

Kansas Association of Biology Teachers

Volume 41 Number 1 - February 2000

Calendar & Activities

Send meeting dates and other items of interest to biology teachers to: John Wachholz, 2311 Applewood Lane, Salina, Kansas 67401-3707, 913- 825-7742 - E-mail: jwachholz@midkan.net

Date	Event
March 31 – April 1, 2000	Kansas Academy of Science Annual Meeting - Hutchinson Comm. College
April 14-15, 2000.....	Conference Kansas University, Budig Hall
	The University of Kansas and Program of Dialogue on Science, Ethics and Religion of The American Association for the Advancement of Science Science, Teaching and the Search for Origins
April 22, 2000.....	KOS Spring Field Trip
April 28-30, 2000.....	KATS Kamp—Rock Springs
April 28-30, 2000.....	KS Herpetological Society—Flint Hills Tallgrass Prairie Preserve near Cassoday
May 4, 2000.....	Kansas Junior Academy of Science, Wichita
May 12-14, 2000.....	Morton County Field Trip
	Todd Carter will be leading this trip. We will have more information in the February newsletter.
May 19-21, 2000.....	KOS Field Trip with Base Camp at Camp Billy Joe Near Kenton, OK
September 16, 2000.....	Fall Meeting – Great Plains Nature Center, Wichita
October 21-22, 2000.....	KHS Fall Meeting—Adam’s Mark Hotel in Kansas City, MO
October 25-28, 2000.....	NABT National Convention – Orlando, Florida
May 12, 2001.....	Northeast KS Field Trip
September 15, 2001.....	KSU Manhattan



KABT Web Site - <http://kabt.org>
 Made Available by KanCRN - <http://kancrn.org>
 Send comments to: jwachholz@midkan.net
 NABT Web Site - <http://www.nabt.org>

Your membership **expiration date** can be found on your mailing label. All dues are now payable on September 1st of each year. The membership list was last updated on **February 26, 2000**. If you sent dues in after this date they were not recorded before the mailing list was printed.

Publishing Dates For Newsletter

The newsletter is published during the months of September, November, February and April. Manuscripts must reach the editor by the 15th day of the previous month. The KABT Newsletter includes abbreviated minutes of the official meetings, announcements of future activities, brief news notes, and other brief items of interest to biology teachers. Send your contributions to John Wachholz, Editor, 2311 Applewood Lane, Salina, KS 67401 785-825-7742. You may send you information to jwachholz@midkan.net.

Newsletter & Journal Articles

Articles are needed for the newsletter and journal. Send them via e-mail to jwachholz@midkan.net or on a disk. If you send it on a disk, any format is acceptable. Your help is appreciated.

Articles for the Kansas Biology Teacher should be sent to John Richard Schrock, editor KBT, Division of Biological Sciences, Box 50, Emporia State University, Emporia, KS 66801-5087. E-mail: knsnaturl@esumail.emporia.edu

Please remember to keep your dues up to date so you will continue to receive KABT publications.

Outstanding Biology Student Certificates

These are available for students who you feel have completed a biology course under you and have shown outstanding achievement. We have just updated our supply. Send your name and address to KABT Student Certificates, 2311 Applewood Lane, Salina, KS 67401-3707.

Please use these certificates as valuable awards for outstanding students.

NABT Contact Information

Address: 12030 Sunrise Valley Drive, Suite 110
Reston, VA 20191-3409

Web Site:..... <http://www.nabt.org>

Phones: 703-471-1134 or 800-406-0775

Fax: 703-435-5582

E-mail: NABTer@aol.com

KABT SPRING FIELD TRIP MAY 12-14, 2000

Following are some web sites to check out for our spring field trip to the Cimarron National Grasslands near Elkhart, KS. We will be camping and gathering on Friday night for the big Saturday excursion. We will need commitment from all who plan to attend ahead of time. We will have complete information in the

April Newsletter. If you have questions we will get the information posted on the KABT website. You can also contact Todd Carter (tcarter@sccc.sccc.cc.ks.us) who is working on arrangements for the trip.

<http://www.fs.fed.us/grasslands/>

<http://www.fs.fed.us/r2/psicc/cim/cimrd.htm>

<http://www.lasr.net/leisure/kansas/morton/elkhart/ff3.html>

<http://www.lbean.com/parksearch/parks/html/2011lf.htm>

<http://www.lasr.net/leisure/kansas/morton/index.html>

From the President

Well, it's off to a new semester! My biology classes are currently studying Mendelian genetics and other inheritance patterns as it applies to humans. I have really tried in this unit to emphasize where this is leading us--to discussions on population genetics and evolution. I do this each and every day. I'm hoping, of course, that I will just have to jog their memory back to human genetics and then relate it to the concepts of population genetics and natural selection--and my students will "get it" --quicker! Such examples as sickle cell anemia are excellent in demonstrating how selection affects gene frequency in a reproducing population (and why deleterious recessive genes are able to persist in a population).

I received a series of three videos at the last NABT conference in Fort Worth, Texas (for free!!) this past October called *Genetics*. These are films from an Australian company--one can e-mail them at: helke@westneuroctr.com.au to inquire about these videos. These videos link cellular division to Mendelian genetics to human genetic disorders to Darwin and natural selection to DNA technology. Watching the first two of these videos has already lead my honor class into discussions on evolution. The question has come up concerning whether or not I will be teaching creationism along with evolution. Most students that have paid any attention to the issue on the science standards are still unsure what the final outcome was--and are asking their biology teachers to find out! How do we as biology teachers respond to these questions?

These are the real outcomes that biology teachers face as a result of the Kansas Board of Education's decision on the Kansas Science Standards document--uncertainty, confusion, and a feeling of some skepticism on the students' part about what we are teaching. To these honor students inquiry about my teaching evolution, I presented an answer that I have combined from several sources. My main source of information has been from Steve Case on our listserve. He is an excellent source for updates on evolution, controversies stemming from the decision, etc. It is easy to sign up for the listserve--go to our website www.kabt.org. We all know as teachers that we feel much more comfortable teaching something that we understand well ourselves. Resources are available especially if you are a member of KABT!

There are several events coming up that will help boost your knowledge of evolutionary concepts! First is a conference that I recently received information on and is being cosponsored by the American Institute of Biological Sciences and the Smithsonian Institution. They will be honoring special guest Ernst Mayr. Speakers include Stephen Jay Gould, Lynn Margulis, and Edward O. Wilson. The conference is being held at the Smithsonian Institute. There will be a special workshop on teaching

evolution that is in collaboration with NABT. Registration is limited to 500 attendees and may be done on-line at www.aibs.org/meeting/2000/.

The second event is KATS Kamp, April 28 - 30, 2000. KABT will cosponsor a strand of evolutionary issues all day Saturday along with its originators, KCFS, the Kansas Citizens for Science group. If you have a special interest in presenting a lab or an activity that you do during your unit on evolution, contact Harry McDonald (KABT President-Elect) as soon as possible. The deadline for presentation proposals is February 15, 2000. KABT will also sponsor a booth (and of course a raffle prize for KABT members!!). Stop by and see us!

