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EDITORIAL

Degrees of Freedom

Biomedical scientists, whether they reach this editorial via the magazine's front cover or the advertisements at the back, are affected by the harsh reality of today's job market for biomedical Ph.D.'s. How do we fix a system that has created such scientific success but has produced many more Ph.D.'s than the market can bear? Many are demanding change in graduate education. I believe that graduate education in biology should continue to focus on the pursuit of scholarship and basic discovery. Before we change the system, the first step toward relieving the crisis should be to discard the prejudices that force too many Ph.D.'s to compete for dwindling resources and that fuel false expectations of job security.

Search committees are inundated with hundreds of applications for every available position, and young scientists watch even the best of their peers struggle to find jobs. Even a faculty position is no guarantee of funding, as the percentage of awarded grants slides to record low levels. In academic science it is up or out, and principal investigator positions for all trained Ph.D.'s simply do not exist. Basic biomedical research resembles a great pyramid scheme, and latecomers have little chance of a payoff. Nonetheless, the supply of postdoctoral fellows and new graduates continues unabated and unrestricted by graduate programs, in part because these young scientists are needed to fuel the labor-intensive research enterprise and to teach undergraduates.

Although it is obvious that there are too many scientists and too few jobs, there persists a prejudice that Ph.D.'s who choose alternative careers to science represent a failure of the system and the individual. The stigma attached to those who publicly contemplate leaving the research track is a permanent one. In today's cutthroat job market, such a scientist's commitment is questioned and his or her potential to succeed is considered suspect. The job hunt has become a one-strike-you're-out game, and that strike can be merely questioning the pursuit of an academic career—a sad irony, given that inquiry is so integral to the scientific method. Such prejudices are shortsighted and irresponsible in a constricting job market. For today's cohort of postdoctoral fellows and graduate students in biological sciences, a career outside basic research is not only an alternative but may be a necessity.

Those who leave research science with a Ph.D. should proudly wear that badge of intellectual and personal achievement. The well-trained Ph.D. knows how to rigorously pursue creative solutions to problems beyond the boundaries of existing knowledge. That skill can be applied to a myriad of careers that offer intellectual challenge and provide societal benefits. However, those who leave the womb of academia do not face a certain future. Scientific training does not teach the managerial and interpersonal skills that are so often needed to excel in other careers. It is a harmful prejudice to believe that leaving science is the easy alternative, even if the job of the average nonscientific professional may be more secure than that of the merely above-average scientist.

In the foreseeable future, only truly exceptional (and lucky) Ph.D.'s will find funded positions, and mentors must face the task of counseling fellows and students to seek careers outside academic science. If concern for students' quality of life is not enough motivation, there are selfish justifications for helping young scientists pursue other careers. First, it is in the best interests of those who remain in basic research to reduce competition for limited resources and jobs. Second, those who leave academic science are most likely to be its advocates through their involvement in science education, science writing, business ventures, and political action. Today's Ph.D.'s and trainees who do not find jobs in basic research will be tomorrow's ambassadors and advocates of science. The graduate-level training of those scientists provides a very high rate of return on investment for biomedical science.

Prejudices emerge most strongly at times when stress and insecurity heighten a society's fears and misunderstandings. The dwindling resources and increasing competition in biomedical research have created such a time. When a student or fellow exercises his or her freedom to pursue different professional interests, it should not be seen as a challenge to the beliefs of those who have chosen to stay in basic research. Those who choose careers outside of science should do so with pride and with the support of their fellow scientists.

Don S. Doering

Don S. Doering received his Ph.D. in biology in 1992 and is now vice president of AquaPharm Technologies Corporation in Columbia, MD.