Helping to define graduate education: the APS/ACDP list of professional skills for physiologists and trainees

Graduate training provides unique educational challenges and opportunities for physiologists. As teachers and mentors, physiologists direct most aspects of graduate training. This is in contrast to the role played by physiologists in most professional programs where physiologists are responsible for only a portion of the educational and professional training. Graduate training is also unique in that the trainees are expected to acquire a set of skills and competencies in addition to mastery of a core knowledge base. Graduate training relies heavily on a mentor model where experienced advisors model good ethical and scientific behavior and expect students to adopt these behaviors and attitudes as a part of their professional identity. Penny Hansen recently addressed these attributes of graduate education as part of the “hidden curriculum,” a group of expectations that are expected of our students but that are rarely explicitly communicated (Adv Physiol Educ 26: 139–145, 2002).

In July 2002, the American Physiological Society (APS) Council directed the Education Committee to work with the Women in Physiology Committee and the Career Opportunities Committee to further explore the idea of competencies for graduate education. The three committee chairs (Robert Carroll, Carol Liedtke, and Frank Belloni) worked with the APS Education Office (Marsha Matyas and Melinda Lowy) and three representatives from the Association of Chairs of Departments of Physiology (ACDP), William H. Dantzler, Vernon S. Bishop, and William S. Spielman to develop a list of skills that help to define graduate education in physiology.

The final product is divided into nine major categories:

1. Core Biomedical Science Knowledge
2. Professional Ethics
3. Laboratory-Related Skills
4. Research/Analytical Skills
5. Communication Skills
6. Teaching and Mentoring Skills
7. Personnel and Management Skills
8. Lifelong Learning Skills
9. Career Development Skills

This list provides a set of expectations for use by mentors, students, and individuals at varying stages of their careers. The expectations are stratified, applying to master’s level students, doctoral students, and to postdoctoral trainees. The desired outcomes include intellectual skills, general technical skills, and communication skills. This project relied heavily on existing information and recommendations and adapted them to the needs of physiologists. It also provides a focus on the mentor’s commitment to promoting the development of those skills in students.

Drafts of the document were circulated at the 2003 Experimental Biology meeting, and through groups within the APS and the ACDP. Following incorporation of recommendations, the final product was endorsed by the APS Council in November 2003 and the ACDP in December 2003. The final product is published jointly by the APS and ACDP, and is available at the APS web site at http://www.the-aps.org/education/skills.htm.

This document is intended for a variety of audiences. Students may use the list as a form of self evaluation. This will enable students to be more proactive about focusing and monitoring their own training and career development. Faculty members may find the list a useful yardstick in measuring both their individual mentorship of students and in the development of overall departmental efforts and expected outcomes in preparing students for the 21st century job market. The APS Education Office is using the list to identify specific areas where resources can be developed to support graduate education. Finally, the list provides a baseline for future review and revision as critical skills change over time. Take a look to see if there are any new ideas for your graduate training program.

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