KABT has certainly had a busy year since I've been in office as President. Even though most of these events fell into our lap, I think we taken the ball and ran with it (so to speak) pretty well. We have been active in supporting Kansas biology teachers in promoting good science to be taught in our Kansas schools as well as supporting good, solid training for science teachers. We have had several field trips, learning about the land that surrounds us here in Kansas. We made several national presentations as KABT members--with a popular "favorite labs" presentation at NABT and a panel discussion on the teaching of evolution in Kansas after the state's Board of Education's decision of the science standards. Several of us made national news during this time; we were even "covered by the press" at our fall conference. All of this has served to strengthen our bond as biology teachers, and to push to work harder at serving the needs of our students. Now is the time to encourage your coworkers and colleagues to join KABT. An incentive to join is that members will be receiving special inserts along with the KBT journal coming this spring. They will serve as a great resource for teaching. Join now; keep KABT strong!

As a final note--plan to join us in southwest Kansas this May for a tour of the Cimarron National grasslands. Every KABT field trip that I have attended is a great memory--come and learn with us! Feel free to e-mail me with any questions or concerns that you may have on KABT, the spring field trip, or any other upcoming events.

Lisa Volland, Past President

OBTA for Kansas—1999

Larry Ballard, Hutchinson High School

The Outstanding Biology Teacher Award for 1999 went to Mr. Larry Ballard of Hutchinson High School. Larry is a native Kansan. He received his BSED from Emporia State University in 1971 and later in 1985 earned his Masters in Education from Wichita State University. Larry Ballard's teaching career spans 28 years. The last 19 years have been at Hutchinson High School. He teaches both Honors Biology and Life Science. He has been selected Hutchinson's District Educator of the Year and a Tandy Technology Scholars Outstanding Teacher. Larry believes that "learning should be a dynamic, hands on experience whenever possible". He also believes that "science teachers must show a relationship between what goes on in the classroom and the students lives". Larry's district sent him to the National Convention where he and the other recipients were honored with a luncheon. Congratulations to Larry Ballard for being the 1999 Outstanding Biology Teacher of Kansas.

OBTA Nominations For 2000

All teaching is hard work. However teaching science is especially difficult. Hard work needs recognition! I realize that the reason we're in the classroom is because we love teaching, we love our students, we love our subject, and we believe in the power of education. And while its obvious that no one enters education for the money or the recognition, isn't it still gratifying to know that someone recognizes your efforts? This is especially true if that someone is a fellow biologist.

If you know of any deserving biology/life science teacher with at least three years of experience, please take the time to nominate them. Even if the nominee does not have the time to fill out the forms, at least they would know that you felt they were a worthy candidate. That recognition alone would be worth your ten minutes.

Time Line: All nominations must be post marked no later than **April 1, 2000.**

Finalist will be notified by May 1, 2000. The OBTA award recipient will be selected before June 10, 2000.

Please send the nomination form to:

Pat Lamb
Manhattan High School
2100 Poyntz Ave.
Manhattan, Kansas 66502

Region 3 Representative Report

KACEE Environmental Education Workshops

Date	Workshop	Location
15 February	- Project Learning Tree	- Blue Valley M. School
29 March	- Project WILD & WILD/Aquatic	- Topeka, Kansas
7 April	- Project WET	- Cottonwood Ranch Historic Site
15 April	- Project WET & WILD/Aquatic	- Ernie Miller Nature Center

Stream monitoring opportunity:

The Kaw Valley Heritage Alliance, a partnership whose goal is to promote greater awareness, appreciation, and stewardship of the cultural and natural resources of the Kansas River (Kaw) Valley, can provide opportunities for classrooms to participate in stream water quality monitoring within the Kansas River watershed. Many of the protocols are based on the Save Our Streams sampling methods. Information is available through their website.kvha.org).

The Kaw Valley Heritage Alliance (KVHA) invites teachers in the Kansas River Valley (Riley, Geary, Pottawatomie, Wabaunsee, Morris, Jackson, Jefferson, Leavenworth, Shawnee, Douglas, Johnson, & Wyandotte counties) to submit grant proposals for trips to environmental "spots" or honorariums for artisans. Up to \$150/classroom is available to cover transportation costs through the Classroom to the Environment Grant Program and up to \$200/school to cover the costs of bringing in a resource person to work with students. The grants are limited to teachers working in schools in the counties listed above. Please see the KVHA website (www.kvha.org) for a grant application or contact Alison Reber, KVHA Education Coordinator, at 785-843-2205 or e-mail her at <areber4369@aol.com>.

Kansas Archeology Week

Activities celebrating Kansas archeology will be held at the Kansas Museum of History in Topeka during the week of 4 April 2000. More information can be found at <http://www.kshs.org>.

Fordham Foundation Report

The Fordham Foundation Report looks at State Curriculum Standards in all curriculum areas, in all states. Below is the Kansas Science Review - which got an F by the way. The link listed will take you to the full report.

<http://www.edexcellence.net/library/soss2000/standards%202000.html#KS>

The Kansas standards have been much in the news of late, and with good reason. A very detailed Kansas Science Education Standards, Fifth Working Draft (June 1999) was the fruit of a year's labor by a committee of highly qualified scientists, teachers from both public and Catholic schools, and expert consultants. The resulting document, about 100 pages long, would have attained one of the highest ratings among the state standards reviewed here. Its special strength lay in the way it tied together individual standards with brief but clear explications of the underlying theory and methodology.

As is now widely known, however, the State Board of Education gutted the document, removing almost every reference to the theoretical backbones of the sciences having historical content—astronomy, geology, and biology—and replacing some of the material with nonsense of a pseudoscientific bent. There is little point in going into detail as to how this was done; a single example will suffice. In the following passage from Standard 5, Benchmark 5, Eighth Grade, original material removed by the Board is in **strikeout type** and their additions in *italics*:

Millions of species of animals, plants, and microorganisms are alive today. Animals and plants vary in body plans and internal structures. Biological evolution, gradual changes of characteristics of organisms over many generations, Over time, genetic variation acted upon by natural selection has brought variations in populations. Therefore, a structural characteristic or behavior that helps an organism to survive and reproduce in its environment is called an adaptation. When the environment changes and the adaptive characteristics are insufficient, the species becomes extinct.

As students investigate different types of organisms, teachers guide them toward thinking about similarities and differences. Students can compare similarities between organisms in different parts of the world, such as tigers in Asia and mountain lions in North America. Instruction needs to be designed to uncover and prevent misconceptions about natural selection. Students tend to think of all individuals in a population responding to change quickly rather than over a long period of time. Natural selection can maintain or deplete genetic variation but does not add new information to the genetic code. Using examples of microevolution, such as Darwin's finches or the peppered moths of Manchester helps develop understanding of natural selection over time. (Resource: *The Beak of the Finch* by Jonathon Weiner). Providing students with Examining fossil evidence and allowing them time to construct their own explanations is important in developing middle level students' assists the student's understanding of extinction as a natural process that has affected Earth's species over time.

