Science fair logbook sept 16th 2024

- Started the science fair project for
- Turned on computer
- Researched information then reworded it
- Got first step of decoding the monkey DNA

Method

First we searched up one website, reworded the information. Then after that we typed the reworded information/step 1 into a word document. Then we brainstormed what we will do next week then we said goodbye.

Step 1: DNA extraction

The process begins with DNA extraction, where samples are obtained from monkey cells using standard methods such as blood draws, skin swabs, or tissue biopsies. This step is crucial for isolating the DNA from the cells. The cell membranes are broken down through chemical treatments, which enables the DNA to be released and prepared for further analysis

Observations: We observed that decoding monkey DNA has complicated but easy steps.

Thoughts: I think that next time we should make the paragraph a little bit longer.

Idea: we currently have no ideas.

Science fair logbook sept 23rd 2024

- got my friend
- turned on computer
- we researched information then reworded the information
- We brainstormed what else to do or edit.
- We said goodbye

Method

First I turned on my computer, then we researched more about the monkey DNA. Then we got our step 2 and 3 of decoding the monkey DNA. After that we reworded it, and went through it once for editing. Then we typed it in the same word document as step 1.Then we said goodbye.

Step 2: purification of DNA

Once the DNA is extracted, it undergoes purification to remove contaminants like proteins and lipids that could interfere with sequencing or alter the results. This is typically done using organic solvents or specialized commercial purification kits. Ensuring the DNA sample is as pure as possible is essential for obtaining accurate sequencing outcomes.

Step 3: sequencing of the DNA

Once purified, the DNA is sequenced to determine the sequence and arrangement of nucleotide bases (adenine, thymine, cytosine, and guanine). Advanced technologies, such as next-generation sequencing (NGS), enable fast, high-throughput sequencing. NGS works by fragmenting the DNA, amplifying the fragments using polymerase chain reaction (PCR), and then sequencing them in parallel, generating large datasets efficiently and accurately.

Thoughts: we did well.

Ideas: currently no ideas.

Observations: It took a little bit longer.

Science fair logbook sept 30th 2024

- **Got my friend**

- Got started on the project
- We researched information
- My partner got step 4 and reworded it
- I made the conclusion then edited it.

Method

First my friend came to my house. Then we got started on step 4 and 5.He researched step four and I thought and brainstormed the conclusion. After that we reworded the paragraphs and said goodbye.

Step 4: functional annotation

Understanding the functional elements in the DNA is crucial. Researchers annotate the genome to identify the roles of genes and regulatory regions. Techniques such as gene expression analysis help determine which genes are active in particular tissues, while epigenetic studies investigate modifications that affect gene expression without altering the DNA sequence.

Step 5: conclusion

The data obtained from decoding monkey DNA has a wide range of applications in both research and medicine. It plays a key role in understanding genetic diseases, contributes to the

development of new treatments, and enhances our knowledge of primate biology.

Thoughts: Getting the information was a little bit harder and next time we could add a little bit less writing.

Ideas: Not any at the moment.

Observation: This topic has lots of information yet this subject is hard but easy.

Science fair logbook Oct 7th 2024

- Got my friend

- Started a new question

- I researched one website and got half of the paragraph

- Then my friend researched the website again and another website and got the final part of information

- Then we reworded it and typed it into another word document

Method

First my friend came to my house, then we started brainstorming about what to do next. After some brainstorming we thought of a problem with or related to the monkey DNA. (Why can't you cure cancer with the monkey DNA?).Then I researched information about why can't you cure cancer with the monkey DNA? Then my friend researched and got the other half of the paragraph, then we reworded our information. After that we typed the information into the new word document and said goodbye.

Why can't you cure cancer with the monkey DNA?

Decoding monkey DNA offers valuable insights into genetic diseases, but curing cancer is not as simple as analyzing a genetic blueprint. Cancer is a complex and diverse group of diseases, each with different genetic and environmental factors, making it difficult to find a universal cure. While monkeys share genetic similarities with humans, significant differences exist, meaning treatments effective in monkeys may not work the same in humans. Monkey DNA research provides helpful models for understanding cancer, but it does not directly lead to a cure. Developing a cancer cure requires extensive testing, clinical trials, and approval, which takes years and substantial resources. Monkey DNA is one piece of the puzzle in the ongoing effort to cure cancer.

Thoughts: This is valuable and informative information

Ideas: make the paragraph a little bit more longer

Observation: Cancer is a very complicated topic

Science fair logbook Oct 14th 2024

- **Got my partner**
- Started to brainstorm about a new question
- We came up with a question (who discovered the monkey DNA, how, when and why?)
- Then we started researching about the topic
- I checked one websites and got the first quarter of information
- He searched two website and got the rest
- We reworded our information
- Then typed it on the word document

Method

First my partner came to my house then we started to brainstorm about a question that relates to the topic and is reasonable. Then we thought of (why can't you cure cancer with the monkey DNA?)Then we researched three websites to find information about the topic of interest. Then we got the paragraph of information. After that we reworded the paragraph and edited the paragraph. Then we said goodbye.

