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**HAPS-EDucator**

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*HAPS-EDucator* is the official publication of the Human Anatomy and Physiology Society (HAPS) and is published four times per year. Major goals of the Human Anatomy and Physiology Society are: to promote communication among teachers of human anatomy and physiology in colleges, universities, and related institutions; to present workshops and conferences, both regional and national, where members can obtain information about the latest developments in the health and science fields; and to encourage educational research and publication by HAPS members. HAPS was established in 1989.

Annual membership dues are $30. Annual membership renewals shall be due on January 1, April 1, July 1, or October 1. New members shall renew on whichever date most closely follows the date of their initial membership. **HAPS Hotline**: (800) 448-HAPS (4277).

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**SUBMISSIONS TO HAPS-EDucator**

Papers for publication, requests for information, positions available and wanted and letters to the editor are welcomed. Articles submitted on 3.5" double density disks are preferred - please include a hard copy as a backup. If references are included, please follow the methods suggested in *Scientific Style and Format: The CBE Manual for Authors, Editors, and Publishers*. 6th Edition, Style Manual Committee (Council of Biology Editors) Cambridge, Cambridge University Press. 1994.

It is the policy of the Human Anatomy and Physiology Society (HAPS) that any advertising appearing in its publication(s) must be related to the teaching of anatomy and physiology. The *HAPS-EDucator* Editor and Editorial Board jointly determine whether an advertisement meets the criteria of HAPS. Any advertisement that is deemed not to meet the needs of the organization will not be printed, and the advertisement plus any monies collected from the advertiser will be returned. The opinions reflected in advertising that appear in this publication do not necessarily represent the opinions of HAPS. Advertisement of a product in the *HAPS-EDucator* does not represent endorsement of that product by HAPS. Contact the Editor for information on advertising rates, advertisement size and the procedure for submitting an advertisement to *HAPS-EDucator* for publication.

**DEADLINES FOR SUBMITTING MATERIAL TO HAPS-EDucator:** June 1 (August issue); September 1 (November issue); December 1 (February issue); March 1 (May issue).
It is with trepidation and excitement that I am taking on this new task of Editor of *HAPS-EDucator*. I have had previous experience in editing and publishing a newsletter and thus I know what difficult work it can be. But there is great pride in seeing the fruition of those labors. I follow in the footsteps of Theresa Page who has done a marvelous job of printing a newsletter four times a year for over five years (and this year was the Annual Conference coordinator to boot)! Although I do not anticipate any significant changes in the immediate future, the look of the newsletter will be changing in light of the new Publication Plan (see page 14) of this newsletter. At the meetings in Fort Worth, the EDucator Editorial Advisory Board and I met and discussed some additional columns that we would like to see provided in future newsletters. Stay tuned.

For those of you who could not attend the Annual Conference in Fort Worth, we missed you - and you missed a WONDERFUL conference. The conference was attended by well over 300 participants and 27 vendors. A broad range of topics was covered and summaries on many of those presentations will appear in future newsletters. I especially enjoyed a workshop by Bob Smoes on sex analysis of human skulls. I recently was able to acquire an articulated 100-year old skeleton for our laboratory (at an auction!) and will be attempting to sex it from the information I learned in the workshop. The workshop presented by Bill Higgins on "Phractured Physiology: Testosterone Makes You Stupid" was so well attended that he performed an encore the next day! The keynote speaker at the banquet educated us all on David "the bubble boy", his medical treatment, and advances in genetic immunobiology. In addition, we were all greatly entertained at the banquet by the Daughters of the Pioneer singers who provided us with an anatomy and physiology sing-along not to be forgotten.

The Board of Directors maintained a "Chat Room" for HAPS members to discuss issues with Board members. The Board also established an Emeritus status for Past-Presidents who were recognized at the HAPS banquet for their significant past and ongoing roles in HAPS.

Lastly, I want to stress that this is YOUR newsletter. The newsletter cannot be produced without input from the members of HAPS. I want to thank all those who regularly contribute material for the newsletter and would like to encourage others to put your "pens to the paper" (or e-mail if you prefer). If there are any features or articles you want to submit or see addressed, please do not hesitate to contact me at the address inside the front cover.

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HUMAN ANATOMY AND PHYSIOLOGY SOCIETY
MID- ATLANTIC REGIONAL CONFERENCE

Hosted by:
Montgomery College
Continuing Education
Takoma Park, Maryland
8:00 am - 3:45 pm
Saturday, October 24, 1998

"Fitness and Physiology" update seminars
workshops...exhibitors...networking
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For more information on the Conference or presentation of a workshop contact:
Dr. David Parker at: nvparkd@nv.cc.va.us or (703) 845-6004
Our family celebrated Independence Day this year with a trip to the city park for a patriotic band concert and the traditional fireworks display. As I listened to my children exclaim over the beauty of the fireworks, or flinch at the concussive aerial explosions, I thought back to my childhood and to my memories of similar Fourth of July celebrations. We didn’t have municipal displays in my home town, so families in the neighborhood would chip in to buy a nice collection of fireworks for an impressive evening display. Although this year’s details were quite different from what I experienced as a child, there were sufficient similarities (evening fireworks and excited children, not to mention mosquitoes, oppressive heat and humidity) for me to feel strongly about the continuity of this annual tradition.

I’d like to think that the same will be said of HAPS in the years to come. Each year’s details are different from the last, but our traditions continue. Seeking out opportunities for professional development of our members, developing and maintaining networks of acquaintances who quickly become friends, sharing ideas and resources - these are a few of the facets of the HAPS tradition that began in the first informal meeting over ten years ago and continue in strength and force today. How to preserve that tradition while responding to the changing needs of our growing membership will remain my central focus this year.

As the Publications Board gets up and running (see related article on page 14), I feel that the membership of HAPS will realize a significant broadening of member benefits. We will have more avenues by which we can increase the professional development and competency of our members (the Proceedings and the Resources List), as well as ways that make it easier to stay in touch with one another (Membership Directory and Web Page). Many thanks to Kevin Patton and his vision of service to the HAPS membership in developing and implementing the concept of the various HAPS publications.

As you can see in this issue, the HAPS-EDucator is now under the leadership of a new editor, Caryl Tickner. We wish her well as she continues the tradition of high quality professionalism established by Theresa Page. Every member of HAPS owes Theresa a large debt of gratitude for contributing significantly to the success and growth of our organization.

