

# News Bulletins for Biology Classes

Barry L. Batzing

*It is characteristic of science and progress that they continually open new fields to our vision. When moving forward toward the discovery of the unknown, the scientist is like a traveler who reaches higher and higher summits from which he sees in the distance new countries to explore.*

(Louis Pasteur, 1889)

Today, we are almost blinded by the speed with which developments in science are taking place. It is a challenge for even the best scientists to keep abreast of events in a specialized area. How can students who are just being introduced to particular areas of science be made aware of the most recent developments in these areas?

Both textbooks and lectures can provide avenues for the introduction of current information. Textbook authors attempt to include the most recent developments in subjects and new editions inevitably contain changes resulting from ongoing research. Some texts even have special topic modules that present current information. However, textbooks cannot address the issue of new developments adequately because the publication process delays the release of information for at least a year and usually even longer.

Educators can introduce new information through their lectures, and in fact most probably do bring important new information to the attention of their students during lectures. The integration of new developments into lectures is critical to the learning process. Students should be taught that knowledge is not static and that education, even for the instructor, is a continuing activity. However, most teachers cannot spend the time in a lecture to explain and reflect on the importance of a new development because their primary task is to cover the basic information for the course.

Is there another way to routinely bring the newest developments to the attention of students? I suggest the use of printed news bulletins. Rather than just mention new developments in class, instructors can

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distribute to students a news bulletin that summarizes the new information and briefly reflects on its significance. Businesses often do this as part of their daily routine and the advent of desktop publishing over the last few years has revolutionized the process of information dissemination within corporations. Through desktop publishing in classes the most recent developments in a subject can be rapidly inserted for effective consideration. In addition, a news bulletin serves as a reference. Students will benefit from having a page that they can take with them and refer to later. In political science or economics courses, student assignments can include reading current newspapers and magazines, such as *The New York Times* or *The Wall Street Journal*. However, in most areas of science there are no comparable publications. Although many journals are available for professionals (such as *Science* and the *New England Journal of Medicine*), most are expensive and difficult for nonspecialists to read. They also cover too much material or have too narrow a perspective. News bulletins can focus on one specific subject and be directed to different levels of readers.

For the past year, I have produced the news bulletin **MICRO TODAY** for use in my undergraduate microbiology classes. It introduces students to some of the most recent developments in microbiology and makes them aware of its importance in everyday life. Reading short accounts of current events in microbiology can stimulate students' interest in the subject and prompt greater involvement with their studies.

## Producing the News Bulletin

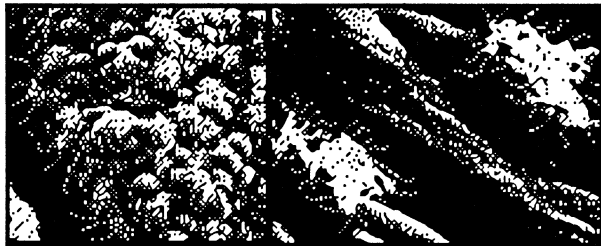
An issue of **MICRO TODAY** is shown in Figure 1. A key feature is its graphic display of information. This can take the form of a graph of data, a table of information, a drawing, or even a photograph digitized for computer display. Graphics can stimulate student interest, expose students to actual data and demonstrate how data may be viewed in various ways.



"It's a small world after all."

## What Just Flu By?

We have just passed the peak of the annual flu season. **Influenza** is caused by *orthomyxoviruses*. There are two major types, influenza A virus and influenza B virus. The most serious epidemics are caused by influenza A viruses. During the course of the infection, epithelial cells of the respiratory tract are infected and killed. Normally, ciliated epithelial cells coat the entire epithelial surface. During infection, the surface becomes barren as the ciliated cells shrink, lose their cilia, and are destroyed. You can see this progression in the following two scanning electron micrographs.

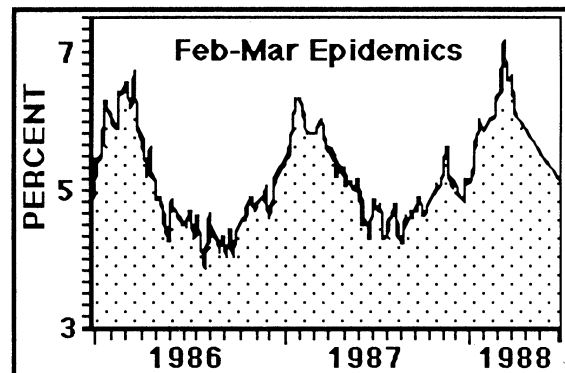


Normal epithelium      Virus-infected Epithelium

Major epidemics of influenza occur during the months of February and March each year. This year, several strains of influenza viruses have been circulating. Influenza A(H3N2) variants have predominated, with types A(H1N1) and type B also causing disease. 85% of all virus isolates have been type A(H3N2). Through April 8, influenza A(H3N2) isolates had been recorded in Washington, D.C., and all states except New Hampshire and Rhode Island.

