

Meet Julian:

A few of Julian's family members have type 2 diabetes so he/she registers for a 23andMeTM genetic test to find out if he/she is at risk of having type 2 diabetes too. The results provide common SNP (single nucleotide polymorphism) genotypes based on the NCBI human reference genome (a standard version of the nucleotide sequence of the human genome). The result shows that Julian has multiple SNPs associated with a highly increased risk of developing type 2 diabetes, which makes him/her worried. Luckily, Julian finds a website called GenoCode and uploads the genetic test data there. The website gives outputs of normally-distributed synthetic data that describes the full possible range of phenotypes (the observable characteristics) for a given genotype (the genetic constitution) from which Julian is able to understand the risk better from the visualized data and realizes that the risk of developing type 2 diabetes is not necessarily as high as what is estimated by 23andMeTM. By providing relevant scientific articles, the GenoCode website helps Julian to understand that type 2 diabetes risk is largely driven by environmental and lifestyle factors that he/she can control.

There are several uses for this GenoCode tool:

1. Julian will import his/her own genetic data in a protected and user-friendly web interface
2. Julian will be able to visualize complex statistical data in a way that's easily understandable
3. An accurate disease risk score will be evaluated for Julian with full transparency on the data resources used for prediction
4. Relevant scientific articles on the phenotype evaluated will be provided to help Julian understand that the risk is largely driven by environmental and lifestyle factors that he/she can control