

Biology Department, Middle Tennessee State University, Spring 2007



Chair's Message

As I write this article, I find it difficult to convey the excitement the department feels now that the legislature has funded the initial phases (planning for the building and a new campus heating and cooling plant) that will culminate in the long-awaited new science building! Obviously, this represents the combined efforts of many including our alumni, legislative delegation, MTSU faculty and administrators, and current students. A heartfelt thank you to all is in order.

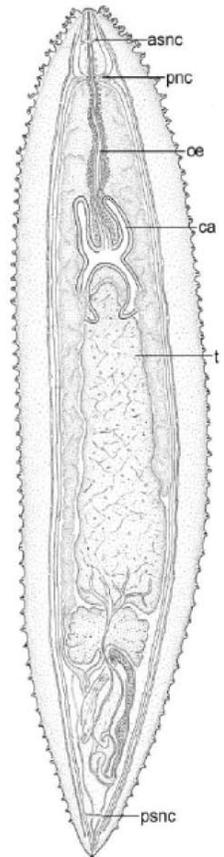
We appear to be on track for the departments of Biology and Chemistry to occupy the new building; Physics will occupy part of the Davis Science Building. Dr. Steve Wright was named "building shepherd" for the project. Steve's role is that of liaison between the faculty and architects as the project unfolds. Assuming continued successful funding, it appears that groundbreaking for the building should occur after the 2008 legislative session, with building completion and occupancy in 2010 or 2011.

Mr. Art Lidsky of Dober, Lidsky, and Craig did a great job in completing a needs assessment for the sciences, and

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Selachohemecus benzi n. sp. (Digenea: Sanguinicolidae) Named for Dr. George Benz

Dr. George Benz, marine biologist in the department, was recently honored by his friend and colleague Dr. Stephen "Ash" Bullard, of the Gulf Coast Research Laboratory of the University of Southern Mississippi, by having his name placed on a parasite of the blacktip shark (*Carcharhinus limbatus*). *Selachohemecus benzi* is only the second named blood fluke reported from a chondrichthyan in the Gulf of Mexico. The parasite was isolated from sharks captured between 1995 and 2004. The type-host is the blacktip shark, and the primary site in adults is the heart. Additional specimens were collected from kidneys. Twenty-seven percent of the sharks captured in Florida were infected. The type-locality is the northern Gulf of Mexico, Apalachicola Bay, Florida. The complete description of the blood fluke along with additional illustrations can be found in the February 2006 issue of *Systematic Parasitology*. Benz said the naming was a great honor for him. Having a species named after you is one of the top honors a biologist can receive. Way to go, George! The department is very proud of you. •



New Building Update

There is little question that laboratory facilities in the Biology Department are lacking. Independent external reviewers have characterized our teaching and research spaces as "woefully inadequate." Department Chair

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Chair's Message

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his data provide a starting point for the architects. The science building architectural firm of Einhorn, Yaffee, and Prescott and primary architectural firm, Thomas, Miller, and Partners were recently selected for the project. Thomas, Miller, and Partners are no strangers to MTSU—they designed several campus buildings including Walker Library and Cason-Kennedy Nursing Building. Our building is the largest higher education project ever undertaken by the state and is precedent-setting in its use of science building architectural consultants. We anticipate a wonderful, functional building that will be the academic home to thousands of students during its lifetime.

The past year was particularly successful for our faculty. MTSU Foundation Awards for Outstanding Research were given to Dr. George Benz and Dr. Jeff Leblond, and an Outstanding Service Award went to Dr. Kim Sadler. Dr. Cindi Smith-Walters received a Foundation

Special Project Award of \$10,000 and also received the Distinguished Service Award from the Tennessee Environmental Education Association for 2006. In addition, Dr. Padgett Kelly was elected to a three-year term on the board of directors of the National Marine Educators Association. Faculty and students authored 20 national refereed and 11 state publications and engaged in 88 presentations at scientific meetings this year (7 international, 33 national and 44 state/regional). Faculty members also engaged in 310 public service presentations, consultations, and/or training sessions. Nine faculty members received 10 new external grants for a total of \$1,888,524. When combined with the annual funding of grants in progress of \$494,594, total funding was \$2,211,635.

