February 1997

HAPS EDUCATOR
HUMAN ANATOMY & PHYSIOLOGY SOCIETY
Established in 1989 by Human Anatomy & Physiology Teachers

PROMOTING EXCELLENCE IN THE TEACHING OF HUMAN ANATOMY & PHYSIOLOGY
HAPS-EDucator

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). Information on membership, meetings and more!

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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.

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DEADLINES FOR SUBMITTING MATERIAL TO HAPS-EDucator: June 1 (August issue); September 1, (November issue); December 1 (February issue); March 1 (May issue).

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     Phone: (Toll-free) 1-800-387-8687, (416) 977-0707, Fax: (416) 977-1136
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Travel: Toronto (Lester B. Pearson) International Airport (YYZ). Special group rates are available from American Airlines (1-800-221-2255) and Canadian Airlines (800-443-1790), the Star File number is S0457AJ, and from Air Canada (800-361-7585), the event number is CV970248. Whichever airline you choose, you must use the assigned number to receive additional discounts on the lowest possible fares. The discounted fare requires a Saturday night stay and advance purchase. Discounted fares are valid May 28-June 8, 1997.

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It's still not too late to send in your proposal for either a workshop or poster session. Let Henry Ruschin know ASAP and he will mail, fax or email information right away.
Ten years ago I commented to a sales representative that education as we know it will be virtually unrecognizable within 10-15 years. Today, ten years later, some of my highest expectations have been fulfilled, but many of my worse fears have come true as well.

Problems that I encounter in my interaction with students fall into four categories: 1) lack of ethics, 2) lack of intellectual preparedness, 3) lack of financial support and 4) competition stress. Ethics, or the lack thereof, creates a dangerous situation for teachers and society as a whole. Cheating has become the acceptable behavior for the vast majority of students—recognizing of course that our students are a reflection of society’s values. In many institutions students who are accused of cheating have recourse to an appeal system which is certainly an equitable way of insuring that the student has not been accused unfairly. What seems to be happening of late though is that students who challenge the issue by threatening to sue the instructor and the institution win by default. The message the student walks away with is: “to get away with any kind of behavior all you have to do is threaten litigation”. Instructors and institutions are being sued for all kinds of reasons. As these cases are won, they begin to set a pattern of behavior to which all of us will subscribe if we wish to continue working as educators. Can we turn it around? I fear not, but I hope I am wrong.

Interactions with students who lack intellectual preparedness produce the greatest increase in my stress level. These students lack self-discipline, knowledge, study skills and reading skills. They continually complain about how hard the course is and how unfair we are if we implement critical thinking exercises or set high standards. They continually tell us that they are “A” students, meaning that we must be doing something wrong if they are failing our courses.

Lack of financial support creates major problems for many students who must work full time while going to school and taking care of a family. These students may fail courses due to lack of time and exhaustion rather than lack of intellectual ability, but it is often difficult to separate the two factors.

The final and most insidious problem is the stress that students experience who must compete for limited slots in certain programs. Physical therapy, occupational therapy and nursing are three programs that probably create the greatest stress levels for anatomy and physiology students. The competitiveness and anxiety generated by these programs manifests in a number of ways such as student cheating, lying, stealing, hostility and an increased susceptibility to stress-related illnesses. Many science courses are used as “weed out” courses whether by design or by the nature of the subject matter. Students probably know this on a subconscious level, or even on a conscious level, and deeply resent us for it—as perhaps they should.

Should we fight against these changes or yield to them? Can we find a middle ground? Perhaps we should begin by encouraging our administrators to stand behind us when we reprimand students for unethical behavior. If we help them understand that while “fixing the problem by getting rid of it” is a great way to find short term relief, it may not be the best long term solution for faculty, students and the rest of society. Should we invite lawyers, religious leaders and other members of the community to meet with students and faculty to help set standards of ethical behavior? Another solution might be to set up an ethics committee composed of faculty and students that would be part of the appeal system within the institution. In other words, students could learn appropriate behavior by being involved with faculty and administrators who decide cases that pertain to student conduct. What do you think?

LETTER TO THE EDITOR

We are facing a decision at our school that I am sure many others have faced. Do we continue to do blood labs in which the students work with their own blood?? In the past two years, I have also had animal blood (sheep, cow and horse) available as an alternative although most of the students prefer to work with their own blood. Our acting department chair prefers we do not work with human body fluids and yet we are not even sure about animal blood or even screened human blood. Does anyone have any guidelines?? Is there any evidence that animal blood is more or less dangerous than humans using their own? The artificial blood I have exam-
A HAPS & APS LOCAL CONFERENCE
APRIL 5-6, 1997
NEW ORLEANS, LOUISIANA
to be held in conjunction with
EXPERIMENTAL BIOLOGY ’97
hosted by
DELGADO COMMUNITY COLLEGE

TENTATIVE SCHEDULE
Saturday, April 5: Update speakers, exhibits, and workshops
Sunday, April 6: American Physiology Society Teaching Section events:
   Teaching respiratory physiology
   Symposium on challenges facing physiology teachers
   Dinner at Delmonico's with presentation of the Guyton Physiology Teacher of the Year Award

For additional information, contact:
Dee Silverthorn
Dept. of Zoology
University of Texas
Austin TX 78712
Phone: (512) 471-6560
Fax: (512) 327-2441
Email: silverth@ubvms.cc.utexas.edu

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GREETINGS
FROM YOUR PRESIDENT

KAREN LAFLEUR
GREENVILLE TECHNICAL COLLEGE
GREENVILLE, SC 29606-5616

The work of your officers continues. Dedicated HAPS Directors and Steering Committee members have been meeting via a series of conference calls. To reduce the length of those phone conferences, since we now have more than twenty people involved, we are alternating conference calls between the Board of Directors and the Steering Committee. Conference calls that include the full Steering Committee are reporting sessions, whereas conference calls that involve only the Board of Directors serve as official business and voting sessions.

