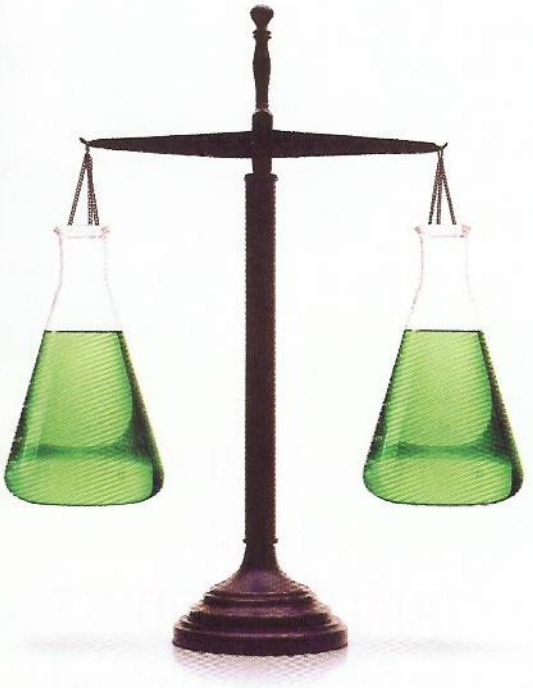
By C. Neal Stewart, Jr., and J. Lannett Edwards

OPINION

How to Teach Research Ethics

Two scientists – neither bioethicists – describe the best course they've ever taught.



Both of us, independently, have been "victims" of research misconduct – plagiarism as well as fabricated data. One day, while venting about these experiences, we agreed to co-teach a very practical graduate course on research ethics: "Research Ethics for the Life Sciences." The hope was that we could ward off future problems for us, our profession, and, ultimately, society. Ethical misconduct is a big crisis in science. No longer are misdeeds buried in journals; they often make for international headlines.

Our dean and department heads were enthusiastic. They must have realized that while we were reminding them of a problem, we were also willing to step up and accept the challenge of making a difference.

Neither of us are ethicists, though that didn't seem to matter. At first blush, bioethics, a field unto itself, might be included in a research ethics course for graduate students. But, we had more than enough ground to cover in our one-hour, one-day-a-week, 8:00 am course without including bioethics content. First and foremost, we wanted our students to learn and discuss the best practices in our fields of research. Twelve students enrolled in our experiment, a pragmatic and experiential course that primarily consisted of case study discussions.

We decided to focus on the areas where graduate students, technical staff, postdocs, and even established scientists run into trouble: plagiarism, authorship, grantsmanship, peer review, research misconduct, image fraud, whistle-blowing, conflicts of interest, patenting, and as a special topic, women in science. (See our syllabus under "teaching" at http://plantsciences.utk.edu/stewart.htm.)

The first homework assignment was to find plagiarism. They did. They found gratuitous cases, and some not so black and white. Here we parsed through what is acceptable and not acceptable from a scientific standpoint. More importantly, we discussed, rather than lectured, about best practices and what happens when shortcuts are taken. So it went for the entire semester.

For those of you who'd like to teach your own courses, here's a bit of what we learned:

- **Team up with another faculty member.** As coinstructors we often had disparate opinions; sometimes we agreed, and sometimes we debated. The students appreciated hearing the range of opinions from us and from their peers.
- **Case studies are a powerful tool.** They personalized real events and problems. They helped us all empathize with wrongdoers and victims, roles we've found ourselves in from time to time.
- **Teach best practices in your discipline**, and not just general issues of right and wrong. Keep it practical.
- **Have fun.** Sometimes we felt like some of the examples could be condemning – with us being the condemned. Did I plagiarize when I recycled text from my own writing? These instances don't sound like much fun, but the students observed that we all make mistakes and we're all human. Don't be afraid to laugh.
- **Keep class size small**, with a limit of 20 students. In larger classes, shy students might not feel comfortable with sharing.
- **Don't focus on morality.** Focus on ethics. One of our students thanked us for that specifically.

We look forward to teaching this class again. Feel free to "plagiarize" our syllabus. Teaching this course should count toward teaching (obviously), research (making it more efficient and productive by keeping open lines of communication/expectations of staff and students), and service (to your colleagues and profession). We bet it will be the best course you've ever taught. ■

C. Neal Stewart, Jr., is professor and Ivan Racheff Chair of Excellence in Plant Molecular Genetics at the University of Tennessee, where J. Lannett Edwards is associate professor and graduate director in the Department of Animal Science.