



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>



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

CACACCCGCGGTGACTTGACATGCGATTGCTCCCTTAAGGTCTATCTCC

>A3

GAGCAAGTACAGCAAGTGTGGTCGCAAGGACCTACCCCCGCGTATCGGCA

>A4

CACACCCGCGGTGACTTGACATGCGATTGCTCCCTAAGGTCTATCTCC

>A5

ATGGGGGAAGGAACCGCCAGGCCAACGGTTTTTCGGTGAGTTCACATTG

>A6

TCGGTGACAAACCCAGACTTCATCGTACGACCATTTTGAGTTGCAGAAGC

>A7

TTACCTAGCCGATCAGCATGAGAACGGGAAAATAGCCCACGGAGGCTACT

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

Sample B

>B1

CACACCCGCGGTGACTTGACATGCGATTGCTCCCTAAGGTCTATCTCC

>B2

CGCAGAAGCTGCTCGTGTCAAATTAAGAGAAACGCACTGATGTTAAGCAT

>B3

AGCCAAGTACAGCAAGTGTGGTCGCAAGGACCTACCCCCGCGTATCGGAG

>B4

TCGGTGACAAACCCAGACTTCATCGTACGACCATTTTGAGTTGCAGAAAT

>B5

TTACCTAGCCGATCAGCATGAGAACGGGAAAATAGCCCACGGAGGCTACT

>B6

ACACAGGAAGGAACCGCCAGGCCAACGGTTTTTCGGTGAGTTCAACCTG

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



Sequence Manipulation Suite

Ident and Sim

Ident and Sim accepts a group of aligned sequences (in FASTA or GDE format) and calculates the identity and similarity of each sequence pair. Identity and similarity values are used to assess whether or not two sequences share a common ancestor or function.

Paste the **aligned sequences in FASTA or GDE format** into the text area below. Input limit is 20,000,000 characters.

```

<?php
//C rease IFFI-2
//-----HSDSLMPSSTVHAGDGEPTSPEDNKK
PS1EQDQGERALPTDLFADRRARSVEEAFQNLUSAEPYQHWPR-
PESIPERFEGHVGADHGVGVNHSIFQCTISGADVHVSINDG
ALDQVKT-QGVNHPVFCDTVA1EGG,EAQV1FDEKSAVEE2LKS
ALVCOTISKATGTGVSADQIKSGHVGQEDFVAFVQGVHMQG-SDTS

```

Enter the groups of similar amino acids separated by commas to be used for the similarity calculation. If you are comparing DNA sequences, leave this text area empty.

SAVL, FTV, CH, ST, KR, DQ, P

*This page requires JavaScript. See browser compatibility.
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[Genome FASTA](#)
[Probs. in FASTA](#)
[EXML Feature Extractor](#)
[GDS: Gene Extractor](#)
[Pile Plot](#)
[GenBank to FASTA](#)
[GenBank Feature Extractor](#)
[GenBank Trans Extractor](#)
[One to Three](#)
[Range Between DNA](#)
[Range Between Protein](#)
[Reverse Complement](#)
[Self Counts](#)
[Self Counts](#)
[Three to One](#)
[Sequence Extractor DNA](#)
[Sequence Extractor Protein](#)
[Sequence Analysis](#)
[Color Plot](#)
[Color Usage](#)
[GDS: Icons](#)
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[PCR Primer Suite](#)
[PCR Products](#)
[Repeat \(Shuffle\)](#)
[Protein Isoelectric Point](#)
[Protein Molecular Weight](#)
[Protein Pattern Find](#)
[Protein Stats](#)
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After you have solved the Forensic Science problem above, look for another case to find a solution using the bioinformatics methods you have learned.



D, Discussion

Please answer the questions below again.

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From a forensic event, name 4 samples that can be used as evidence in analyzing DNA?	
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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?	

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.