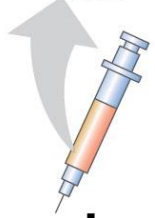
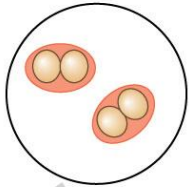


Instructional Activity 1: Griffith's experiments

EXPERIMENT

**Living S cells
(control)**

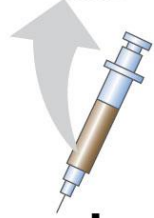
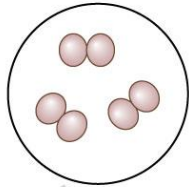


RESULTS

Mouse dies



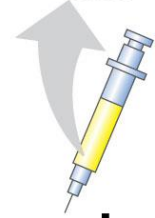
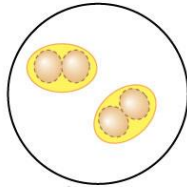
**Living R cells
(control)**



Mouse healthy



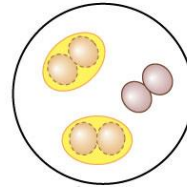
**Heat-killed
S cells
(control)**



Mouse healthy



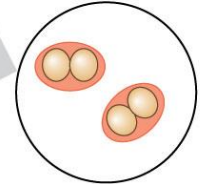
**Mixture of
heat-killed
S cells and
living R cells**



Mouse dies



Living S cells

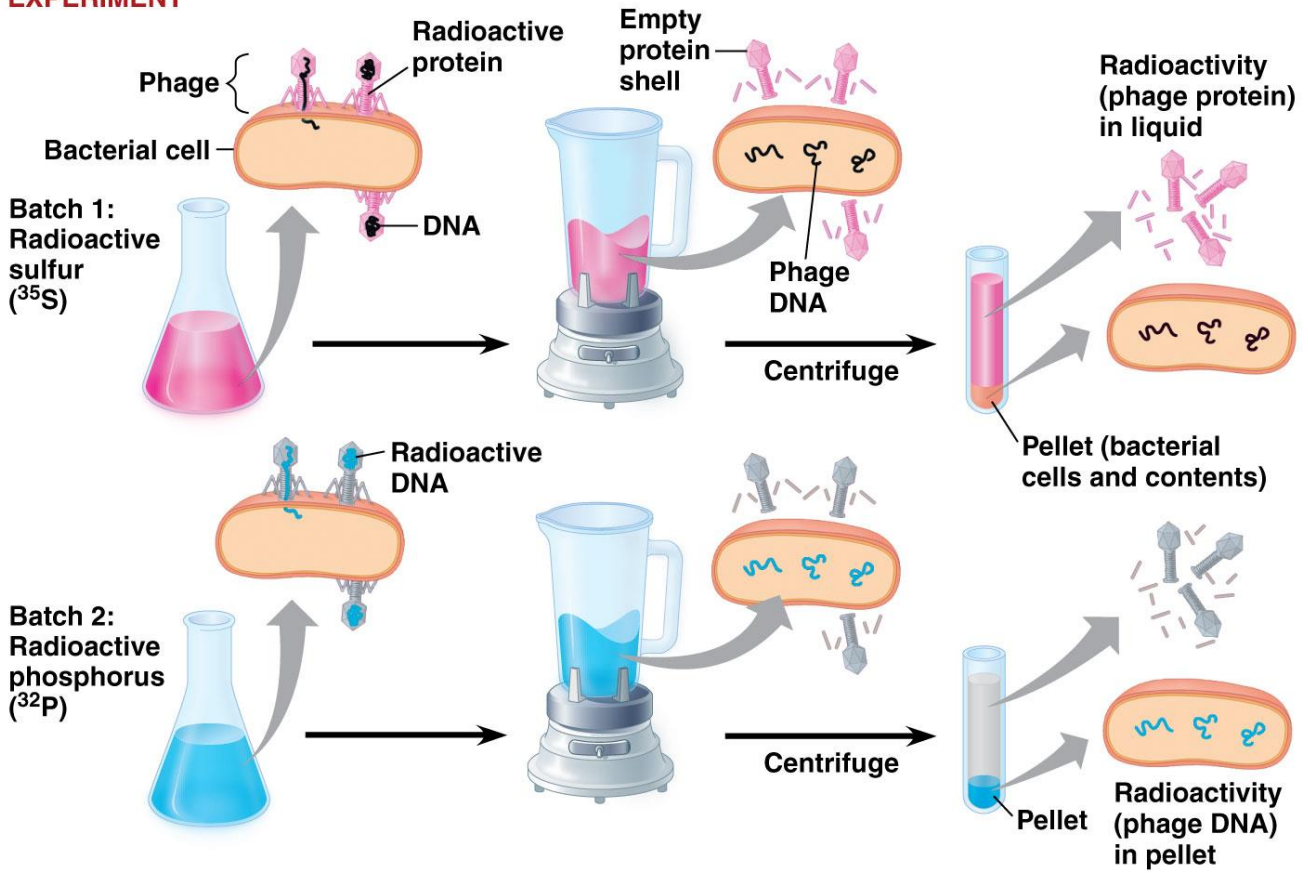


Within your group, take about 5 – 10 minutes to discuss the experiment then answer the questions.

1. Describe the above experiment completed by Griffith.
2. What can you infer about the two bacterial strains from their experimental inferences.
3. How does the information resulting from Griffith's experiments with *Streptococcus pneumoniae* support the idea that a heritable material (the identify of which unknown) transformed living, nonpathogenic "R" bacteria into pathogenic "S" bacteria?
4. Thinking about the macromolecules from Unit 1, which macromolecule can the transforming factor not be?

Instructional Activity II: Hershey – Chase Experiments

EXPERIMENT



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Within your group, take about 5- 10 minutes to discuss the experiment then answer the questions.

- Describe the above experiment completed by Hershey & Chase.
- Why did they use radioactive sulfur in experiment 1 and radioactive phosphorus in experiment 2?
- Where was radioactive sulfur found at the end of experiment 1? Where was it found at the end of experiment 2?
- What can you conclude about the material that was found in the bacterial cells (assuming that the material found is the genetic material)?
- Is DNA or protein the genetic material of phage T2?
- How does evidence resulting from the Hershey – Chase experiments support that DNA, not protein, is *the* heritable material? What is the connection between the two experiments?

Instructional Activity III: DNA Extraction (*possibly for Day 2*)

Complete the virtual mini-lab (<http://learn.genetics.utah.edu/content/labs/extraction/>) then answer the following questions.

- How can DNA, a submicroscopic molecule, be visualized with the naked eye?
- DNA in a single human cell totals three meters in length. How is it able to fit inside the nucleus of a cell?
- What must be done to extract and isolate DNA from human cheek cells?
- Name all of the chemical used in this DNA extraction mini-lab and their functions.
- Where is DNA located in eukaryotic cells? What, then, is the first step in isolating it from nuclei?
- What can we conclude about the chemical nature of DNA through isolation techniques?