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What is Professionalism and Can We Teach It?

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A few years ago I presented a poster at the APS Annual Meeting that described a professionalism course Wayne Pedersen and I now have taught four times since 1982 to graduate students in plant pathology at the University of Illinois. Since, at that time, this was a new and, to our knowledge, unique course, we attached an envelope for comments and suggestions from those who stopped by the poster when we were not there. One response adamantly stated: "You cannot teach students to be professionals. They can only learn through experience."

Let me give you an example of learning professionalism through personal experience. Many years ago as a young assistant professor I wrote up a study for submission for publication. Included on the manuscript as coauthors were three scientists who had contributed both ideas and labor to the project, one of whom was a graduate student. Following our departmental system, I gave the manuscript to a colleague for review prior to submission. I can still remember my astonishment and dismay when this colleague demanded to be made an author on the paper. Among his arguments for authorship status were the use of his greenhouse space for the project and a statement that "if a student is going to be an author on this paper than I certainly should be as well." This experience taught me a lot about one aspect of professionalism—authorship—but this and other experiences during the early years of my professional career convinced me that there had to be ways other than personal experience to learn to be a professional plant pathologist. I hoped that all young scientists did not need to learn to be professionals in the "School of Hard Knocks" that I attended all too often! In the intervening years I have discovered that some aspects of professionalism can be taught, and today I have my chance to rebut that unknown critic of our poster many years ago.

In a recent column in *Phytopathology News* (3), I discussed the origins and meanings of the concept of "professionalism" and what I believe makes any of us a professional plant pathologist. To briefly summarize, there are both ethical and workmanlike qualities that separate the professional from the amateur. These qualities lead to high-quality products (i.e., our science) and to public trust in our value to society. Thus, professional plant pathologists are, first and foremost, identified by their manner of conducting and communicating science. But to effectively conduct and communicate science there are many aspects of our profession that most of us never learn about in formal settings. For example, to conduct science you need money. Since most of us are neither independently wealthy nor supported by wealthy patrons, we need to know how to get the money to do science. Where does it come from? How do you manage it? How do you report responsible use of it? Most of us never learn these things until faced with the necessity of acquiring funds. Another example, science isn't science until the results are communicated to the appropriate audience, be it scientific colleagues, corporate management, or commodity groups. How is this communication accomplished? How is the appropriate audience selected and the science transcribed into the proper language? How is the work reviewed by peers? Again, most of us never learn this until facing the blank computer screen or piece of paper that represents the beginning of our first scientific publication. A final example: Throughout our professional careers we are faced with situations that test our ethical judgment. Situations in which there is often no clear-cut right or wrong, or maybe several rights or wrongs. How do we learn to handle situations such as the assignment of authorship or the manipulation of data or the acquisition of funds? Where do we learn to think about right or wrong as it applies to science and to the job of being a professional plant pathologist?

These are just a few examples of skills and information we need to function as professional plant pathologists that we usually do not acquire during our M.S. or Ph.D. programs. Granted, experience is often useful and necessary, but some aspects of professionalism can be taught, or at least the thought processes can begin, in a classroom setting during a graduate program.

We have taught a professionalism course to four groups of plant pathology students over the past 14 years. The professionalism course meets once a week. We teach the course when there is sufficient student interest—typically between 8 and 12 students. Each class is 2 hours long, with the first hour devoted to presentation of information on the topic of the day, and the second hour devoted to class discussion of the topic. A core of topics to be covered is selected by the instructors, but other topics vary from time to time depending on the interests of the students enrolled. Information is often presented by guest speakers who are particularly knowledgeable about a topic. Speakers have included faculty from agriculture and other disciplines, administrators, alumni of the department, and professional university staff. The people whom we have invited have welcomed the opportunity to share their experience with younger colleagues. The class rates each guest speaker and only those with superior ratings are asked for return engagements! This use of many guest speakers has several advantages. Students get information and advice from different perspectives. Concurrently, they learn about the infrastructure of the university where they are studying—they build their professional network. Finally, the information presented is current and the burden on the course instructors is greatly lessened. The most significant role of the course instructors comes during the class discussions when questions, opinions, and arguments are expressed and explored. For that reason, one of the most important prerequisites for instructing this course is an enjoyment and appreciation of graduate students.

I recently sent a simple survey to graduates of our professionalism course, asking them to evaluate the course in light of their individual professional experiences since taking it. I had a 45% response rate from former students, with at least three responses from each year the course was offered. About three-fourths of the respondents have Ph.D. degrees in plant pathology, about two-thirds work in academic settings, and about two-thirds have more than 50% of their job responsibilities in plant pathology. I would like to thank those who returned the forms and to share some of their comments with you today.

The survey respondents were virtually unanimous in some responses. Among these were the value of team-teaching the course, the use of different guest lecturers, and the mixed format of lecture and open discussion. Here are some representative

comments. On the use of two instructors, one respondent wrote, "the opinions of the instructors vary through their experiences. By having the course team-taught, you enrich the resources available to the students." Another wrote that the frequent use of guest lecturers "takes advantage of additional expertise and experience and takes the course out of the traditional format." Finally, students responded that the lecture/discussion format gave time for "reflecting and chewing on information and advice" and "more open and critical discussion" of the topics.