There is much more of this ignorant mischief. Worse, it is not limited to biological evolution, as is almost universally true in other state standards of this genre. Rather, as noted above, there

is a sweeping excision of all references to evolution in the universe as a whole, in the solar system, and on Earth. By means of these cuts, the Kansas State Board of Education has reduced biology to natural history, geology to rock collecting, and astronomy to stargazing.

The direct damage affects two-thirds of the standard physical science-life science-Earth/space science curriculum. But the damage extends to the non-historical sciences in a more subtle way. Teaching students that most sciences lack a theoretical backbone denigrates the significance of theory in physics and chemistry as well.

The Kansas State Education Standards in science are a disservice and an insult to the young people of Kansas. Dorothy went from Kansas to Oz seeking wonders and there found empty pseudoscience. She had the good sense to return to Kansas. Sadly, the State Board of Education seems to wish to issue a one-way ticket to all the state's children.

Scientific Journal Abstract Assignment

Early in my career as an eager young college instructor I wanted to diversify the experience of learning Human Physiology. So I sent my students to the library to report on the latest scientific findings in our field of study. Since I perceived this to be a conventional collegiate activity, I thought very little of discussing specific parameters or expectations and merely emphasized the due date of the assignment.

The resulting papers not only represented the expected array of composition quality, but also lacked conformity both in format and content style. The grading process was a difficult task but one I diligently undertook trying to make constructive comments to the students on ways in which to improve their writing. I concluded the assignment was time consuming on my part and promptly began considering alternatives.

However, upon returning the research papers I was dumbstruck as one student announced that my assignment forced him to break his record of never having been in the campus library. And yet another student, hands on her hips, loudly proclaimed: "You can't grade-me-down for 'incorrect spelling' and 'poor sentence structure,' scientists DON'T DO English!" Hence my scientific journal abstract assignment was born or more accurately – reborn – in earnest.

The Rubric

Communication is the key. I have found the students need to be given clear guidance. And although some students may feel constrained by the rigid parameters of this assignment, many more welcome the specific direction in which to proceed.

Scientific Article Selection:

*Collect and read three (3) RESEARCH articles that emphasize the topic of Human Physiology from three (3) DIFFERENT scientific journals available from the H.F. Davis Memorial Library from the following list:

- "The American Journal of Sports Medicine"
- "Archives of Physical Medicine and Rehabilitation"
- "Journal of Orthopedic and Sports Physical Therapy"
- "The Lancet"
- "The New England Journal of Medicine"
- "Science"

*Only select Journal issues published since the month of (month the last abstracts were due).

*Please allow the instructor the opportunity to approve your article selections.

Abstract Writing Style:

*Write your abstract as a comprehensive, objective summary of the scientific study; this should include: who did the study, the purpose of the study, the method of the study, details about the subject population, statistical results, and the researcher's conclusions.

*The abstract should be written in the past tense using the third person (don't use "I" or make references to yourself or your beliefs).

*Quotations should be limited and even avoided.

*Use careful attention to keep mechanical errors (spelling, grammatical and punctuation errors) to a minimum as they will be considered in the overall grade in addition to the actual content of the abstract.

*An abstract will NOT be accepted if ANY portion of the content is found to be plagiarized.

Reference Documentation:

*Each heading MUST include the student's full name, course title, and the journal referenced in APA style. (The APA Publication Manual is available in the H.F. Davis Memorial Library and the campus bookstore)

*Each abstract MUST be stapled to a photocopy of the ENTIRE original article.

Format Requirements:

*Each abstract MUST be presented separately, each on an 8.5" x 11" sheet of paper.

*Each abstract's length is LIMITED to one side of one page.

*Each abstract MUST be typed. (Use of the computer is encouraged)

*Please DO NOT present the assignment in a folder or binder.

*The ENTIRE assignment is DUE NO LATER THAN: (2 weeks before mid-term)

The Rationale

By utilizing current scientific journals I am able to expose my students to the most current research that has not yet found its way into the textbooks or that, in a few rare cases, has actually nullified an accepted tenant of Human Physiology. More often than not though, I hope the assignment will simply begin to demystify the scientific process for the student and allow them to see how scientific research rarely ever proves anything beyond a shadow of a doubt.

Since professional journals exist for most every field imaginable, I would presume this assignment could be modified to fit most any field of study. With some minor modification, it could be tailored for either the secondary level or the advanced pre-professional student.

I am careful to specify the titles and publication dates of the scientific journals that may be used for the assignment. This allows me the realistic opportunity to "read ahead" and be prepared for the students' interpretations. Then by limiting the issues to those that have been published since the last scientific abstract assignment was due, I can effectively preclude the temptation of a student submitting a graded assignment from a previous semester.

I encourage each student to bring the photocopies of their selected articles to my office for approval. Primarily I see this as an opportunity to better get acquainted with the student. I can

then access their individual understanding of the assignment and ensure they are getting off on the right foot by having selected articles that fit the assignment parameters. Additionally, the photocopy of the article that is later submitted with the scientific journal abstract allows me to search for and prove instances of plagiarism in a judicious manner. Conversely, on occasion the photocopy has actually exonerated a student I suspected of plagiarizing, but couldn't find evidence to substantiate my claim.

Most college students have had more experience writing personal narratives, comparison/contrast, argumentative, and essay style papers than they have writing technical objective summaries. Hence, this assignment offers a valid venue outside of the traditional English classroom to develop this writing technique. And although I do not profess to be an English instructor or even attempt to teach the nuances of the field, I DO evaluate the use of proper spelling, grammar, and punctuation!

I ask my students to document their references using APA style principally for the sake of requiring them to step out of their established MLA style high school comfort zone and to follow the guidelines of yet another widely accepted method of reference documentation.

The stringent format requirements compel the student to adhere to brevity and conformity when writing their scientific journal abstract. Most would agree that the task of writing succinctly often requires more thought and organization than simply allowing the pen to flow. The issue of format conformity allows grading to be a bit more of a uniform process. The due date of the assignment is generally two weeks before mid-term, thus allowing me plenty of time to grade and include them on the mid-term progress report.

After the abstracts have been graded and returned I ask each student to give an informal 3-5 minute oral presentation about one of their abstracts to the class. Initially I began this as an opportunity for public speaking outside of a traditional speech class, but it has evolved into almost a journal club type of group activity. At times the students have actually boldly criticized the design of a study and questioned the conclusions of the researchers. Many thought provoking class discussions and even a few impassioned personal stands have ensued. Empowered students who possess the ability to think critically are certainly a positive yet immeasurable outcome of this assignment as well.

