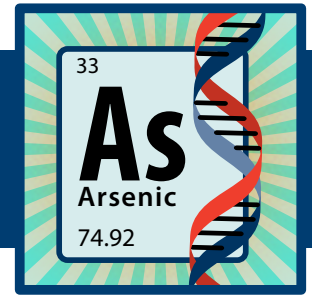


Teacher Directions

UNIT: DNA

LESSON 1: ARSENIC AND EPIGENETICS: A DNA STORY

Activity 1C: Epigenetic Word Map – Linking Vocabulary



TEXAS BIOMEDICAL
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HEALTH STARTS WITH SCIENCE

Activity Rationale

The Epigenetic Word Map invites students' creativity as they illustrate connections between vocabulary words from the transformed article, *Arsenic–The Toxin That Keeps On Giving*, and activity background information. Through the word map, students will define the terms in their own words and demonstrate their understanding of the connections/relationships between the vocabulary words.

Teacher Directions:

To construct the word map, students will use the vocabulary term **Epigenetics** as the center word or anchor for their word map. Students will construct their word map using the transformed article, *Arsenic–The Toxin That Keeps on Giving* and Activity 1C Student Background.

Students must include a minimum of three branches from the anchor word. The focus of each branch can be assigned by the teacher or self-selected by students. Students will self-organize terms in each branch, using illustrations and arrows to demonstrate their process of relating the terms to a specific process or concept.

This may be an individual or group project. Using the provided vocabulary list, teachers select the following options or create their own parameters:

- › Limit the number of vocabulary terms used.
- › Students self-select a required number of terms to include in their word map.
- › If students have completed Activity 1B, they may include information from that activity into their word map.

Activity Suggestions:

- › Use this activity as a summative DNA unit project.
- › The resulting Word Maps can be used as a gallery walk:
 - Students can grade one another's Word Maps:
 - › Provide each student with three tokens to award to their top three Word Maps (excluding their own),
 - › Rank Word Maps in different categories:
 - Best illustrations
 - Best representation of epigenetics

MIDDLE & HIGH SCHOOL LEVEL

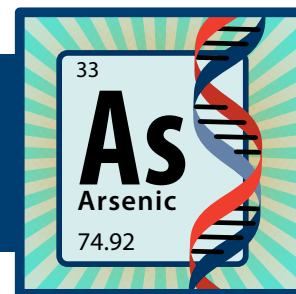
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NIH SEPA Project #1R25GM142021-01A1

Teacher Directions

UNIT: DNA

LESSON 1: ARSENIC AND EPIGENETICS: A DNA STORY

Activity 1C: Epigenetic Word Map – Linking Vocabulary



Activity Prep

- › Transformed article (electronic or hard copy)
- › Activity Student Background (electronic or hard copy)
- › Student Directions (electronic or hard copy)
- › Creating the Word Map:
 - Electronic Option:
 - › Access to computer
 - › Access to presentation software
 - Hands-On Option:
 - › Newsprint or construction paper
 - › Markers or colored pencils
 - › Optional items:
 - Colored paper, scissors, glue

Vocabulary Terms

| Transformed Article: Arsenic – The Silent Toxin that Keeps on Giving | | |
|--|-------------------------------------|------------------------|
| Arsenic | Differentiate | Placenta |
| Methylation | PancreasToxin that Keeps on Giving, | Diffuse |
| Epigenetics | Glucose | Stem cells |
| Metalloid | Metabolizes | Phenotypes |
| Student Background | | |
| Nucleotides | Pyrimidine | Cytoplasm |
| Deoxyribose | Molecule | Semipermeable membrane |
| DNA | Polarity | Ribonucleic acid |
| Adenine | Hydrogen bonds | Transcription |
| Thymine | Genes | Uracil |
| Guanine | Codons | Transfer RNA |
| Cytosine | Genotype | Ribosomal RNA |

MIDDLE & HIGH SCHOOL LEVEL

Teacher Directions

UNIT: DNA

LESSON 1: ARSENIC AND EPIGENETICS: A DNA STORY

Activity 1C: Epigenetic Word Map – Linking Vocabulary



Vocabulary Terms Continued

| Student Background | | |
|--------------------|-----------------|---------------------|
| Purine | Phenotype | Messenger RNA |
| Peptide chain | Microscopic | Nanoscope |
| Mutation | Point mutation | Frameshift mutation |
| Insertion | Deletion | Hereditary diseases |
| Epigenetics | Gene expression | |