Since the 1996 Annual Meeting, our HAPS committees have been busy creating and refining policies and planning for our future. One of the most active HAPS committees, and one of the largest, is Membership. Under the energetic direction of Connie Vinton-Schoepske, all states and Canada now have membership-committee representatives who are attempting to compile a complete list of current anatomy and physiology faculty. Once a master list is assembled, we will no longer purchase expensive lists from commercial sources. Because membership activities inevitably spill over into publicity, this committee has also been working on methods for making HAPS a more visible organization. HAPS members are putting out the word about HAPS in a variety of settings, and a membership brochure is being developed for distribution to potential members. Excellent work, Connie!

You may have thought the Animal Use Committee had finished its work, but they are actually busy exploring new territory. Competently organized and directed by Bill Perrotti, this group of HAPS members is tackling issues involving lab safety, monitoring of legislation affecting dissection and reviewing contracts involving specimen vendors. Potential areas of action are development of policies detailing the use of cadavers and human blood. Thank you all for this crucial work.

One of the most exciting and affirming actions emerged from the Core Curriculum Committee under the direction of our most astute Ron Carlin. Through communication with the American Physiological Society (APS), this committee has elicited agreement from APS to endorse our curriculum model. Dialogues with other organizations are underway and similar endorsements of HAPS curriculum are being sought. Congratulations on obtaining this affirmation!

John Waters and his Internet Committee have been scripting a procedure for posting positions available and positions wanted for the HAPS Home Page. In addition, two news groups have been added. Possible links between our Home Page and other sites are being explored—for example, a link to the hotel where the upcoming conference will be held. If you have not visited our Home Page, check it out to see how capably John and his team have created an Internet presence for HAPS.

You have seen evidence of Henry Ruschin's groundwork for Toronto. His early flyer about the meeting should have been in your hands in late November. Early reports indicate that we will be having presentations on tropical diseases, drug resistance, cardiovascular controls and local color as well as scientific appeal, a review of Banting and Best's research. It looks as if Toronto is shaping up into another exceptional conference experience!

Not all of you would be informed of the local conferences that are being planned unless they are in your area. Efficient Ann Smith and Pat Hawker and their team members are far from idle. They are engaged in planning meetings in Ohio, Louisiana, California and Nebraska. As travel costs rise and institutional financial support dwindles, these local conference offerings continue to gain importance. The work that these HAPS members have accomplished is deeply appreciated.

Our newest ad hoc committee is being organized by Martha DePecol Sanner. This group will ultimately address issues involving technology and multimedia and their applications in the anatomy and physiology classroom. At present the
committee is deliberating on how they can provide the greatest assistance to HAPS members.

In September, HAPS Directors passed policies regarding the use of our mailing lists. We will provide our mailing lists to educational and non-commercial entities at cost; commercial organizations will be charged $2000. The Board voted to insert a check-off box on membership applications that would prevent a member's name being included in a mailing list, but no immediate mechanism that would effect such a change has been found. If we cannot find a way to separate members on that basis, that action will have to be tabled.

The officers of HAPS are currently engaged in discussions of issues that affect many areas of our Society. For example, in order to better serve the membership we have been trying to distinguish between scholarly and professional dissemination of information (software, textbooks, etc.) and the problem of commercial advertisement for a fee. Even though there have been no serious problems, the Directors feel strongly that some preventive policy making is needed. At the January meeting in Chicago, the Board of Directors and Steering Committee will consider this a key agenda item. It is hoped that an appropriate policy will emerge from that meeting of the minds, but given the complexity of the issue, no immediate resolution may emerge.

As 1996 draws to a close and we reflect on our past and our future, it is a good time to review the actions of our HAPS volunteers. Realize that committee chairs and their committee members, as well as the elected and appointed officers, all do what you do—teach full time while balancing a busy schedule and the demands of daily life. Yet, all of them have managed to unstintingly devote the time needed to execute the duties of their respective offices. HAPS is fortunate to have such capable and dedicated members.

### CARDIOVASCULAR NEWS

**Submitted by**
Donna Van Wynsberge
**University of Wisconsin-Milwaukee**
Milwaukee, Wisconsin 53201

The May 1996 issue of *Science*, Volume 272, has a special section (pp. 663-693) devoted to "Cardiovascular Medicine". There are several articles presented that I think are of special interest to human anatomy and physiology instructors and students. I would highly recommend the following two articles.

"Finding New Drugs to Treat Stroke", pp. 664-66, is a very good, brief three-page review of the pros and cons of tissue plasminogen activator (tPA), a clot-busting drug given to suspected stroke victims, preferably within three hours of the suspected stroke. There is also a partial list of other drugs that are currently in or close to clinical trials. These drugs are aimed at preventing the destructive processes set in motion by the clot, rather than acting on the clot itself.

"New Devices Are Helping Transform Coronary Care”, pp. 668-670, presents three cardiac “bioengineered” devices that are briefly and clearly reviewed: 1) left ventricular assist devices (LVAD) also known as mechanical hearts (pictured in the article); 2) implantable defibrillators (pictured in the article); and 3) vascular stents, small metal devices (coils or slotted tubes) that expand inside an artery to hold a plaque in a narrowed vessel against an artery wall. The shortcomings and progress of each of these devices are presented with hopes for better bioengineering devices on the horizon.
USING A PING PONG BALL TO CONSTRUCT AN EXTERNAL EYE MODEL

Submitted by
John E. Stencel
Biology Department
Olney Central College
Olney, Illinois 62450

Students often have difficulty understanding movement of the eyeball and the function of each of the external muscles of the eye. To help them overcome this problem, I ask students to form small groups and construct models representing the human eyeball. Students attach strips of paper to a ping pong ball to represent muscles. (Note completed model in figure 1.) My students are motivated and captivated by this assignment, but it is important to note that while construction of the model is helpful in understanding the function of the eye, dissection of a fresh cow eye is paramount for learning the anatomy of the eye.

