



GENETIC DISEASE

Group....

Group Members

1. .....
2. .....
3. .....
4. .....
5. .....
6. .....
7. .....

LIVEWORKSHEETS

GENETIC DISEASE

A. Introduction

Questions	Expected Answer
Do you know about "Sequence Manipulation Suite (SMS) ?	
What do you know about Genetics?	
What do you know about Gene Mutation?	
What are some examples of genetic diseases that you know?	
Do you know about Cystic Fibrosis?	
Do you know about the CFTR gene?	

Now, let's watch a video on Mutations and Cyctic Fibrosis.

a). Genetics

https://www.youtube.com/watch?v=8rbMQwzmQrk



LIVEWORKSHEETS

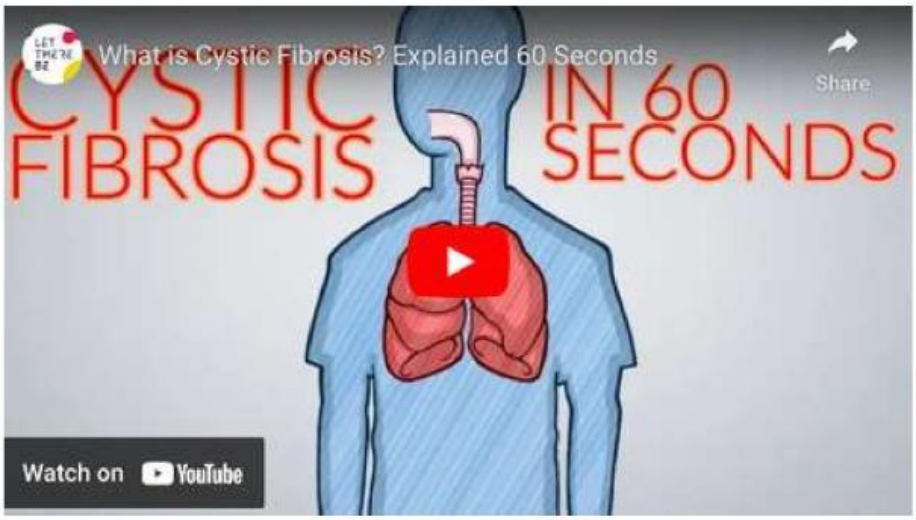
b). Mutations

https://www.youtube.com/watch?v=vl6Vlf2thvI



c). Cystic Fibrosis

https://www.youtube.com/watch?v=ppMZwjcEfxs



After watching the three videos above, give us your comments and thoughts!

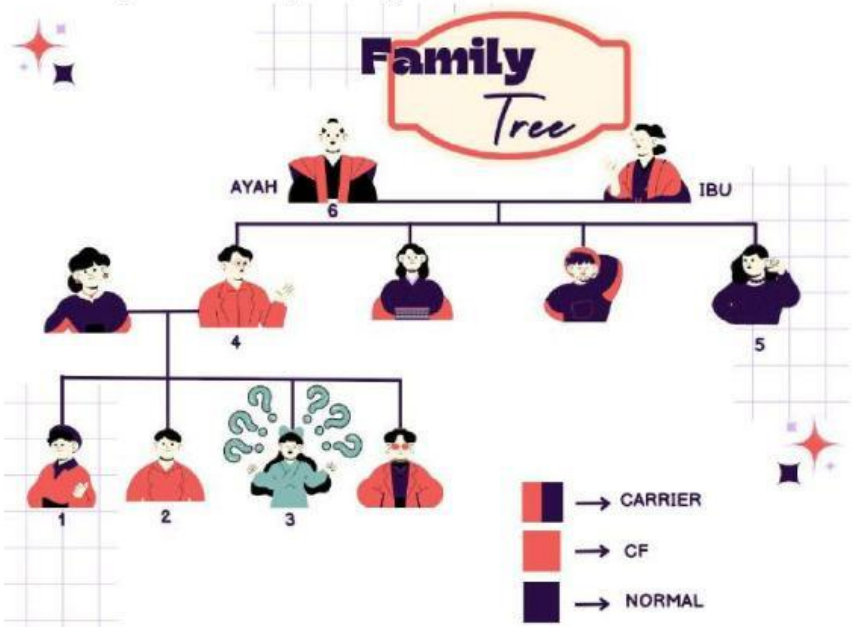
B. Investigations

Cystic fibrosis (CF) affects 1 in 2500 births with symptoms including recurrent lung infections, intractable cough, salty sweat and abnormal stools in Australia. The gene associated with CF produces a protein responsible for transferring salt in and out of cells in our body. This gene is called the CFTR (Cystic Fibrosis Transmembrane Regulator) gene and is located on chromosome seven. Since each person has two copies of chromosome seven, each person also has two copies of the CFTR gene.

Modified from Article: Health Engine. (2008).Genetic Testing for Hereditary Diseases. https://healthinfo.healthengine.com.au/genetic-testing-for-hereditary-diseases

LIVEWORKSHEETS

Here is the family tree of the phenotype.



The question is, can the child with number 3 get cystic fibrosis symptoms?

To answer this question, researchers extracted DNA and sequenced it from the 6 family members in the family diagram above.