Although we are proud of these accomplishments, we have never lost sight of our role as educators and mentors. Our faculty continues to involve undergraduate and

graduate students in almost all phases of departmental activities, but special emphasis is placed on participation in research projects. For example, of the 31 national and state/regional publications mentioned above, 14 graduate and 10 undergraduate students shared authorship in one or more papers, and of the 102 presentations, 34 graduate and 30 undergraduates shared authorship with a faculty member. It is doubtful that these numbers are equaled by any other biology or science department in the state.

We enjoy hearing from you, our alumni, and take pride in your accomplishments, some of which are chronicled in this edition. You always have a standing invitation to visit the campus in person or electronically!

George Murphy, chair

Department Now Has Logo Shirts

The department is now selling shirts that sport the departmental logo. The shirts come in four types: a light tan, short-sleeve t-shirt with the logo on the upper right front and an enlarged color logo on the back; a long-sleeve t-shirt; a dark green, short-sleeve polo shirt with the logo on the upper right front; and a green, long-sleeve polo shirt. Several faculty members and students have been seen wearing the shirts in the hallways and in class. Prices for the shirts are as follows:

T-SHIRTS

Short-Sleeve \$10
Long-Sleeve \$12

POLO SHIRTS

Short-Sleeve \$20
Long-Sleeve \$25

Shirts can be purchased in the Biology office; see Virginia McKnight. For alumni, former faculty, staff, and students, e-mail Virginia at mcknight@mtsu.edu.

Front logo on Polo Shirt



Above: Student, Andrea Scruggs models the Biology Logo T-shirt.

Right: Back Logo on T-shirt (actual logo is in color)

Faculty Awards

The past year has been exceptional with regard to faculty awards. At the University-wide faculty meeting on August 25, 2006, the MTSU Foundation announced the recipients for their annual awards. Members of the Biology faculty received four of the 18 awards. The College of Basic and Applied Sciences received 11 of the 18 awards. Congratulations to all award recipients.

DR. GEORGE BENZ received a Distinguished Research Award. George, an associate professor, teaches general biology, marine biology, and ichthyology. Before coming to MTSU, he was a fisheries biologist with the Connecticut Bureau of



Fisheries and the Tennessee Aquarium. He was the aquarium's first curator of fishes, later becoming its first chief research scientist and founding director of the Tennessee Aquarium Research Institute. George's research on sharks and parasites of fishes has taken him from the Arctic to the tropics. He has authored, coauthored, and edited over 90 scientific publications, and his research has been the focus of articles in *Discover*, *National Geographic*, and *Highlights for Children* as well as other magazines and popular books. A believer that science should be interesting and accessible to all, George presented and narrated a one-hour television special on parasites called *Body Snatchers* for the National Geographic Society. His collaborative Greenland shark research was part of the focus of a Discovery Channel

special called *Jurassic Shark*. Recently, George was honored to have a parasite (*Selachohemecus benzi*) of the blacktip shark named after him (see article on page 1 of this issue of *BioUpdate*).

DR. JEFFREY LEBLOND received a Distinguished Research Award. Jeff, an



associate professor, teaches general biology, microbiology, and microbial physiology. His research is focused on the lipid biochemistry of harm-

ful dinoflagellate algae, particularly the Florida redtide organism *Karenia brevis*. He also has interest in the lipid biochemistry of Chlorachniophyte amoeboid green algae. Jeff has presented his research at numerous professional meetings and has published his findings in leading journals such as the *Journal of Phycology*, the *Journal of Eukaryotic Microbiology*, *Harmful Algae*, and *Physiologia*.