Who discovered the monkey DNA how, when, and why?

The discovery of monkey DNA has been a gradual process involving many scientists. A major milestone was the sequencing of the rhesus macaque genome in 2007 by an international team of over 170 scientists. This project aimed to understand human biology and evolution by comparing human and monkey DNA, with the rhesus macaque chosen for its genetic similarity to humans and its long use in labs. The sequencing revealed that humans and macaques share about 93% of their DNA, offering valuable insights into genetic similarities and differences. This research has contributed to the study of human diseases and the development of medical treatments. In 2023, scientists at the Chinese Academy of Sciences created the world's first chimeric monkey, with two different sets of DNA, to improve research in neurological diseases and biomedical studies. These ongoing discoveries aim to deepen our understanding

of human biology, develop disease treatments, and explore genetic traits and behaviors.

Thoughts: we did well, it is a strong and interesting topic. Lots of informative writing

Ideas: None available at the moment

Observation: This is a very long paragraph and it is interesting. And scientists have made lots of discoveries about the monkey.

Science fair logbook Nov 1st 2024

- Got my partner
- Started the scientific method of decoding the monkey DNA
- I the question
- We typed the hypothesis
- I typed the procedure
- My partner typed the experiment I typed the observation and data collection

·We used YouTube as our information source for the experiment and procedure

·We reworded our information

·We typed it in a new word doc

·We said goodbye

Method

My partner came to my house. Then we started the scientific method for how to decode the monkey DNA? Then in total we researched three websites for the current information (except the hypothesis).After that we reworded our information including the hypothesis. Then we typed it on a new word document then said goodbye.

Scientific method

Question: How can we accurately decode and manipulate the DNA of monkeys to gain a deeper understanding of their genetic composition and structure?

Hypothesis: We hypothesize that it is possible to successfully decode monkey DNA by obtaining a sample, examining it under a microscope, and identifying its key components.

Supplies: Monkey, DNA extraction kits, thermal cycler, sequencing equipment, bioinformatics tools, laboratory supplies.

Procedure:

1. Collect DNA samples from the monkey using methods such as blood draws, skin swabs, or tissue biopsies.
2. Purify the extracted DNA to remove proteins and lipids.
3. Sequence the DNA to determine the order and arrangement of nucleotide bases, and amplify it using PCR.
4. Annotate the genome to predict the function of genes through gene expression analysis.

5. **Experiment:** DNA Extraction: First Collect samples from the monkey cells available with methods like (blood, skin swabs, and tissue biopsies). Then treat them with chemicals to break down the cell membranes that release DNA.

6. **Purification:** Secondly purify the extracted DNA available to remove contaminants, making sure there is a clean sample for sequencing.

7. **Sequencing:** Thirdly Use next-generation sequencing (NGS) technology to find out the order and arrangement of nucleotide bases in the DNA and fragment the DNA.

8. **Bioinformatics Analysis:** Then assemble DNA sequences into complete genomes, identifying genes, regulatory elements, and other features.

9. **Functional Annotation:** Finally annotate the genome to predict and find out gene functions, conduct gene expression analysis, and perform epigenetic studies to understand gene regulation.

10. **Observation:** Scientists observe that understanding monkey DNA can provide valuable knowledge into genetics,

disease research, and etc. They notice holes in the current knowledge about primate genetics and identify the need to decode monkey DNA for further study and analysis.

Data Collection: During the experiment, gather data at each stage: DNA quality and quantity during extraction and purification, sequencing data during the sequencing process, and gene annotations and expression patterns during bioinformatics analysis and functional annotation.

Thoughts: The scientific is crucial and important

Ideas: no ideas available at the moment

Observation: this is a very strong and interesting topic

Science fair logbook Nov 9th 2024

- Got my partner
- Started to work on the scientific methods last steps
- I typed the analysis
- We typed the conclusion
- We reworded the whole thing
- We typed the last and the reworded parts into the word doc

- We said goodbye

Method

First my partner came to my house, then we started to work on the scientific method. For the analysis we used a website that we already used. For the conclusion we typed without using a website then we reworded most of the scientific method. After that we said goodbye.

Scientific method

Analysis: Analyze the collected data to identify alignments, patterns, similarities, and differences in the DNA sequences. Compare the monkey DNA to known sequences from other species to uncover evolutionary changes.

Conclusion: Our hypothesis was found to be incorrect, as it involved many complex steps. However, based on the available data, the experiment contributes more to understanding and potentially curing illnesses.

