

DNA

Teach 1	Names of student(s) teaching:
Teach date: Teach time: Teach length: 45 minutes	Title of lesson: DNA Source (Kit, Lesson, Page #):

Concept statement/Main idea:
Introduction to DNA pairing

Standards for the lesson:
Students may have heard of DNA and may know that it is genetic information.

Objectives	Evaluation
Write objectives in SWBAT form	Write at least one question to match the objective you listed or describe what you will look at to be sure that students can do this.
SWBAT define what purines and pyrimidines are, along with the pairings of adenine with thymine and guanine and cytosine.	

Engagement

Estimated time: 5 minutes

Description of activity: Students will be shown a video that shows genetics and introduces them to how it is related to DNA.

What the teacher does	What the student does	Possible questions to ask students — think like a student and consider possible student responses
Teacher will show a video of celebrities that look like their parents.	Students will watch the video.	Why do we look like our parents?

		<p>What gets passed down from generation to generation?</p> <p>What determines our traits?</p>
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Resources needed:

Video link

Safety considerations:**Exploration**

Estimated time: 15 minutes

Description of activity:

What the teacher does	What the student does	Possible questions to ask students — think like a student and consider possible student responses
Teacher will pass out beads (in cups that contain multiple colors) and stretchy jewelry string to each student and ask them to make a random DNA sequence on one string and its complement on the other string.	The students will assign a specific nucleotide to each bead and make a random sequence on one string (longer) and complementary pairing on the other string (slightly shorter).	<p>Why is it important that the nucleotides have the correct pairing?</p> <p>What will happen if the nucleotides are incorrectly paired?</p> <p>Which two nucleotides go together?</p>

Resources needed:

Colored beads and stretchy bracelet string.

[DNA bracelet activity WS](#)

Safety considerations:

Students should not put beads in their mouths.

Explanation

Estimated time: 5 minutes

Description of activity: Students will discuss their methods behind the classifications they came up with in the exploration.

What the teacher does	What the student does	Possible questions to ask students — think like a student and consider possible student responses
Teacher will ask students to share how it felt to put the bracelets together.	<p>Students will discuss their experience in making complementary strands.</p> <p>This is to get students to know how our body is able to complement millions of amino acid bases in our body.</p> <p>This is because DNA has a specific way of coding bases.</p>	<p>Were there times you got confused about the pairing? Did you mess up in one spot and had to start over?</p> <p>Did it feel tedious towards the end?</p>

Resources needed:

Safety considerations:

Elaboration

Estimated time: 10 minutes

Description of activity:

What the teacher does	What the student does	Possible questions to ask students — think like a student and consider possible student responses
The teacher will pass out white boards to students and have each student write their	Students will make a genetic sequence using their name and write a complementary sequence. (codons for each	If you were to pair one strand of DNA to your group mates would they be complementary?

name and their corresponding codon.	letter of their first name is in the powerpoint) This is to have the students assign codons to the letters of their name and also practice assigning complementary base pairs.	How does this relate to DNA sequences in our body? This is to allow students to acknowledge that the sequence of DNA is different for every person. (This is only if no students share the same name) **emphasize that names are not related to DNA.
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Resources needed:

White boards, markers, and erasers

Safety considerations:**Evaluation**

Estimated time: 10 minutes

Description of activity: Students will have a worksheet where they will answer the evaluation questions.

What the teacher does	What the student does	Possible questions to ask students — think like a student and consider possible student responses
Teachers will pass out evaluations. If there is still time, go over questions with the students.	Students will take the evaluation and go over the questions at the end of class.	

Resources needed:

[Evaluation Quiz](#)

KEY

Safety considerations:

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DNA Bracelet Activity

How does the chemical molecule, DNA, carry so much information? It is very similar to how our alphabet of only 26 letters is used to convey limitless amounts of information. The DNA "alphabet" consists of only four "letters" (G, A, T, C) instead of 26, but the entire human DNA code contains over 5 billion G, A, T, and C's! Each of these letters represents a nitrogenous base and they are paired in a specific way along a DNA molecule.

What to do:

1. Choose a color for each nitrogenous base:

A= _____

T= _____

C= _____

G= _____
2. In a random order, string 21 beads (or how many fit around your wrist) and write down the order of the nitrogenous bases you have.
3. With a longer string, make the complementary strand. Remember A and T are base pairs; and C and G are base pairs. Write the nitrogenous bases for the complementary pair

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4. Take the two bracelets and tie them together. Ask the teacher for assistance if needed.

Name:

Date:

Evaluation

1. What do three nitrogenous bases make?
 - a. Trio
 - b. Codon
 - c. Base pairs

2. What is the **complementary** sequence of the following?
GTC-AAA-ATC-GCA-CAT-TTA-GCG

3. Write one way to remember how the bases are paired.

Name:

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Evaluation

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