DR. KIM SADLER received an award for Outstanding Public Service. Kim, an



assistant professor, has been primarily teaching nonmajor biology since 1989 and has been affiliated with the Center for Environmental Education

(CEE) since 1994. In 1995, she became director of the CEE Microscope and Materials loan program, which has provided over 150 reclaimed microscopes for middle Tennessee schools, teacher training in microscope use, and workshops for K–12 students on microscope skills. Additionally, Kim has codeveloped materials about invasive pest plants and green shopping strategies. She serves on the Stones River Greenway Education Committee and has helped secure funds for backpacks for educators visiting the Greenway and teacher training showing how to use the Greenway as an outdoor laboratory. One project she is developing is a scavenger hunt pamphlet to encourage visitors to take a closer look at biotic and abiotic features on the Greenway.

DR. CINDY SMITH-WALTERS, along with **Laura McCall** (CEE) and **Bob English**



(environmental consultant, CEE), received a \$10,000 Special Projects award for their Four-Season Virtual Tree Trail project. The Virtual Trail offers a four-

season tour of the sights and sounds of the paved, handicapped-accessible trail at the Wilderness Station in Barfield Crescent Park in Murfreesboro. ●

Student Research

Last year in *BioUpdate*, we detailed student efforts in research. Over the past year and a half, those efforts continued with numerous students conducting research in all areas of biology. These students have seen the fruits of their labors in the form of poster presentations, oral presentations, and publication in peer-reviewed journals. The following is a list of biology student presentations and publications during the past year. Additional student presentations made at the 2006 Annual Meeting of the Tennessee Academy of Science are listed on page 19 in this issue of *BioUpdate*. All these students deserve recognition for their efforts above and beyond typical classroom education. The department is very proud of each student identified below. Student status, as undergraduate (U) or graduate (G) is also noted.

Presentations

Justin Anderson (G), along with major professor Frank Bailey, presented "The Use of Terminal Restriction Fragment Length Polymorphism (TRFLP) in Fecal Bacterial Source Tracking" at the 25th Annual Meeting of the Society of Environmental Toxicology and Chemistry in Baltimore in November 2005.

Erin Archer (U), along with professors Rebecca Siepelt and Michael Thompson, presented "A Conserved Tryptophan Residue with an Altered pKa Is Essential for the Peptidase Reaction of *Saccharomyces cerevisiae* A4 Hydrolase" and, along with A. Terry (U), presented "Halide Ions Alter Substrate Specificity of *Saccharomyces cerevisiae* Leukotriene A4 Hydrolase, But Do Not Increase Catalytic Efficiency" at the Experimental Biology 2006 Conference (ASBMB) in April in San Diego.

Terry Banaszak (U), **C. Copola** (U), **L. Ekard** (U), **K. Hinton** (U), and **H. Yu** (U), along with professor Anthony Newsome, presented "Expanding Our Understanding of the Microbicidal Properties of Chlorine Dioxide Using Newer Generation Technology" at the Kentucky/Tennessee Branch Meeting of the American Water Works Association in September 2005 in Covington, Kentucky.

Crystal Bishop (G), **Brianne Begley** (G), **C. Nicholas** (G), **Jessica Rader** (G), **Elizabeth Reed** (G), **Kyle Sykes** (G), **T. Williams** (G), and **Elizabeth Young** (G), along with professor Dennis Mullen, presented "Shelter-Use and Interactions between Banded Sculpin (*Cottus caroliniae*) and Bigclaw Crayfish (*Orconectes placidus*) in Stream Pool Habitats" at the 2006 Annual Meeting of the Tennessee and Kentucky Chapters of the American Fisheries Society.

Shea Cofer (G) and Jeff Walck presented "Germination Ecology of Bulbils from the Exotic Vine *Dioscorea oppositifolia* (Dioscoreaceae)" and "Determinants of Species Richness and Exotic Species Invasion on Cedar Glades in Middle Tennessee" at the Annual Meeting of the Botanical Society of America in Chico, Calif. July 30-August 2.

Dwayne Coleman (U) and **Christopher Meyers** (U), along with professor Nicole Welch, presented "The Chemical Influence of *Kalmia latifolia* on *Pinus pungens* Seedlings" at the 2006 Annual Meeting of the Association of Southeastern Biologists in Gatlinburg.

Elizabeth Fitch (G), along with Jeffrey Walck, presented "Temporal Aspects of the Light Requirement for Seed Germination of Two Rare *Paysonia* Species (Brassicaceae) in Considering Management Protocols" at the Annual Meeting of the Botanical Society of America in August 2005 in Austin, Texas.

Amy Mauritsen (U), along with Anthony Newsome and Chemistry professor Martin Stewart, presented "Surface Crystallization of Solid-Supported Reagents" at the March 2006 Annual Meeting of the American Chemical Society in Atlanta.

Andrew McElwain (G) and George Benz presented "Reconsidering Phylogeny within *Sphyriidae* (Siphonostomatoida, Copepoda)" at the March 2006 Annual Meeting of the Southeastern Society of Parasitologists in Gatlinburg.

Matthew Niemiller (G), along with Brian Miller, presented "A Survey for Stream-Dwelling Hemidactyline Salamanders in Caves of Middle and Eastern Tennessee" and "Distribution, Relative Abundance, and Notes on the Natural History of the Tennessee Cave Salamander Complex (*Gyrinophilus pallescens*) in Tennessee" at the Joint Meeting of the Association of Ichthyologists and Herpetologists and the Society for the Study of Amphibians and Reptiles in Tampa. The two also presented "Molecular Systematics of the Tennessee Cave Salamander Complex, *Gyrinophilus pallescens*, Based on the Mitochondrial 12S rDNA Gene" at the 11th Annual Tennessee Herpetological Conference, September 2005 in Lebanon, Tenn. and "Phylogenetics of the Tennessee Cave Salamander (*Gyrinophilus pallescens*) Complex" and, with **Brad Glorioso** (G), "Status and Distribution of the Streamside Salamander (*Ambystoma barbouri*) in Middle Tennessee" at the 2006 Meeting of the Association of Southeastern Biologists in Gatlinburg.

J. Palmer (G), along with Anthony Newsome, presented "Amoeba Products Promote *Listeria* Multiplication" at the May, 2006 Annual Meeting of the American Society for Microbiology in Orlando.

Elizabeth Reed (G), along with major professor Frank Bailey presented "Effects of Aquatic Plants on Metal Bioavailability to Organisms" at the 25th Annual Meeting of the Society of Environmental Toxicology and Chemistry in Baltimore in November 2005.

Carrie Romer (U) coauthored the poster "Two Conserved Tyrosine Residues Are Essential for the Peptidase Activity of *Saccharomyces cerevisiae* Leukotriene A4 Hydrolase" with Michael Thompson and Rebecca Seipelt, presented at the Annual Meeting of the American Society for Biochemistry and Molecular Biology.

Witold Skolasinski (G), along with professors Mary Farone, Anthony Farone, and Anthony Newsome, pre-

sented "Isolation of a Novel Amoebal Pathogen from a Hot Tub" at the June 2005 General Meeting of the American Society for Microbiology. With Mary Farone, Skolasinski presented "The Packaging of a Novel Amoebal Pathogen into Vesicles of Tetrahymena" at the June 2005 General Meeting of the American Society for Microbiology.

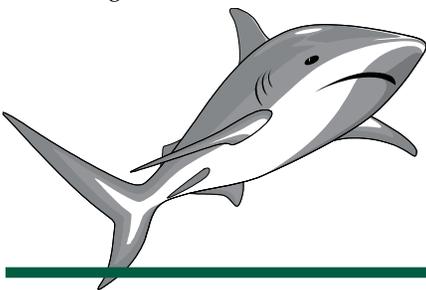
Roger Street (G), along with major professor Frank Bailey, presented "Effects of Herbicide Atrazine on the Gray Tree Frog (*Hyla chrysoscelis*) in a Microcosm System" at the 25th Annual Meeting of the Society of Environmental Toxicology and Chemistry in Baltimore in November 2005.