During the week ending Feb 20, 8.1% of patients in the U.S. had a flu-like illness. (The seasonal average is 4.8%.) Correlating with the incidence of flu is the proportion of deaths due to pneumonia and influenza (P & I).

The following graph (from vol. 37, no. 13, *Morbidity and Mortality Weekly Report*) shows how the percent of deaths attributed to P & I rises and falls in conjunction with the flu season. During the week of March 5, the percentage of total deaths in the U.S. due to P & I reached 7.0%.



Last year (the 1986-1987 flu season), the predominant flu virus circulating worldwide was A/Taiwan/1/86(H1N1). Few A(H3N2) and B isolates were made. Based on the data from last year, the World Health Organization recommended that flu vaccines for 1987-1988 contain antigens of A/Taiwan/1/86 (H1N1) virus, B/Ann Arbor/1/86 virus, and A/Leningrad/360/86(H3N2) virus.

Influenza immunization is recommended each flu season for persons at high risk for complications of influenza (such as persons with heart disease, chronic pulmonary disease, chronic renal disease, diabetes mellitus, chronic anemia, and immunosuppressive diseases). Immunization of medical personnel is recommended and elderly persons are encouraged to be vaccinated because of the excess morbidity and mortality in their age group.

Figure 1. This issue of **MICRO TODAY** was produced with *WriteNow* using a two-column format. The title box graphic, logo and headline all are part of the header for the *WriteNow* document. The title box is a graphic unit imported from *SuperPaint*. Both the two electron micrographs (R. Ramphal, et al. (1979). *American Revue of Respiratory Disease*, 120, 1313-1324) and the graph were generated as Thunderscan images and modified with *SuperPaint*.

I produce **MICRO TODAY** on a Macintosh Plus computer. The graphics are generated by using *SuperPaint* (Silicon Beach Software, San Diego, California) and *Thunderscan* (Thunderware, Orinda, California). *SuperPaint* costs about \$125 and *Thunderscan* costs about \$200 when they are purchased via mail order. Graphics are integrated into text produced with a Macintosh word processing program, such as *WriteNow* (T/Maker, Mountain View, California), *MacWrite* (Claris, Mountain View, California), or *Word* (Microsoft, Redmond, Washington). *WriteNow* and *MacWrite* are available from mail order suppliers for about \$100-\$110 each. (*MacWrite* was originally supplied free with Macintosh computers and older versions are generally available.) *Word* is a more powerful word processing program that costs about \$250, although excellent educator discounts have been made available by Microsoft. Initially, all work was done directly within the *SuperPaint* domain, with scanned images imported from *Thunderscan*. However, the total image quality is better when the graphics are incorporated into the word processor rather than the text produced as a graphics unit.

*Thunderscan* is a simple but capable scanning device that replaces the ribbon on the Apple Image-Writer dot matrix printer. It converts an image on a printed page (such as in magazines, newspapers and journals) into a digitized image on the computer screen. This image may then be manipulated as a computer graphic and formatted with text. This is a key piece of equipment because it makes it possible to incorporate virtually any illustration from any printed publication into the news bulletin and because it decreases tremendously the time required to generate graphics. The most important use of the scanner is to convert photos into computer images. An electron micrograph of an AIDS virus or a photo of a genetic engineer can be integrated quickly and easily into a news bulletin. In addition, a graph can be copied directly from an article and thereafter manipulated to focus on specific data (credit must be given, of course, to any source of information). To actually redraw a graph and redesign it would require too much time and effort. If the news bulletin is to be successful, it must be produced easily so I can focus on the overall ideas to be presented rather than expend most of my energy on making a drawing.

It takes approximately four hours to produce each bulletin—one or two evenings. About half that time is devoted to generating the graphics.

Where do the ideas come from for the topics in **MICRO TODAY**? They usually come from papers in research journals that I browse through each week. I also see articles in newspapers and magazines. Sometimes I see a topic mentioned on the evening news and I then attempt to track down the pertinent research publication. This "prepublication phase"

also requires time. The source of the information is included in the article. References to sources of information should be included to give authors credit, but the inclusion of references also enables students to pursue topics on their own.