---

**WANTED:**

**APPLICANTS For HAPS Grants and Scholarships Program**

Faculty and students alike are welcome to apply for funding to engage in activities related to anatomy and physiology. Some suggested activities that are eligible for funding include short-term research projects, research in novel curricular strategies, clinical/practical experiences, “shadowing” projects, student attendance at workshops, and selected tuition awards for students. Put on your thinking caps and apply by contacting:

Estry Ang
University of Pittsburgh at Greensburg
1150 Mt. Pleasant Rd.
Greensburg, PA 15601
E-mail: Estry@vms.cis.pitt.edu
Fax: (412) 836-7129
Cooperative Education: Part I
Three Types of Educational Environments - Competitive, Individualistic, and Cooperative

Murray Jensen
University of Minnesota, Minneapolis, MN

The first day of class, and more precisely the first few minutes of the first day, are the most teachable moments of an entire course. Students are truly anxious to learn - not necessarily the principles of anatomy and physiology, but rather items such as "Will we ever laugh in class?", "Will I be allowed to ask questions?", "Where do I go for help?", and probably most important, "How will I be graded?" Instructors typically do not spend much time thinking about their grading systems, but options do exist. In this short article I will summarize three different types of grading schemes available to instructors: competitive, individualistic, and cooperative.

1. Competitive Environment

When college students walk into a classroom on the first day of class, most assume the academic environment will be competitive. A competitive classroom is set up by grading on a curve: the success or failure of one student is inversely proportional to the success or failure of the next student - it is a system based on rank, with the top students getting As and the bottom getting Fs. A cliché that describes a competitive environment is "You win, I lose; you lose, I win" - or put another way, if one student gets an A, that lessens the chances that the next student will get an A.

The Up Side: Competition has been known to bring out the best in students. Over a long period of time a healthy dose of "I want to be the best!" can lead to excellent test scores and wonderful reports and projects. Many students have an inborn desire to compete, and many politicians, parents, students, educators, etc. say that competition is what makes our country great: competition produces excellence! Many things in life are competitive (e.g., getting into law school, medical school, business school, etc., and especially getting a job).

The Down Side: Imagine a hypothetical situation: A very small anatomy and physiology class contains the following students - Marie Curie, Linus Pauling, Barbara McClintock, Albert Einstein, and Bart Simpson (four Nobel laureates and one academically challenged cartoon character). If that class were to be graded on a curve, should Bart even try to complete it? Probably not. He is probably destined for a D or an F even if he does better than he has ever done before. When students are in a competitive class, they are concerned not only with the course material, but also with who else is in the class and how well they know the course material. If a curved class is rich in very bright students, it lessens the opportunity of other students getting good grades, regardless of their understanding of anatomy and physiology. Of course this situation works in reverse too whereby an entire class could refuse to study for an exam and the top score would still have to be an A if the course were based on true competition.

There are many horror stories describing the behaviors of pre-med majors (often considered the most competitive students in college) within competitive environments. A common one involves a very bright student stealing the competition's books and notes on the eve of a large exam so the competitor is not able to study. Why should any student perform such a disastrously deed? Because it is common knowledge that if the competition does poorly, it increases another student's chance of getting a better grade; and a better grade just might mean a better recommendation for a spot in medical school. (I could mention ethics and academic integrity here, but unfortunately those are not the driving forces motivating all students.)

2. Individualistic Environment

An individualistic learning environment is created when students are evaluated by a preset grading criterion (e.g., all individuals scoring above 90% receive an A). In an individualistic environment, the success of one student is independent of the success or failure of the other students. If, for example, everyone was above 90%, the whole class would get As. It is a grading system not based on rank.

Teaching Tips continued on page 6
Teaching Tips continued from page 5

The Up Side: For some unknown reason, students think that teachers get paid more if they give out fewer As. There are two things wrong with this notion: 1) teachers can give out as many As, Bs, Cs, etc. as they wish; and 2) teachers do not “give out” grades, students earn grades! Nonetheless, grading on a preset criterion lets the students know that it is their knowledge of anatomy and physiology that is being evaluated, not their knowledge in relation to other students’ knowledge. And if students perform well on an exam or project, then they will be rewarded proportionally for their efforts and not have to rely on the failure of other students.

In an individualistic environment, students’ efforts can be focused on mastering the course material, rather than competing against other students. If, for example, an instructor truly has all A and B students, he or she can assign them a more valid grade in relation to their understanding of anatomy and physiology. Because all students have the same opportunities for grades, there is less desire to see their fellow classmates do poorly - and they may even decide to help one another.

The Down Side: For some students, the desire to be the best is thwarted within an individualistic learning environment; achieving the top score on an exam becomes a moot issue because it is not important who the top student is, but rather how well each student performed in relation to the preset criterion. One troublesome issue in an individualistic environment is what to do if no students achieve the A criterion. If an instructor is true to the grading scale, no one will get an A, an event that is likely to lead to very distasteful teaching evaluations.

3. Cooperative Environment

The third academic setting is the cooperative environment. In a cooperative environment, the success of one student is dependent on the success of his/her partners. A cooperative learning environment is the most difficult of the three to create and maintain and is frequently confused with simply having students work in groups. There exist several different models of cooperative learning, but all require that certain elements (e.g., group dynamics) be met in order for the environment to be called cooperative. For example, the Johnson and Johnson (1991) model contains five essential elements, two of which are that 1) students must have a reason for helping one another (i.e., positive interdependence), and 2) students must be individually accountable for their own learning. Without these two elements, most group work digresses into a sort of host and parasite relationship between students, where one student does the work while the others get credit for doing little or nothing.

The Up Side: Vast quantities of research show that the cooperative learning environment is superior to both the competitive and individualistic environments in relation to student performance, attitude toward the topic and teacher, attendance, and many other areas (see, for example, Johnson and Johnson, 1989).

The Down Side: The popular press has frequently reported the advantages of cooperative learning in the past ten years but has not provided the guidance necessary to help instructors create a truly cooperative environment. The result is that many instructors have tried “group work”, believing it to be cooperative learning. When such activities fail miserably, then this attempt at “cooperative learning” is written off as just another farce in a long list of recommendations from educational psychologists. Even for instructors experienced in cooperative learning, creating a truly cooperative learning environment (e.g., designing lessons that facilitate the proper elements) is difficult and time consuming.

The Best Combination

According to educational research, academic performance is maximized when students work within cooperative groups and then compete with other cooperative groups. (An analogy can be made here to athletic teams; within a team there is cooperation, but competition exists between teams.) For example, students might work in cooperative groups to design, carry out, and report on a physiology experiment, and then each group competes with every other group for a top grade or award. Despite the data reporting the effectiveness of the cooperative/competitive combination, most instructors who utilize cooperative learning do not implement this strategy.

What I Do

Within my own anatomy and physiology course, I use an individualistic grading scheme for all exams, most quizzes, and calculating final grades. However, for a few quizzes and projects, especially computer projects, I have students work in cooperative groups. I use the cooperative activities for several reasons, but mostly to help students get to know one another, promote group study skills, and to help students with assignments that may be overbearing due to factors not related to academics (e.g., completing a computer activity is very intimidating to technophobic students, no matter what level of knowledge they have of anatomy and physiology). By using even a few cooperative activities during the quarter, I have noticed that students are much more communicative with each other, study in groups more frequently, and are more willing to participate in classroom discussions than when I did not use any cooperative activities.