Amy Tolley (G), along with major professor Frank Bailey, presented "The Effects of Polychlorinated Biphenyls on Gonadal Differentiation in the Gray Tree Frog (*Hyla chrysoscelis*)" at the 25th Annual Meeting of the Society of Environmental Toxicology and Chemistry in Baltimore in November 2005.

Jerry Tragester (G), along with professor John Zamora, presented "The Isolation and Identification of Diazinon-Degrading Bacteria" at the June 2005 Annual Meeting of the American Society for Microbiology in Atlanta.

Charles Yawn II (G), along with professor John Zamora, presented "The Isolation and Identification of Pectin-Degrading Microorganisms" at the May 2006 Annual Meeting of the American Society for Microbiology in Orlando.

Joy Young (G) and George Benz presented "Rapid Colonization of Neonate Lemon Sharks by Monogeneans" at the March 2006 Annual Meeting of the Southeastern Society of Parasitologists in Gatlinburg.



Publications

Eric Freundt (U), **D. Beatty** (U), **Teresa Stegall-Faulk** (G), and Stephen Wright published "Possible Tick-Borne Human Enterovirus Resulting in Aseptic Meningitis" in the *Journal of Clinical Microbiology*.

Niloufar Gilliani (U) and Anthony Farone published "Kinetic Isotope Effects of a Nucleoside Hydrolase from *E. coli*" in *Biochimica et Biophysica Acta*.

Cathy Koczaja (G), **Laura McCall** (G), **Elizabeth Fitch** (G), **Brad Glorioso** (G), **Chad Hanna** (G), **Julianna Kyzar** (G), **Matthew Niemiller** (G), **Jeremy Spiess** (G), **Amy Tolley** (G), **Richie Wyckoff** (G), and Dennis Mullen published "Size-Specific Habitat Segregation and Intraspecific Interactions in Banded Sculpin (*Cottus caroliniae*)" in *Southeastern Naturalist*.

Matthew Niemiller (G) and Brian Miller published "*Pseudotriton ruber* (Red Salamander) Reproduction" and "*Rana clamitans melanota* (Northern Green Frog) Predation" in *Herpetological Review*.

Matthew Niemiller (G) and Brian Miller published "The Tennessee Cave Salamander Complex" in the 2005 *National Speleological Society Convention Guidebook*.

Matthew Niemiller (G), **Jason Todd** (U), and Brian Miller published "Geographic Distribution: *Gastrophryne carolinensis*" in *Herpetological Review*.

Sean O'Donnell (U), **Chad Brooks** (G), **Kritel Young** (G), Anthony Farone, and Mary Farone published "Reovirus Strain-Dependent Inflammatory Cytokine Responses and Replication Patterns in a Human Monocyte Cell Line" in *Viral Immunology*.

Jennifer Thompson (G) and Jeff Walck published "Microhabitat Requirements of the Federally Endangered *Dalea foliosa* with Recommendations on Establishment of New Populations" in *Castanea*. •

