



**Science Unit:** *Fossils*

**Lesson 7:** *Decay Lab Part 2 - Results*

School Year: 2015/2016

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Grade level: Presented to grade 5-7; appropriate for grades 4-9 with age appropriate modifications

Duration of lesson: 45 minutes

Notes: This lesson is a followup to Lesson 6: How Fossils Form - Decay Lab

## Objectives

1. Observe and record the changes that occurred in fruit and vegetable pieces since the last lesson.
2. Practice using a systematic method for ranking qualitative observations.
3. Compare predictions with results; practice being objective.
4. Make a display for other students to examine.

## Materials

- Garbage can and organics bin
- Photos of fresh samples from last week, or fresh fruit/veg for comparison
- Newspaper for workspace and disposable gloves for examining samples
- Lab worksheet from last week and new worksheet (Appendix A)

## In the Classroom

### Introductory Discussion

1. If you have not previously, you may want to administer the “Rotting Apple” or “Earth’s Mass” probe (see Bibliography) to assess student’s evolving understanding of decomposition and decay.
2. Discuss the concept of bias and objectivity. Don’t let predictions bias observations!
3. Discuss plan for recording data and displaying results
4. Safety guidelines.
  - Some students may prefer handling their samples using disposable food handling gloves
  - Students should not eat any of the samples!
  - Students should wash their hands after the activity.

### Science Activity/Experiment

#### Methods and Instructions:

Set-up prior to experiment:

- Students will need their completed lab worksheets from last week.
- Either have photos of fruit and vegetable samples from last week, or have fresh, comparable fruits and veg available for the students. These will be used to compare with the samples that have been decaying for a week.



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- Cover tables with newspaper. The samples may be messy.
- Have a large garbage can (and organics bin) available.
- Leave a space for students to display all their ranked samples at the end.

## Instructions:

1. Students get back into their groups and get their samples from last week
2. The groups compare their control sample (1) with the photo of the fresh fruit or veg from last week, or a similar fresh piece; they record the changes they observe on the data sheet (Appendix A).
3. Groups observe their preserved samples (2-4) and continue to fill out the data sheet.
4. Groups rank their samples from best preserved to worst and make a display of their ranked samples (Appendix B). When everyone is finished, students can examine everyone's results.

## Closure Discussion

1. What changes happened to the fruit and vegetable samples?
2. Why did these changes occur?
3. What will eventually happen to the fruit or vegetable pieces?
4. What treatments did the best job at preserving the samples?
5. What natural processes or environments do the most successful treatments represent?
6. What is the likelihood of any of the fruit or vegetable samples becoming a fossil?

## References (examples of the format to use for different types of references are below)

1. <<http://www.k5geosource.org/2activities/1invest/fossils/pg2.html>> Why do some things become fossils, but others do not? American Geosciences Institute. [Fruit decay lab]. Accessed March, 2016.
2. Keeley, Page, Eberle, Francis, and Dorsey, Chad. 2008. "Rotting Apple." Uncovering Student Ideas in Science v. 3. NSTA Press. pp. 139-145.
3. Keeley, Page, Eberle, Francis, and Dorsey, Chad. 2008. "Earth's Mass." Uncovering Student Ideas in Science v. 3. NSTA Press. pp. 147-154.

## Extension of Lesson Plan

1. Science. Other types of decay: If students are studying radiometric dating as part of their Earth Sciences unit, they can compare the similarities and differences between radiometric decay and organic decay.
2. Social Studies. People and Bias. Older students might be interested in the Harvard Implicit Bias tests. Note not all of these are age appropriate, but the US - Canada test or the Age test could be interesting for elementary-age students: <https://implicit.harvard.edu/implicit/Study?tid=-1>



## Becoming a Fossil - Decay Lab: Results

### Procedure:

1. First examine your CONTROL. This is the piece of fruit or veg that you did not try to preserve in any way; it was just left alone. List the changes that have occurred since last week on the chart below. For example, do you see any changes in size, shape, colour, etc...

Change Observed in Control	Observed in Cup 2?	Observed in Cup 3?	Observed in Cup 4?
<b>Total check marks</b>			

2. Now look at your piece of fruit or veg in cup 2. You can clean it off if it is dirty and is hard to see. For each of the changes you have listed in the first column, decide if the same change has occurred in cup 2. Leave the box blank if you do not see the change, Mark one check if you see the same change you did in the control, but less so, and mark two check marks if you see the same change as the control.
3. Do the same for the other cups.
4. Then add up the check marks in each column. The column with the least number of check marks is the cup with the best preserved piece of fruit/veg. If two columns have the same number of check marks, use your judgement to decide which piece of fruit/veg is better preserved.
5. Write the ranking of best to worst in the “condition after a week” column on your lab sheet from last week, from best condition (1) to worst (4). How do the results compare to your predictions? Write any notes or observations on each sample in the last column.



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## Display Table

<b>1 (Best Preserved)</b> Treatment:	<b>2</b> Treatment:
<b>3</b> Treatment:	<b>4 (Worst Preserved)</b> Treatment: