



How does the DNA structure support its function?

Ideas...

- What are polymers and monomers?
- What kind of polymer is DNA/RNA?
- What are the monomers of DNA and their parts?
- How is DNA different than RNA?
- What does the double helix look like?
- What makes up the sides and the steps of the DNA?
- How do hydrogen bonds hold the two strands together and why is that useful?
- What is the base pair rule (Chargaff's Rule)?
- The DNA code is universal in all species and is evidence we evolved from a common ancestor.

Light Bulb Page

DNA UNIT HONORS

For each BIG IDEA of the unit find supporting **evidence** in the form of diagrams, tables, data, examples, graphs and explanations that relate to each idea.

- Cite evidence source (Ex. Notes Day 2 or Lab #1)
- Use color, font, size to emphasize vocabulary.

How does the structure of DNA allow it to reproduce itself accurately?



Ideas...

- What is replication?
- What are the roles of helicase, DNA polymerase and ligase?
- How does the 5' to 3' direction of DNA polymerase end up in a leading strand and Okazaki fragments on the lagging end?
- What are the products of replication called?
- When and why does replication happen?
- When is DNA in the chromatid and chromatin form?
- Why is replication called a semi-conservative process?
- What would an error in the copy process be called?
- If this copy process is how all cells pass their DNA



If DNA is a recipe for our traits, what does the recipe make and how?

Ideas...

- How do you read the secret code of DNA? (What is a codon and what does it translate into?)
- A copy of the DNA recipe is made (transcription)-When? Why? Where? How? What is the product called?
- Which enzyme transcribes the DNA and what are the steps?
- The copy is used to convert the DNA recipe into protein (translation). What are the steps of translation? Where does it happen? When does it happen?
- What are mRNA, tRNA, ribosome (rRNA) and what are their jobs?
- What is a codon and what does it translate into?
- How do I read a codon (Code Wheel/Code Box)
- What are the start and stop codes? Why do you need them?
- What are proteins and amino acids?

How can the DNA be damaged and what are the results of that damage?



Ideas...

- What is a mutation? What are some causes of mutations?
- Are mutations always bad?
- How does the redundancy of the DNA code help to protect against the effect of mutations? (silent mutations)
- How is the protein affected by a mutation?
- What are point and frame shift mutations? Which is worse and why?
- What are some chromosomal mutations? How do they happen?
- What are some examples of diseases caused by gene mutations?
- ~~• What are some diseases caused by chromosomal mutations?~~
- ~~• Why are chromosomal mutations hard to fix?~~
- ~~• How might CRISPR be used to fix these mutations?~~