

Genetic Material

5E Lesson

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



Complete Teacher Instructions

Genetic Material 5E Lesson

Grades 10-12	Genetic Material	Ongoing Learning
Lesson Objective: Students will learn about: - Nucleotides - Nucleic Acids - Nitrogenous Bases - Deoxyribonucleic Acid - Ribonucleic Acid - Types of RNA - Genes - The Genome - The Human Genome Project - Rosalind Franklin - Chromosomes		
Possible Student Misconceptions: - DNA and RNA are basically the same - The more genes an organism has, the more complex it is - DNA varies greatly from individual to individual of a species		
Materials: 1 device (smartphone, Chromebook, laptop, tablet, or computer) per student - A means of projecting a PowerPoint presentation - Internet access - General classroom objects		
Teacher Notes: - All videos can be accessed directly from the PowerPoint. To retrieve icon while in slideshow mode and it will automatically open for you. I reason, right-click on the image and click Edit Hyperlink or something similar. - I've created a video walkthrough if needed. It can be accessed here: https://youtu.be/oCIKIP9SaDQ - I don't believe in long lessons. If you feel your students are losing the Stop the PowerPoint and give them a 5-minute break. If you'd like to recommend my video collection here - http://www.teachwithafairy.com are tons of brain-break videos to choose from all grouped by category.		

Genetic Material – 5E Lesson

Engagement Phase Your students will watch the video 'DNA versus RNA' and complete the questions found in the file – Engagement – DNA versus RNA Video . Teacher Notes: - The video is about two minutes long - You may need to show the video more than once or pause when an answer is given to one of the questions.	
Exploration Phase Exploration – Lab Station Activity - In groups of 2-3, have your students complete Exploration – Lab Station Activity. Once they're done, they will submit their passport to you. Teacher Notes: - The complete instructions for my Lab Station activity can be found in the START HERE – Instructions file.	
Explanation Phase PowerPoint Lesson - The lesson is found in the folder – Explanation – Lesson - This lesson is designed to be completed over one day - There are five embedded videos and plenty of opportunity to engage, interact and check for your students' understanding throughout the lesson - The lesson covers the following topics: - Structure of Nucleotides - Functions of Nucleic Acids - Humans vs. Chimps - DNA vs. RNA - Nitrogenous Bases - DNA Facts - Genes - DNA Hierarchy Teacher Notes: - All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select Edit Hyperlink or something similar. - I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ - I have also enclosed a .PDF version of both the teacher and	

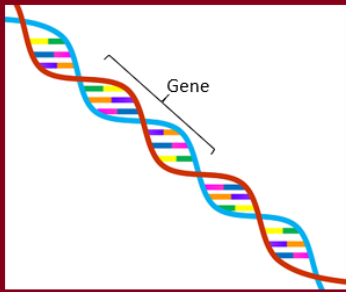
student versions.	
Elaborate Phase Elaborate – Scavenger Hunt Your students will complete – Elaborate – Scavenger Hunt . This activity will require your students to move beyond what was covered directly in the lesson and allow them to further develop their understanding.	Duration: 1 hour Teacher Role – Facilitate learning and keep students focused
Teacher Notes: - Students will work individually or in small groups - Students will need one device per group	Goal ☐ Students use their newly obtained knowledge to propose solutions and extend their learning to new situations
Evaluate Phase Quiz Have your students complete - Evaluate – Genetic Material Quiz	Duration: 30 min Teacher Role – Distribute and collect evaluation
Teacher Notes: - It's sometimes best to have the students peer evaluate - Placing students in small groups and having them exchange papers to mark will accomplish two things 1) Provide immediate feedback on the questions they just completed 2) Significantly reduce your marking time - Peer evaluation is not needed, only suggested when appropriate	Goal ☐ Students are given the opportunity to demonstrate their understanding and evaluate their own progress

Each phase is clearly described

A Complete Lesson

Genes

- Short segments of DNA which code for proteins are called genes
- Genes are the result of a specific sequence of nucleotides

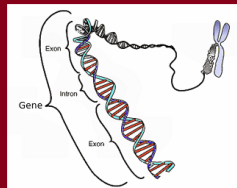
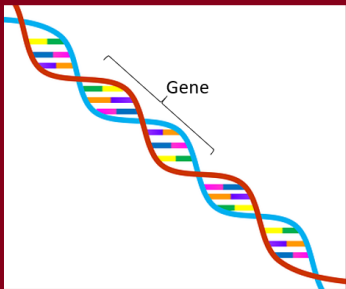


Make sure your students are on track

Student copies with blanks
Videos embedded right into your slideshow

Genes

- _____
- _____



▪ DNA Structure Video



▪ The DNA Song



Interactive and Engaging Activities

Genetic Material: DNA & RNA Lab Station Activity



7 Lab Station Activities to get your kids out of their seats and engaged in their learning

Device-Based Scavenger Hunt Genetic Material

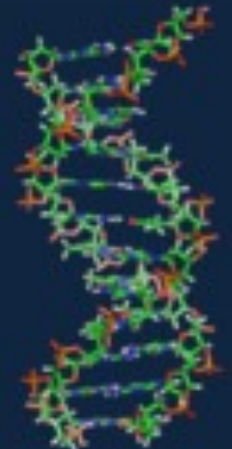


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