Thoughts: There are none at the moment

Ideas: There are none at the moment

Observation: this topic is interesting and a little bit hard

Science fair logbook Nov 16th 2024

- Got my partner
- Started to work on the hypothesizes, summary ,and conclusion
- I turned on my computer
- I typed the positive hypothesis
- My partner typed the null hypothesis
- We typed the negative hypothesis
- We typed the summary and the conclusion

Method

First my partner came to my house. Then we started to work on the hypotheses, summary, and conclusion. We typed them on the word doc without any websites. Then we reworded the information for editing. Then we said goodbye.

Positive negative and null hypotheses

Positive Hypothesis

We hypothesize that it is possible to successfully decode monkey DNA by collecting a sample (such as skin, hair, or saliva) from the monkey. The sample would then be examined under a high-powered microscope to identify its components, which could lead to a deeper understanding of monkey DNA and its potential applications in curing illnesses.

Null Hypothesis:

Decoding monkey DNA does not result in a cure for cancer.

Negative Hypothesis:

There have been instances where experiments have led to the death of monkeys, such as in the mid-20th century when Dr. Robert J. White transplanted the head of one monkey onto the body of another. Unfortunately, immune rejection caused the monkey to die nine days later. Immune rejection occurs when the monkey's immune system recognizes the transplanted head as a foreign object and attacks it.

Conclusion

Our Hypothesis:

We hypothesized that it is possible to successfully decode monkey DNA by collecting a sample (such as skin, hair, or saliva) from the monkey, examining it under a powerful microscope, and identifying its components. However, this hypothesis was incorrect for five reasons:

We mentioned DNA extraction but did not address the need for chemical treatments to break down cell membranes and release the DNA.

We failed to include the step of purifying the extracted DNA.

We did not mention sequencing the DNA or identifying its elements (adenine, thymine, cytosine, and guanine).

We overlooked advanced techniques like next-generation sequencing and polymerase chain reaction (PCR).

We also neglected to include genome annotation and epigenetic studies in our process.

Summary

Overall, the project was successful for five reasons:

1. We completed it without needing a fourth copy.

2. Our hypothesis was at least 25% correct.

3. The trifold included a lot of relevant information.

4. We stayed focused on the topic of decoding monkey DNA.

5. Our explanation was detailed enough to be understandable.

However, there were areas for improvement. We could have added more color, reduced the number of trifolds, included additional pages of information, and provided more facts in the conclusion. Despite these areas for improvement, we did well on the CYSF project overall.

Thoughts: we put lots of information towards the hypothesis and the summary and conclusion.

Ideas: we think that next time we should make the null hypothesis longer.

Observation: Overall our project looked good, detailed and descriptive.

Science fair logbook Nov 30th 2024

- Got my partner

- Started to work on additional information

- We came up with fun facts
- We researched the fun facts we used three websites
- We found the information
- We reworded the information
- We typed the fun facts in a new word document

Method

First my friend came to my house. Then we started to work on the additional information. We came up with additional information about the monkey DNA in the form of fun facts. After that we checked three websites with some of the websites having more than one fun fact. After that we got our information and reworded the fun facts. Then we typed the fun facts into a word document for printing later on. Then we said goodbye.

Fun Facts

Monkey in Space

Some of the first monkeys to travel to space were also involved in genetic studies. By examining their genetic makeup and patterns, researchers were able to study the effects of space travel on living organisms.

Fun Facts

Monkey DNA Similarity with Humans

Monkeys share approximately 93% to 98% of their DNA with humans. This genetic similarity makes them valuable subjects for studying human biology, diseases, and illnesses.

Fun Facts

First Cloned Monkey

The techniques used in decoding DNA also paved the way for cloning. The first cloned primate, a rhesus monkey named Tetra, was born in 1999, thanks to advancements in genetic technology.

Fun Facts

Enhanced Color Vision

Certain monkeys, such as howler monkeys, have unique traits in their DNA that enable them to perceive a wider range of colors compared to many other mammals.

Thoughts: we put descriptive imagery towards the picture.

Ideas: There are none at the moment.

Observation: we worked hard on this concept of fun facts. We did good and put lots of information towards the main topic

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Science fair logbook Dec 7th 2024

- Got my partner

- Started more additional information

- We thought of mini introductions and facts

- We thought of one for the dna for the readers to understand DNA

- Then we thought of one for the (monkey DNA)

- After that we thought of one for why do we decode the monkey DNA

- Then we researched them and only used 1 website because we had a strong understanding of the topic

- Then we reworded the information

- After that we typed the information into a new word document and said goodbye

(Method)

First my partner came to my house then we started to work on more additional and subtopic information about the topic. Then we came up with facts and some mini introductions. Then we thought and researched about those three additional pieces of information then when we got the information we started to reword and edit the information

then type the information into the word doc. Then we said goodbye.

What is DNA?

