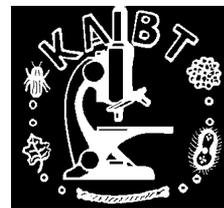


Kansas Association of Biology Teachers



KABT Web Site

<http://kabt.org>

NABT Web Site

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Presidents Column

Harry McDonald

August, 2002

Harry McDonald

You just can't beat field trips and this spring's trip to the Smokey Valley Ranch was no exception. Seeing the ranch and it's short grass prairie was invigorating. Thanks to Stan Roth for coordinating a wonderful trip. A personal highlight was taking my 14 year-old son and a friend along. I had told them that day about cowbirds as social parasites. In the afternoon, they found a lark sparrow's nest and they noticed that one of the eggs was not the same. They asked if it was a cowbird egg and sure enough it was. I guess some of our student's do listen.

I hope you have all been rewarding personally and

even professionally. I know that many of you have taken summer courses or workshops. Please consider sharing some of what you learned. Write up a summary and send it in for a future newsletter. If you develop any labs or activities as a result, send them in as well. I have included one (found later in the newsletter) I developed from my bioinformatics workshop this summer. It is always good for your curriculum vitae to have published.

Elsewhere in this newsletter, you can find information on KABT's fall conference. This year the conference will be a share-a-thon hosted at Salina Central High School. This format has been extremely well received in the past and we have many excellent sessions with outstanding teachers scheduled again this year. Put it on your calendar. Ask a colleague to attend and share the ride with you. We still have room for more presentations. If you wish to do so, email me, Harry McDonald, at biol-ogycctrack@hotmail.com.

Kansas Association of Biology Teachers Biology Teacher Share-A-Thon and Fall Meeting

Saturday, September 14th, 2002

Time: 8:30 AM to 3:00 PM

Fruit, Coffee and Muffins available starting at 8:00 AM.

Place: Salina High School Central
650 E. Crawford St.
Salina, KS 67401-5119

Cost: \$10 Registration - \$7:00 Lunch

Phone: 785-309-3585 John Wachholz—School Phone

Phone: 785-309-3500 School

785-825-7742 Home - 785-342-1442 Cell

(Enter Via Crawford Street Entrance by the Maroon Mustang—
Science Rooms are located above the concourse.)

IMPORTANT

PLEASE FILL OUT THE REGISTRATION LOCATED ON THE LAST PAGE OF
THIS NEWSLETTER AND MAIL IT IN BY SATURDAY, SEPTEMBER 7th.

If that is too much trouble and you still plan to attend, please e-mail me at wachholz@swbell.net and let me know if you will be having lunch with us. It will help a great deal if we can get a fairly accurate count before the 14th. Your consideration and help relating to this matter is appreciated. You can pay your registration and meal money along with KABT dues on Saturday. We just need to know how many plan to attend.

This is a tentative schedule. We discussed and felt the need to give people a chance to interact between sessions and so we set up the schedule below.

8:30 - 9:00 AM Registration

(This will accommodate morning drivers)

Session 1 - 9:00 - 9:45

Session 2 - 10:00 - 10:45

Membership meeting - 11:00 - noon

Lunch - Noon - 1:00

Session 3 - 1:00 - 1:45

Session 4 - 2:00 - 2:45

Door prizes - 2:45 (One of the prizes is a MICROSCOPE!)

Following is a partial list of program of presenters but feel free to change the list to suit your needs.

Session 1 - Brad Williamson, Sandy Collins, Kylee Sharp, Randy Dix, Steve Potter

Session 2 - John Wachholz, Dru Clark, Harry McDonald, Paula Donham, Todd Carter

Session 3 - Jeremy Mohn, Harry McDonald, Sandy Collins, Randy Dix, Todd Carter

Session 4 - Brad Williamson, Steve Potter, John Wachholz, Dru Clark, Paula Donham

E-mail John Wachholz < wachholz@swbell.net >

Or Harry McDonald < biologyctrack@hotmail.com >

If You Have Any Questions Concerning The Fall Meeting!