To construct the model of the eyeball, first gather the following items:

- white ping pong ball
- one piece of colored paper (75 x 75 mm), select a bright
- color such as blue or yellow
- black and blue marking pens
- small Styrofoam cup
- ink pen for labeling muscles
- one piece of plastic wrap (30 x 30 mm)
- cellophane tape
- double piece of paper (40 x 40 mm) for tube diagram of external eye muscles

The eyeball model with its associated muscles is constructed as follows:

1) Use a marking pen to draw a blue iris with a white pupil on a ping pong ball. Color the pupil black, similar to the choroid layer in the eye.

2) Cut the colored paper into six equal strips. Label each strip as a different external eye muscle: superior oblique, inferior oblique, superior rectus, inferior rectus, lateral rectus, and medial rectus. Put a Roman numeral on each muscle strip to indicate the cranial nerve that innervates it. Use cellophane tape to attach one end of the strip to the ping-pong ball. Placement should correspond to location of that muscle on the eyeball. Consult your textbook for a diagram showing anatomy of the eyeball and location of external muscles.

3) Place a piece of plastic wrap (30 x 30 mm) over the front of the eye, representing the cornea. Attach it with clear tape.

4) Punch a hole in the bottom center of a Styrofoam cup

Figure 1. The constructed eye model.
and place the eye model over it. The superior oblique muscle should be on top. Carefully pull each “muscle” and note how the eye moves.

5) Roll a double piece of paper (40 x 40 mm) into a tube and secure with cellophane tape so it does not unravel. Then place tape in one end and secure the tube to the back part of the ping pong ball. This tube will represent the optic nerve.

6) Each student in the group should practice naming the parts of the model and listing a function for each part.

LETTER TO THE EDITOR
Continued from page 2

ined from Wards does not appear to be a truly satisfactory substitute. As of now, students may elect to use their own blood or an artificial blood substitute.

Can anyone contact me regarding guidelines or good alternatives? Can HAPS issue a policy statement along the lines of the animal use position statement? I would appreciate a response from interested or concerned HAPS members. Please take a moment to complete the following questionnaire.

Are you using student blood in your teaching laboratory?
If you do not use human blood, do you use animal blood?
If you do not use student blood, do you use screened blood?
Do you use artificial blood from commercial sources?
Do you use “home made” artificial blood?
Do you only show videos and use none of these?
If you do not use blood, was it your choice to change?
If it was, was this due to an incident in the lab?
Was it an administrative decision rather than your own?
Do you still do labs with student urine?
If you use an alternative to student blood, do you feel it serves the purpose as well as the “traditional” use of student blood?

(If you prefer to remain anonymous, omit your name and the name of your institution.)

Please mail your response to:
Bonnie Kalison
Mesa Community College
1833 W. Southern Ave.
Mesa, Arizona 85202
Phone: (602) 461-7112
E-mail: Kalison.Bonnie@acmc.maricopa.edu

HAPS ’98
FORT WORTH, TEXAS
MAY 23-MAY 29

The Radisson Plaza Hotel is the site for the 1998 HAPS Annual Conference. The anticipated room cost is $79.89 for a single and $99.109 for a double.

Fort Worth is renowned for its western flavor. It is a place where one can sample the uniquely different Texas culture in its purest form. The people are mostly friendly unless you rile them by acting too much like a Yankee.

Come prepared to sample Tex-Mex cuisine, cowboy museums, country western dance and honky tonks. If you prefer more refined pleasures, the Kimball museum of fine art is one of the most respected museums in the country. Fort Worth also has a world class zoo. There are innumerable other attractions from Texas Ranger baseball to the Colonial ProAm golf classic. Whatever your tastes, Fort Worth has something for you.

In your spare time, you might enjoy attending seminars where the latest information on anatomy and physiology is presented, joining other HAPS members in workshops and engaging in networking. All in all, those of us on the Host Committee think you will enjoy HAPS ’98 and Fort Worth, Texas.

Y’All come, ya hear!

A NEW TECHNOLOGY COMMITTEE

During their July teleconference, the HAPS Board of Directors approved the formation of an ad hoc committee to monitor and report on technological changes influencing anatomy and physiology teaching such as advances in instructional software and data acquisition equipment. HAPS members wishing to serve on this committee should contact:

Martha DePecol Sanner
Middlesex Community-Technical College
100 Training Hill Road
Middletown, Connecticut 06457
Phone: (860) 343-5780
Email: mdsanner@aol.com
ALCOHOL AND TEMPERATURE REGULATION

Presented by
Larry I. Crawshaw
Department of Biology
Portland State University
Portland, Oregon

Consumption of excessive quantities of alcohol presents serious problems worldwide. In the United States, for example, the annual per capita consumption of alcohol is 2.5 gallons of pure ethanol (in individuals 14 years of age or older) and an estimated 11 million individuals are reported to suffer from alcoholism while at least 7 million people abuse alcohol periodically. The annual social and medical costs of such dependence are estimated at 150 billion dollars. These costs include health care, lost wages and death. If alcohol consumption and alcohol related deaths are plotted versus day of the week, Saturday and Sunday show a marked increase over other days of the week with Saturday night having the highest incidence.