Conclusion

The decision about what classroom environment to use is a very personal one - only a very few instructors are told to grade on a curve or are obligated to use cooperative groups. However, if you wish to try a cooperative lesson, in Part 2 of this article, I address how to implement a cooperative quiz in the anatomy and physiology laboratory. It is an activity that emphasizes both individual accountability and positive interdependence, two of the more difficult elements of cooperative learning.

References


Teaching Tips continued on page 7
Cooperative Education: Part II
The Cooperative Quiz: An Introduction to a Cooperative Learning Lab Activity

Murray Jensen
University of Minnesota, Minneapolis, MN

Cooperative learning environments can be very difficult to create and maintain. According to the Johnson and Johnson model of cooperative learning (Johnson, et al., 1991), a group must possess five different elements for it to be called “cooperative.” In no particular order of importance, those elements include the following: First, positive interdependence between the members of the group; there must be a reason to help one another (i.e., group members not only contribute to a project or test, they monitor each other’s progress and assist when necessary). The second and third elements are face-to-face promotive interaction and the proper use of interpersonal and small-group skills. These items may seem obvious to experienced teachers because it is how we work with our colleagues. But for students who may be new to both anatomy and physiology AND cooperative learning, group members frequently do not know how to work with each other. Therefore, efforts must occasionally be made by the instructor to teach students how to communicate with each other in a constructive manner. The fourth element is termed “group processing”; it involves group members talking with each other about how well their group is operating (e.g., what actions of the group were or were not helpful in completing the tasks, what processes should or should not be continued next time, and even discussing the possibility of discontinuing the group if major problems exist). The fifth element is individual accountability; it refers to individual students being ultimately responsible for their own learning. One way this element is accomplished is by administering tests or other evaluations on an individual basis after the group work has been performed.

Incorporating all five elements into one activity is enormously difficult at first; it can take up to two or three years of practice before a teacher no longer has to consciously think about maintaining the requirements for cooperative groups. But without the elements, cooperative groups collapse into students simply working together on a project or task - a situation that frequently deteriorates into academic hostilities and parasites, bad attitudes toward other students, and a general dislike for anatomy and physiology and even the instructor.

Two of the more difficult elements of cooperative learning are positive interdependence and individual accountability. How can there be an activity where each student is responsible for the material and also is interested in helping his/her group mem-

bers? Both elements can be achieved via the use of a testing procedure I use in my anatomy and physiology laboratory called a “cooperative quiz.” The actual implementation of the cooperative quiz takes only minutes out of the lab period but sets a cooperative atmosphere for both the lab and the lecture portions of a course.

How to Implement a Cooperative Quiz
The events leading up to a cooperative quiz start at the beginning of the lab session when the instructor sets up a list of objectives (e.g., structures to be identified, procedures to be performed, graphs to be constructed and interpreted, etc.). The list must be clearly communicated to the students, either written on a chalkboard or provided in handouts. For example, Table 1 lists some objectives for dissecting a cow’s eye.

<table>
<thead>
<tr>
<th>Table 1: Objectives for Cow Eye Dissections:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identify the following structures</strong></td>
</tr>
<tr>
<td>aqueous humor</td>
</tr>
<tr>
<td>optic nerve</td>
</tr>
<tr>
<td>choroid</td>
</tr>
<tr>
<td>retina</td>
</tr>
<tr>
<td>lens</td>
</tr>
<tr>
<td>optic disc</td>
</tr>
<tr>
<td>cornea</td>
</tr>
<tr>
<td>iris</td>
</tr>
<tr>
<td>vitreous humor</td>
</tr>
<tr>
<td>sclera</td>
</tr>
<tr>
<td>suspensorial ligaments</td>
</tr>
<tr>
<td><strong>What are the functions of the following structures?</strong></td>
</tr>
<tr>
<td>cornea</td>
</tr>
<tr>
<td>lens</td>
</tr>
<tr>
<td>retina</td>
</tr>
<tr>
<td>nerve</td>
</tr>
<tr>
<td>ciliary muscles</td>
</tr>
<tr>
<td>fovea centralis</td>
</tr>
</tbody>
</table>

After the instructor models the day’s activity (e.g., identifies all the structures and demonstrates all of the required procedures), students are divided into groups of two, with maybe one group of three, but never more than three per group. On the first day of the quarter, random groups are used, but during subsequent labs, students choose their own partners. Next, the “criteria for success” are set for the cooperative quiz and written on the board. For example, “Today’s cooperative quiz will involve ten questions taken from the objectives (Table 1). The first six of the ten questions will be individual; that means one of you will be asked to identify a structure or perform a task with no help from your partner(s). The final four questions will be group questions; your group will have to produce one answer or perform a single procedure.” A scoring criterion is then developed (e.g., “If your group answers all ten questions correctly, you will get 10 points; nine correctly, 9 points, etc.”). Another scoring alternative is to use ranges and scales (e.g., “If your group answers nine or ten questions correctly, each member of the group will receive 5 points; answer seven or eight correctly and each member will receive 4 points, etc.”).

As in most anatomy and physiology labs, cooperative or not, the largest portion of time in our lab is spent on students engaged in activities. Students work in their groups to dissect the...
Teaching Tips continued from page 7

eyes, brains, hearts, etc. Students are told that when they are ready to take their cooperative quiz they should raise their hands, or time limits can be set (e.g., "We'll start the quizzes in one hour, ready or not").

Implementing a cooperative quiz can be done in two different modes. First, the instructor can choose questions from the objectives (Table 1), maybe even targeting more difficult questions at better students; or second, students can select their own questions at random by drawing cards with questions on them from a hat. For example, a card may have written on it "Point to the cornea" or "Explain the function of the lens." Questions are administered first on an individual basis (e.g., "Jane, use the probe and point to the retina,") and second, in group form (e.g., "Group question: tell me the function of the optic nerve."). The last group question is sometimes omitted because the group may have already met the criteria for the maximum number of points. The final score on the cooperative quiz is given to all members of the group, regardless of individual performance. Taking a cooperative quiz is typically the last activity of the day for the students.

Some Important Points on Implementing Cooperative Quizzes

It is vital that all members of a group receive the same point totals for a cooperative quiz. It is this feature that promotes the "positive interdependence" between group members and gives students a reason to be concerned about the performance of their fellow group members. Students will help each other prepare for the quiz because they have a vested interest in their performance: their own grade is dependent on the performance of their partner(s). During the time preceding the quiz, the instructor should witness group members quizing each other in order to prepare for the quiz to assure that each member has mastered the material.

 It is important that there be both individual and cooperative questions within the quiz and that the individual questions be asked first. Individual questions promote individual accountability, thus helping prevent the academic parasite syndrome. The cooperative questions permit students to work together to provide one product (answer) and thus further promote positive interdependence.

After a student or group has provided an answer (e.g., "that's the cornea"), it is fun and revealing to pause a few seconds (i.e., wait time) and then say something like, "Are you really sure about that?" Wait time and verbally questioning students' answers are two more instructional tools (along with cooperative quizzes) that can be used by instructors to help students reinforce their understanding of anatomy and physiology. (For more information on wait time, see Rowe, 1986.)

