

I worry about the future of my own graduate students and postdocs, I have even more worries about the implications for the country as a whole.

Doering seems to suggest that we train Ph.D.'s for three reasons. The first is to obtain cheap labor to get our science done. The implications here are beyond comment. I would hope that kind of attitude does not exist, and if it does, we should wipe it out. The second justification given for training Ph.D.'s is that we need cheap labor to instruct undergraduates. Again, the implications about the morality of the academic community are disturbing. If this is happening, we should be working to change the structure of undergraduate education. Why do we need so many graduate students to teach so many undergraduates if the market is dictating a need for fewer people trained in science? The third reason, and in my opinion, the most disturbing one of all, is that we train people so that they can take jobs. I am not convinced that this should be a major goal. People can pursue learning for many reasons, only one of which is to secure employment.

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### Academic Expressways

I was taken aback by the headline "Scientists enjoy life in the not-so-fast lanes" (Karen Celia Fox, *Careers '95*, 6 Oct., p. 141). It is true that my colleagues do very much enjoy their lives. It is also true that they are very much in the fast lanes, but on an expressway that is different from those where faculty at research universities are found. Faculty at many undergraduate colleges must run very hard to achieve excellence in both instruction and research. Their product, their students, are the graduate students, business leaders, and educated citizens upon which our nation depends. My institution is often the leading producer of B.A./B.S. chemistry majors in the nation. In the past 10 years 11 graduates have earned one of the 50 National Science Foundation (NSF) graduate fellowships granted annually to graduates of 4-year colleges. All of my colleagues hold or have recently held peer-reviewed research grants, and most have substantial publication records. They are also excellent teachers and some are national leaders in curriculum reform. Nearly all have been awarded grants by NSF for instructional equipment or curricular development. Three members of our

chemistry faculty have been awarded the Catalyst Award of the Chemical Manufacturer's Association. As the article indicates, faculty at undergraduate institutions have different goals, and they have chosen a different route; there is substantial evidence that their work in the fast lanes contributes in an important way to the nation.

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### What Is Excellence?

The *Careers '95* issue raises the spectre of the "versatile Ph.D." Definitely, broad experience enables a committed and restlessly curious graduate student to attack a lifelong research question from many angles. But I suspect that what is meant is conferring on those graduate students who do not have a burning curiosity the ability to provide skilled hands for any of a variety of employers. If our programs are versatile, we will still need a focused program for students who have always known they wanted to uncover mysteries. We already

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