Each year the editor of our campus publication, The Colby Community College Collection, eagerly selects three or four of the highest quality scientific journal abstracts I've submitted for their "Writing across the curriculum" section. Consequently the assignment affords the students the opportunity and honor of possibly being published.

The scientific journal abstract assignment has truly become a work in progress for me as an instructor. Generally I find myself tweaking the rubric here and there to increase the clarity of the assignment and enhancing the opportunity for learning; not to mention my continual attempt to prevent the opportunity for plagiarism and other types of academic dishonesty. Overall though, it represents my continuing effort to incorporate a multitude of disciplines in the classroom, and my firm belief that true learning is a synthesis of our total educational experience.

Final Comments

As we find ourselves inside the threshold of a new millennium with the information highway electronically whisking us all

along I've found myself clinging ever more tightly to my old friend – the library. Remember that friendly sentry in the center of the campus who has long guarded volumes of wisdom and secrets of the ages? Throughout history scholars from all disciplines, even science, have found great academic inspiration and even solace while working amid the book-lined nooks of the library and breathing its vaguely musty aromas.

As instructors we owe it to today's young scholars not only to guide them through the Internet's maze of wonders but also to reintroduce them to the library and the art of integrating academic disciplines into a cohesive educational experience.

Tricia A. Reichert

Instructor of Human Anatomy and Physiology

Math/Science Department

Colby Community College

1255 South Range

Colby, Kansas 67701

tricia@colby.cc.ks.us

phone: 785-462-3984 ext.218

fax: 785-462-4699

Biology Education News

Because of unexpected declines in fertility worldwide, some international agencies predict **world population growth will stall and reverse in about 70 years**; the lowest prediction is a peak in 2040 at 7.7 billion, dropping to below today's 6 billion by 2100 and to 3.6 billion by 2150 (*New Scientist*, Oct. 2, 1999). New Methicillin-resistant *Staphylococcus aureus* (**MRSA**) **Visa strain is resistant to nearly all antibiotics** (*Sunday Herald*, Sept. 12, 1999). In Africa, **AIDS now exceeds both malaria and war as the number 1 killer** and in South Africa, the average life expectancy will drop from 60 to 40, leaving over a million orphans (*Mail & Guardian* as reported in Dec. 1999 *World Press Review*). Two individuals who were raised in normal families but who had **injury to the frontal portion of the brain had impaired moral reasoning and lack of empathy**, according to research in the November *Nature Neuroscience*. **Head lice in the U.S. are becoming resistant to permethrin**, the common agent used against them (Sept. *Archives of Pediatric and Adolescent Medicine*). **Federal funding for abstinence-only sex education programs has had little effect** on school sex-ed programs, according to a 1999 SEICUS report titled "Between the Lines." Another Guttmacher survey reported in the Nov./Dec. issue of *Family Planning Perspective* indicates that over one-third of school districts forbid information about contraception. Nearly 200 scientists and mathematicians, including four Nobel Laureates, have signed a petition asking Secretary of Education Riley to withdraw Education Department endorsement of ten math programs that omit dividing fractions and multiplying multi-digit numbers and condemning the Department for excluding research scientists from the rating panel (Dec. 3, *Chron. Higher Educ.*).

NAS President Bruce Alberts states "It is poignantly clear that **research has not had the kind of impact on education** that is visible in medical practice, space exploration, energy, and many other fields." A survey of over 10,000 high school students by the Josephson Institute of Ethics indicates **70% of students cheated during a test and 82% lied to a teacher** during the past 12 months (Nov. 4, *Educ. Week*). NCATE and ETS are

working together to **change the Praxis II tests and develop content tests that new student teachers will have to pass** if Kansas continues to follow NCATE and teacher testing (Oct. 29, *Educ. Week*). **All four of the U.S. 1999 Nobel Prize winners in science were born outside the U.S.**; the director of the American Physical Society indicates that without importing foreign students and scientists "I don't see how we could maintain our scientific and technical enterprise" (Oct. 22, *Chron. Higher Educ.*). The same issue documents how the **U.S. share of the international student market has shrunk** from 40% in the 1980s to 32% today (p. A71). The AAAS found **no middle school science textbook adequate to teach fundamental concepts** to students; see www.project2061.org. At both private and public schools in affluent communities, teachers complain of **"too much parent involvement—too many parents breathing down their necks telling them how to teach"** (Oct. 6, *Educ. Week*). **Research fails to ask the right questions to determine whether distance learning is effective**, according to an AFT/NEA-sponsored report "What's the Difference" available at www.ihep.com. In Missouri, the number of **high school students earning college credit in dual-enrolment schemes has increased by 50%** in the last 2 years; problems and benefits are discussed in the April 14 issue of *Education Week*. **Oklahoma is a state-text-adoption state with a textbook committee that voted in November 1999 to insert a statement into every related textbook questioning the theory of evolution**; the textbook committee members are appointed by Governor Frank Keating—the Oklahoma statement and a detailed point-by-point summary of what is wrong with the statement by Richard Dawkins, Oxford biologist, will be published in the Spring 2000 *KBT*. The **public blames schools and teachers for problems in K-12 education but has confidence that U.S. colleges and universities are world-class**, according to the report "Doing Comparatively Well: Why the Public Loves Higher Education and Criticizes K-12" by the Institute for Educational Leadership. **Texas has 40,000 teachers teaching out-of-field** or without proper licenses, and their students' parents are receiving letters revealing this, thanks to right-to-know legislation passed last year (see Nov. 3 *Education Week*). "In fact, **American schools are safer and more peaceful** than they have been for a long time," according to Michael Ulveman (Sept. 12 *Jyllands-Posten* [Denmark]) who continues by explaining why the perception is different: "While the murder rate fell by 20 percent from 1990 to 1998, the number of murders reported on TV news programs rose by 600 percent." University of Missouri at Columbia and Indiana University have started **"virtual high schools"** according to the Dec. 10 *Chronicle of Higher Education*; "The main reason that we sought accreditation was to accommodate the large number of students who haven't succeeded in traditional high schools or don't want to go to traditional high schools, including millions of students who are being home-schooled" says I.U. dean Jeremy Dunning. \$42,000 for elitist certificate—as of mid-November, 21 Kansas teachers have been awarded a \$2,000 subsidy grant from the Kansas State Department of Education to pay the 1999-2000 National Board for Professional Teaching Standards candidacy fee.

**The University of Kansas and
Program of Dialogue on Science, Ethics and Religion of
The American Association for the Advancement of Science
Present**

Science, Teaching and the Search for Origins.

April 14-15, 2000

Budig Hall, The University of Kansas

- What Do We Know?
- How Do We Know It?
- Why Are We Confident About Our Knowledge?
- What are the Unanswered Questions?