Evaluation

A statistical comparison of students' performance in lab sections using daily cooperative quizzes vs. sections using daily individual quizzes was conducted and published in Advances in Physiological Education (Jensen, 1996). Comparisons between sections showed no differences in daily quiz scores, and in fact showed that almost all students mastered the daily quiz.

zes. However, students in lab sections where the cooperative quizzes were used scored statistically higher on both midterm and final lab exams, which were given to all students in every section on an individual basis. Student opinion surveys showed two more differences between sections, though no inferential methods were employed. First, students in the cooperative sections enjoyed the lab more than students in the individual sections, and second, when preparing for midterm and final exams, students in the cooperative sections studied with other classmates more than did students in the individual sections.

Both of these outcomes are consistent with previous research on cooperative learning.

Suggestions

At the beginning of the quarter, I start with very simple cooperative quizzes, and almost all groups get the total points possible. This is done so students initially experience success with their groups. As the quarter continues, the objective lists (Table 1, for example) become longer and the tasks more difficult. Sometimes when there is an exceptionally long list of structures (e.g., bones of the skull), a small subset is chosen for the daily cooperative quiz. However students are responsible for the entire set of objectives for the midterm and final exams. Through experience I have also learned that some labs do not lend themselves well to cooperative quizzes. A critical factor seems to be the creation of a tangible list of objectives to be mastered during the lab session. If such a list cannot be created (e.g., in a physiology activity whose prime goal is to measure respiration rates), a cooperative quiz will be more difficult to implement.

And Finally

Many instructors have had difficult experiences with cooperative learning. But what many think is cooperative learning is actually only students working in groups. The cooperative quiz is a tool that can be implemented in either the lecture or lab and incorporates two of the more difficult elements of cooperative groups: positive interdependence and individual accountability. In my lab cooperative quizzes are used for only a small portion of a student's overall course grade; all major exams are taken on an individual basis. But despite its relatively small contribution to the total number of points, the cooperative quizzes set an overall tone to the course where students help each other, speak up in class more often, and generally have a positive experience.

References


LOCATING CADAVER USAGE FOR
CLASSROOM VISITATION

Thomas J. Deschain
Anatomy & Physiology Instructor
Wayne-Westland Community Schools
Westland, Michigan 48185

A visitation to a cadaver dissection can be an excellent culminating activity for the students of a Human Anatomy and Physiology class. However, locating the availability of a cadaver lab may be a completely different matter. The following suggestions can be used to locate those colleges and universities where human dissection or prosection is available.

Each year my Anatomy and Physiology classes have been invited to participate in a human dissection at one of our local universities. Our visit is scheduled during the time when the thoracic and abdominal cavities are exposed and no organs have yet been removed from the cadaver. Students are allowed to don latex gloves and are free to explore the cadaver in as much detail as they like as long as organs are not damaged or removed. In addition, the human anatomist usually provides a variety of prosection materials for those who wish to examine organs and limbs in more detail. Over the years I found this to be an invaluable experience for the students. Not only does it provide the students with an opportunity to see and to explore the very substance of what they have been studying, but also provides the vehicle necessary to introduce them to the respect and ethic due to the true uniqueness of the human body.

Because many HAPS members conduct or participate in human dissections on a regular basis, I would hope that you invite the participation of local schools, colleges and universities who, for whatever reason, cannot provide such opportunities to their own students. However, if you currently do not conduct a cadaver dissection but have thought about the possibility of visiting one with your class, how do you locate those schools in the area where cadaver usage is taking place? There are several modes or pathways you can explore. Please use whichever of these seems the easiest or the most direct for your area of the country.

1) Funeral Directors: I randomly selected ten funeral directors in my area. I called each, introduced myself and explained what I was doing. Each director, without hesitation, responded with a phone number of where I should call for body donation in my area. Donation centers can then direct you to universities utilizing cadavers.

2) Medical Schools: I contacted three different medical schools in my area and asked to speak with someone in the

Department of Human Anatomy. Each school connected me with a human anatomist who listened to my appeal.

3) State Board of Anatomy: Many states have an Anatomy Board that regulates the use and distribution of cadavers as well as governs the rules and procedures used by anatomists within their particular state. They can usually be located by contacting your state office or by contacting one of your state legislators for the appropriate phone number. Mine, when contacted, provided me with a list of every college and university within the state that used cadavers.

4) Published Information: Several sources are available that will list agencies and phone numbers that can help you. The best I have seen is entitled, "Anatomical Gift - Whole Body Donation Guide," by Ms. Regina Lee. This publication lists everything you will need to locate cadaver usage in your area. It was not designed for our intended use because so much extraneous (but interesting) information is contained. This publication is available for $21.00 + $3.50 for shipping and handling from Consumer Education Services, P.O. Box 724261, Atlanta, Georgia, 31139.

Do not be discouraged if you receive a flat "no" from some medical schools. Over the years some medical schools have seen pranks and abuses take place by medical students and their so-called guests. Many now have strict rules prohibiting any visitations by groups or individuals. You may have many calls to make and letters to write, but hopefully your perseverance will be rewarded.

If you succeed in finding an obliging anatomist, be sure you take the time to meet with him/her and find out exactly what is expected from your students. Prepare your students well and be alert during your visitation. Stand back, enjoy, and let the dead teach the living. ♦

A special thanks to Barbara Rosso of Wayne State University and Kris Liles of Michigan State University who assisted me with the gathering of information for this article.

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Memories Of HAPS 98

Harold Modell and Joel Michael.

Estry Ang and Wayne Carley.

Outgoing President Kevin Patton relaxes at the banquet.
The Conference Committee


Bill Higgins gives the “thumbs up” after his “Phractured Physiology” workshop.

A great time was had by all - and that’s no bull!!
Zapping the Ischemic Heart

"Burning a hole in the heart" may not be all bad. A new experimental laser procedure is in clinical trial for treatment of patients with end-stage heart disease. Although heart-lung machines and coronary-bypass surgery are available for blocked coronary arteries, surgeon John Crew of Seton Medical Center and engineer Robert Rudko of PLC Medical Systems, Inc. wanted to improve blood flow through the use of a laser technique that involved cutting channels in the heart. This procedure, known as transmyocardial laser revascularization or TMLR, involves making a four-inch surgical incision between the ribs and using a laser to drill 15-30 channels (0.5-1.0 mm wide) through the left ventricle in the ischemic section. By timing the firings of the high-powered carbon dioxide laser with the patient's EKG/ECG, the laser works only during diastole which is the period when the heart is least sensitive to the laser stimulation. The result is increased blood flow in the ischemic region.

Prior to TMLR treatment, test patients experienced angina on the average of 2.5 times per year. Clinical studies indicated that TMLR reduced chest pain and improved patient physical performance in 75% of those being treated. Perfusion scans support that there was improved blood flow and 44% fewer ischemic regions in test patients' hearts. In addition, PET scans indicated an average increase in blood flow to the ischemic areas. Because the patients were able to increase oxygen flow deep into the muscles, they felt better and performed better on treadmill challenge tests.

