

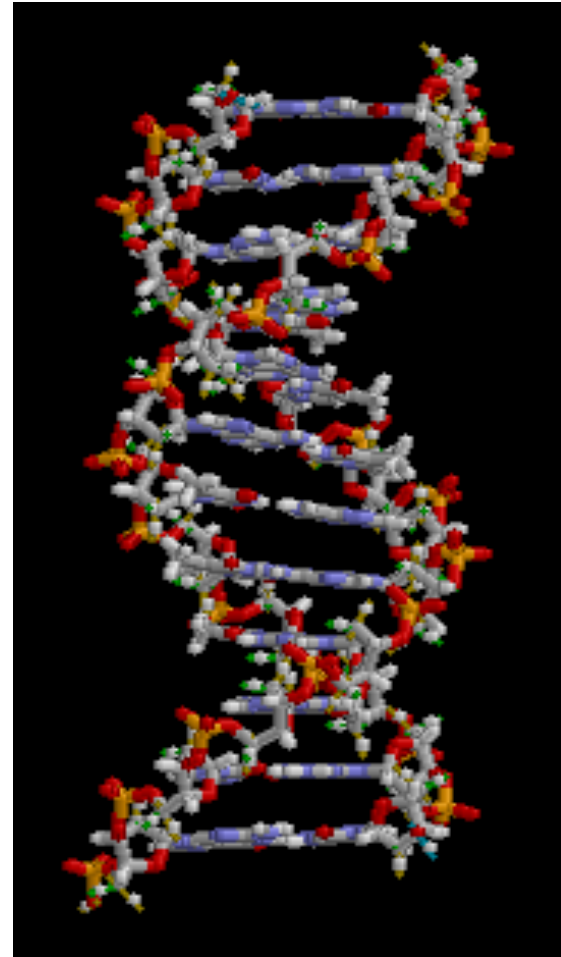
let's talk 
science
partnership program

Forensic Detective

Agenda

let's talk 
science

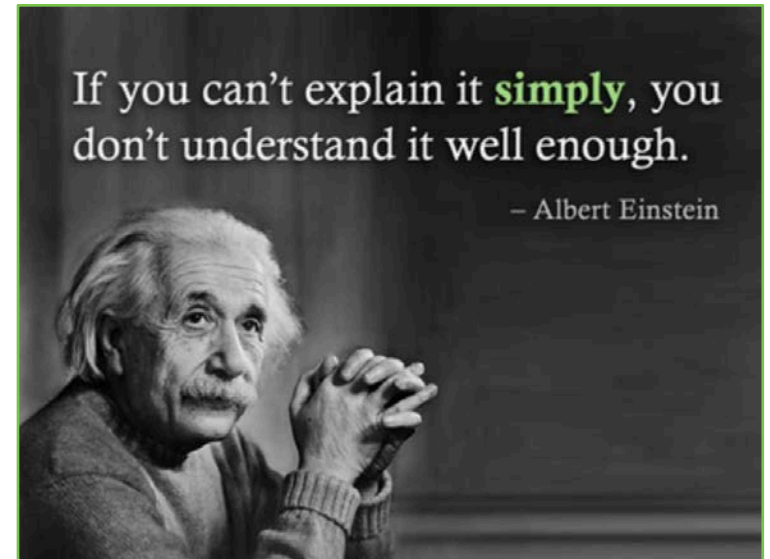
- Introduction
- What is DNA?
- How can we extract DNA?
- DNA extraction activity
- How is DNA used in Forensic Investigations?
- DNA Fingerprint Activity
- Gel Electrophoresis
- Conclusion



Introduction

let's talk 
science

- What do scientists do?
- Where are they?
- What types of scientists are we?
- How does this type of science affect you?



What is DNA?

- DeoxyriboNucleic Acid
- What is DNA made of?
- Where is DNA found?
- What is the function of DNA?
- Why is it important?