Partial Listing of Presenters and Topics For September 14th!

Sandy Collins – Nature of Science Activities and Discussion

Sandy will present some activities she has developed to introduce the nature of

science to her students. She will solicit discussion from all present over similar activities they use.

Harry McDonald – Use of the Cold Springs Harbor Website to Support E-labs.

Harry will introduce participants to the resources of the Cold Springs Harbor website and share an activity he has developed using that site. This will be a hands-on presentation.

John Wachholz – What We Eat Matters—Nutripoints—A Method That Works!

John will give a presentation on the social, ecological, and personal implications related to the food choices we make. He will also include information on a system that allows and assists students to make food choices good for their health and the environment.

John Wachholz

John will demonstrate the CD - Virtual Prairie – A Project Completed by Judd Patterson - Salina Central High School

Features:

- Photographs, sound, and video
- Presentations on the prairie ecosystem
- Main image changes every time the program is loaded
- Background soundscapes consisting of prairie sounds
- Two types of quizzes (text & photo) with high score tables
- Ability to Auto-update through an Internet connection
- Fully searchable and printable text on each organism

Each attendee will receive a copy of the CD to use in your classroom.

Todd Carter – An Activity-based Framework for Investigating the Biocomplexity of Disease

Todd will share activities he has developed on this subject.

Jeremy Mohn – The Use of the Computer in High School Biology

Jeremy is a third-year teacher who will share some of the ways he uses a computer in conducting his biology classes.

After spending half a century sharing my experience with thousands of students in India as well as in America, I have come to the conclusion that the best teaching is done in person, through the quality of one's life.

By the time you receive this, the primary elections will be over. In many cases, the winner of the Republican primary will be unopposed in November. Some local and many statewide races will be contested in November, and I encourage you to vote in both elections. I hope you will be represented by pro-education, pro-science legislators and State Board of Education members. If you are uncertain about whom to vote for, send me an email and I will share my personal opinion about candidates in your area (if I know them) and about statewide races.

New Teacher Licensure

As many of you know, the State Department of Education has been holding meetings this summer to establish standards for a content test and pedagogical test which must be taken by all candidates for receiving an initial license to teach biology in Kansas. I had a chance to gather with 16 other current biology teachers to work on this task.

KABT Newsletter for Fall 2002

BIOLOGY NEWS

Inhalation anthrax could be detected by monitoring an outbreak of cold medicine purchases at pharmacies, according to an analysis of daily sales in pharmacies in a Pennsylvania county as well as records from a 1979 anthrax accident in the Soviet Union (reported in the April *Proc. of the NAS*).

EDUCATION NEWS

"Eisenhower" funding for teacher workshops, once dedicated to science but more recently diffused across social studies and other areas, **is now essentially gone** under the new ESEA, dropping from \$450 million to less than \$12.5 million (see Jan. 16 *Educ. Week*, p. 20, 23).

The CDC used 1997-98 census surveys to estimate that **about 7% of children age 6-11 have been diagnosed with ADHD** with boys outnumbering girls 3-to-1 (see May 29 *Educ. Week*, p. 3) The CDC likewise issued a report showing **adolescent smoking dropped significantly since 1997** in all categories of "ever," "current," and "frequent" (see May 29 *Educ. Week*, p. 4).

In response to severe criticism of grade inflation, **Harvard University has capped the number of students who can receive various levels of cum laude honors** at 60% (last year 91% received honors), and has taken various measures to reduce the numbers of A's and B's in response to an inquiry that found grade inflation to be a serious problem (see June 7 *Chron. Higher Ed.*, p. A39). Due to budget shortfalls, **Missouri has cut required assessments to only the math and communication arts**; districts must spend \$5.30 per student if they wish to give the voluntary science and social studies tests in 2002-2003 (see June 5 *Education*