Data presented at the American Association for Thoracic Surgery meeting showed only an 8% mortality after the surgery.

There are potentially large numbers of patients who could benefit from this new technique. For those patients with terminal, inoperable blockage of major and minor coronary arteries, this procedure may offer their only hope, beyond heart transplants. Studies in sheep, pigs, and dogs have proven that the technique is safe. TMLR is currently approved and available in the European Union. Randomized studies are ongoing in the U.S. Soon it may be okay to burn a hole in the heart... for a special reason.

The Journal of NIH Research, September 1996, Vol. 8, No. 9

A & P On the Road

Robert L. Smaes
Towson University
Towson, MD 21251-0001

While in Philadelphia visiting all of the historical sites, you really should stop at the Mütter Museum of the College of Physicians of Philadelphia (not a medical school!). The museum collection emphasizes the history of medicine including instrumentation. However, the rather eclectic anatomy exhibits are outstanding. Most of these exhibits seem to be derived from the last century with emphasis on oddities and the unusual. With over 900 fluid preserved anatomical and pathological specimens, 1400 bones and dried preparations, 400 anatomical and pathological models in plaster, wax, paper maché and plastic, plus many other items, you can spend a couple of hours at the museum doing only a quick once-through or an entire day in study. Items I found of special interest included an exhibit on conjoined (Siamese) twins, a huge collection of skulls from around the world representing multiple ethnic groups, a trephining exhibit (some skulls showed healing, some didn't!!), articulated skeletons from dwarf to giant plus a variety of skeletal pathologies, the soap (adipocere) lady, a nice embryological exhibit with an adjunct exhibit of embryological abnormalities...what the heck, I found it all fascinating!! Regular exhibits fill two rooms on two levels and special exhibits fill one to two rooms. All exhibits are so well done that even the medicine and instrumentation exhibits, normally not my favorites, held my attention. For you herbalists, there is a nice medicinal plant garden adjacent to the museum entrance.

Check before visiting, but current info is:

- Visiting Hours: Mon-Sat. 10-4; closed some holidays
- Admission: $8.00 regular; $4.00 seniors or college students with IDs
- Parking is on public lots (one is adjacent to the museum); parking rates in Philadelphia are high.
- Address: Mütter Museum
  19 South 22nd Street
  Philadelphia, PA 19103-3097
  (215) 563-3737 ext. 241
  http://www.colphyphil.org/muttgpl.shtml
Using Technology for Testing in Anatomy and Physiology

Keith Graham
Lutheran College of Health Professions, Indiana

The anatomy and physiology classroom has changed dramatically in recent years. Technology has taken us far beyond the chalkboard and the overhead projector. Digitized image technology allows the teacher to create and direct the projection of ideas with more detail, more color, more motion, and more flexibility. There has been an explosion of anatomy and physiology software programs, some of which add breathtaking images from laser videodisks and CD-ROMs. Even video clips can be added to provide visualization of the dynamic activity in the body. I have tried to use as many of these new techniques in my classes as possible, and what I have done has been well received by the students. In addition, I have been replacing overhead transparencies with PowerPoint presentations which include scanned images from books, imported graphics from CD-ROMs, and downloaded images from the Web. I believe all of these have helped to make my classes more interesting, easier to follow, and beneficial to the student's learning.

However, in spite of all of the available technology, there was one aspect of my classes that had not changed - testing. I was still testing in the same manner I had used for years which was through paper and pencil tests taken in class. Although I could cut and paste computer images and use word processing to make test construction easier, students still took tests during class time. One of my frustrations as a teacher is the amount of class time spent giving tests. In order to decrease class time spent on testing, I have tried giving 2-3 exams during the semester. However, this was met with much dissatisfaction by the students because each test, necessarily, covered vast quantities of material. The alternative, giving 5-6 exams throughout the semester, takes valuable classroom hours away from teaching. In trying to address this dilemma, I wondered how I could use computer technology to give more frequent tests and quizzes without diminishing classroom instructional time. I began to envision students taking tests independently on the computer.

Since my lecture material is presented as PowerPoint presentations and those presentations are available to the students on the college network server, I thought I should be able to place tests on the network as well. But how to accomplish this goal became quite a project. While graphic presentation software has helped in the creation of presentations, there was little available to help me develop computerized tests. Additionally, I was concerned with test security and cheating.

Since our students use ADAM as a supplement, I decided to begin there. I used the graphic images to cut and paste identification-type questions. The ADAM Studio program makes it rather easy to take any ADAM image and label any structure on that image. If Studio is not available, Paint or Paint Shop Pro can also be used to capture part of a window, paste it onto a page, and label it. The word-processing function provides the ability to type questions related to the displayed anatomy.

However, these programs and capabilities still had not addressed my frustration in using class time for the student test-taking. I wanted the students to be able to answer the test questions on the computer instead of on paper. To accomplish this objective, I constructed an answer sheet using Word 7.0. The test and answer sheet were kept in a secure file on the network and was available as "read-only." The students could see it and change it (write their answers), but could not save the changes back to the source. By using this mechanism, the test and answer sheet would not be corrupted. Once the answer sheet was completed, it could be saved using "Save As" to a directory that was accessible to students or it could be printed and turned in for credit.

To further develop this concept, I used the method above to create a series of ADAM projects. For each body system I cut and pasted appropriate ADAM images. Then I added instructions and explanations. Questions were written within the project to stimulate critical thinking. Word 7.0 was used for all written portions of the projects. The project directions and the answer sheet were located in separate Word documents. Students would proceed through the ADAM project lesson, and when they came to a question, they would activate the Word answer sheet window, type in the answer, and then return to the ADAM project. Thanks to the multi-tasking ability in Windows, the students could work in ADAM and have instant access to the Word file of directions and the answer sheet. When the project and the answer sheet were completed, the answer sheet could be printed and turned in for credit. I found that this worked very well and was a popular activity for the students. I realized then that testing could be done in a similar manner. However, because I did not want students to be able to print out copies of the test answer sheet, I instructed the students to save their computer answer sheets to a class file on another directory. I would then "drag" those answer sheets to my home directory where they were graded and stored. Scored test papers were copied by identification number into a file accessible to students. In that way the entire testing process was done on the computer. Tests were constructed, administered, graded, displayed, and stored entirely within the computer network.

This testing method seemed to work well, and it gave me several more hours of classroom time for teaching. However, it presented other challenges. Test security and cheating were chief
Technology for Testing continued from page 13

among my concerns. To address these issues I developed an honor system for my classes (some campuses have well established honor codes in place already). I discussed with the students the advantages and challenges of such a system. The students would benefit from the ability to take the test at their discretion. The students could take the test on the college network computers or they could copy it to a diskette and take it home to complete. That meant they could complete the test practically any time of the day or night, although I gave them a time limit of several days for each exam. Without the usual pressures of a classroom test, they would experience less test anxiety, and they could determine when they were ready to complete the test. Students also benefited from the use of more class time on each topic, and there was more frequent testing feedback.