Extracting DNA

- Time to extract your own DNA!
- Materials:
 - Bottled water
 - Clear dish soap
 - Food dye
 - Table salt
 - Isopropyl Alcohol



let's talk  **SCIENCE**

Biological Separation

1. Mix 500 mL drinking water with 1 tbsp of salt.
2. Take 3 tbsp of mixture to another cup.
3. Gargle the 3 tbsp salt water. Time for 1 minute.
4. Spit back into cup.
5. Stir with 1 drop of soap.
6. Mix 100mL isopropyl alcohol and 3 drops of food dye.
7. Tilt salt cup and gently pour a 2cm layer on top.
8. Wait 2.5 mins!

let's talk Science

Forensic Investigations

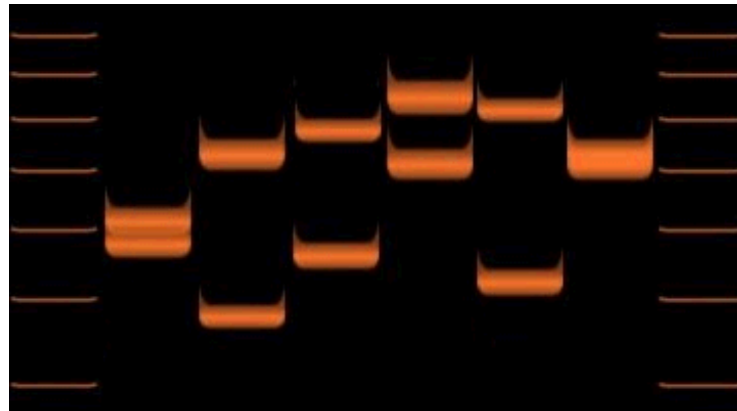
- What does “Forensic” mean?
- How does one become a Forensic Investigator?
- Why is DNA important in Forensic Investigations?
- What type of ‘clues’ or ‘traces’ do Forensic Investigators usually look for in a crime scene?



let's talk Science

Forensic Investigations

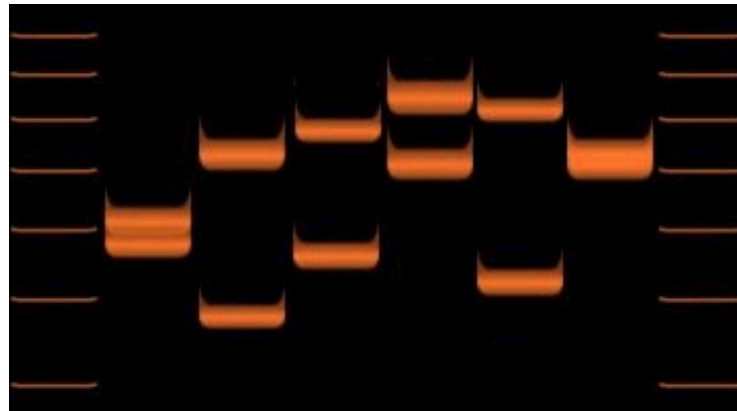
- Fingerprints, bloodstains, hair, finger nails, saliva
- What do we get from the traces above?
- What is DNA Fingerprinting?
 - Technology used by forensic scientists to identify a person by their DNA profiles or Genetic Fingerprint



let's talk Science

Forensic Investigations

- Fingerprints, bloodstains, hair, finger nails, saliva
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let's talk 
science

DNA Fingerprinting

Find out who ate the
lollipop?

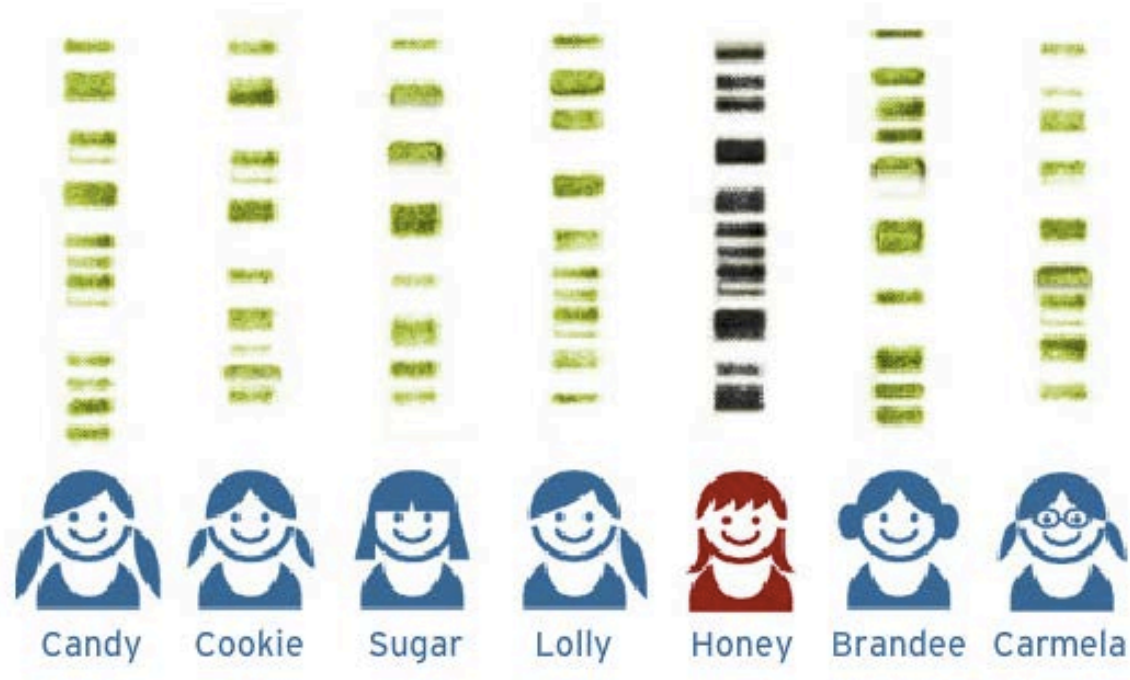
[NOVA Lollipop](#)



