

Elaboration

Additional Research

DNA has been studied for over 100 years, but it was the completion of the Human Genome Project in 2003 that provided scientists with the best insight into human DNA. This advancement has allowed for a greater look into how DNA makes us who we are. Since its completion, scientists and doctors have been able to better study the genes that make up our DNA and figure out what specific genes do. DNA testing is now used in doctors' offices for a variety of reasons, including: diagnosing genetic conditions, predicting potential genetic diseases in pregnancies, and learning about potential genetic conditions that a patient may be likely to have.

Genetic testing at a doctor's office can cost between \$0 to \$3,000 depending on the patient's insurance. Unfortunately, many people will not be able to afford this genetic testing. There is one main at home genetic testing kit on the market called 23andme. This product is available for \$99 which is a reasonable cost for most, however, a patient would not have the support of a doctor with this product, and it does not test for all genetic diseases. Our product aims to reduce the overall cost for genetic testing while thoroughly testing the patient's DNA for possible ailments or concerns.

Our product, Health Protect, will aim to cover all areas of genetic testing as well as the areas that 23andme is unable to cover. Our tests will be able to be done in a doctor's office, and the patient will be able to consult their doctor if concerns arise from their results. Patients will have comfort in knowing that they can turn to their doctor for guidance when they receive the results of their test. Patients will be able to view their results at any time via our mobile application designed to go with the use of our product. The work done to determine which genes cause certain diseases and determine which medications to recommend as well as providing the mobile application for viewing this information would be the main part of our product. Medical swabs are vastly available, so although the swab is what gathers the information, the analysis of the DNA collected by the swab is the ultimate product that we are providing as well as the additional resources provided to the patient. The prototype section that follows will provide examples of what the mobile application would look like.

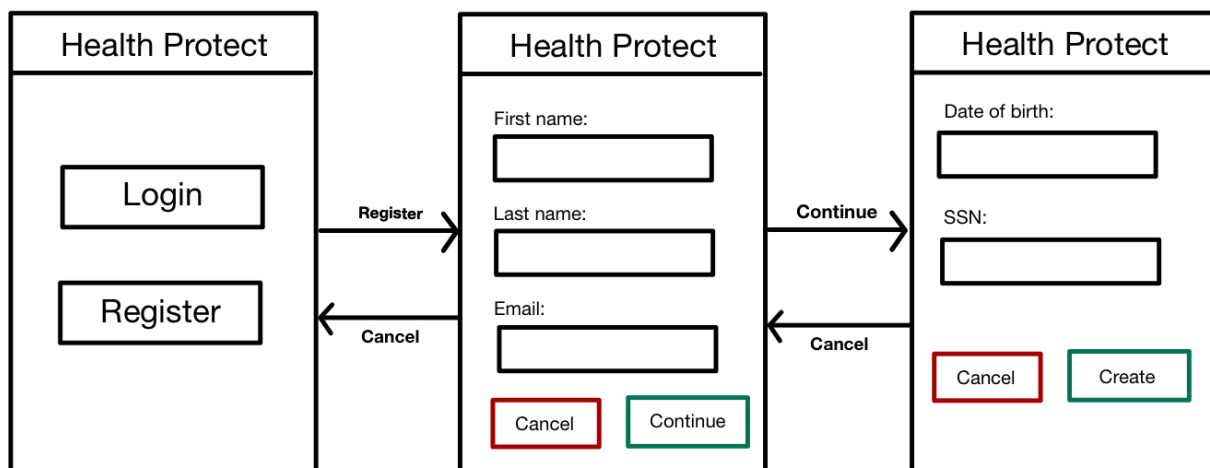
Our product will gather data with consent of the patient, and with that data, will be able to provide more accurate results in future tests. When considering cancer in particular, there are a multitude of genes that may contribute to a person developing it. Our scientists will use the data given by the patients to further investigate what genes cause certain types of cancers. Receiving updates from patients years after their initial tests would allow scientists to better determine which genes cause a certain cancer.

Prototype

The information will be gathered from a swab of saliva taken from the inside of the cheek of the patient by their doctor. The swab will be a generic swab similar to the one pictured below:



The patient's sample will be sent to the lab to be examined, and the results of the examination will be sent to the patient. In order to view their results, a patient will have to sign up for an account using their personal information which would include their social security number. The results will be synced to the account that matches the social security provided at the time the sample was collected. An example of the registration page is shown below:



Given that no other account exists with the social security number provided when registering, the account will be created, and the patient will be brought to the homepage. The homepage will also be brought up when a patient logs in. The homepage will provide the patient with options to view their results, view their recommendations based on their results, or to contact their doctor. This is shown below:

Health Protect
View Results
View Recommendations
Contact Doctor
Return to Login

If a patient's results determine that they are more genetically prone to a disease or condition than an average person, then this information will be displayed in their results page. The following shows an example of each selection shown in the homepage:

"View Results" screen:

Health Protect
<u>Results:</u> The results of your test show that you have a mutation in the HOXB13 gene which puts you at a greater risk of developing prostate cancer. Please consult your doctor for further testing...
Return to Homepage
Contact Doctor

"View Recommendations" screen:

Health Protect
<u>Recommendations:</u> Conduct regular self examinations to check for any new growths. If you smoke, consider quitting. Reduce alcohol intake. Consider increasing intake of foods containing lycopene...
Return to Homepage
Contact Doctor

"Contact Doctor" screen:

Health Protect
<u>Your Doctor:</u> Dr. Carlisle Cullen
<u>Phone Number:</u> 374-432-1098
<u>Address:</u> 123 N 4th St. Forks, WA 98331
Return to Homepage
Call Doctor