Week, p. 15). According to a U.S.D.E. survey in 1999, **over 850,000 children are home-schooled in the U.S.**; about half of the parents spend under \$400 for curriculum materials per student but some spend up to \$1200. **Out-of-level testing**—administering tests at a lower grade level than a student's enrollment in order to include students with disabilities—is currently practiced in 13 states, but not Kansas (see May 29 *Educ. Week*, p. 9). **Students of teachers certified by the National Board had no greater student gains** on annual test-scores than students of non-NBPTS teachers, according to a study conducted by East Tennessee State University, data that question the wisdom of states paying up to \$7500 annually to board-certified teachers (see May 15 *Educ. Week*, p.11). With scores from the Maryland School Performance Assessment Program remaining stagnant, the state superintendent is using this as evidence for **requiring a statewide curriculum** (see Feb. 6 *Educ. Week*, p. 19). An economics professor has provided a formula to calculate **what your time is worth**: Value (V) = W [(100-t)/100]/C where W is salary or wages, t is tax rate, and C is cost of living—this can be calculated at the Barclay's Bank website and converted to other currencies at <http://www.barclaycard.co.uk/timeismoney>.

Past Newsletters

All of the newsletters that have been published since 1990 and which I have had a part in will be available in PDF format at the KABT Fall Meeting.

I did this to assist all of us in the storage of past materials that we have probably tossed and at times would still like to reference them.

So just check with me at the fall meeting in Salina and I'll get you a CD.

My Last Newsletter

Well this is my LAST newsletter for KABT. What I dislike most of all is calling me Editor. I actually failed English a few times so have felt all along that I really don't qualify as an editor and have never really done much editing. Actually I have just been the producer. Simply putting things together, printing the labels and assembling things for mailing.

I have a few individuals and groups I would like to thank. First, my school system who for years let me copy it at no expense, KABT just supplied the paper. Secondly I want to thank all the contributors who have provided materials and share their teaching strategies, labs and techniques. And finally, all of you who faithfully read this publication when I did get it published.

In passing, please attend the teacher share-a-thon on the 14th. I know you'll come away with some good ideas. Later, John Wachholz

Education is when you read the fine print. Experience is what you get if you

Comparison of Mitochondrial DNA Base Sequences as Evidence of Evolutionary Relationships: an e-Lab

By Harry McDonald

Blue Valley High School

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Stilwell, KS 66085

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913-897-9630 - home

biologycctrack@hotmail.com

The site you will be using is maintained by the Dolan Learning Center, of Cold Springs Harbor Labs. The base sequences provided are all from actual samples sequenced by the lab or taken from original research.

Prepare for this activity by introducing the idea that, since we inherit our DNA from our ancestors, DNA shared with other organisms is evidence of a common ancestor. Additionally, introduce the idea that, since DNA mutates at a fairly consistent rate, the more SNP's found in shared DNA, the more distant the common ancestor.

1. Have students log on to www.bioservers.org/bioserver. They should click "Enter" under "Sequence Server." This will allow them to access the site without registering.
2. Students may read the site instructions which automatically pop-up or you can have them close this window and give instructions yourself. I favor this method.
3. The window "Compare" should show "Align: Clustal W" in the pull down menu. If it does not, make it so.
4. Click on "Manage Groups" at the top of the window.
5. At the top right of the next window, click on the pull-down menus that reads "Classes."
6. Have students explore the various categories, but, initially, for this activity, I have them use only modern humans, prehistoric humans and non-humans.
7. Click on one of these groups. From the resulting menu, click in the box at left for any organism you wish to investigate, then click "OK"
8. Selected groups will appear on the screen. Click in the box at the left for any organisms you want to compare.
9. Click "Compare" from the top left of the screen.
10. What will now be displayed is a base-by-base comparison of a 500-base stretch from the control region of the organism's mitochondrial DNA. If you have not done so, you will need to explain what mitochondrial DNA is and the significance of its strictly maternal inheritance.
11. SNP differences between the compared organisms will be highlighted in yellow. Counting the number of differences indicates the relative length of time since the organisms have had a common ancestor. The first and last base sequences are unreliable so advise your students to begin their count with the first base that all compared organisms share. Apply similar logic on the tail. A blank means that organism lacks a base at that location. An "N" indicates that the base "read" was inconclusive at that point. Don't count those comparisons as differences.
12. There are numerous options for what can be done with this site. Here is one simple idea. Once introduced to the site, have students ask a question about the relationship of several organisms. Have them hypothesize an answer. They should then run the appropriate comparisons. It will be necessary for them to select appropriate controls in order to interpret their

