

Forensic Science Virtual Labs

DNA Extraction

Go to the following link: <http://learn.genetics.utah.edu/content/labs/>

Click on 'DNA Extraction' then, 'Start Lab'

1. What are three ways human DNA can be used?
2. Where is DNA located? How much DNA can be found in one cell?
3. What kind of cells are we using to isolate DNA?
4. What are the four steps to purify DNA?
5. What are the 10 materials used in the DNA purification?
6. What is the purpose of the lysis solution?
7. What is the purpose of the salt solution?
8. What can you do with DNA once it is extracted from a cell?

PCR

Go to the following link: <http://learn.genetics.utah.edu/content/labs/>

Click on 'PCR' then, 'Begin'

1. The human genome is composed of over _____ chemical base pairs.
2. The _____ or PCR is used to make copies of DNA.
3. PCR can generate over 100 _____ copies of DNA in hours.
4. What is the purpose of PCR ?
5. _____, _____, _____, and _____ are the nucleotides needed to _____ copies of DNA.
6. What is DNA Polymerase?
7. What can DNA Polymerase withstand that other enzymes cannot?
8. What does a DNA Thermal Cycler do?
9. When the temperature cools to 50 degrees Celsius, the single strands of DNA do what?
10. When the temperature is 72 degrees Celsius, what happens to DNA polymerase?
11. When do your desired fragments start to appear?
12. On cycle _____, you have over a billion copies of DNA.

Gel Electrophoresis

Go to the following link: <http://learn.genetics.utah.edu/content/labs/>

Click on 'Gel Electrophoresis' then follow the directions

1. What is gel electrophoresis used for?
2. What is the filter that sorts the DNA?
3. What makes the DNA move?
4. DNA migrates to the _____ end of the gel.
5. True or False: Long strands of DNA migrate farther than short strands of DNA.
6. Why do we stain the gel?
7. Why do we add buffer into the gel mix?
8. What is the gel comb used for?
9. True or False: buffer keeps the gel from drying out.
10. Why add the loading buffer to the DNA sample?
11. Why do we also run a standard?
12. True or False: the red wire will generate a negative charge.
13. True or False: because DNA is negatively charged, it will migrate to the negative pole.
14. How do we know that the current is running in the gel box?
15. Ethidium bromide fits between the _____ of the DNA ladder and shows up under _____ light.
16. Write down your DNA estimates below from smallest to largest.

Cloning

Go to the following link: <http://learn.genetics.utah.edu/>

Click on 'Cloning' then move through the activities from 'what is cloning?' to 'Cloning Myths'

1. You need three individuals for the cloning process. What is the purpose of each one?
2. What are the 6 steps of cloning?
3. What is the ball of 16 cells called?
4. What color should the baby mouse be?
5. What did researchers in Hawaii find was critical to successful cloning?