Cosmology

Geology

Evolutionary Biology

Organizing Committee:

- Chair: Hume A. Feldman, Department of Physics & Astronomy, KU
- Phil Baringer, Department of Physics & Astronomy, KU
- Steven Case, Kansas Collaborative Research Network
- Allan Hanson, Department of Anthropology, KU
- Assistant Chair: Adrian Melott, Department of Physics & Astronomy, KU
- Steve Lopes, Teacher Union Rep
- Jim Miller, Program of Dialogue on Science, Ethics and Religion, AAAS
- John Staver, Center for Science Education, Kansas State University
- Bruce Twarog, Department of Physics & Astronomy, KU

Visit This Site To Obtain More Information and Register:

<http://tatania.phsx.ukans.edu/KU-conf/>

Dr. Ken Miller will be the Friday night feature speaker!

See A Tentative Schedule On The Next Page Or Go To The Web Site Above

Tentative Conference Schedule

Date	Time	Topic	Speaker	Discussion Moderator	Teachers Meeting
Friday, April 14	7:30 pm	Opening Remarks	Robert Hemenway KU Chancellor		
	7:45 pm	Keynote talk	Ken Miller Professor of Biology Brown University		
	8:45 pm	Discussion			
Saturday, April 15					
	9:30	Cosmology	P.J.E. Peebles Albert Einstein Professor of Physics		
	10:30	Coffee Break			
	10:45	Breakout Sessions		Adrian Melott, KU	Bruce Twarog, KU
	11:45	Break			
	12:00	Geology	John Geissman Professor of Geology University of New Mexico		
	1:00	Lunch			
	2:30	Breakout Sessions		Lee Allison, KGS	Keith Miller, K-State
	3:30	Break			
	3:45	Biology	Ursula Goodenough Professor of Biology Washington University		
	4:45	Coffee Break			
	5:00	Breakout Sessions			
	6:00	Dinner Break			
	7:30	Science & Society	Robert Pennock Professor of Philosophy The College of New Jersey		

Websites for Biology Teachers

SCIENCE ATTITUDES/METHODS

Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP)

(exposes pseudoscience) <http://www.csicop.org>

The Skeptics Society (exposes pseudoscience) <http://www.skeptic.com>

Sigma Xi, the Research Society (science attitudes and fraud) <http://www.sigmaxi.org>.

The International Society of Cryptozoology (rarely-seen animals) <http://perso.wanadoo.fr/cryptozoo/method.htm>

CELL BIOLOGY

Harvard Medical School Cell Biology Home Page (cutting edge research) <http://cbweb.med.harvard.edu/>

Molecular Cell Biology <http://plantcell.lu.se/mcb/>

The Salk Institute <http://www.salk.edu>

The American Society for Cell Biology (teaching resources) <http://falcon.jmu.edu/~ramseyil/cellbiology.htm>

The Journal of Cellular Biochemistry <http://www.interscience.wiley.com/jpages/0730-2312/aims.htm>

Plant Cell Structure of Elodea Cells <http://www.unl.edu/wglider/tutor/plant.htm>

Virtual Cell (Jacob Hill: images, text and movies of cells) <http://ampere.scale.uiuc.edu/~m-lexa/scripts/cell.cgi>

Diffusion and Osmosis Experiments <http://www.gpc.peachnet.edu/~ddonald/biolab/celtrans.htm>

Reverse Osmosis <http://www.members.tripod.com/~urila/index.htm>

Transport In and Out of Cells (Michael Neville) <http://www/emc.maricopa.edu/bio/bio181/bIOBK/BioBooktransp.html>

Columbia Microbiology Lab (Fred Chang: yeast fission) http://cumicro2.cpmc.columbia.edu/Micro_files/Chang_Lab.html

Diatom Reproduction <http://www-marine.stanford.edu/Phycology/JOHN/BASICS/repro.html>

ScienceNet-Mitosis http://www.sciencenet.org.uk/database/Biology/Cell_Biology/

Abnormalities in Red Blood Cell Metabolism Leading to Thalassemia <http://www.mahidol.ac.th/mahidol/st.thal.html>

Bioenergetics Laboratory of Centre for Neuroscience <http://wwwsom.fmc.flinders.edu.au/FUSA/NEUROSCIENCE/>

Isoenzymes http://www.hscbklyn.edu/suny/BIOCHEM/BioModules/Bkgnd_Isozym

Cellular Respiration (Russell Snow) <http://mss.scbe.on.ca/DSRESPIR.htm>

PHOTOSYNTHESIS AND PLANT BIOLOGY

Advances in Photosynthesis <http://www.asu.edu.clas/photosyn/books.advances.html>

International Links to Photosynthesis and Photorespiration <http://ss.tnaes.affrc.go.jp/pub/suzuki/photosynthesis.html>

Photosynthesis Center at Arizona State University <http://photoscience.la.asu.edu/photosyn/Default.html>

Forest Products Lab <http://www.fpl.fs.fed.us/welcome.htm>

Ohio State University Biology of Horticulture <http://hcs.ohio-state.edu/hort/biology/ptranslo.html>

U.S.D.A. Forest Service--Southern Region <http://www.r8web.com>

Bee Pollination <http://www.planbee.org/pollen.htm>

*Indiana Univ. Dept. Biol. Growth of *Arabidopsis* Seedling* <http://sunflower.bio.indiana.edu/~rhangart/plantmotion/PlantsInMotion.html>

*Photomicrographs of Stomata of *V. faba** <http://centralia.ctc.edu/~dmartin/Bot250/readings/stoma.html>

Botanical Society of America <http://www.botany.org/>

International Directory for Botany: Images by Finnish Museum of Natural History <http://www.helsinki.fi/kmas/botpics.html>

A Survey of the Plant Kingdom (Manhattan College) http://www.mancol.edu/science/biology/plants_new/intro/start.html

HUMAN ORGANIZATION AND BODY SYSTEMS

American Medical Women's Association <http://www.amwa.org/>

American Medical Student Association <http://www.amsa.org/>

Association of American Medical Colleges <http://www.aamc.org/>

Biomedical Engineering Information Servers <http://www.bme.jhu.edu/resources/hotlists/>

Centers for Disease Control and Prevention <http://www.cdc.org/>

World Wide Web Virtual Library in Physiology and Biophysics (Cornell University Medical College) <http://www.physiology.med.cornell.edu/WWWVVL/physioWeb.html>

American Diabetes Association Official Website <http://www.diabetes.org/>

Radiological Society of North America: Postoperative Stomach and Duodenum <http://www.rad.rpslmc.edu/pos.copyright.html>

Temple University School of Medicine--Gastroenterology Section <http://www.temple.edu/gisection/howdig.html>

University of Calgary--Gastrointestinal Tract <http://www.cap.ucalgary.ca/patinfo/index.html>

American Heart Association National Center <http://www.amhrt.org>

Heart Homepage <http://www.heartdisease.miningco.com/linker.html>

New York Medical Center for Thoracic Surgery <http://www.medref.com/sthorsur.htm>

