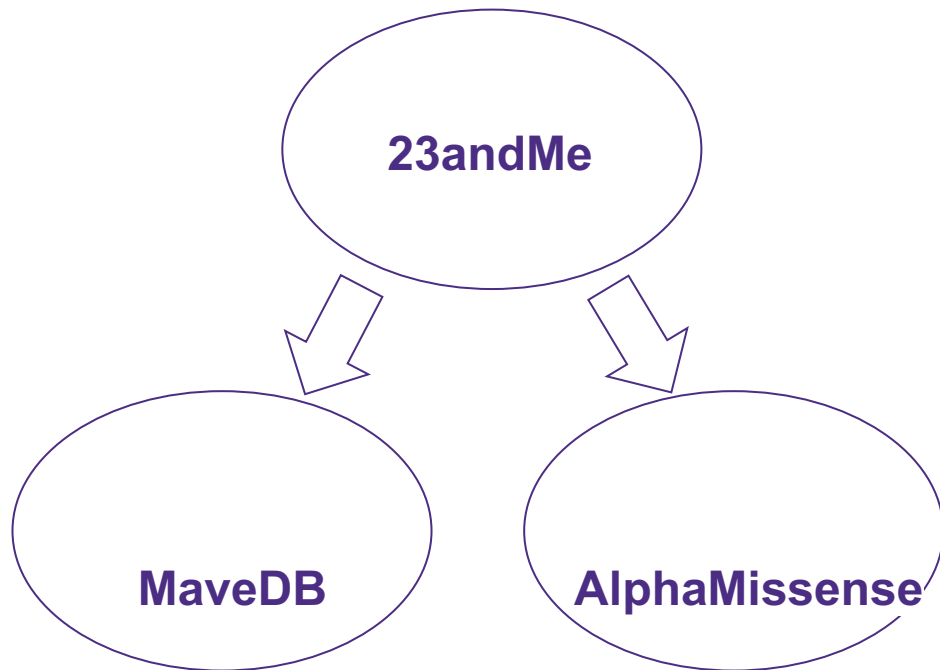
Results & highlight

Information obtained from UltraGene:

- **gene position**
- **functional score**
- **FAQ with chat bot**
- **identifies and suggests the most dangerous DNA positions**

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Future work

- **Incorporation of Additional Databases (aim for Open Source) :**
  - **EX - data on genetic inheritance patterns Autosomal Dominant vs Recessive (*i.e., 1 or 2 copies of the gene need to be defective to cause disease*)**
- **Support for Multiple Data Formats:**
  - **Expand the data input compatibility to accept various formats (ex. WGS, Exome)**
  - **Move beyond exclusive support for 23andMe SNP Chip data.**