Alcohol has acute effects within the body and individuals can develop a tolerance and dependency rather rapidly. Once ingested, blood alcohol concentrations rise even while ethanol is being rapidly metabolized by the liver. The level of an individual's physical and mental impairment is directly proportional to the blood alcohol concentration.

In laboratory animals, two strains of inbred mice differ in their preference for ethanol and in their physiological response to the drug. The C57BL/6J strain prefers a dilute ethanol solution while the DBA/2J strain will avoid a dilute ethanol solution. Alcoholism, as well as tolerance to alcohol, appears to be determined by both genetic and environmental influences. Studies with twins have clearly demonstrated genetic links to alcoholism. Identical twins have a 75% concordance of alcoholism while fraternal twins have a 32% concordance.

Ethanol's physiological effects are not receptor mediated. Rather, ethanol is believed to disrupt the plasma membrane, and thereby disrupt membrane bound proteins (i.e. receptors). Disruption of the membrane causes an alteration in cellular functions which subsequently leads to anesthesia and other effects. As demonstrated in a study using goldfish, the greater the number of carbons in the alcohol, the shorter the average time to anesthesia (300 seconds for ethanol, 105 seconds for pentanol and 12 seconds for octanol).

Thermoregulation is one of the physiological processes that is seriously compromised by alcohol consumption. Core body temperature is usually maintained between 36 and 38°C, but it is dependent upon cyclical changes produced by normal variations in the circadian rhythm. The anterior and preoptic areas of the hypothalamus are the regions responsible for maintaining core body temperature. Thermosensitive neurons in these areas respond to temperature information generated by free nerve endings. Since the hypothalamus also regulates water balance, reproduction, food intake and behavioral responses, factors altering thermoregulation may affect one or more of these physiological processes.

Alcohol's impairment of thermoregulation is evidenced by the fact that victims of outdoor hypothermia or indoor hyperthermia are often intoxicated. The reasons for the alcohol-induced breakdown in thermoregulation are not completely understood. It is recognized that ethanol introduces errors in thermoregulation by altering brain function, possibly through its effects on dopaminergic neurons in the nucleus acumbens or serotonergic neurons in the hypothalamus. Alcoholics and individuals with alcohol dependence display a decreased body temperature due to a shift in the thermal set point within the thermoregulatory center. This alcohol-induced hypothermia is also observed in the C57/B16 (alcohol preference) inbred strain of mice.

Alcohol consumption is a serious individual and societal problem, and much remains to be learned about the physiological effects of alcohol. Studies like these that use inbred
strains of mice allow researchers to locate genes that may predispose an individual to alcohol abuse.

Reported by
Colleen J. Nolan
St. Mary's University
San Antonio, Texas 78228-8511

References suggested by Dr. Crawshaw:


5. Government publication on alcohol:
   Scientific Communications Branch
   Office of Scientific Affairs, NIAAA
   Wilco Building, Suite 409
   6000 Executive Boulevard
   Bethesda, MD 20892-7003
   Telephone: (301) 443-3860

CALL FOR POSTERS!

Are you planning to attend HAPS '97 in Toronto, Canada, May 31-June 5? If you gave a definitive yes to this question, please consider submitting a poster for the meeting. HAPS members are always interested in new techniques or creative approaches to teaching anatomy and physiology. As a bonus, bringing a poster to the meeting may sway your department chair toward funding your expenses for travel and lodging, no small accomplishment in today’s climate of limited or virtually non-existent travel funds.

The abstract for the poster must be submitted to the Conference Coordinator at least 6 weeks prior to the conference so it can be published in the conference brochure. For information on preparing and submitting an abstract and a poster for the annual conference, contact Henry Ruschin, the Conference Coordinator or:

Satish Chandran
Kennedy King College
Dept. of Biology
6800 S. Wentworth Avenue
Chicago, IL 60621-3798
Phone: (773) 602-5211

HAPS ANNUAL TALENT SEARCH!

If you are searching for a new direction in your career, HAPS has a place just for you. Complete this form and mail it today to join other members on the HAPS ADVENTURE. Be sure to include a resume, a brief statement of approximately 200 words describing your interests or goals concerning HAPS and a photograph (2" X 3").

NAME_________________________POSITION_________________________

ADDRESS_________________________

_________________________

Phone_________________________Fax_________________________

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For what elected office would you be willing to serve as a nominee? (Check one or more.)
President Elect (3 yr. term) Secretary (2 yr term) Treasurer (2 yr. term) Member-at-Large (2 yr. term)

In what appointed position would you consider serving? (Check one or more.)
Archivist______ Editor______ Committee Chair (Please indicate)__________

On what committees would you be willing to serve? (Check one or more.)
Animal Use Committee______ Annual Conference Committee______ Competency Testing Committee______ Core Curriculum and Assessment Committee______ Grants and Scholarships Committee______ Local Conference Committee______ Membership Committee______ Nominating Committee______ Technology Committee______

Would you be willing to coordinate a regional or national HAPS conference?
When_________________________Where_________________________

Are there so many options that you can't decide which one to select? Maybe you would like to know the duties and responsibilities of a given position before you sign up. Or perhaps you are concerned that it will take too much time away from your already busy life. To help with these or other questions, contact:

Kevin Patton, President-Elect
St. Charles County Community College
Dept. of Life Sciences
4601 Mid Rivers Mall Drive
St. Peters, MO 63376
Phone: (314)922-8000 X 438
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AN UPDATE: LATEX ALLERGY

BY SARAH COOPER, BEAVER COLLEGE, GLENSIDE, PENNSYLVANIA 19038-3295

The latex gloves we are currently using in our labs may be sensitizing our students to a protein that comprises part of the latex material. There is evidence that the more often an individual is exposed to latex, the greater the risk of developing symptoms of latex allergy. In certain people, these symptoms may progress rapidly to breathing difficulties and life-threatening anaphylaxis. As instructors we need to be alert to the presence of latex-sensitive individuals in our courses. For example, out of approximately 60 students taking Human Anatomy in the Fall of 1995, I identified three who had significant allergic reactions to the gloves we routinely use in dissection. If their allergy progresses, these individuals are at risk for developing severe health problems. This is a situation that could have profound and long term effects on anyone who wishes to pursue a career in health care or research.

