DNA from fruit

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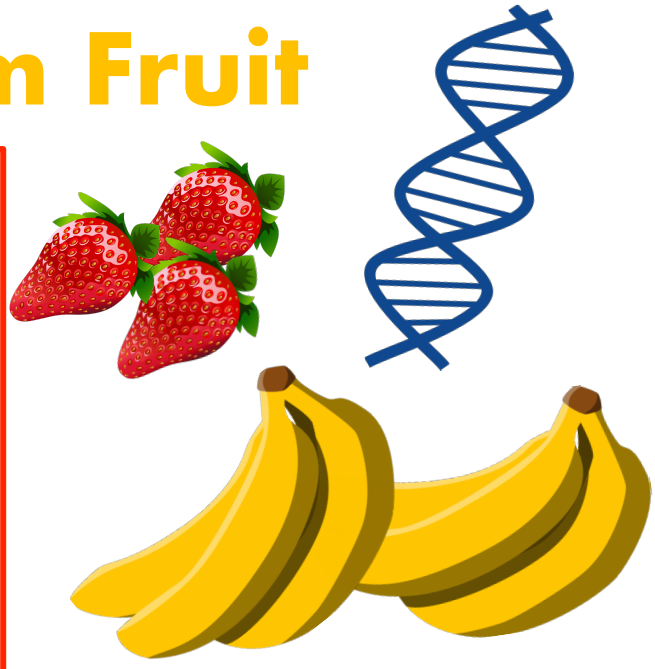
DNA from Fruit



Materials

- 1 Resealable (e.g. Ziplock) bag
- 1 Banana or 2 strawberries (can be substituted by a tomato, kiwi, apple)
- 2 tsp Dish detergent
- ½ Cup of water
- 2 Clear cups (plastic or glass)
- 1 Coffee filter or fine mesh strainer
- 1 tsp of salt
- ½ Cup of cold rubbing alcohol (Put bottle in freezer before use)
- Coffee stirrer or wooden skewer
- Measuring spoons

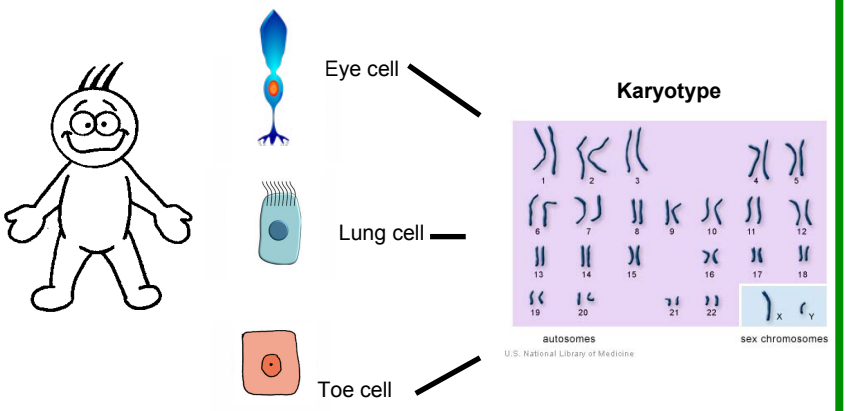
Procedure

1. Take the peel off the banana (or use 2 strawberries).
2. Put the fruit into the plastic bag.
3. Seal the bag.
4. Completely mash the fruit with your hands (this breaks open the cells and releases the DNA!).
5. In a cup, make the DNA extraction liquid:
    1. Mix together 2 teaspoons of detergent, 1 teaspoon of salt, and ½ cup of water
6. Add 2 teaspoons of the DNA extraction liquid into the bag with the fruit.
7. Reseal the bag and gently smash/mix for another minute (avoid making soap bubbles).
8. Place the coffee filter/strainer inside the other cup.
9. Open the bag and pour the content from the bag into the filter.
10. Gently squeeze the filter to let the liquid seep through.
11. Next, pour down the side of the cup an equal amount of cold rubbing alcohol as there is fruit liquid and do not mix or stir.
12. Within a few seconds, watch for the development of a white cloudy substance (DNA) in the top layer above the fruit extract layer.
13. Tilt the cup and pick up the DNA using a plastic coffee stirrer or wooden stick.
14. You have now isolated DNA from fruit!

What is DNA?

"It's a history book - a narrative of the journey of our species through time.
It's a shop manual, with an incredibly detailed blueprint for building every human cell.
And it's a transformative textbook of medicine, with insights that will give health care providers immense new powers to treat, prevent and cure disease." - Francis Collins

Every cell in our body has the same DNA .

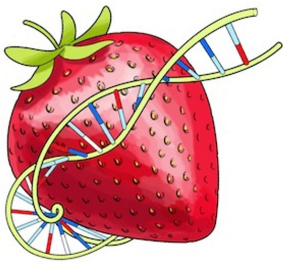


How much DNA is in one human cell?

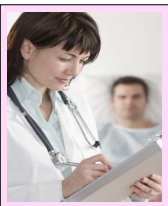
Genome = 46 (23 x 2) chromosomes
Genome = approx. 3 billion base pairs. If stretched = 2 meters (6.6 ft)
DNA sequence in any two people is 99.9% identical – only 0.1% is unique!

How much DNA is in one strawberry cell?

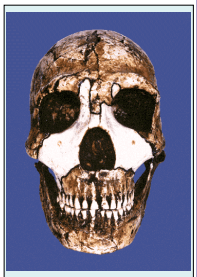
Genome = 56 (7 x 8) chromosomes
Genome = approx. 960 million base pairs



WHAT CAN WE LEARN FROM THE HUMAN GENOME?

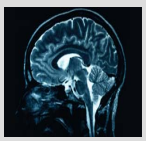


Better understanding of human disease



Insight into human origins

Personalized medicine & Pharmacogenetics



Greater insight into cognitive function

Identifying genetic susceptibility to disease

"Silly Science" is organized by the Luca Lab.
www.lucalab.wayne.edu

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Credit

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- Strawberry picture:
- https://pngimg.com/uploads/strawberry/strawberry_PNG2586.png
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