Building Update *cont. from p. 1*

George Murphy has written about our needs in the past several issues of BioUpdate. Planning for new science facilities began over a decade ago and could be characterized as a "hurry up and wait" process. The waiting period was considerably shortened when Governor Bredesen signed the state budget at MTSU this past summer. The budget included funding for design and site selection for our new science facilities along with renovation plans for existing facilities. Six departments (Biology, Chemistry, Computer Science, Geosciences, Mathematical Sciences, and Physics and Astronomy) have been involved in initial planning with consultant Art Lidsky, a science building architect. The architects and design team hired for the project are Thomas, Miller, and Partners in joint venture with Hastings Architecture and science building design specialists Einhorn, Yaffee, and Prescott. President Sidney McPhee and the vice presidents have agreed that the site for the new science building may be located immediately west of Walker Library. The site is currently occupied by the Wood, Felder, Clement, and Gore housing facilities. All demolition costs will be paid out of the science building project. The plan calls for Biology and Chemistry to move into new facilities, while remaining departments move into vacated space in Davis Science, Wiser-Patton, and Kirksey Old Main, following renovation. Although we are still early in the process, significant progress has been made in a short time, and we look forward to site selection and working closely with the architects to design classrooms, teaching laboratories, and research space over the next year or two. The new facilities are expected to be ready for occupancy in 2011. Biology faculty members Dennis Mullen and Bruce Cahoon are the department representatives leading the design process. Steve Wright serves as "shepherd" for the project—liaison between the faculty and the architectural and planning team. •

Where Are They and What Are They Doing?

A visit with former faculty members

The Biology Department has done an exceptional job over the years in hiring top-quality faculty. Faculty members have left from time to time for a variety of reasons including retirement and to pursue careers elsewhere. Some have remained in middle Tennessee and stay in touch by attending various social activities sponsored by the department. But for others, until recently, the department had only mailing addresses (and for some not even that). In an effort to keep in touch, *BioUpdate* attempted to contact all former biology faculty members to find out where they were and what they have been doing since leaving the department. The nine who responded represent a total of 242 years of service to the department. It is safe to say that these people not only had an impact on their students but also helped shape the department into what it is today. We owe them our gratitude for their tireless efforts toward building the Biology Department.

They were asked about their former service to the department, what they miss most (and least) after being away, and what they are doing now. They were also asked to share some of their best memories during the time they were in the department. All who responded have given us permission to include contact information so former students and colleagues can keep in touch with them. We hope they will continue to keep us informed of their activities and that you will stay in touch with them. If you are a former faculty member who did not respond to the survey or did not receive one, or if you are in contact with such persons, please update us with your (or their) activities,

Sarah F. Barlow

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Dr. Barlow joined MTSU in 1979 and officially retired in 2003. Sarah continues to teach for the department as a member of the postretirement program. In this capacity, Sarah teaches the Honors section of Biology

1030, Exploring Life (formerly Topics in Biology), the non-majors biology course. For many years, Dr. Barlow was the coordinator for the course, and she also coordinated the pre-occupational therapy program and pre-health information management program.

Sarah has special memories of the department, particularly the camaraderie among the faculty and the dedication of the faculty to the welfare of the students. She enjoyed the vast diversity

of the faculty with respect to their expertise and talents. Sarah, along with her husband, Ed, were (and continue to be) strong supporters of department- and University-sponsored activities. She fondly remembers the various department homecomings, Christmas parties, picnics, etc., and having the chance to catch up with former students. As part of her responsibilities as coordinator for Biology 1030, Sarah spent countless hours working with graduate teaching assistants (GTAs). Many of our GTAs have gone on to rewarding careers in teaching at the elementary, secondary, and college levels. Sarah probably inspired many of them to pursue such careers. A graduate of MTSU, Sarah continues to support Blue Raiders athletics, as does Ed. If you attend a football or basketball game, chances are you will see them in the stands. Sarah has always been and continues to be "True Blue." Throughout her career, Sarah has had a major impact on the department and its students. It is hard to imagine third-floor Science Hall without her. We hope she continues to be part of the department in some capacity.

Clay M. Chandler

1016 W. Cunningham St.
Milan, TN 38358



Dr. Chandler joined the faculty in 1970 and retired in 1992. He taught General Biology, Honors Biology, Ecology, Limnology, Microtechnique, and Biological Literature. He supervised student projects in the

Ecology course and several graduate student research projects. Clay was the faculty advisor for 13 master's degree theses.