Allergy to latex appears to have been an uncommon occurrence prior to 1980. The basis for its appearance at this time, in numbers large enough to cause great concern among health care professionals, is not fully understood although it is probably linked to a significant increase in the number of people using latex gloves coupled with the removal of a major glove supplier. In the early 1980's, Liberia disrupted the world latex markets when internal strife brought a halt to manufacturing in that country. New and inexperienced manufacturers who rushed to fill the void left by Liberia may have contributed to the problem by using insufficient washing and leaching methods in latex processing (Charous, 1994).

Within the past five years, latex allergy has become a major occupational health problem that is considered to be epidemic in scope among health care workers as well as patients who develop latex allergy from exposure during frequent surgeries (Charous, 1995). Analysis of the medical literature suggests that as many as a million health care workers may have developed antibodies against the protein found in latex. The risk of these workers developing life-threatening anaphylaxis and persistent respiratory symptoms is much higher than would be expected in other types of allergy (Kelly, 1995). Evidence suggests that glove-associated dermatitis, a very common condition, may substantially increase the risk for developing latex allergy (Charous, 1995).

Latex can cause three types of reactions, only two of which are classified as allergic reactions. The most common of these, irritant contact dermatitis or glove-associated dermatitis, is not classified as an allergic reaction. Those who suffer from this type of dermatitis experience itching and/or burning upon exposure to latex and present acute and chronic dermal reactions. They experience redness and swelling in the area of glove contact as well as skin dryness, thickening of the epidermis, cracking, peeling and scaling. These symptoms are associated with inadequate hand washing and exposure to disinfectants, glove powder, surfactants, solutions that are highly acidic or basic or preservatives such as formaldehyde (Thompson, 1995).

The most common type of allergy to latex is classified as Allergic Contact Dermatitis Type IV Hypersensitivity: Chemical Allergy. It is most commonly produced by latex gloves and other medical equipment and occurs one or two days after contact with latex. Contact dermatitis is caused by chemicals added to latex during processing and not properly removed by washing or leaching during the manufacturing process. Symptoms include a red bumpy rash, open sores and skin-cracking in the area of glove contact. Vesicles or small blisters may also be present and symptoms of irritation may extend from the area of glove contact up the forearm (Thompson, 1995). Type IV reaction is comparable to the allergic contact dermatitis caused by poison ivy (Personius, 1995).

Like animal danders, latex can also cause immediate allergic reactions. Symptoms are caused by sensitivity to a foreign substance such as the naturally occurring latex protein, Hevea brasiliensis, that is found in the sap of the rubber tree. Classified as Type I Hypersensitivity, this is the most extreme of the latex-associated difficulties and may include hives, allergic rhinitis, asthma and anaphylactic shock resulting in death. The FDA issued its first medical alert concerning latex allergy in March of 1991. The alert was based on reports of severe allergic reactions to common products that contain latex. The FDA is currently tracking reports of anaphylactic reactions, some of them fatal, that have occurred in health care professionals. (Personius, 1995).

Researchers have consistently reported a correlation between repeated exposure to latex products and increasing incidence of latex allergy (Personius, 1995 and Charous, 1994). Sensitization is thought to occur over a long period of time and may include direct contact with skin and mucous membranes as well as by aerosol inhalation resulting from latex glove powder being released into the air as gloves are “snapped off”. The powder in latex gloves becomes attached to the latex protein and acts as a carrier which may stay in the air for as long as five hours. When hands sweat inside latex gloves, even more protein may dissolve into the powder, thereby increasing the amount of antigen liberated into the air when the gloves are taken off (Charous, 1994).

There is frequently a history of contact dermatitis in latex glove wearers prior to the onset of true allergic symptoms. Health care workers who have worn gloves without problems for many years may suddenly experience a rapid cascade of symptoms starting with contact dermatitis and
quickly progressing to Type IV or Type I systemic reactions. The progression of symptoms may be severe enough in some cases to warrant a career change or total disability status. Recent studies indicate that most latex proteins do not pass through intact skin, and so the disruption of the skin barrier by contact dermatitis may facilitate passage of sensitizing proteins from latex gloves into the blood stream of the wearer (Charous, 1994). Oil based hand care products increase the breakdown of glove material and further add to the problem of exposure to latex antigens.

To prevent or decrease the likelihood of developing latex sensitivity, the following recommendations should be considered: 1) Order, store and use only vinyl gloves. Gloves made from polyvinyl chloride polymer are available commercially. 2) Avoid the use of hypoallergenic gloves. Hypoallergenic is a misleading term since these gloves, if they are latex, still contain the latex protein although perhaps in smaller amounts. 3) Do not wash and reuse disposable gloves. Detergents and disinfectants can damage them and increase exposure to the latex protein. 4) Gloves with holes, brittleness, discoloration or that are past their expiration date are particularly dangerous. Any gloves donated by hospitals with expired dates on them should be immediately discarded (Charous, 1995).

