## Teaching Notes

### By *John A. Barone*

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**Course Information**

Department: **Biology**

Level: **Upper Undergraduate**

Course type: **Lecture & Lab**

Students: **Majors**

Number of Students: **40**

**Module Information**

Original Module Name: **Plant Chemical Defenses**

Link to Original:

[Adapted Module Name: (if applicable)

Link to Adapted Module]

Modified Module Name: **Plant Chemical Defenses**

Files associated: **Class worksheet**

Modification Learning Goals:

* Introduce evolutionary explanations for plant chemical defenses.
* Introduce the concepts of bioprospecting and bioactive compounds.
* Have the students appreciate that plants are an important source of medicines.
* Have the students practice collecting and displaying data in a lecture setting.
* Connect ecology to other disciplines, like microbiology and biochemistry.

**Teaching Notes**

This case study is intended to coordinate with the SimBio chapter on Predation, Herbivory and Parasitism (http://simbio.com/products-college/simutext-ecology). The case study would work best after an introduction to the concept of plant defenses, including the types of defenses.

Note: The case study requires that students have rulers.

This mini-case study took about 40 minutes. Individual students were each provided worksheets, though they were permitted to work in pairs. I read through the paragraphs on the worksheets and then gave students a few minutes to work on each set of questions. The answers were then discussed.

Students reported enjoying the mini-case study. I think they were particularly intrigued by the concept of bioprospecting. Some students complained about the tedium of multiple measurements, which is one reason to have students work in pairs. But overall, they approached the activity with good humor. Students turned in their worksheets for credit.

On the exam, they did a very good job answering an essay question about bioprospecting and plant defenses.

The only prep, other than providing the worksheets, is making sure to provide rulers.

The current version provides all the students with the same data. In the future, I hope to make several different sets that will produce additional outcomes. Also, the take-home questions were not tested. However, they could also form the basis of a classroom discussion.

To shorten the time demands, the students could be given the data/measurements, instead of having to do them on their own. Alternatively, the measurements could be assigned as homework. Also, much of the text could be copied to PowerPoints, reducing the amount of writing the students were expected to do. Finally, if students are reasonably proficient with statistics, and the software is available, they could analyze their results with a 1-way ANOVA. I did not do this in the first run-through but probably will in the future.