## Using News Bulletins

Currently, **MICRO TODAY** is distributed to students before class begins. I usually place it at their seats and most students will read the bulletin as soon as they are settled. When class begins, I briefly mention the topic in the bulletin, but I do not discuss the article. Throughout the course, I will make note of a particular **MICRO TODAY** if I am discussing a subject that one of the articles relates to. The articles are not required reading assignments and students are never tested on them.

## Evaluation

At the end of the 1987 fall semester, each student was asked to write a brief critique of the news bulletins. As part of the critique, students were asked if they had read the bulletins and what their impressions of them were. All the students found the bulletins interesting. Here are three representative comments:

*"First, yes I did read MICRO TODAY. I found the various sheets to be informative. Some were very provocative and interesting. They might be useful in lectures to help get points across. They have a lot of educational value. Keep using them—the updates on new things, like AIDS, are really useful."*

*"Yes I did read MICRO TODAY. I think the articles were interesting. I liked how they usually tied into what was being discussed in class. This showed that what we discuss really does happen in the real world. I think you should incorporate these articles into the class."*

*"Yes, I read MICRO TODAY. And yes, I liked it. It was very interesting. Short and to the point. It was interesting for my friends too, even though they are not Health majors. Too bad I am graduating, however, and cannot receive copies in the spring. Maybe you should start having people subscribe—that way alumni can have it."*

Several students suggested having short discussions of the bulletins in class. Students also were asked if they thought a series of short essays, somewhat similar in format to **MICRO TODAY**, might be a good alternate to a required term paper. Many thought this would be beneficial, and I am trying this concept for the fall 1989 class. (During the fall 1988 semester, I allowed students to write one-page, extra credit reports of news items related to microbiology. This was quite popular and most of the reports were well written.) Some students even thanked me for the time I spent creating the bulletins, commenting, "Thank you for taking the time to make them up" and "It was very thoughtful of you to devote so much time to our class."

I have found the **MICRO TODAY** news bulletin to be a valuable tool for introducing students to current developments in microbiology. New information about basic subjects in microbiology and new topics in microbiology can be immediately brought to students' attention. Students can see the ever-changing nature of microbiology as a science and the implications of microbiology in their daily lives. **MICRO TODAY** helps students see microbiology as more than a collection of static facts.

One recurring suggestion from students is to discuss the bulletin's articles in class. This could be done by distributing them at a lecture and following up the next day by discussing the article at the start of the laboratory session. I think it is important to hold any discussion as soon as possible after students have had a chance to read the article so that the information will be fresh in their minds.

Two practical questions that may be asked are:

1. Can a news bulletin be produced with computers other than the Macintosh? and
2. Can a news bulletin be produced even without a computer and sophisticated graphics software?

The answer to both questions is, "Certainly it can!" Many word processing, graphics and desktop publishing programs are available for the Apple II series of computers and for IBM computers. Some examples of software that integrates graphics and text and is designed specifically for desktop publishing tasks such as assembling newsletters, are:

- *Newsroom* (Springboard Publisher, Minneapolis, MN). Apple II and IBM versions; about \$25
- *Publish it!* (Timeworks, Deerfield, IL). Apple II and IBM versions; about \$70 for Apple II/\$140 for IBM
- *Geopublish* (Berkeley Softworks, Berkeley, CA). Apple II computers; about \$80

- *NewsMaster II* (Unison World, Berkeley, CA). IBM computers; list price \$79.95

Scanners also are available for other computers. A version of *Thunderscan* can be used with Apple II computers connected to an ImageWriter printer. There is no scanner widely used for IBM computers that is comparable to *Thunderscan*, but there are several "hand-held" scanners. Three of these are *The Complete Hand Scanner* (The Complete PC, Milpitas, CA; list price \$249), *Scan Man* (Logitech, Redwood City, CA; list price \$299) and *Handy Scan* (Mitsubishi, Torrance, CA; list price \$995).

Even if you do not have a computer, standard "cut and paste" methods can be used to place photos and graphs on a page with typewritten text. The computer merely opens up many possibilities for formatting and graphics manipulation. By using a computer, an image can be manipulated to conform to the page, rather than the page conforming to the picture. With a computer you can rearrange the type on the page to see how the graphic will best fit into the complete story. This is page processing as opposed to simple word processing. Another important consideration is that by using the scanner, a photo or even a whole article does not have to be cut up and perhaps rendered useless thereafter.


Finally, the importance of the instructor's involvement with the production of the bulletin cannot be overstated. While acquiring information for the bulletin and actually producing it, the instructor is immersed in current information. Therefore, the instructor—as well as the students—benefit.

### Acknowledgments

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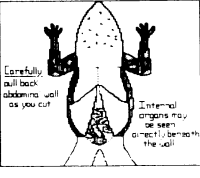


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