SAMPLE 1
TTCCAAGTCTAGATGTAAAATATTAAGAAACAGATCAACTTTGGCAGTCAAGATGAAAATA
TACTGAAT

SAMPEL 2
TTCCAAGTCTAGATGTAAAAAATTAAGAAACAGATCAACCTTGGCAGTCAAGATGAAAAT
GCGCTGAAT

SAMPLE 3
TTCCAAGTCTAGATGTAAAAAATTAAGAAACAGATCAACCTTGGCAGTCAAGATGAAAAT
GCGCTGAAT

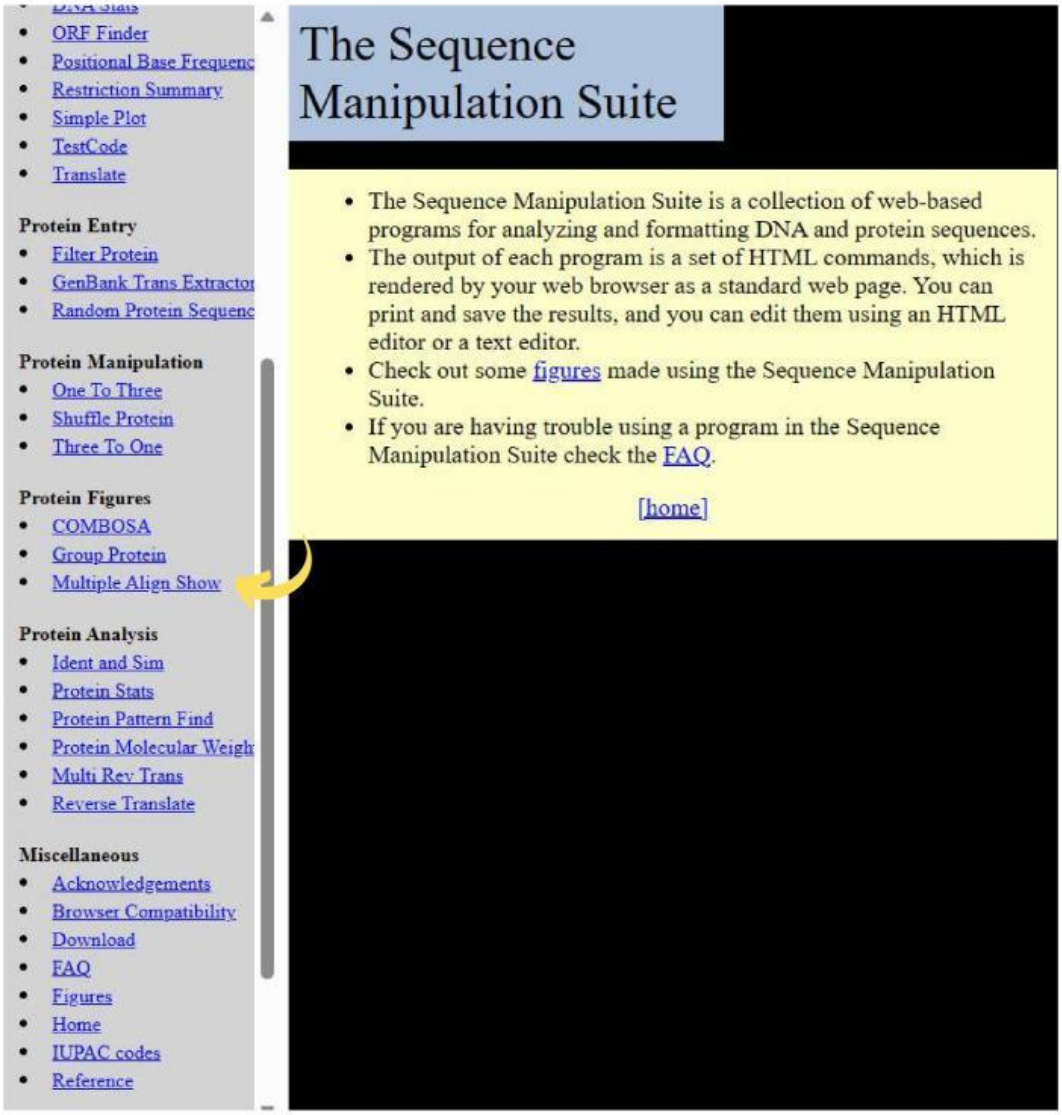
SAMPLE 4
TTCCAAGTCTAGATGTAAAAAATTAAGAAACAGATCAACCTTGGCAGTCAAGATGAAAAT
GCGCTGAAT

SAMPLE 5
TTCCAAGTCTAGATGTAATATATTAAGAAACAGATCAACCCTGGCAGTCAAGATGAAAAT
ATACTGAAT

SAMPLE 6
TTCCAAGTCTAGATGTAAAATATTAAGAAACAGATCAACTTTGGCAGTCAAGATGAAAATA
TACTGAAT

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1. Using manually
   a. Write back the results of DNA Sequences
   b. Look for differences from DNA Sequences in each sample
   c. Give a mark as a form of distinguishing DNA Sequences in each sample
2. Using *Sequences Manipulation Suite* (SMS)
   a. Access the following link http://bioinformatics.org/sms/



Please make the steps in comparing the DNA Sequences above!

LIVEWORKSHEETS

Please answer the following questions again.

Questions	Expected Answer
Do you know about "Sequence Manipulation Suite (SMS) ?	
What do you know about Genetics?	
What do you know about Gene Mutation?	
What are some examples of genetic diseases that you know?	
Do you know about Cystic Fibrosis?	
Do you know about the CFTR gene?	

Let's look at your answers after doing the activities in this lesson. If your answers change, become more detailed and better than before, congratulations! Your understanding is improving. However, if your answers after these activities remain the same, don't worry, please study again and consult your teacher.

LIVEWORKSHEETS