REFERENCES


Natural Rubber Latex Allergy, Guidelines for allergic patients, The Emory Clinic, Division of Allergy and Immunology. (404)-778-4867.

Ownerby, Dennis R. M.D., (1995) Latex Allergy: The Sting of Rubber, Asthma and Allergy Answers, Asthma and Allergy Foundation of America. The ABC's of Latex Allergy, a patient education booklet about latex allergy, Division of Allergy and Clinical Immunology at Henry Ford Health System, Detroit, Michigan.


HAPS-PES: THE HUMAN ANATOMY AND PHYSIOLOGY SOCIETY, INC.
Membership Form and Interest Survey

Name
  First name
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  Middle name or initial
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Department or Division

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Please check (✓) one:
  □ New membership
  □ Renewal
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Please check (✓) if you are interested in or have experience in any of those areas:
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Fill out this form, put it in an envelope with a check for US $10 payable to HUMAN ANATOMY AND PHYSIOLOGY SOCIETY and mail to MARGARET A. WECK HAPS SECRETARY-TREASURER ST. LOUIS COLLEGE OF PHARMACY 4588 PARKVIEW PLACE ST. LOUIS, MO 63110

Your membership includes a subscription to HAPS EDUCATOR ($10), the official publication of the Society.

HAPS-EDucator February 1997 page 11
HUMAN HISTOLOGY SLIDES ON THE INTERNET

The Biology faculty and Faculty Resource staff at Delaware County Community College have developed a computerized histology program for Human Anatomy students. Called, Virtual Microscope, the program is available through the World Wide Web at the following address:

http://www.dccc.edu/virtualmicroscope/VMPage/very1st.htm

The program has digitized images of human histology slides at different magnifications and includes at least one labeled version of each slide. There are also practice tests consisting of coded versions of each slide and an answer section. Students write their answers to the practice tests on a separate answer sheet.

THE VIRTUAL MICROSCOPE
Greetings and Welcome!

Instructions for using the Virtual Microscope program are as follows:

Getting started:

1. Find a computer that has Netscape installed on it.
2. Open Netscape.
3. Click on Bookmarks to see if VIRTUAL MICROSCOPE is listed. If VIRTUAL MICROSCOPE appears on the menu, highlight the title. Note: If there is no Bookmark for VIRTUAL MICROSCOPE, please do the following:

   1. Type the URL address in the URL window exactly as YOU see below, including caps:
      http://www.dccc.edu/virtualmicroscope/VMPage/very1st.htm

   2. After typing the above line, press ENTER. You should now be at the first page of the Virtual Microscope program.

Select an option:

A. The Slide Box: Includes images of all the slides viewed in BIO 117 (Human Anatomy) at DCCC. The slides are shown at various magnifications and include one or more labeled versions.

B. Review/Self-Test Lab Practical 1: The format is as follows:

   1. For each slide, identify the tissue (shown by letters) and any labeled parts (shown by number).

   2. Select your answers.

   3. At this point you have two options, you may elect to repeat the test or go to an Answer Section that includes:
      a. Another look at the slides
      b. The answers
      c. Another look at the labeled slide.

C. Review/Self Test Lab Practical 2 (Same format as Practical 1 Self-Test)

D. Helpful Hints:

   1. Wherever you see text that is underlined and a different color, this is hypertext. When you click on this text the computer will take you somewhere else within the document/program. On some of the screens the hypertext will appear in a cell within a table. You must still click directly on the text to move to another page. Clicking randomly in a box will not request another page.

   2. The BACK button on the tool bar allows you to return to a previous frame at any time.

   3. Depending on the size of the monitor you are using, the slides may be too large to fit entirely in the Netscape window. You may have to “scroll” to see the entire image. To scroll: click on an arrow to the right of the window to move up or down. (This is a bummer, but it sure beats squinting through a microscope, doesn’t it?)

   4. When in a Review/Self Test, there is a “Next Slide” graphic beneath some of the slides. The entire area around the graphic is “hot”, meaning you can activate that link rather easily. You must progress slide-by-slide to the end of the test once you begin.

Continued on page 16
Using Improvisation to Teach Anatomy and Physiology

Presented by
Carolyn Yucha, R.N., Ph.D.
University of Colorado
Denver, Colorado

Carolyn Yucha's excitement about improvisation was contagious. She had all of us up on our feet and motivated to experience "improvisation" first hand. In her lively introduction, we were reminded of the quote "tell me I forget, show me I remember and involve me I understand". Improvisation is defined as the spontaneous response to a new and unexpected situation under structured circumstances. While employing improvisation, we incorporate seeing, hearing and direct physical or mental involvement in the learning experience.

The environment for improvisation must be safe physically, socially and psychologically. Incorporating costumes, signs or hats into the improvisation provide an atmosphere where students can act silly without being criticized by peers. An instructor's enthusiasm and the use of improvisation early in the course are often all that is needed to sell the technique to a group of students. As the semester progresses, the instructor can use varying levels of complexity of improvisation as appropriate. The instructor should act as a coach but should not interrupt the improvisation. The use of improvisation not only assists the kinesthetic learners through active participation but also allows the instructor to be aware of the level of student understanding of complex concepts and their interrelationships. Improvisation in the classroom usually follows a previous exposure to a concept through lecture or readings.

During the workshop we were involved in several improvisations. The first improvisation had individuals act out the process of skeletal muscle contraction. Some of us carried signs to indicate we were actin molecules, some were myosin molecules and some were troponin/tropomyosin molecules. The myosin volunteers used their hands as the cross-bridges and "Portland Rose Festival Taffy" represented ATP. We were able to see and experience the interactions between troponin, actin and myosin as the sarcomere shortened during contraction.