Mice Reject Genetically Modified Food

The shocking excerpt following is from a British journal : THE ECOLOGIST, vol. 32, #5, June 2002 page 33

"While the International scientific community spares no effort in branding Genetically Modified food as 'substantially equivalent' to conventional food (essentially so as to prop up the ailing biotech industry), a 17-year-old Dutch undergraduate has created scientific history with some simple and disturbing experiments on mice." by Devinder Sharma

"Hinze Hogendoorn conclusively demonstrated that not everything endorsed by Nobel laureates & other so-called authorities like the UK's Royal Society is scientifically correct. Hogendoorn may not find a place of honour in the pro-GM stuffed Royal Society, but he has surely put the august body to shame.

Following basic scientific conventions, Hogendoorn conducted his experiments on mice. He picked up 30 female 6-week-old mice from a herpetology centre. These rodents were originally bred to feed snakes.

Then, like any other net-savvy teenager, he searched the web for information on how to take care of mice. Accordingly, he bought some rodent mix, some Kellogg's and Quaker cereals and some oatmeal that was specified to be 'GM-free'. Hogendoorn also bought some GM maize and soya. These foodstuffs were to form the staple diet for the mice.

The mice were let loose in big cages with 2 piles of food--one GM and one non GM--stacked in 4 bowls. Unaware of received opinion on the virtues of GM 'functional foods', the mice delivered their own verdict. They completely emptied the bowls containing the non-GM food. The bowls with GM food remained untouched.

But Hogendoorn was still not satisfied. He conducted a series of other tests to find out what would happen when the mice were force-fed with GM foods.

Significantly, but for unknown reasons, one of the mice died. The other GM-fed mice initially appeared heavier, but by the end of the experiment they had actually lost weight. A rival group of mice was fed a non-GM diet.

These mice ate less and gained more weight, and continued to gain weight.

Equally sorrying were the behavioural changes that the diet induced in the mice. The GM-fed mice 'seemed less active', more nervous and distressed and were completely at a loss. 'Many,' Hogendoorn was quoted as saying, 'were running round and round the basket, scrabbling desperately in the sawdust, and even frantically jumping up the sides--something I'd never seen before.

The Royal Society has so far refrained from commenting on Hogendoorn's experiments.... As a face-saving device, it has drawn attention to the potential risks GM foods pose for babies. The latter are particularly susceptible to changes in the nutritional make-up of food.

But the Royal Society report is full of contradictions. It states that consumption of genetically modified DNA has no effect on human health Hogendoorn – "Are babies not human?"

