Case: Title

Overall Background:

This is the first material students read. For example:

IGRs are attractive candidates for developing less hazardous insecticides. The problem is, which plants contain them? One way to identify sources of them is to look for plants that insects avoid eating. The example we will test today is blue flossflower (*Ageratum houstonianum*), which insects rarely attack.

Goals of Whole Case:

Summarize what students are trying to do without giving away the key points. For example:

During this 2-day case you will learn:

1. How to make a sound logical argument using experimental data.

2. Why the same transcription factor can both turn genes off and on.

Day 1 Handouts:

### Day 1 Background

Content specifically for first day. Students may not need to read this prior to starting.

### Day 1 Goals

Which part(s) of the case should students complete, and by when.

### Day 1 Guide Questions

I find students are more successful if they have an idea which points are important to focus on. These questions can be very open-ended; they should not give away endpoints.

### Day 1 Activity Materials

These can be a single packet or series of handouts that students receive as they complete earlier steps.

### Day 1 Data Set (optional)

When students must refer to a data set at multiple points in the session, they appreciate having the data set on a separate document. This way they avoid flipping between pages or scrolling through documents.

### Day 1 Follow-Up Questions

These can be the same as the initial guide questions, or new questions that ask students to use or interpret information from Day 1.

Day 2 Handouts:

### Day 2 Background (optional)

If students need more information for the next session. This can be turned into a pre-class reading assignment.

### Day 2 Goals

Which part(s) of the case should students complete, and by when.

### Day 2 Guide Questions (optional)

If students need to be reminded which points are important to focus on.

### Day 2 Activity Materials, Data Set

Again these can be a single packet or series of handouts that students receive as they complete earlier steps.

### Day 2 Summary Questions

The final set of questions that ask students to integrate the elements of the case. Often these questions will be the final assignment that is handed in for grading.

Case and Instructor Notes:

I STRONGLY encourage case authors to create Instructor Notes. Even when you have used a case several times, you can forget key points in the rush of the semester. Supplemental notes also make it easier to share cases with colleagues teaching other sections of the same course.

Most of my case notes at least have these sections. I add any other information I think is helpful. For new cases, I usually include my raw development notes until I have run the case a few times.

### Background

Provide any additional information that an instructor who is not familiar with the topic would need to understand the overall structure and end goals of the case. In practice, you may want to include:

* Rationale for the scenario or the model system
* Additional information about the biological processes involved
* Links to outside supporting resources or reference

Here is an example.

*A. houstonianum* is the original source from which the compound methoprene was first isolated. Methoprene and its synthetic derivatives are JH disruptors. Methoprene is an effective IGR because JH has such broad effects. At low physiological doses, JH inhibits energy storage, so more is available for growth. It also prevents moving into the pupal stage, so that molting produces extra larval stage instars. At supra-physiological doses, JH and its mimics can inhibit production of essential energy storage molecules. Conversely JH blockers prevent normal metabolic function. Either way, resultant metabolic imbalances can be fatal.

### Case Data Structure

Provide an explanation of the main takeaway points of any data provided. Here is an example.

The case data table is written as if a diet containing 1% *A. houstonianum* leaves is equal to a **small** increase in JH. As a result caterpillars are eating more, and getting longer and heavier. Unlike the controls, they are NOT browning, which means they are not preparing to pupate.

### Goals of the Follow-Up Questions

Use this section to describe how the questions at the end of each day lead students towards the overall case goals. Here is an example.

##### Day 2 Questions: Building Argumentation Skills

The questions at the end of the case are designed to guide and clarify students’ thinking using a practical argumentation and logic model called the **Toulmin model** to break down arguments into specific parts for analysis:

* **Claims** or conclusions
* **Evidence** or observations to support the conclusions
* **Reasoning**, inference, or rationale that connected the evidence and conclusions.

Toulmin’s full logic model has other elements, but for this exercise we only want students to be able to break a conclusion down and provide adequate support for it.

### Class Management

Use this section to describe any specific classroom practices you use to make the case more effective. It is better to split this section into specific goals or actions rather than have one long narrative. Here is an example.

##### Compiling the Group Responses

The simplest way to collect the responses of multiple groups is to ask each group to share ONE of their hypotheses, comments or thoughts for each question. Write a short 2-3 word summary of each on the board. Rotate between groups asking for responses until all groups’ thinking has been captured. Keep the data on the board for when students must revisit their original thinking at the end of the case.

### Supplemental Activities and Case Extensions

Describe additional learning or skills development activities here that the case might be used for, but are not part of the primary purpose or goals of the case.