OnHealth Resources on Varicose Veins <http://www.onhealth.com/chR/resources.conditions/>

Allergy and Asthma Disease Management Center <http://www.aadmc.org/currentliterature/selectedarticles/neutrophils/html>

National Institute of Allergy and Infectious Disease <http://www.niaid.nih.gov/Publications/allergies/research.htm>

Stanford HealthLink to Details of Double Transplant http://www.-med.stanford.edu/healthlink/_news/_surgery/082729bottrans.html

University of Birmingham "Lymphatic System" Illustrations <http://medweb.bham.ac.uk/cancerhelp/public/system.html>

Bureau of Tuberculosis Control, New York City Department of Health Updated TB Information <http://www.cpmu.columbia.edu/resources.tbcpp>

Cincinnati Children's Hospital Medical Center Patient Education Program on Respiration <http://www.new-vis.com/html/feed/links/respiratory/index.html>

Lung Cancer Awareness Campaign Media Information Line <http://www.lungcancer.org/media/media.htm>

American Kidney Fund <http://www.arbon.com/kidney/home.htm>

The Kidney Transplant/Dialysis Association <http://www.ultranet.com/~ktda/>

National Kidney Foundation <http://www.kidney.org>

American Neurological Association <http://www.aneura.org>

Brain Surgery Information Center (New York University) <http://www.brain-surgery.com>

Southern Illinois University Center for Epilepsy <http://siumed.edu/neuro/epilinks.html>

American Academy of Audiology <http://www.audiology.com>

American Academy of Ophthalmology <http://www.eyenet.org>

International Federation of Anti-Leprosy Associations <http://www.oneworld.org/ilep/text.htm>

Kinesiology Net <http://www.kinesiology.net>

National Osteopath Database <http://www.osteopath.com/>

Osteocarcinoma (bone cancer) <http://www.ncl.ac.uk/~nchwww/guides/guide2o.htm>

"Links of Interest in Endocrinology" (Illinois State Academy of Sciences) <http://www.museum.state.il.us/isas/health/endolink.html>

Society for Endocrinology <http://www.endocrinology.org/>

Society for Reproductive Endocrinology and Infertility <http://www.socrei.org/>

Sex Information and Education Council of the U.S. <http://www.siecus.org/>

Prostate Cancer Homepage <http://www.cancer.edu.med.umich.edu/prostcan/prostcan.html>

National Cervical Cancer Coalition <http://www.nccc-online.org/>

Society for Reproductive Endocrinology and Infertility <http://www.socrei.org/>

The Visible Embryo <http://www.visembryo.uscf.edu/>

Society for Study of Infertility <http://www.ssf.org.uk/>

"Frequently Asked Questions Concerning Thalidomide" (FDA) <http://www.fda.gov/cder/news/thalinfo/thalfaq.htm>

The Biology Project <http://www.biology.arizona.edu>

The Evolution and Population Genetics Database <http://www.wbar.uta.edu/index.htm>

The Genetics Society of America <http://www.faseb.org/genetics/gsa/gsamenu.htm>

The Cooperative Human Linkage Center <http://www.chlc.org/>

The Behavioral Genetics Association <http://www.bga.org/>

The Evolution and Population Genetics Database <http://www.wbar.uta.edu/index.htm>
The Genetics Society of America <http://www.faseb.org/genetics/gsa/gsamenu.htm>
The Cooperative Human Linkage Center <http://www.chlc.org/>
The Evolution and Population Genetics Database <http://www.wbar.uta.edu/index.htm>
The Genetics Society of America <http://www.faseb.org/genetics/gsa/gsamenu.htm>
The European Bioinformatics Institute keeps a "BioCatalog" Software Directory in Molecular Biology and Genetics <http://www.ebi.ac.uk/biocat/biocat.html>
Australian Biotechnology Association Home Page <http://www.aba.ans.au/index/html>
Biotechnology Information Center at the National Agricultural Library of the U.S.D.A. <http://www.nal.usda.gov/bic/>
The Human Genome Program of the U.S. Department of Energy http://www.ornl.gov/TechResource/Human_Genome/home.html
The Maize Genome Database of the U.S. D.A.–Agricultural Research Service <http://www.agron.missouri.edu/>
Molecular Evolution and Organelle Genomics <http://megasun.bch.umontreal.ca/welcome.html>
Evolution and Population Genetics Education Database <http://wbar.uta.edu/index.htm>
National Center for Science Education (evolution) <http://natcensci.ed.org/>
New York Center for Studies on the Origins of Life <http://www.rpi.edu/~sttraca/NSCORT/news.html>
American Society of Microbiology Journal Online and other ASM Links <http://www.journals.asm.org/>
American Society of Virology <http://www.mcw.edu.asv/>
International Union of Microbiological Societies <http://www.iums.rdg.ac.uk/home.html-ssi>
Society of Protozoologists <http://www.uga.edu/~protozoa/>
American Institute of Biological Sciences <http://www.aibs.org/>
The Entomological Society of America <http://www.entsoc.org/>
The Linnaean Society <http://www.linnean.org.uk/>
The Society for Integrative and Comparative Biology (formerly American Society of Zoologists) <http://www.sicb.org/>
American Institute of Biological Sciences <http://www.aibs.org/>
American Society of Mammalogists Mammal Image Library <http://www.emporia.edu/biosci/msl/home.htm>
The Linnaean Society provides extensive resources on Linnaeus at <http://www.linnean.org.uk/>
Mammal Species of the World Home Page by the National Museum of Natural History <http://nmmhwww.si.edu/msw/>
National and International Ornithological Societies and Organizations http://www-personal.ksu.edu/~drintoul/kos/state_os.htm
The Society for Integrative and Comparative Biology (formerly the American Society of Zoologists) <http://www.sicb.org/>
The Animal Behavior Society <http://www.cisab.indiana.edu/ABS/index.html>
The Association for the Study of Animal Behavior <http://www.hbuk.co.uk/ap/asab/>
Nebraska Behavioral Biology Group <http://cricket.unl.edu/Internet.html>

ECOLOGY

The Ecological Society of America <http://sdsc.edu/ESA/esa.htm>
Plant Population Biology links to other sites at <http://myapollo.ucsd.edu/pltecol.html>
United States Fish and Wildlife Service links to numerous ecological sites at <http://bluegoose.arw.r9.fws.gov/>
Natural Resources Conservation Service (previously Soil Conservation Service) <http://web.fie.com/htdoc/fed/agr/nrc/any/text/any/>
Pacific Salmon Information Website <http://kingfish.ssp.nmfs.gov/salmon/salmon.html>
The Rainforest Action Network <http://www.ran.org/ran/>
Biosphere Reserve Information <http://www.mabnetamericas.org/brprogram/reserves.html>
Discover Biosphere 2 http://www.bio2.edu/working/home_disc.htm
U.S. Man and Biosphere Program <http://www.state.gov/www/global/oes.mab.html>
American Wind Energy Association <http://igc.apc.org/awea/>
National Coal Council <http://www.natlcoalcouncil.qpg.com/>
The Nature Conservancy <http://www.tnc.org/> and <http://www.abi.org/tnc/tnc.html>
Nuclear Energy Links <http://www.phoenix.net/~nuclear/univ.html>

Aerobic and Anaerobic Use of ATP Lab

By Pat Lamb

OBJECTIVE:

To actually physically experience the difference in muscle performance when using both aerobic and anaerobic respiration.