In our second improvisation on capillary filtration pressure, individuals carried signs for hydrostatic pressure, osmotic pressure, protein molecules and water molecules. Long ribbons represented the walls of the capillary. The relationships between capillary hydrostatic, capillary osmotic, interstitial osmotic and interstitial hydrostatic pressures were demonstrated by gently pushing water molecules in various directions across the capillary membranes. We were able then to experience what would happen if there were increases or decreases in hydrostatic or osmotic pressures interstitially or intravascularly. We could also transfer this knowledge to the understanding of other situations such as glomerular filtration.

The third example tried by the group involved the reflex arc. We expanded this improvisation to include upper motor and sensory neurons and other relationships within the nervous system.

During the last part of the workshop, the participants shared personal experiences and examples from their own classrooms that could easily be adapted to the lecture or lab. Using oranges to represent electrons in the electron transport chain was one example.

In conclusion the workshop served as a greenhouse for our germinating ideas. We can now incorporate improvisation, as demonstrated by Carolyn Yucha, into our arsenal of teaching techniques to assess student understanding of concepts as we are teaching them rather than just at exam time. Improvisation will encourage our students to involve all of their sensory modalities in learning, not just vision and audition.

Reported by
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NEUROFIBROMATOSIS

In the past, no eugenics or pathophysiology textbook was ever considered complete without the picture of a neurofibromatosis (NF) patient. Neurofibromatosis Type I, also known as Von Recklinghausen’s Disease, was until recently one of the least understood genetic diseases. Countless NF patients have been shunned and tortured due to ignorance concerning the gross deformities that occur with the disease. Joseph Merrick, the renowned “elephantman”, is one of the best known victims of such abuse, although most genetists now believe that he actually had Proteus Syndrome and not NF. Proteus Syndrome is a disorder of skeletal overgrowth that is distinct from NF.

Neurofibromatosis affects more than 100,000 Americans and transcends racial, ethnic, gender and financial barriers. NF presents as two quite distinct genetic disorders that are distinguished as NF1 and NF2. NF1 was formerly known as Recklinghausen’s disease and NF2 is now known as central or acoustic NF.

Neurofibromatosis is inherited as an autosomal dominant trait that is expressed in the heterozygous state. There are numerous cases where the parents showed no evidence of the disease yet produced offspring that manifested the disease. Unexpected appearance of the trait in a child whose parents are free from it suggests that this is a spontaneous and dominant mutation. Geneticists calculate a mutation rate of 13-25 per 100,000 gametes or roughly 50% of all cases result from new mutations. The NF1 gene has been determined to have its locus on chromosome 17 (17q 11.2) and has been successfully cloned. The NF2 has its locus on Chromosome 22 (22q 12.2).

The NF1 gene appears to be quite large with 350 kilobases and 56 exons. It size may explain its consistently higher spontaneous mutation rate. The mRNA that is transcribed from the gene consists of about 13,000 nucleotides, and it codes for the neurofibromin protein which has approximately 2800 amino acids.

Neurofibromin exhibits properties much like GTPase activating protein (GAP). GAP regulates a cellular proto-oncogene (P21-ras) that is involved in signal transduction pathways, cell growth and differentiation and regulation of ion channel functions. When a mutation or defect is present, the gene may switch back and forth between active and inactive states that may account for the development of tumors and neurofibromas. NF1 has an estimated prevalence rate of 1/3000 in the U.S.A.

The NF2 gene product is also a tumor suppressor protein known as Schwannomin or merlin. This protein is thought to interact with membrane and cytoskeleton proteins. NF2 generally does not manifest its presence until the late teenage years or even later. It occurs as an autosomal dominant condition with 100 percent penetrance (100% of individuals with the gene exhibit the specified/expected phenotype) and derives from a deletion of chromosome 22. It has a prevalence rate of 1: 40,000 in the USA.

The clinical and pathological manifestations of NF may vary from harmless “Cafe-au-lait” spots to numerous malignant neurofibromas, sclerosis, seizures, gliomas, neumadas and hypertension. Some mental deficiency (2.5%) may be present with learning disability, hyperactivity and/or speech problems. With delayed age onset and incomplete penetrance, variable expressivity (extent of variation in a phenotype associated with a particular genotype) is maintained at a higher prevalence rate in many populations (McCance et al 1994). This variable expressivity (due to modifier genes at other loci, environmental factors and other mutations) is seen in individuals with at least two of the general manifestations. The influence of modifier genes is more distinct in conditions such as macrocephaly or learning disability where manifestation occurs in late childhood and in neurofibromas that arise during puberty.

NF1 pathology, the better known of the two, arises primarily in tissues derived from the neural crest. Neurofibromas of the cutaneous and subcutaneous types are the most outstanding symptoms. The cutaneous ones are soft and pedunculated while the subcutaneous tumors become hard and firm.

Other common signs and symptoms of NF1 are:

a. Cafe-au-lait macules (1.5 cm or more) and freckles under the arm and in the groin area.

b. Tumors of cutaneous, subcutaneous and plexiform
types (the plexiform types may become malignant).

c. Brownish red spots on the iris called Lisch nodules.
d. Bone deformities including atrophy, dysplasia of skull bones and non-healing fractures of long bones called pseudarthrosis.
e. Gliomas on the optic nerve.
f. Meningiomas of brain and other parts of the body.
g. Seizures, mental deficiency, short attention span and hyperactivity (40-60% of affected children).
h. Renal artery stenosis (due to dysplasia) and ensuing hypertension.
i. Impairment of motor and sensory function due to hypertrophy of nerve trunk tumors.
j. Adrenal medullary tumor (pheochromocytoma) causing moderate to severe hypertension.
k. Hamartoma of hypothalamus causing precocious puberty.
l. Retroperitoneal or gastrointestinal bleeding.