from article in THE ECOLOGIST, vol. 32, #5, June 2002 page 33

Half of the earth's surface is bathed by the Pacific Ocean and on certain rocky shores, the intertidal zone's tide pools are found. Fortuitous circumstances attributable to features peculiar to temperate ocean water and solid, sloping rock allow this remarkable wilderness to exist: the book entertains its intricacies with superbly written text and dramatic, intimate photographs (like one of my favorites, a green anemone reproducing asexually: it looks like a soft, tentacled bun being pulled apart!). Like the zonation found in the intertidal realm, the author interprets what occurs there in separate themes: an introduction, competition, predation, reproduction and settlement, the role of color, understanding the patterns, and conserving the species. While she offers insights into observable relationships, like the green anemone growing enormous in surge channels but remaining diminutive in less flushed areas, or the explanation for the odd holes in mussel shells, she poses thought-provoking questions of things less well understood, inviting the observer to think beyond the obvious and to marvel at what we still need to learn to be intelligent conservationists. Why, for example, does the orange morph of *Pisaster ochraceus*, the sea star which is a keystone species, predominate on exposed shores, while the purple morph is common in calmer, protected waters? Why do a mussel's byssal threads fail them on vertical walls, while goose barnacles thrive in the same habitat? No one yet knows. An appendix to aid in planning a visit to tide pools includes information on tides and safety. A special section on intertidal etiquette is welcome, as is a second appendix on classification of animals and plants found there. This book will whet the reader's appetite to consult some of the one hundred and forty seven references listed, many specific to one organism or a single relationship. Should you want just one book for a thorough and readable overview of the tide pool ecosystem, choose this one, for it goes beyond simple identification to the creation of a graceful and integrated portrait of a place you'll want to visit.

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100th Meridian

Rhetoric flows from all who have interest in the rangeland west of the 100th meridian: much of it is antagonistic, self-serving, and narrow-minded. So, this book was a welcome read that is balanced, intelligent, caring, and insightful, keeping the theme of traditional (but enlightened) ranching which complements the integrity of the land foremost. The essays carefully chosen to illuminate the culture, ecology, and economics of ranching on these arid lands mesh to provide a framework for determining future use that rightly should include large, undivided spreads with appropriate cattle grazing. Herbivory (grazing) and fire are the "disturbances" (limiting factors) necessary to maintain these ecosystems: subdivisions prevent both and lead inevitably to deterioration and loss of ecosystem cohesiveness. Transient tourists decry the occasional cow in "their" public lands campground, but have little understanding or tolerance for the rancher who, by virtue of his perennial presence, is helping to maintain large tracts of intact nature, and the cowboy by "mowing the lawn," providing biological fire control. One only has to think of the fires of the summer of 2002 to make the connection. Mistakes- like overgrazing and predator control by earlier ranchers were made, but their sons and daughters want to move beyond them and restore harmony to a compromised landscape. Hopefully we will not make a bigger mistake by letting the big ranch tradition go by the wayside, displaced by ranchettes and roads and a universal suburban mentality.

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Cramer, Deborah (2001). *Great Waters - An Atlantic Passage*. New York: W.W. Norton and Co.

It is always an unexpected joy to find a book of science written with consummate skill in a rich and lusciously descriptive style. And for the theme to be of the ocean in all its complexity is a huge undertaking, one which Cramer took on with her passion for writing and willingness to research in exquisite detail. *Great Waters* is ostensibly about the Atlantic, or simply "Atlantic", as Cramer personifies this parcel of the larger ocean, in an successful effort to make it more meaningful to the reader.

Aboard the *Corwith Cramer*, a 134 foot brigantine research vessel out of Woods Hole, Massachusetts, she sails with the crew to Barbados, running along the continental slope of eastern North America, moving through coastal waters and the open ocean, across the Gulf Stream, into the Sargasso Sea, making landfall in the basin of the tropical Caribbean Sea. Her journey threads throughout the Atlantic, tying in every possible realm and adjacent sea to create an elaborately embellished tapestry of this great watery place. Chapter 2, *A Diminished Thing*, which appeared in another form in *The Atlantic Monthly* in 1995, is an example of how she weaves biology, plate tectonics, history, economics, bioethics, ecology, law, and legend in explaining the demise of the cod fishery in New England waters. Implicit in this and every chapter is a warning to us to learn our history well and heed the call of the salt water that bathes our bodies and our psyches.