let's talk  **SCIENCE**

Who ate the lollipop?

Honey is the lollipop culprit!!!

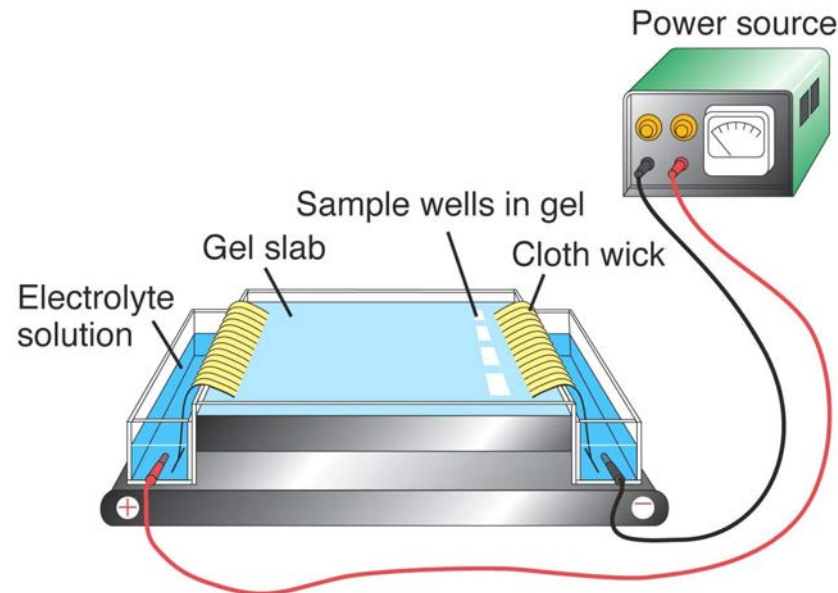


SHE'S THE ONE!

Gel Electrophoresis

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SCIENCE

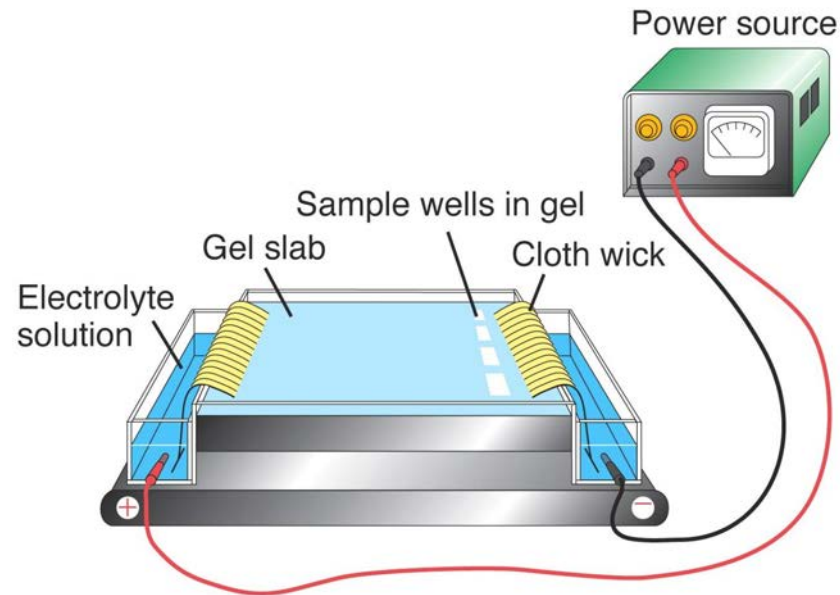
- What is Gel Electrophoresis?
 - method used to separate and analyze different molecules like DNA, RNA, and proteins into fragments
 - Fragments separate in terms of their **size** and **charge**