I decided to give this testing concept a preliminary trial with an assessment at the end of the semester. Using informal interviews and a formal survey method to evaluate the activity, I found very positive results. Both the students and I had a high level of confidence that cheating was not occurring. About half of the class believed they did better and learned more using the independent computerized tests. I found the grades on computer tests reflected positively in the written in-class mid-term and final exams. The vast majority of students liked the system and thought that it should continue with future classes. I believe the learning process was enhanced by giving me more classroom teaching time and by allowing greater flexibility in testing.

Although this homemade method was successful, it was crude and cumbersome. Commercial products are just beginning to help in the testing process but are almost exclusively devoted to identifying anatomical features. ADAM Practice Practical supplies thousands of questions from ADAM images, cadavers, and radiographs, but it does not allow the capability to choose the specific questions that I want to ask. Many A&P software programs have built in quizzing, but they are written more as tutorial feedback rather than for evaluative testing. With Interactive Atlas of Human Anatomy by Frank Netter on CD-ROM, I can choose identification or location questions from any of the over 500 plates for a quiz or test. Those questions are saved on a 3-inch diskette. Students can take the test on the computer by inserting the CD-ROM with the graphic images and the 3-inch diskette with the questions. At the end of the test the scores and test data can be saved using identification numbers. Human Anatomy on CD-ROM by Gold Standard Multimedia uses cadaver photographs. The built-in testing program not only keeps a record of students’ scores but also provides a detailed record of who was in the program, when they were in it, and for how long.

Think about the possibility of test-taking in the future! To this point, most of the technological innovation in teaching has been designed to enhance instructor presentations through various visual, video, and audio capabilities. However, my interest lies in seeing the development of more technological innovations in the area of testing. I want to be able to construct interactive tests that will test conceptual knowledge and critical thinking and be able to adjust to the specific learning objectives of the class and even the individual. I am also concerned about the development of testing security measures so that I can be confident that computerized test results reflect learning and not cheating. I believe all of this technology can help us become better Anatomy and Physiology teachers by more effectively and accurately evaluating our student’s learning.

HAPS Board Adopts a New Publication Plan

Kevin Patton
HAPS Past-President

Introduction

At its annual mid-winter meeting in St. Louis (January 1998), the HAPS Board of Directors approved a new publication plan. The Board has worked hard over the last several years trying to manage HAPS’ phenomenal growth. This growth has not only involved a several-fold increase in active membership, but also an exponential growth in services. One of the major areas of service to members has been in the arena of publications. As you all know, all of these publications are produced by volunteer members who, like yourselves, have many professional and personal obligations in addition to their voluntary work for you and me. In an effort to coordinate these tasks and to make sure that no one person is excessively burdened, the Board has approved the following plan.

I would like to make a few comments before presenting the new plan. First, the Board approved this plan “in principle.” This means that the overall plan is put forth as a general goal with details to be flexible enough to accommodate the creativity and vision of a new HAPS Editorial Board. The HAPS Publication Plan went into effect July 1, 1998, which was the date that the new officers assumed their positions on the Board of Directors and the date that our new fiscal year began. Lastly, I want to point out that our new plan calls for eight volunteer positions to serve on the HAPS Editorial Board plus many others to help them produce their respective publications. If this plan, or indeed HAPS itself, is to succeed we must have not only your support but also your participation. Please, if you are willing to help us in our publications efforts, contact me or Steve Trautwein, our President.

HAPS Publication Plan Background

Considering the intense desire of the membership of the Human Anatomy and Physiology Society (HAPS) to maintain excellence in teaching, HAPS has always provided quality tools to help professors achieve their goals of excellence. Included in these tools have been a number of publications. The HAPS Newsletter, which has evolved into the HAPS Educator publication, is the flagship of the publications that HAPS provides its members. Over the years, we have also begun providing a number of other publications such as the HAPS Web Page, the HAPS Software List, the Annual Membership Directory, the

Publication Plan continued on page 15
HAPS Core Curriculum, and HAPS Position Papers (the first of which was the Animal Use Policy). Recently, a number of other publications have been mentioned as possibly being useful to the HAPS membership. Among these are a “Proceedings” publication to include information from our Annual and perhaps Local Conferences and additional Position Papers. In the future, the society may also wish to publish monographs, handbooks, how-to manuals, or other publications that help in the mission to support excellence in anatomy and physiology education.

Except for HAPS-EDucator, and more recently the HAPS Web Page, there has been no formal editorial oversight or coordination at an organization-wide level. Of course, the Board of Directors has always maintained an interest in these publications and has done an admirable job in coordinating the efforts of the respective groups that have produced them. However, considering the current and anticipated future growth of the family of HAPS publications and in keeping with the Board’s intent to avoid micro-management of HAPS activities, the following plan has been adopted “in principle.”

HAPS Editorial Board

The Board of Directors established a new HAPS Editorial Board effective July 1, 1998. The Editorial Board consists of the Editor of each official HAPS publication, an Advertising Editor, a Chairperson and additional members determined necessary by the Board of Directors. The Chairperson will serve a term of three years, and each Editor will serve a term of three years. At the outset, shorter terms may be designated so that the terms are staggered to avoid massive turnover at any one time. The Chairperson and all Editors are appointed by the President with the approval of the Board of Directors. Individuals may be reappointed when their terms expire.

The purpose of the Editorial Board is to implement the HAPS vision articulated by the Board. In doing so, it will coordinate all aspects of development, production, and distribution of HAPS publications. This will include setting editorial and production policies, coordination of publication and circulation schedules and related matters. It is especially important that this Board maintain a coordinated and professional look, tone, and editorial quality reflective of the HAPS culture. The Editorial Board will also be responsible for fiscal planning of the entire publication program.

The first HAPS Editorial Board should address issues of mailing schedules, shared mailings, and similar issues. Each publication may incorporate its own Editorial Advisory Board, or list of contributing Editors.

HAPS Publications Editor

The HAPS Publications Editor will serve as the Chairperson of the HAPS Editorial Board. The Publications Editor will preside over the Editorial Board but will not have direct responsibility for any one publication. As stipulated in the constitution of the organization, the Publications Editor will be a nonvoting member of the HAPS Board of Directors. This will ensure clear and consistent communication between the Board of Directors and the Editorial Board. Since many of the members of the Editorial Board will also have direct contact with one or more committees, the proposed arrangement will hopefully maintain a strong network of communication within the organization. However, this cross-communication will not in any way diminish the importance of the Steering Committee in HAPS planning activities.

HAPS Publications and Editors

The following current and proposed publications will comprise the HAPS publication program. Each publication must directly serve the organization’s primary mission: to promote excellence in teaching human anatomy and physiology. The HAPS Editorial Board will, under the auspices of the Board of Directors, determine the scope and purpose of each publication with an eye to coordination of services to HAPS members. The editor(s) of each of these publications will serve as a member of the HAPS Editorial Board.

