

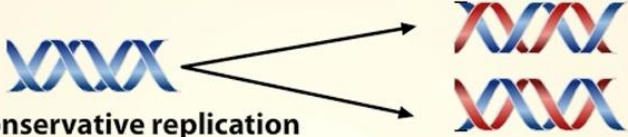
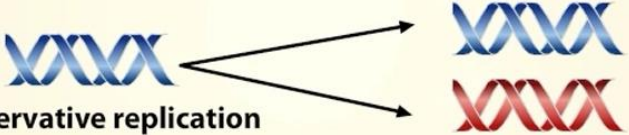
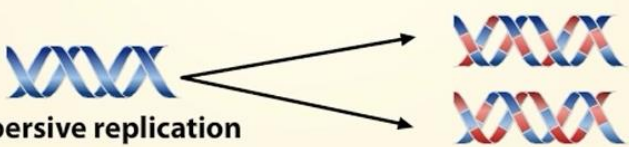
CLIL – DNA DUPLICATION – STUDENT WORKSHEET

MESELSON AND STAHL EXPERIMENT: HOW CAN WE SHOW THAT DNA DUPLICATION IS SEMICONSERVATIVE?

TASK 1: Look at the video and try to answer

1. What is the difference between isotope ^{15}N and ^{14}N ?
2. What is the purpose of the centrifugation in CsCl ?
3. During Meselson and Stahl's experiment, samples of DNA were isolated every 20 minutes: why did they choose this period of time?
4. Results: match the hypothetical models of DNA duplication with the results of M&S's experiment that they would have obtained if each model had been correct.

Remember that: L, I and H stand for "light", "intermediate" and "heavy"

 <p>semiconservative replication</p>	<table><tr><th>GENERATION</th><th>L</th><th>I</th><th>H</th></tr><tr><td>0</td><td></td><td></td><td>100%.</td></tr><tr><td>1</td><td></td><td>100%.</td><td></td></tr><tr><td>2</td><td></td><td>100%.</td><td></td></tr></table>	GENERATION	L	I	H	0			100%.	1		100%.		2		100%.	
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Screenshots taken from YouTube video: "Meselson and Stahl experiment"

<https://www.youtube.com/watch?v=JeoegQaF8iq>

TASK 2: Read the text on page 31 (BIOZONE, Biochemistry and Biotechnology, Zanichelli 2014) and then answer to these questions

1. What is the purpose of DNA duplication?
2. Which are the 3 main steps involved in DNA replication?
3. If a cell has 22 chromosomes, how many chromatids would exist after DNA replication (but before mitosis)?
4. What does it mean when we say DNA replication is semi-conservative?

TASK 3: Read the text and look at the picture at page 33 (picture and text from BIOZONE- Biochemistry and Biotechnology – Zanichelli 2014) and then learn about enzymes. In group, match each enzyme card with its function and then complete the table. Can you match every enzyme? If you can't, try again after watching the video in task 4

Enzyme	Function
Helicase	
Topoisomerase	
DNA polymerase III	
Primase	
ssBP	
DNA polymerase I	
Ligase	

Task 4: look at the video describing DNA duplication process and make some notes

<https://www.youtube.com/watch?v=TNKWgcFPHqw>

Task 5: speaking task. Enzyme game. The class is divide into groups of 4 people. Every student draws 2 cards. Your goal is to describe DNA duplication: when it's your enzyme turn, put the card on the table and explain what the enzyme does.