•DNA stands for deoxyribo nucleic acid

Which is pronounced: de-oxy-ri-bo-nu-cliec-acid

•It's like a code that carries genetic information in all living organisms.

•The DNA our cells how to grow, work, and reproduce

What is the (monkey) DNA

· Monkey DNA is the genetic code found in monkeys.

· Humans and monkeys share a lot of DNA.

· Monkeys, like chimpanzees and gorillas, are some of our closest relatives in the animal kingdom.

· By studying their DNA scientists can learn about evolution and how species are connected.

Why decode the monkey DNA?

•How did humans and monkeys evolve from a common ancestor: Because we humans and monkeys have lots of genetic similarities such as the DNA similarity, the chromosome similarity, etc.

•Studying and decoding the monkey DNA can help scientists understand diseases that affect both monkeys and humans.

• (Conservation efforts): Decoding the monkey DNA can help protect endangered species of monkeys.

Ideas: The introduction to DNA is very crucial to understanding the topic.

Thoughts: There are no thoughts at the moment

Observation: This topic has lots of complicated, and crucial information.

Science fair logbook Dec 14th 2024

- Got my partner

- Started to work on more additional information

- We thought of interesting facts about the monkey DNA, challenges in decoding the monkey DNA

- We researched information

- We used two same websites and one new website

- We reworded our information then typed it into a word doc

▪The we said goodbye

Method

First my partner came to my house .Then we started to work on more additional information. We came up with interesting facts about the monkey DNA, and challenges in decoding the monkey DNA. We used two of the same websites and one new website .Then we reworded the information then we typed the information into the word doc and said goodbye.

Interesting facts about the monkey DNA

•Monkeys can have up to 24 chromosomes while humans have 23

•Over millions of years, small changes/mutations in the DNA have led to the differences we see between species

•Some monkeys can even be taught sign language to communicate.

Challenges in decoding the monkey DNA

•Monkey DNA is huge and complex, so decoding the monkey DNA takes a lot of time and effort

•Researchers must be careful when using animals such as the monkey (In this case) in studies to ensure they are treated humanely

Thoughts: we did good but we could add a little bit more information

Ideas: There are no ideas at the moment

Observation: Monkeys are very important species because they helped us evolve in certain ways in the past.

Science fair logbook Dec 21st 2024

- Got my partner
- Started to work on the last piece of additional information
- We got our information from one website
- The additional information is (What have we learned from the monkey DNA?)
- We typed the additional information into the additional information word doc
- Then we reworded all of the information of the trifold
- Then we said goodbye

Method

First my partner came to my house then we started to work on the last piece of additional information for the trifold. Then we came up with (What have we learned from the monkey DNA? Then we researched the information Just one website .Then we reworded the information and reworded all of the information that would be on the trifold .After that we said goodbye.

What have we learned from the monkey DNA?

- Some monkeys, like chimpanzees use tools and communicate in advanced ways

- Studying diseases like HIV in monkeys has helped us learn how to fight diseases in humans

Thoughts: we did well and this was a little bit less information but it is enough information.

Ideas: There are no ideas at the moment

Observation: monkeys are very helpful towards humanity; they help in genetics, diseases, etc.

Science fair logbook Jan 4th 2025

- Got my partner

- Started to print the pages on the word docs
- Printed all of the pages
- Glued them onto the trifold
- The arrangement wasn’t neat
- We used our extra trifold
- We printed the pages again
- We glued the pages onto the trifold
- We had a few more adjustments
- We went to dollar store
- We bought a new trifold
- We printed the pages again
- We glued them onto the trifold
- We agreed on the layout
- We said goodbye

Method

First I got my partner, then we started to print all of the pages on information. After we printed the pages we glued them onto the trifold. Then we thought that it did so we used our extra trifold. Once they were all on the second trifold we thought of a few adjustments to the layout so we got a 3rd trifold from the dollar store. We printed and glued the papers again onto the trifold. Then we said goodbye.

Thoughts: we used a lot of trifolds.

Ideas:we did good

Observation: We observed that we used a lot of trifolds, and we used lots of good information overall.

Websites

1 monkey's genetic code deciphered

2 Rhesus monkey genome reveals DNA similarities with ...

3Chimpanzee genome decoded

4DNA: Comparing Humans and Chimps

5Cancer Genes in Humans vs. Chimps: Why Are We More ...

6No, 'monkey virus DNA' was not found in COVID vaccines

6 youtube videos:

- Monkey dna/50 fascinating facts about the monkey DNA
- The difference between the monkey and human DNA

- DNA Evidence That Humans & Chimps Share A Common Ancestor: Endogenous Retroviruses
- # facts human share 99% DNA with humans
- Are We Really 99% Chimp?
- Who discovered the monkey DNA?

7 **Genetics | The Smithsonian Institution's Human Origins Program**

8 **Scientists decipher chimp genome | Genetics**