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### **Biological Inquiry: A Workbook of Investigative Cases**

Margaret Waterman and Ethel Stanley, Benjamin Cummings, San Francisco, 2005. 200 pages.

Most of us wish textbook publishers would spend more time trying to write clear texts at a reasonable price and less time churning out new editions with tons of glitzy ancillary materials. *Biological Inquiry* is designed to accompany the big edition of Campbell's *Biology*, with free desk copies to adopters, but it is also available as a stand-alone text. Despite my skepticism, I found this to be an intriguing book and would recommend it to anyone who is frustrated with the way introductory biology is taught at his or her institution. Even if you end up deciding not to use any of these case studies in your course, just considering them may help you rethink how you structure your teaching.

The book is divided into a student edition and an instructor's edition; the latter containing suggested answers, learning outcomes, and links to the Campbell text. Not surprisingly, the student section is much more interesting to read. Eight different cases are presented, each occupying only about a single page of text. For those familiar with clinical microbiology cases these can be rather disconcerting. There is no clear direction to take from the dialogue in the scenario, which reads something like a page from a Dick and Jane book. This lack of direction is what makes these "investigative" cases, in the authors' terminology. The heart of this approach is the "Case Analysis" in which students work in small groups to flesh out what they already know and need to know related to the scenario. This then leads to a formulation of questions (hopefully) pertinent to the biology under consideration. The point of the exercise is learning how to pose insightful, testable questions. If this is something you want your introductory biology students to do, then this may be a fruitful approach to try. If your focus is on teaching students how to answer, rather than pose questions, then this may all seem rather confusing and a waste of time.

The remainder of the text is made up of workbook-style questions (with room to write answers) organized in sections around some of the possible biology concepts that each case is likely to draw out. These are quite eclectic, some involving the use of software or datasets available on the web, others only requiring a decent textbook. The questions demand a fairly sophisticated level of thinking, but should be accessible to most college freshmen, and in general represent the type of critical thinking questions that biology students deserve to see more often. Even if you decide against using the case approach, you may be inspired to incorporate some of these appealing hooks into your lecture material.

Only one of these cases, which relates to West Nile Virus, might fit comfortably into a Microbiology course, though microbes also appear in the details of soy sauce fermentation and equine digestion.

It will be interesting to see how this book fares in the turbulent world of evolving introductory biology curricula. The authors are both experienced and devoted scholars of case-based instruction and their goal is clearly to encourage more instructors to try the method and modify it to fit their particular situation and style. The workbook format, with three-ring drilled and perforated pages, along with the seemingly simplistic writing style may put off some of the more sophisticated instructors who could benefit from the ideas here. It remains to be seen whether publishers can package case study teaching as easily as they have the PowerPoint lecture, but this is a well-conceived and ambitious first attempt.

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