12-5-2014

Using APS Classic Papers in Physiology for Class Discussions

Patricia A. Halpin
University of New Hampshire, Manchester, Patricia.Halpin@unh.edu

Using APS Classic Papers in Physiology for Class Discussions

By adding class discussions on APS Classic Papers students are presented with a historical prospective of the current knowledge that is taught today. Of great interest to students is how primitive the techniques that were used and yet how much was learned from these early experiments. Each student is assigned a classic paper in physiology that is related to the lecture topic of the week. They are expected to read the paper and all the associated papers. As discussion leader the student is expected to prepare discussion questions to engage their fellow classmates in a robust discussion of the paper. The methods should be explained and discussed. The current technology used today to study these concepts should also be noted. The classmates are expected to raise their hand and not wait to be called on. They need to be actively involved with the discussion and come to class prepared. The discussion leader grades each student participant with a rubric and the grade is part of their final course grade. By providing students with this student centered active learning activity they become more engaged in the material and gain a deeper understanding. In the process of this investigation into history respect and admiration for the pioneers of physiology is also achieved.

There are many APS Classic Papers to choose from and they are all freely available. If a class size is large students could be broken into smaller groups of 5-6. Depending on the length of the lecture more than one paper could be discussed per class. Allow 30 minutes for the discussion. For the first week of class the instructor should model the role of discussion leader so the students can understand the expectations of their role.

Learning Objectives- Students will

Describe and discuss the techniques used in the original discoveries and identify current techniques to obtain similar information today.

Identify the historical perspective of the work that was done.

Evaluate the significance of the discovery and the impact it has on the physiology knowledge of the present.

Physiology Topic	*APS Classic Paper in Physiology*
1. Membrane Transport	The Basis for Transport Across Epithelial Cells-Marshall Montrose *Am J Physiol Gastrointest Liver Physiol 287*:G941-G942, 2004. doi:10.1152/classicessays.00014.2004
2. Endocrine System	Leading to the Discovery of Prolactin Anterior Pituitary Hormones: Development of a Bioassay- M. Susan Smith. *Am J Physiol Endocrinol Metab, 287*:E813-E814, 2004 doi: 10.1152/classicessays.00022.2004
3. Nervous System	What Do Dendrites and Their Synapses Tell the Neuron?- Idan Segev *J Neurophysiol 95*:1295-1297, 2006. doi:10.1152/classicessays.00039.2005
4. Sensory systems	Placing Pain on the Sensory Map: Classic papers by Ed Perl and colleagues - Peggy Mason. *J Neurophysiol 97*:1871-1873, 2007. doi:10.1152/jn.01327.2006
5. Circulatory system	Alpha and Beta Adrenergic Receptors: Ahlquist's Landmark Hypothesis of a Single Mediator with Two Receptors-David B. Bylund *Am J Physiol Endocrinol Metab 293*:E1479-E1481, 2007. doi:10.1152/ajpendo.00664.2007
6. Renal system	Micropuncture: Unlocking the Secrets of Renal Function-Jeff M. Sands *Am J Physiol Renal Physiol 287*:F866-F867, 2004. DOI: 10.1152/classicessays.00019.2004
7. Respiratory system	Teaching the Physiology of Adaptation to Hypoxic Stress with the aid of a classic paper on high altitude by Houston and Riley- Etain A. Tansey *Advan in Physiol Edu* 32:11-17, 2008. doi:10.1152/advan.00005.2007
8. Digestion	Teaching Basic Gastrointestinal Physiology Using Classic Papers by Walter B.Cannon-Paul P. Bertrand and Rebecca L. Bertrand *Advan in Physiol Edu 31*:136-139, 2007. doi:10.1152/advan.00112.2006
9. Skeletal Muscle	The Exercise Dose Response Key Lessons from the Past- Marcas M. Bamman *Am J Physiol Endocrin Metab 294* E230-E231, 2008.DOI: 10.1152/ajpendo.00787.2007
10. Thermoregulation	Hypothalamic control of body temperature: insights from the past-Gary W. Mack *Am J Physiol - Regul Integra Comp Physiol 287* R1012-R1013 2004. DOI: 10.1152/classicessays.00011.2004
11. Reproduction	Discovering the Lutenizing Hormone of the Anterior Pituitary Gland-H. Maurice Goodman. *Am J Physiol Endocrin Metab 287*,E818-E819 2004. DOI: 10.1152/classicessays.00006.2004

Student Name	Answered presenter's question and effectively demonstrated they read and understood the paper. 6 points	Gave vague answer that demonstrated they read the paper but may not have a full understanding of the material. 4 points	Demonstrated they are unprepared and did not read the paper. 0 points	Added additional comments that demonstrated they understand the historical significance of the work or technologies used. 4 points	Additional comments did not effectively demonstrate they understand the historical significance of the work done or technologies used. 2 points	No additional comments to the discussion. 0 points