- **HAPS-EDucator**

  The HAPS-EDucator will continue to serve as the flagship publication of the organization. The HAPS-EDucator will provide at least these services on a regular basis:
  - News of organization activities such as Annual Conferences, Local Conferences, and Board meetings.
  (Note that synopses of conference proceedings will no longer appear in this publication, but will instead be in the Proceedings publication.)
  - First publication of HAPS Position Papers.
  - Updates in major disciplines and topics relevant to the mission of HAPS. These include all anatomy and physiology subject areas (cell biology, neurobiology, cardiovascular biology, etc.) as well as subject areas related to teaching (multimedia, collaborative learning, assessment, etc.).
  - How-to items related to teaching human anatomy and physiology.
  - News related to other organizations that is of interest to HAPS members.
  - Other useful information related to teaching anatomy and physiology and/or the HAPS organization.
  - 4 issues/year; already in publication.

**HAPS Annual Directory**

The annual membership directory has been published twice, once in each of the last two years. This annual publication has become an integral part of the networking function central to the mission of HAPS. However, the editorship of this publication has yet to be formalized. The Annual Directory will include at least the following:

- Directory information for each current HAPS member, arranged alphabetically.
- Cross-listing of members by state and city.
- Listing of all members of the HAPS Board of Directors and Steering Committee.
- Listing of all upcoming HAPS events, including both Annual and Local Conferences.
- Listing of important “who to contact” information regarding HAPS activities and programs.
- Blank membership/renewal form.

*Publication Plan continued on page 16*
Publication Plan continued from page 15

- Information about the HAPS headquarters.
- Information about the HAPS web site.
- 1 issue/year (July); already in publication.

HAPS Resource Lists

The HAPS Software List has been published once and has been very useful to HAPS members. This publication will be updated regularly and will contain a listing of software useful to the teaching/learning of human anatomy and physiology. This listing will also include information useful in determining specific uses of software titles listed but will not include critical reviews. The Board of Directors recommends that a similar list of books (textbooks, lab manuals, other teaching books, and reference books) be published on a regular basis as well as a list of other resources (such as specimens, lab equipment, etc.). An Associate Editor or Co-Editor could be appointed for each list to serve as a liaison with appropriate committees. A time line for these lists should be developed by the Editorial Board.
- Already in publication.

HAPS Position Papers

HAPS has one Position Paper in publication: the Animal Use Policy. It is hereby proposed that HAPS set as a goal the publication of one such position paper per year. To facilitate meeting this goal and to ensure coordination with other components of the HAPS publication program, the designation of Position Paper Editor was established. This editor will receive the finished, final draft of an official position paper and take responsibility for its publication and distribution. Ordinarily, a position paper is published in the next available edition of HAPS-EDucator following the paper's acceptance by the Board of Directors. The position paper may then be subsequently published in other internal or external publications. Ordinarily the position paper is posted on the HAPS web site and paper copies are printed for distribution to new members, current members or others who request them. The editor ensures that such publishing duties are met, that stocks of current position papers are maintained, and that proper permission for republication is obtained and recorded. The editor also ensures that HAPS retains full copyright and publication rights in all position papers. For the purposes of this document, the Core Curriculum and related documents will be considered position papers.
- 1 issue/year; already in publication.

Web Page

The HAPS web site will undoubtedly become an increasingly useful tool in the information age. The Board of Directors has already determined that the web page is an official publication of the organization. Participation of the Web Page Editor on the Editorial Board will maintain coordination among all the HAPS publications.
- Continually updated; already in publication.

Proceedings of the Human Anatomy and Physiology Society

Members have always found the Annual and Local Conferences to be invaluable to their professional development. Unfortunately the pace, scope, and depth of these meetings often prevent individual members from recording and recalling all the available useful information. The HAPS-EDucator editor has in the past asked specific members to produce synopses of some of the presentations at the Annual Conference. But these synopses often appear up to a year after the presentation. Workshops at the Annual Conference are seldom summarized at all.

It is hereby proposed that an annual publication to be called Proceedings of the Human Anatomy and Physiology Society be produced. This publication will include at least the following:
- A complete article or summary of each of the seminar presentations at the Annual Conference. The article will be written by the presenter, if possible, or by another author if that is not possible.
- An abstract of each workshop presentation at the Annual Conference.
- Complete directory information for each author and presenter.
- Synopses of the business meeting, field trips, and other relevant events of the Annual Conference.
- Articles and/or abstracts from Local Conferences, if possible, and as space permits.

The first publication of Proceedings should cover the 1999 Annual Conference. It is the responsibility of the Proceedings Editor, not the Conference Coordinator, to establish submission policies, solicit articles and abstracts, and otherwise collect information and communication with authors.
- 1 issue/year; first issue 1999.

Advertising Editor

One editor should be appointed to promote and coordinate advertising in all appropriate HAPS publications. Currently, only the HAPS-EDucator accepts advertising. It is hereby proposed that the Annual Directory and Proceedings also include advertising, at the discretion of the Editorial Board. Advertising will not only generate revenue for the production and distribution of the publications, thus relieving the burden from individual members, but also will provide a forum for vendors who support the teaching of anatomy and physiology.

Summary

The HAPS Editorial Board, which reports directly to the Board of Directors, oversees and coordinates the entire HAPS publication program. Significant changes or additions to the publication program will be considered by the Editorial Board and their recommendations will be submitted as a proposal to the Board of Directors for final disposition. Minor changes to the publication program will be handled by the Editorial Board.

The HAPS Editorial Board Consists of:
- Chair
- HAPS-EDucator Editor
- Web Page Editor
- Annual Directory Editor
- Resource List Editor
- Position Paper Editor
- Proceedings of HAPS Editor
- Advertising Editor

Each member ordinarily serves a term of three years. Editors and the Chair are appointed by the Board of Directors.
HAPS COMMITTEES AND BOARDS

Have you ever wondered where you could obtain a standardized anatomy and physiology test? Or maybe you are thinking about an educational project and are looking for funding? Do you feel strongly about a particular issue and would appreciate an opportunity to discuss it with other HAPS members? The following committee chairs invite input from HAPS members and willingly provide information on the activities of their committees.

ANIMAL USE COMMITTEE
Craig Clifford, Chair
Northeastern State University
611 N. Grand Avenue
Tahlequah, OK 74464
(918) 456-5511 x 3827
(918) 458-2325 (fax)
clifford@cherokeee.nsou.edu

A three-year plan includes widely distributing the HAPS policy statement, developing animal use internet links on the HAPS Home Page, addressing laboratory safety issues, monitoring relevant legislation, developing a dialogue with specimen suppliers and creating a resource packet for HAPS members. Suggestions and questions from members are welcome.

COMPETENCY TESTING COMMITTEE
John Dustman, Chair
Indiana University N.W.
Department of Biology
3400 Broadway
Gary, IN 46408
(219) 980-7106
(219) 980-7125 (fax)
jdustman@iunhaw1.iun.indiana.edu

This committee recently completed and tested an approved HAPS Standardized Test for Human Anatomy and Physiology. Any HAPS member may obtain a copy of the test by writing to the Chair.