PROCEDURE:

PART A:

1. Place sphygmomanometer on "curler's" arm. **Do not pump it up!**
2. Select a dumbbell that is "heavy" for you personally.
3. Place your arm flat on the desk with your wrist, hand, and dumbbell extending over the edge.
4. Moving only your wrist, curl the dumbbell one time so that your partners can measure the vertical distance (in cm) the dumbbell covers.

To measure the vertical distance:

- A. Place a meter stick on a chair to eliminate movement.
 - B. Using the bottom of one side of the dumbbell, measure its highest and lowest points during one curl.
5. Using only your wrist, curl the dumbbell as many times as you can for 30 seconds.
 6. Your partners will:
 - A. Keep track of time
 - B. Count the number of curls
 - C. Make sure you cover the full distance in each curl (without raising your forearm off the desk).
 7. You need to concentrate only on curling the dumbbell. However do note different physiological changes in your body (getting hot, sweating, increased respiration, increased blood circulation to area, etc.) Also try to determine when, and if, your forearm runs out of O₂.

PART B:

1. Immediately after curling for 30 seconds, your partner should pump up the sphygmomanometer to 140 mmHg. Since we only want to slow down the circulation and not stop it, pump it up only to 140. On more muscular individuals be sure to have them use heavier weights. If you don't start immediately they will replenish their stored ATP and myoglobin.
2. Repeat steps 5 - 7.

RESULTS:

Pulse before exercise	Pulse after exercise
/ minute	/ minute

Conversions:

1.000 pound = .4536 kilograms

100.0 centimeters = 1.000 meter

Dumbbell's Weight	Distance Dumbbell Moved
lb	cm
kg	m

_ Right Arm or _ Left Arm	Aerobic (without blood pres. cuff)	Anaerobic (with blood pres. cuff)
Number of Curls		

You must perform the calculation portion of this lab before you can complete the following table.

Energy Used	Aerobic Curls	Anaerobic Curls
Number of calories		
Amount of ATP molecules		

CALCULATIONS:

To lift the dumbbell, we must overcome the gravitational force on that dumbbell. The gravitational force on that dumbbell equals the dumbbell's mass (determined earlier) times the acceleration of gravity. The acceleration of gravity is equal to 9.81 meters / second².

Force needed to lift dumbbell = mass of dumbbell x 9.81 m/s²

$$\text{Force} = _ \text{ kg} \times 9.81 \text{ m/s}^2$$

$$\text{Force} = _ \text{ kg m/s}^2$$

Energy is used to perform work. In our case, chemical energy from ATP is used by your forearm muscles to overcome the dumbbell's gravitational force (found above). By moving the dumbbell (the distance it moved was measured earlier), the muscles are performing "work" on the dumbbell.

$$\text{Work} = \text{Force} \times \text{Distance}$$

$$\text{Work} = _ \text{ kg m/s}^2 \times _ \text{ m}$$

$$\text{Work} = _ \text{ joules}$$

$$(\text{joules} = \text{kg m}^2/\text{s}^2)$$

This is the amount of work needed to raise the dumbbell one time. Therefore the above equation can be written as:

$$\text{Work} = _ \text{ joules/curl}$$

To find the total work expended by your arm, multiply the amount of work needed to raise the dumbbell by the number of times the dumbbell was curled (see results for number of curls).

$$\text{Total Aerobic Work} = (_ \text{ joules/curl}) \times (_ \text{ curls})$$

$$\text{Total Aerobic Work} = _ \text{ joules}$$

$$\text{Total Anaerobic Work} = (_ \text{ joules/curl}) \times (_ \text{ curls})$$

$$\text{Total Anaerobic Work} = _ \text{ joules}$$

Joules are units of measure for both work and energy. They can be converted into other units of measure for energy, such as calories.

$$1 \text{ joule} = .24 \text{ calories}$$

To convert the joules (those produced during total anaerobic and aerobic work) to calories, use the following equation:

$$_ \text{ aerobic joules} \times .24 \text{ calories/joule} = _ \text{ cal}$$

$$_ \text{ anaerobic joules} \times .24 \text{ cal/joule} = _ \text{ calories}$$

Record in your results the total number of calories determined for the energy used during the aerobic and an-

aerobic curls.

It requires 7,300 calories to create 1 mole of ATP. One mole of ATP can also use 7,300 calories to perform work (in our case, the movement of muscles and therefore, of a dumbbell).

Remember that the word "mole" is referring to a specific amount; 602,000,000,000,000,000,000 (6.02 x 10²³).

To determine the actual number of moles of ATP used in moving the dumbbell for 30 seconds, complete the following equation:

$$\frac{(\# \text{ of calories used to move dumbbell})}{(7300 \text{ calories / mole of ATP})} = \text{moles of ATP used}$$

FOR AEROBIC CURLS:

$$\frac{(\text{_____ calories})}{(7300 \text{ calories / mole of ATP})} = \text{_____ moles of ATP}$$

FOR ANAEROBIC CURLS:

$$\frac{(\text{_____ calories})}{(7300 \text{ calories / mole of ATP})} = \text{_____ moles of ATP}$$

To determine the actual amount of ATP used in moving the dumbbell, complete the following equation:

$$\frac{(\# \text{ of moles of ATP}) \times 6.02 \times 10^{23} \text{ ATP}}{\text{moles of ATP}} = \text{number of ATP molecules used}$$

FOR AEROBIC CURLS:

$$\frac{\text{_____ moles ATP} \times 6.02 \times 10^{23} \text{ ATP}}{\text{moles of ATP}} = \text{_____ ATP molecules used}$$

FOR ANAEROBIC CURLS:

$$\frac{\text{_____ moles ATP} \times 6.02 \times 10^{23} \text{ ATP}}{\text{moles of ATP}} = \text{_____ ATP molecules used}$$

In your results record the total number of ATP molecules that you used to curl your arm both aerobically and anaerobically.

Questions to Help Students With Their Conclusions

1. Research what % of the energy used from the destruction of a glucose molecule is used to make ATP? What happens to the rest of the energy?
2. After the lifting the dumbbell did you feel hot? Why?
3. Did you sweat? Why does the body perspire? How is evaporation important in this process? Did your face turn red? What caused your face to turn red and how does that cool your entire body down?
4. How many glucose molecules must have been expended in the aerobic portion of this lab?
5. Did your pulse rate go up after exercising? Did you breathe harder after lifting the weights? Why?
6. Could you tell when most of your muscles went into anaerobic respiration? Did they respond to your commands? What happened and why (physiologically) did it happen?
7. Did you notice any lactic acid build up? Why was it made?
8. What would happen if your entire body ran out of O² and could only make 2 ATP molecules / glucose molecule? Can you support your hypothesis with evidence?