Many topics were considered useful in their professional careers, including job searching and application, employee benefits, scientific writing and the manuscript review process, seminar presentation, and grantsmanship. We also found areas we have not included in the class but that former students believe would be useful, for example: interpersonal skills, budgeting, and public perceptions of science. The respondents thought that, overall, the topics and instructors in a professionalism course had more impact on its success than the students or the class size. The overwhelming conclusions of the respondents were that the professionalism course had been of value to them during their careers and that students should have the opportunity to take such a course. One respondent concluded that the professionalism course "gave me a glimpse of many things not taught in grad school," while another wrote that "it made me think about new issues, and old issues in a different or broader way."

I believe our experience indicates some aspects of professionalism *can* be taught in a classroom. This year I will be working through our Office of Academic Programs to expand the professionalism course into a college-wide offering. My goal is to have the lecture portion of the class generalized, and the discussion portion tailored to graduate students in various college curricula.

There are many ways in which each of us develops professionalism. One way can be through a course such as I have described here. Another is through personal experience. Yet another is through one-on-one mentoring. I would not be who or where I am today had it not been for the mentoring of two entomologists, Bob Granados and Lynn Riddiford, and one plant pathologist, Gus deZoeten. Another way to develop professionalism is through participation in organized groups with an active interest in professionalism, such as AWIS or Sigma Xi. APS also can play an important role in developing the professionalism of our members. For example, at this meeting we have a new student ambassadors program, discussions of several aspects of professionalism at tables at the Members' Breakfast, and program sessions on mentoring, job searching, and promoting our profession. I hope that our Society maintains and increases these opportunities for members.

APS has recently adopted a Code of Professional Conduct. Some members have questioned the need for such a code or our ability to enforce it. I recently read an editorial by President Irene Bass (2) of the Casualty Actuarial Society (CAS), the mathematicians of the insurance industry. CAS had just expelled the first member found to have violated its recently adopted professional conduct code. President Bass wrote, "Some actuaries have said that we needed to expel a member to demonstrate to the public that we are serious about our profession." While I strongly believe that the APS Code is a necessary statement to the public that we will maintain high ethical and professional standards, I certainly do not believe enforcement of the Code is the best way to convince the public our profession is deserving of their support. But convince them we must.

Edward E. David, Jr. (1), past Science Advisor to the U.S. President, recently made a series of projections about the future of U.S. science. Among his projections were: 1) the elimination of corporate central research labs, the reduction of the federal laboratory system to about one-third of its present size, and the downsizing and elimination of academic departments and schools, 2) the complete integration of academic, corporate, and national research, 3) the replacement of research grants with contracts with specified deliverables, 4) an overall reduction in research and development funding of 25–30%, and 5) strict guidelines and enforcement for prevention and detection of misconduct in scientific research. These are indeed tough times for U.S. science, and many predict that the future will be even tougher. We need to educate people, as individuals and through professional organizations such as APS.

I am aware that many APS members are making individual efforts to inform the public about our profession and science. Many sectors of society could benefit from information about agriculture and, specifically, plant pathology. I can give you examples of programs that have successfully addressed one such audience often "turned off" to science—young women. Candace Collmer has obtained funding from the USDA to support research by undergraduate women in her laboratory at Wells College and at nearby Cornell in the laboratory of Molly Kyle and to teach an undergraduate course on how research is "conceived, pursued and reported." Kimberly Gwynn and Bonnie Ownley at Tennessee introduce young girls to agriculture, including plant pathology and entomology, through outreach activities and educational materials, including a coloring book distributed at AG day on campus and during visits to local elementary schools. I am sure many of you find the time to reach out, but I encourage **ALL** of you to consider how you can do this.

Reaching out can also occur in more formal ways (for example, through courses at the undergraduate level), yet attracting students is often difficult. Why? Sheila Tobias (4) recently wrote, "In most science courses . . . one is not invited to get a 'smattering' or a 'museum tour' or an 'overview.' One is either 'in' or 'out,' and, since science can be done only by a very special pre-committed few, more people . . . end up 'out' than 'in.' Not surprisingly, anxiety and intimidation . . . eventually transforms itself into disdain for science, even hostility." How do we break down barriers, and entice those who are outside, in? Can we give them a meaningful smattering or overview? Gail Schumann at Massachusetts has developed a course on plant pathology that fulfills the science requirement of undergraduates; at Illinois I teach a similar course that fulfills a composition requirement. We attract students because these courses fill a need in their undergraduate programs. We offer an overview of plant pathology, past and present, and emphasize its importance in the lives of students *today*. In the process, groups of young men and women learn about our agricultural system and the science of plant pathology. They are not scientists when they finish the course, but they are more literate about agricultural science. It is the beginning of what those of us at academic institutions must do, and it represents one of many audiences we must learn how to reach.

Let me close by returning to President Bass' remarks. She wrote that the actuaries "simply take too long to respond to public issues, and as a result the press goes elsewhere for opinions on issues that are more appropriately addressed by actuaries." Sound familiar? Here is another audience we need to learn to reach. We need to develop better channels for the flow of information with the press and to place plant pathologists in positions where they will be sought out and asked for information.

I want to conclude today as I began last year as your president, by urging each of you to find ways to be "Pro Plant Pathology," to promote our science and our profession, and to develop proactive, progressive activities and projects toward that end. If we do not project a positive image of ourselves, no one else will. We have done a lot we can be proud of and that we can use to promote our profession. We need to identify the audiences we need to educate and the best means to reach those audiences. Some of this APS can do. Some of it only you as individuals can do. This is part-and-parcel of being a *professional* plant pathologist. The time to begin is now and the people to do it are ourselves. Thank you.

LITERATURE CITED

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