CORE CURRICULUM AND ASSESSMENT COMMITTEE
Joe Griswold, Co-Chair
Dept. of Biology
City College of New York
Convent Ave. at 138th St., J526
New York, NY 10031
(212) 650-8530
(212) 650-8545 (fax)
fgros@sci.suny.ccny.cuny.edu

Dan Lemons, Co-Chair
Dept. of Biology
City College of New York
Convent Ave. at 138th St., J526
New York, NY 10031
(212) 650-8543
(212) 650-8549 (fax)
daniel@harold.sci.ccny.cuny.edu

This committee has developed a second, revised edition of the HAPS “Human Anatomy and Physiology Course Guidelines.” The second edition includes new guidelines relating specifically to the laboratory component of the course.

EDITORIAL ADVISORY BOARD
Colleen Nolan, Chair
St. Mary’s University
One Camino Santa Maria
San Antonio, TX 78228
(210) 436-3241 x 1421
(210) 431-6746 (fax)
bionolan@stmarytx.edu

Members of the Editorial Advisory Board provide advisory and support services to the HAPS Educator editor such as writing articles and proofreading the final draft of the HAPS Educator before it goes to press.

GRANTS AND SCHOLARSHIPS COMMITTEE
Estry Ang, Chair
University of Pittsburgh at Greensburg
1150 Mt. Pleasant Road
Greensburg, PA 15601
(412) 836-9938
(412) 836-7129 (fax)
estry@vms.cis.pitt.edu

This committee is responsible for reviewing all grant and scholarship proposals, selecting proposals to receive funding, and submitting its recommendations to the Board of Directors for approval.

MEMBERSHIP COMMITTEE
Connie Vinton-Schoepske, Chair
3138 W. 4th
Waterloo, IA 50701
(319) 235-6179
mrs@forbin.com

Committee members assist the Chair with recruiting members and compiling membership information.

NOMINATING COMMITTEE
Christine Martin, Chair
Science Dept.
Stark State College
6200 Frank Ave. NW
Canton, OH 44720
(330) 494-6170 x 333
(330) 494-0571 (fax)
cmartin@stark.cc.oh.us

The committee chair is always the current President-Elect. The responsibility of the committee is to recruit nominees for the elected offices and appointed positions of the HAPS organization.

ANNUAL CONFERENCE COMMITTEE
Henry Ruschin, Chair
Humber College, North Campus
205 Humber College Boulevard
Etobicoke, Ont., Canada M9W 5L7
(416) 675-6622 x 4641
(416) 675-2015 (fax)
ruschin@admin.humber.on.ca

The primary responsibilities of this committee are development of a standardized fees structure for the annual conference, formulation of guidelines and assistance for the conference coordinator, and generation of a calendar of conference sites.

LOCAL CONFERENCE COMMITTEE
Lisa Lupini, Chair
Baker College of Flint
1050 W. Bristol
Flint, MI 48910
Lupini_L@acadfl.baker.edu

The committee provides mentoring assistance to coordinators of local conferences. Anyone interested in hosting a local conference should contact the Chair.

TECHNOLOGY COMMITTEE
Martha DePecol Sanner, Chair
Middlesex Community Technical College
100 Training Hill Road
Middletown, CT 06457
(860) 343-5780
(860) 344-7488 (fax)
MDSANNER@aol.com

The committee monitors and reports on technological changes influencing anatomy and physiology teaching, such as advances in instructional software and data acquisition equipment.
EXHIBITORS
1998 HAPS ANNUAL CONFERENCE - FORT WORTH, TEXAS

The Human Anatomy and Physiology Society wishes to express its appreciation for the support provided by these exhibitors:

A.D.A.M. Software Inc.
1600 RiverEdge Pkwy.,
Suite 800
Atlanta, GA 30328
(70) 980-0888

AGC Educational Media
1560 Sherman Ave.,
Ste. 100
Evanston, IL 60201
(847) 328-6700

American Physiological Society
99650 Rockville Pike
Bethesda, MD 20814-3991
(301) 571-0672

Benjamin/Cummings,
Menlo Park, CA
1 Jacob Way
Reading, MA 01967
(781) 944-3700

Biomedical Models Co.
P.O. Box 620
Ramsey, NJ 07446-0620
(201) 934-1019

Biopac Systems, Inc.
42 Aero Camino
Santa Barbara, CA 93117
(805) 685-0066

Carolina Biological Supply Co.
2700 York Rd.
Burlington, NC 27215
(800) 334-5551

C.B. Sciences/MacLab
P.O. Box 845
Milford, MA 01757
(800) 234-1757

Center for Image Processing in Education
P.O. Box 13750
Tucson, AZ 85752
(520) 322-0118

Critical Concepts, Inc.
225 N. Michigan Ave.,
Ste. 2522
Chicago, IL 60601
(312) 240-0403

DCM/Instructational Systems
P.O. Box 96
Westwood, MA 02090
(508) 660-0700

EDVOTEK, Inc.
14676 Rothgeb Dr.
Rockville, MD 20850
(800) 338-6835

Gold Standard Multimedia, Inc.
3825 Henderson Blvd.,
Ste. 200
Tampa, FL 33629
(813) 287-1775

Inteltiool, Inc.
P.O. Box 459, 8N. River St.
Batavia, IL 60510
(800) 227-3850

Lazer Professor of
Clear Lake, Inc.
2200 Space Park Drive,
Ste. 205
Houston, TX 77058
(281) 333-5550

Leeds Instruments Inc.
Olympus Microscopes
8150 Springwood Dr.,
Ste. 125
Irving, TX 75063
(800) 395-5998

Medical Plastics Laboratory, Inc.
P.O. Box 38
Gatesville, TX 76528
(254) 865-7221

Mideco Systems, Inc.
15234 Transistor Lane
Huntington Beach, CA 92649
(800) 258-1066

Mosby Publishing
11830 Westline Industrial Drive
St. Louis, MO 63146
(800) 325-4177

NEOTEK
6540 Northumberland St.
Pittsburgh, PA 15217
(412) 521-1111

Nikon Instrument Group
1801 Royal Lane,
Ste. 104
Dallas, TX 75229
(972) 444-0880

Ohio State University
Julia Guy/Elephant CDs
1828 Riverhill Rd.
Columbus, OH 43221
(614) 292-5318

Prentice Hall
1 Lake St.
Upper Saddle River, NJ 07458
(201) 236-7283

Primal Pictures Ltd.
1-2 Ramilies Street
London, UK W1V 1DF
44-171-434-4300

Videodiscovery
11782 Jollyville Rd.,
Ste. 214
Austin, TX 78759
(800) 884-1402

WCB/McGraw Hill
1221 Avenue of Americas
New York, NY 10020
(212) 512-2892

Zahourek Systems
219W W. 15th St.
Loveland, CO 80538
(970) 667-9047