The Kansas Association of Biology Teachers Officers - Representatives - Board Members

President

Lisa Volland
2609 SW Morningside Dr
Topeka, KS 66614
(785) 273-1810
Topeka West High School
2001 SW Fairlawn
Topeka, KS 66604
(785) 271-3529
lvolland@topeka.k12.ks.us

President Elect

Harry McDonald
11917 W 143rd
Olathe, KS 66062
(913) 897-9630
Blue Valley High School
6001 W. 159th Street
Stilwell, KS 66085
(913) 681-4200
biologyctrack@hotmail.com

Vice-President

Sandy Collins
906 E. 543 Road
Lawrence, KS 66047
(785)-841-2375
West Junior High School
2700 Harvard
Lawrence, KS 66049
1-785-832-5500
scollins@raven.cc.ukans.edu

Past President

Terry Callender
15960 Snodgrass
Wamego, KS 66547
(785) 456-7924
Wamego High School
801 Lincoln
Wamego, KS 66547
(785) 456-2214 Ext. 123
FAX (785) 456-8125
callendet@usd320.k12.ks.us

Treasurer and Newsletter Editor

John Wachholz
2311 Applewood Lane
Salina, KS 67401-3707
(785) 825-7742
Salina High School Central
650 E. Crawford Street
Salina, KS 67401-5119

(785) 826-4751
FAX (785) 826-4740
jwachholz@midkan.net

Secretary and

KACEE Representative

Pat Wakeman
24549 Sandusky Rd.
Tonganoxie, KS 66086
(913) 845-3208
Tonganoxie High School
Box 179 24-40 Highway
Tonganoxie, KS 66086
(913) 845-2654
FAX (913) 845-3716
pwakeman@nehub.nekesc.
k12.ks.us

Region 1 Representative

Ernie L. Brown
825 Main
WaKeeney, KS 67672
(785) 743-2972
Trego Community High
School
1200 Russell Avenue
WaKeeney, KS 67672
(785) 743-2061
FAX (785) 743-2449
ebrown@ruraltel.net

Region 2 Representative

Pat Lamb
3014 Sunnyside
Manhattan, KS 66502
(785) 776-1438
Manhattan High School
2100 Poyntz
Manhattan, KS 66502
(785) 587-2100 Ext. 802
Region 3 Representative
John Tollefsen
24015 Loring Road
Lawrence, KS 66044
(785) 749-3280
Highland Park High School
2424 California Avenue
Topeka, KS 66605
(785) 266-7616
jtollfsn@falcon.cc.ukans.edu

Region 4 Representative

Todd Carter
Box 346

Forgan, OK 73938
(405) 487-3547
Seward County Community
College
Box 1137
Liberal, KS 67905-1137
(316) 629-2643
FAX (316) 629-2725
tcarter@sccc.sccc.cc.ks.us

Region 5 Representative

Mike Fell
Rt 1 Box 273
Winfield, KS 67156
(316)-221-5160 W
mafell@terrorworld.net

Region 6 Representative

Jim Foresman
306 Park
Pittsburgh, KS 66672
Pittsburgh High School
(316) 235-3200 W

Representative At Large

Nathan Brown
307 Walnut
Wamego, KS 66547
1-785-456-9823 (H)
1-785-456-8333 (W)
ntbrown@kansas.net

Representative At Large

Eric Kessler
Blue Valley North High
School
12200 Larmar
Overland Park, KS 66209
1-913-345-7300

Journal Editor

John Richard Schrock
1101 W. 18th Avenue
Emporia, KS 66801

(316) 342-3879
Emporia State University
Division of Biological Sci-
ences
Box 4050
Emporia, Ks 66801
(316) 341-5614
FAX (316) 341-5997
ksnatur@esumail.emporia.edu

NABT Representative

Brad Williamson
Olathe East High School
14545 W. 127th Street
Olathe, KS 66062
(913) 780-7120
(913) 780-7137 FAX
bwilliam@sound.net

KABT Historian

Stan Roth
532 Oklahoma St.
Lawrence, KS 66046
(785) 843-4764
jroth@ukans.edu



KABT Regions

Cheyenne	Rawlins	Decatur	Norton	Phillips	Smith	Jewell	Republic	Washington	Marshall	Nemaha	Brown	Doniphan
Sherman	Thomas	Sheridan	Graham	Rooks	Osborne	Mitchell	Cloud	Clay	Riley	Pottawatomie	Jackson	Atchison
Wallace	Logan	Gove	Trego	Ellis	Russell	Lincoln	Ottawa	II	Geary	Wabaunsee	Lawrence	III
Greeley	Wichita	Scott	Lane	Ness	Rush	Barton	Ellsworth	Saline	Dickinson	Morris	Osage	Franklin
Hamilton	Kearny	IV	Finney	Hodgeman	Pawnee	Stanton	Reno	Harvey	Greenwood	Woodson	Allen	Bourbon
Stanton	Grant	Haskell	Gray	Ford	Edwards	Pratt	Kingman	Sedgewick	V	Butler	Elk	VI
Morton	Stevens	Seward	Meade	Clark	Comanche	Barber	Harper	Sumner	Cowley	Chautauque	Montgomery	Lafayette
												Cherokee

Plan on attending the SPRING KABT FIELD TRIP
May 12-14, 2000
Cimarron National Grasslands, Morton County
Gather on Friday night—Camp—Field Trip All Day Saturday

Pay Dues By March 6th

If your dues are paid up by March 6th, when you receive your next Kansas Biology Teacher you will also receive the following two books:

Science & Creationism: A View from the National Academy of Sciences, 2nd Edition

Teaching About Evolution and the Nature of Science, The National Academy of Sciences

YOU MUST!
Check Out The KABT Website
<http://kabt.org>



KABT Membership Application - Renewal - Form

Name: _____
(Mr.-Mrs.-Ms.-Dr.-Miss) First Name Last Name

Mailing Address: _____

City: _____ State: ____ Zip: _____ - _____

School/Institution: _____

Position: _____

City: _____ State: __ Zip: _____ - _____

Phone: Work (____) _____ - _____ Home: (____) _____ - _____

FAX: (____) ____ - _____ Internet Address: _____@_____

Enclosed Dues For KABT **\$15** / Year

Life Membership Available For **\$300**

National Association of Biology Teacher Dues: **\$59.00** / Year

Yearly Due Date is September 1st - Make Check Payable To KABT - Tax ID #: 48-0945206

Send Dues & Information To:

Kansas Association of Biology Teachers

2311 Applewood Lane

Salina, KS 67401 - 3707