The NF2 schwannomas present as massive lesions in the brain and compress surrounding structures. Growth of an acoustic neuroma on the vestibulocochlear nerve is usually bilateral and affects hearing as well as balance—facial weakness and headaches are quite common as well. Schwannomas grow to enormous size and often fill the cerebello-pontine angle resulting in compression of the brain stem that ultimately leads to death if not removed. The fifth and seventh cranial nerves are also affected sequentially by the growing tumors. Both meningiomas and schwannomas occur on the spinal cord as well as on peripheral nerves. Pressure on the optic nerve frequently causes damage to the retina with subsequent blindness. Changes in the lens, resulting in cataract formation, often occur at an early age.

The routine management of NFI through consultation with a medical or clinical geneticist is best accomplished by regular and appropriate screening examinations [ophthalmologic, audiologic, orthopedic and, if problems arise, cranial imaging (MRI)]. Reduction of the tumors through chemical and radiological methods coupled with dermabrasiion and laser surgery has also helped make life more pleasant for individuals suffering from this debilitating disease.

Because countries such as Japan have in recent years invested large amounts of money in a search for the cause of the disease and potential treatments, neurofibromatosis is today a much better understood disease. In addition, increased public awareness of the disease has reduced to some extent the mental and physical abuse of NF patients.

"This summary was taken in part from a seminar presented at Daley College by Dr. Renee Jones, Professor of Anatomy and Physiology at Triton College, Rivergrove, Illinois.

HAPS CLASSIFIED
As a service to our members, the HAPS-EDucator publishes without charge notices of faculty or other HAPS-related position announcements as well as positions sought.

CHADRON STATE COLLEGE

BIOLOGY TENURE TRACK POSITION AVAILABLE

DEPARTMENT: Science
DATE OPENED: 9/30/96
DATE CLOSED: Open Until Filled
STARTING DATE: August, 1997
SALARY: Commensurate with Experience and Degree

QUALIFICATIONS: The Chadron State College Department of Science is seeking an energetic individual to fill a tenure track position in human physiology. Background in human anatomy is required; applicants with training or knowledge in neurobiology, exercise physiology and/or human movement are desired. This person would be expected to have a strong commitment to interactive undergraduate teaching in a small but dynamic Science Department in a rural setting. The successful candidate will utilize multimedia components in their instruction. Ph.D. preferred, ABD candidates considered.

Opportunities exist for research involving undergraduate students and for mentoring Health Professions students.

Application Procedure: Send a letter of application, three letters of reference, personal resume and transcripts to: Personnel Office, Chadron State College, 1000 Main Street, Chadron, NE, 69337-2690.

INPUT/OUTPUT
(Continued from page 12)

With this program, the slides are available to the students at all times and anywhere that they have access to the Web. Students can study the slides and review for the practicals without laboratory facilities and equipment.

If you have any questions or comments, please contact:

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UPCOMING CONFERENCE
The American Society for Microbiology will sponsor the 4th Undergraduate Microbiology Education Conference May 2-4, 1997, in Ft. Lauderdale, Florida. Presentations and work sessions will focus on improving curriculum options used in microbiology laboratory instruction. For more information contact Betty Eidenmiller, American Society for Microbiology, 1325 Massachusetts Ave., N.W., Washington, D.C. 20005; beidenmiller@amsusa.org.

NIH SCIENCE LINKS

The following is a list of general science Internet sites from the NIH site at: http://irma.od.nih.gov/cool_links.html

The other sites are:
1. Frank Potter's Science Gems, a list of over 2000 WWW resources for science teachers of all levels: http://www-sci.lib.uiuc.edu/SEP/life.html#4
2. DOE links to genetic and biological resources: http://www.er.doe.gov/production/other/bioinfo_center.html
4. List of Web sites from the Biology Place: http://www.biology.com/GENETICS/GENBEST/GENBEST.html
5. Genscope develops educational software for teaching biology: http://copernicus.bbn.com/genscope
6. The WWW Genetics Virtual Library: http://www.ornl.gov/TechResources/Human_Genome/genetics.html
HAPS COMMITTEES AND BOARDS

Have you 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
William (Bill) Perrotti, Chair
Life Science Dept.
Mohawk Valley Community College
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Utica, NY 13501
E-mail: wperrotti@mvec.edu
Phone: (315) 853-2343
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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
Email: jdustown@unihw1.indiana.edu
Phone: (219) 980-7106

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
Ronald Carlín, Chair
Fairleigh Dickinson University
285 Madison Ave.
Madison, NJ 07940
Phone: (201) 593-8748

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

GRANTS AND SCHOLARSHIPS COMMITTEE
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The Grants and Scholarships 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. Completed grant and scholarship applications are due December 31, 1997.

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The Committee assists the membership chair in recruiting members and compiling membership information.

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The committee has developed a HAPS Home Page on the World Wide Web and is actively involved in updating it with the latest HAPS information. Visit the HAPS web site at: http://www.bio.psu.edu/haps.htm

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.

HAPS LOCAL CONFERENCE COMMITTEE
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The Committee provides mentoring assistance to coordinators of local conferences. Anyone interested in hosting a local conference should contact one of the Co-Chairs.

ANNUAL CONFERENCE COMMITTEE
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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 are the primary responsibilities of the Committee.

HAPS INTERNET COMMITTEE
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TORONTO, CANADA

ELEVENTH ANNUAL CONFERENCE

HUMAN ANATOMY & PHYSIOLOGY SOCIETY
(Incorporating the 11th Annual CBA Conference)

MAY 31 - JUNE 5, 1997
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