Gel Electrophoresis

let's talk
SCIENCE

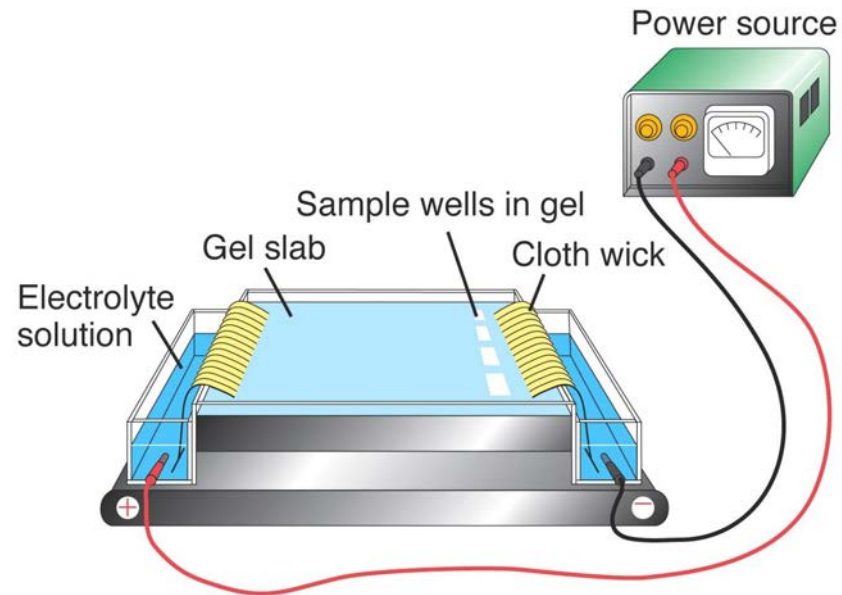
- Let's do our own
- Instead of using actual DNA, we'll use food colors and we'll see how they separate
- Materials are shown on set-up:



Gel Electrophoresis

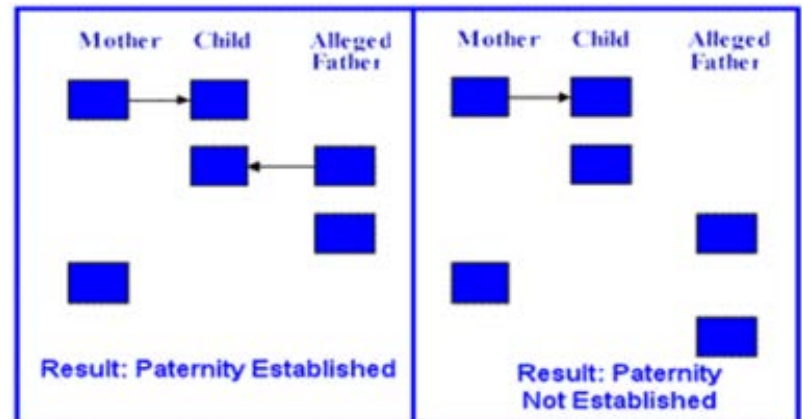
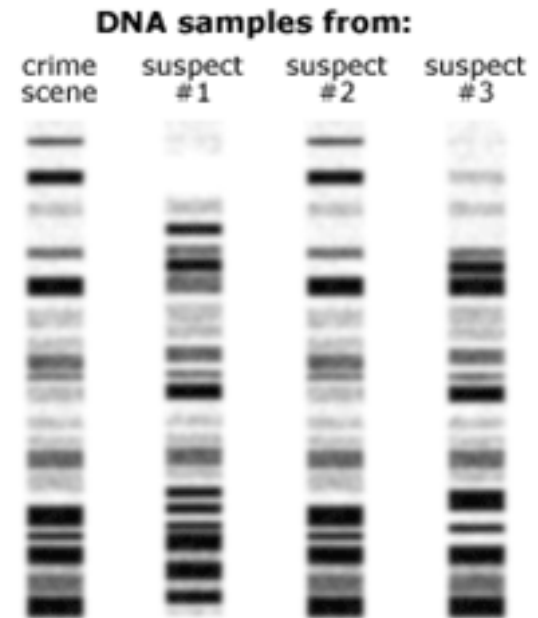
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SCIENCE

- After loading, let it run for 45 mins.



Conclusion

- What is DNA?
- Why is DNA important in Forensic Science?
- How do we get a sample of DNA?
- How do we separate DNA to find someone's DNA Fingerprint?
- Can you think other ways where DNA Fingerprinting may be useful?



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Thanks for having us!