Honors Biology

*DNA Timeline Comic (100 points)*

**Learning Goal:** You will be able to construct a comic strip that details the process and timeline of the discovery that DNA was the genetic material and the discovery of the molecule’s structure.

**Success Criteria:** Your comic will explain how scientists discovered DNA was the genetic material as well as who those scientists were. It will also explain how the structure of DNA was discovered and who discovered it. Finally, it will diagram the structure of DNA.

**Directions:** You will create a comic book detailing the discovery of DNA. This comic book should have 3 main parts:

* Discovery that DNA was the genetic molecule (24 points).
  + Griffith’s experiment
  + Avery’s experiment
  + Hershey and Chase’s experiment
* Discovery of DNA’s structure (24 points).
  + Chargaff’s work
  + Franklin and Wilkins’ work
  + Watson and Crick’s work
* Structure of DNA (30 points)
  + Double helix
  + Nucleotides
  + Covalent and Hydrogen bonds
  + 5’ and 3’
  + Nitrogenous bases (types)
    - Purines
    - Pyrimidines
  + Major and minor grooves
  + Deoxyribose structure
  + Phosphate structure

**What to include:**

On the experiments you need to include when, why, how, and what they learned.

On the structure definition, picture, how it relates to other parts.

**How will you be graded:**

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| --- | --- | --- | --- |
| Section: | Good | Fair | Poor |
| Discovery DNA was transformative agent. (24 points) | Includes a full explanation of when, why, how, and what they learned for each of the three experiments.  2 points for each when, why, how, etc. X 3 (1 for each experiment) | Did not include a full explanation of when, why, how, and what they learned for each of the three experiments.  1 point for each when, why, how, etc. X 3 (1 for each experiment) | Did not include an explanation of when, why, how, or what they learned for each of the three experiments.  0 points for each when, why, how, etc. omitted X 3 (1 for each experiment) |
| Discovery DNA structure.  (24 points) | Includes a full explanation of when, why, how, and what they learned for each of the three experiments.  2 points for each when, why, how, etc. X 3 (1 for each experiment) | Did not include a full explanation of when, why, how, and what they learned for each of the three experiments.  1 point for each when, why, how, etc. X 3 (1 for each experiment) | Did not include an explanation of when, why, how, or what they learned for each of the three experiments.  0 points for each when, why, how, etc. omitted X 3 (1 for each experiment) |
| Structure of DNA  (30 points) | Includes a definition, diagram (label and picture), and how it relates to other parts of the molecule. 1 point for each definition, diagram, and explanation of how it relates to other parts. X 10 (3 for each experiment) | Excludes a definition, diagram (label and picture), and how it relates to other parts of the molecule. Loses 1 point for each definition, diagram, and explanation of how it relates to other parts omitted. | Excludes a definition, diagram (label and picture), and how it relates to other parts of the molecule. Loses 1 point for each definition, diagram, and explanation of how it relates to other parts omitted. |
| Presentation  (22 points) | Follows a comic book format. Clearly written. Illustrated. Uses color or shading. Easy to understand. | Follows a comic book format. Clearly written. Illustrated. Doesn’t use color or shading. Hard to understand. | Doesn’t use a comic book format. Not clearly written. Poorly illustrated. Doesn’t use color or shading. Hard to understand. |