A particularly insightful episode she shares involves the use of the sextant aboard the *Cramer*: the captain is insistent that they master its use, although they have GPS capabilities which unerringly gives them accurate positions (to within 0.3 meters!). She says, "The GPS requires of us no accountability, no discipline, no diligence, no need to observe carefully, no need to see ourselves in context.... To navigate by the stars (using the sextant) is to know, always, that we and our boat can never be the center of anything. "

Chapter 6, *Long Distance Swimmers*, chronicles the migrations of ocean giants - bluefin tuna, whales, sea turtles - and the sorry state of their populations. Chapters 8, 9, and 10 focus on the restless crust of the earth, the geological upheavals which gave birth to Atlantic, and Chapter 11

Fraying Edges brings us to contemporary profiles of seas and estuaries- Gulf of Mexico, the North Sea (especially the Wadden Sea), the Chesapeake, Pamlico- Albemarle, the Baltic, and the Mediterranean- which all have their own peculiar set of problems, most of which are anthropogenic in origin. What we do with the overwhelming evidence that points to us as culprit will depend on our willingness to cooperatively act to reverse our damaging behaviors.

Over 50 pages of citations follow the text, with an acknowledgment that "writing this book was hard." Anytime one tries to look at a complex subject holistically, as Cramer has done with Atlantic through *Great Waters*, it becomes labor laced with love. She has given us a book we can refer to again and again, to gain insight and information. For "it is time to recognize this gift (of Atlantic and the world's ocean) for the bounty it brings and to seek, in our thoughts, words, and deeds, to return it in full measure."

Book Reviews submitted by Dru Clarke, 3755 Rockenham Rd. St. George, Ks. 66535

As a teacher you know there is a war going on out there!

A war over the nutritional health of our children – a war we are losing!!! Every day we fight convenience foods, fast foods, TV advertising, our own busy schedules

- Cancer kills more children than any other disease
- 7000-8000 new cases of childhood cancer every year
- 1 in 4 children are obese – becoming closer to 1 in 3
- Nearly 50% of obese adolescents remain obese as adults
- By age 3, children have fatty deposits in their arteries
- By age 12, 70% have developed beginning stages of hardening of the arteries
- 5% - 7% of school age children are ADHD (Attention Deficit/Hyperactivity Disorder)
- More than 5 million children have asthma
- The number of children with asthma; up 232% over the last 40 years
- 40 million have high cholesterol levels

We aren't paying enough attention to what we feed our children. Almost every condition that occurs later in life can be lessened by good nutrition.

- 25% of all school age children don't get a single serving of vegetables a day!
- 50% get less than one serving of fruit a day!

WHAT IS GOOD NUTRITION?

Whole foods, Whole grains, and the one thing they don't get enough of – FRESH FRUITS AND VEGETABLES. Fruits and vegetables are like a "Doctor Within". Good food is good medicine.

Our children don't have a vitamin deficiency – they have a whole food deficiency.

What are YOU doing for yourself and your family to help prevent or reduce your chances of disease?

Question: If we teach biology, is it our responsibility to model and support good nutrition in schools? Do we allow Fast Food Chains to come into our schools to provide monies that we so desperately need so that they can sell their product?

Question:

The Kansas Association of Biology Teachers

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KABT Regions

Cheyenne	Rawlins	Decatur	Norton	Phillips	Smith	Jewell	Republic	Washington	Marshall	Nemaha	Brown	Doniphan
Sherman	Thomas	I Sheridan	Graham	Rooks	Osborne	Mitchell	Cloud	Clay	Riley	Pottawatomie	Jackson	Atchison
Wallace	Logan	Gove	Trego	Ellis	Russell	Lincoln	Ottawa	II Geary	Wabaunsee	Shawnee	LeFlore	Wichita
Greeley	Wichita	Scott	Lane	Ness	Rush	Ellsworth	Saline	Dickinson	Morris	Osage	Franklin	Miami
Hamilton	Kearny	IV Finney	Hodgeman	Pawnee	Starrford	Rice	MoPherson	Marion	Chase	Lyon	Coffey	Anderson
Stanton	Grant	Haskell	Gray	Ford	Kiowa	Pratt	Kingman	Sedgwick	V Butler	Greenwood	Woodson	Bourbon
Morton	Stevens	Seward	Meade	Clark	Comanche	Barber	Harper	Sumner	Cowley	Chautauqu	Montgomery	Labette
												Cherokee

