FORENSIK SCIENCE

Group....

Group Members:

1. .....
2. .....
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FORENSIC SCIENCE

A. Orientation

Question	Expected Answer
What do you know about Bioinformatics? Relate it to the structure and function of DNA!	
What do you know about forensic science and how it relates to the purpose of sequencing DNA identification results?	
Name 3 examples of cases related to forensic science? And give the reason and purpose!	
How important is Bioinformatics in assisting the Forensic Science process?	
What are the stages of Bioinformatics in solving Forensic Science problems?	
How to determine the DNA sequence in the application of the principle of inheritance of traits?	
From a forensic event, name 4 samples that can be used as evidence in analyzing DNA?	
Is there a connection between forensic science and Genetics?	
What is the role of technology in the context of forensic science? List 3 examples of technologies that can help improve the accuracy and effectiveness of DNA analysis?	

B. Conceptualization

Now, let's watch a video on Forensic Science and DNA Fingerprinting.

a). Forensic

https://youtu.be/i7Lg0dUDzxk

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b). DNA Fingerprinting

https://www.youtube.com/watch?v=7onjVBsQwQ8

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

C. Investigation

On March 4, 2023, there was a major fire at **Pertamina Pelumpang Depo** in North Jakarta, Indonesia. The fire was caused by a leak in the Pertamina gasoline pipeline object. A total of 33 victims were identified. Conventional identification methods left 6 victims unidentified. From the accident site, there are 6 victims who have not been identified and only fragments of the victim's bones remain. To identify them, they were sent to the Laboratory of Molecular Biology, then samples were taken from the victim's family or DNA left on the victim's toothbrush or hair. In this case, mtDNA and STR profiles were used to assist the genetic investigation.

Modified from Article: Death Toll of Pelumpang Pertamina Depot Fire Increases.. (2023). https://bit.ly/KebakaranPertaminaPelumpang

D, Conclusion

The following is the victim's DNA **(Sample A)** which will be aligned with the DNA of the next of kin or the DNA left on the victim's toothbrush or hair **(Sample B)**.

Sample A

>A1
CGCAGAAGCTGCTCGTGTCAAATTAAGAGAAACGCACTGATGTTAAGCAT

>A2
CACACCCGCGGTGACTTGCACATGCGATTGCTCCCTTAAGGTCTATCTCC

>A3
GAGCAAGTACAGCAAGTGTGGTCGCAAGGACCTACCCCCGCGTATCGGCA

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>A4
CACACCCGCGGTGACTTGCACATGCGATTGCTCCCTTAAGGTCTATCTCC

>A5
ATGGGGGAAGGAACCGCCAGGCCAACGGTTTTTTCGGTGAGTTCACATTG

>A6
TCGGTGACAAACCCAGACTTCATCGTACGACCATTTTGAGTTGCAGAAGC

>A7
TTACCTAGCCGATCAGCATGAGAACGGGAAAATAGCCCACGGAGGCTACT

Question, from the DNA samples presented, is there the same DNA?

Sample B
>B1
CACACCCGCGGTGACTTGCACATGCGATTGCTCCCTTAAGGTCTATCTCC

>B2
CGCAGAAGCTGCTCGTGTCAAATTAAGAGAAACGCACTGATGTTAAGCAT

>B3
AGCCAAGTACAGCAAGTGTGGTCGCAAGGACCTACCCCCGCGTATCGGAG

>B4
TCGGTGACAAACCCAGACTTCATCGTACGACCATTTTGAGTTGCAGAAAT

>B5
TTACCTAGCCGATCAGCATGAGAACGGGAAAATAGCCCACGGAGGCTACT

>B6
ACACAGGAAGGAACCGCCAGGCCAACGGTTTTTTCGGTGAGTTCAACCTG

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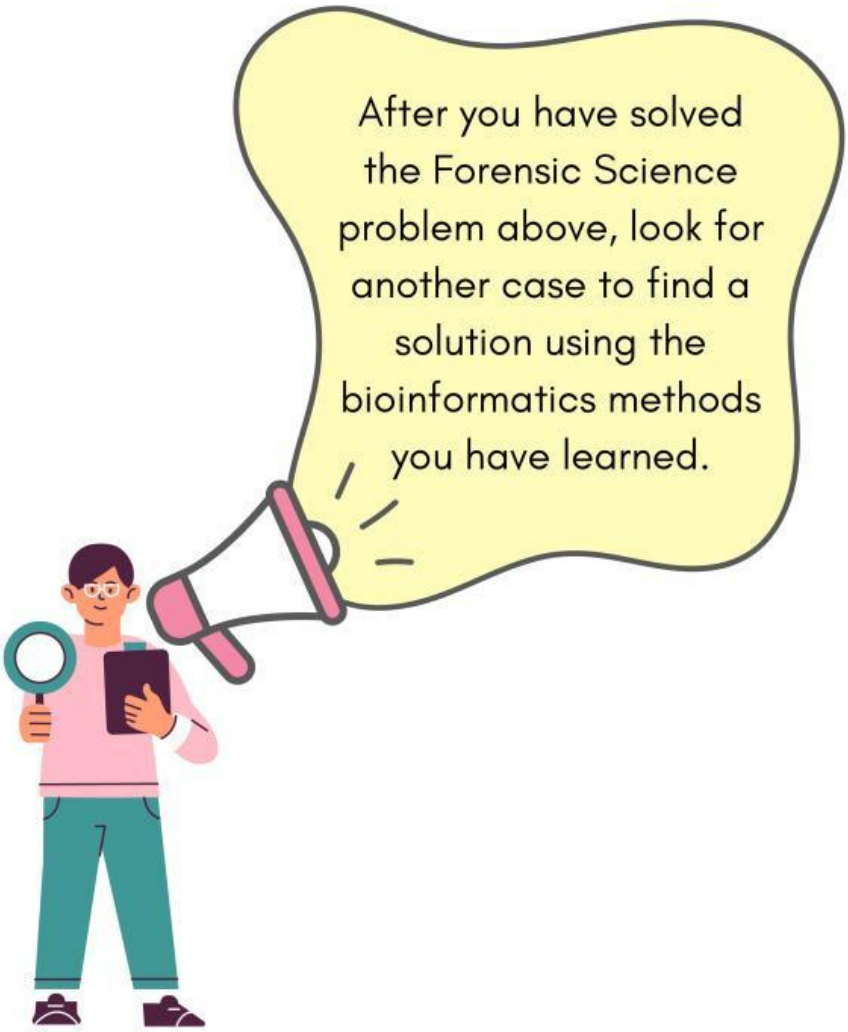
1. Using Sequences Manipulation Suite (SMS)

Access the following link _https://www.bioinformatics.org/sms2/ident_sim.html

Please analyze the aligned DNA!



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D, Discussion

Please answer the questions below again.

Question	Expected Answer
What do you know about Bioinformatics? Relate it to the structure and function of DNA!	
What do you know about forensic science and how it relates to the purpose of sequencing DNA identification results?	
Name 3 examples of cases related to forensic science? And give the reason and purpose!	
How important is Bioinformatics in assisting the Forensic Science process?	
What are the stages of Bioinformatics in solving Forensic Science problems?	
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From a forensic event, name 4 samples that can be used as evidence in analyzing DNA?	
Is there a connection between forensic science and Genetics?	
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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.

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