Using classic papers to teach physiology

Readers of American Physiological Society (APS) journals are well aware of the dramatic changes in our discipline that have occurred since the inception of the American Journal of Physiology over 100 years ago. Development of techniques to accurately measure most physiological variables and to calculate their associated parameters has led to an explosion of data, which has led to the development of complex statistical approaches to objectively evaluate the data. Advent of the genomic and then proteomic ages has led to yet another dramatic change in our discipline. Finally, availability of online search engines and e-journals has made most trips to the library a thing of the past.

To celebrate the 100th-year anniversary of the American Journal of Physiology, the APS started the Legacy Project, which allows retrieval of all journal articles as PDFs from volume 1 onward (http://www.the-aps.org/publications/legacy/). Along with this, the APS Publications Committee established Essays on Classic Papers to highlight the Legacy Project (http://www.the-aps.org/publications/classics/). These essays are focused primarily on the scientific nature of discovery and were intended for our peers.

Dr. Dee Silverthorn, Editor of Advances in Physiology Education, had the idea that classic research papers might also be used to teach basic physiological principles to students at the undergraduate or graduate level. I thought this was a terrific idea. The work of the great endocrine physiologist Dwight Ingle immediately came to mind. He was able to establish many of the basic principles of endocrine control without the ability to measure hormones! Therefore, in addition to a Classic Papers Essay by Mary Dallman describing the studies of Dr. Ingle and his collaborators to appear in American Journal of Physiology-Endocrinology and Metabolism (1), I have written an essay for Advances that highlights how Dr. Ingle’s article can be used to teach physiology students the general concepts of the hypothalamic-pituitary-adrenal axis (2). The beauty of this approach is that these classic papers were intellectual tours de force with quite minimal technology. Therefore, an undergraduate or beginning graduate student need not understand esoteric methodology to get a good feel for physiological principles established in these classic papers. Student readers will also learn an appreciation for the greatness of the scientists of previous generations on whose shoulders we now stand.

Dr. Silverthorn and I are now calling for readers of Advances to join this project (see our Call for Papers at http://advan.physiology.org/). We are encouraging you to select your favorite classic research paper published in an APS journal and write an article explaining how one might use it to teach physiology. The paper need not be from the classic papers list (http://www.the-aps.org/publications/classics/) but can be any classic paper found on the Legacy Project (http://www.the-aps.org/publications/legacy/). In addition to an explanation of how the paper can be used by the instructor (including a section called “Teaching Points”), we are requesting that a “discovery learning” handout be developed. An example would be to present a figure or table from the classic paper you have selected and write a legend containing a series of questions that the student can answer as an assignment. Obviously, your article should include clear and definitive answers to the questions posed in the legend (i.e., an answer key). The article on teaching using Dr. Ingle’s paper, which also appears in this issue, includes an example of a student handout (Fig. 1) created from the original data in the paper (2).

We truly look forward to reading your submissions, which will undergo peer review. So that we do not receive more than one essay on any one classic paper, please notify me (hraff@mcw.edu) if you plan to submit an article for this exciting project.

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