Clay is enjoying retirement reading, biking, and walking. He is an active volunteer at a local facility for indigent people and at a retirement home in Milan. His best memories are of the numerous students he had the pleasure of teaching. Clay was known as a rather strict, no-nonsense instructor, but his students appreciated his remarkable talents. He was very active in research, both his own work with planarians and with various student projects. He fondly remembers many of these student projects and collaborations with colleagues. Clay was very active in the Tennessee Academy of Science and is occasionally spotted at its annual meetings. Like most former (and present) faculty members, he does not miss committee meetings.

In 1999, Clay moved from Murfreesboro back to Milan, which he originally left in 1959. He has been able to spend more time with his son, Morris (MTSU biology major), and family. Along with George Poinar (department of zoology, Oregon State University) he published "Synopsis and Identification of North American Hairworms (Gordioidea: Nematomorpha)" in the January 2004 issue of the *Journal of the Tennessee Academy of Science*.

Dr. Chandler remains active in research by consulting for environmental firms on various invertebrate identifications.

Deborah Clark

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Dr. Clark began her service to the department in the fall of 1995. After spending a one-year leave caring for her newborn son, Christopher, she left MTSU in the summer of 2001. She had just received tenure

and was promoted to associate professor. Her reason for leaving was to spend time with Christopher and to raise him during those early formative years. Her husband, John, had taken a job with Vanderbilt University Libraries and Debbie wanted to devote her time to their son.

While at MTSU, Debbie taught Genetics, Topics in Biology (now Exploring Life), and Genetics and Social Issues. She participated in the Ethology course and the Honors Seminar. She was also instrumental in the development of the online version of *BioUpdate*. Dr. Clark was always well received by her students. Working with students is the thing she misses most since her departure. She was always a student-centered instructor. She wants all her colleagues to know that the faculty and students at MTSU were great and that she misses all the interactions with both. As with most faculty members who have left service, she does not miss the committee work, saying that because of committee obligations, "sometimes the best interest of the student gets lost in the process."

In 2003, Debbie and family relocated to Bellevue and are very happy there. John is closer to Vanderbilt than he was when they lived in Murfreesboro. Christopher is now seven and in the first grade. He is a new Cub Scout and his father is serving as a den leader. Debbie has returned to work as a medical writer for HealthStream Inc. HealthStream provides learning solutions for health care organizations, and Debbie writes

and edits their training manuals. She has been with HealthStream for about a year and says that she didn't realize how much she really missed teaching until she began developing educational materials again. Several of her colleagues in the department say that she is still missed here. We are glad that she is back doing something she enjoys, and we know she will do a good job.

Patrick Doyle

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Murfreesboro, TN 37129
E-mail: pandddoyle@comcast.net



Dr. Doyle joined the Biology Department in 1966 and retired in 2002. Pat taught the General Biology sequence, nonmajors Topics in Biology, History and Philosophy of Biology, Seminar on Environmental

Issues, and Human Anatomy and Physiology. He is best remembered for his efforts in establishing and directing the recycling program at MTSU. The program was recognized twice at the national level by President Clinton: it earned a Daily Points of Light Award in 1999, and Pat received a President's Service Award in 2000. The results of Pat's efforts led to the recycling of thousands of pounds of paper, aluminum cans, cardboard, magazines, and telephone books. Proceeds from the recycled materials have funded 37 scholarships in the department. Countless students have benefited from the scholarships, which fund student travel, research, participation in summer field station programs, and meritorious achievement in the classroom. Pat was instrumental in the relocation of the Environmental Education Center from the Elementary Education Department at MTSU to the Biology Department in the early 1990s and was its first director. He also served as faculty advisor for the Biology Club and as departmental

representative to the Faculty Senate. During his term in the Faculty Senate, Pat served as president. Pat was always known as a student-centered professor. He took an active interest in his students and worked very hard to help them succeed. He has left an impact on thousands of students and others across the state of Tennessee, especially those in K-12 education. When asked about some of his best memories of his time in the department, Pat said, "lots and lots of outstanding students." Interactions with students are also the top thing he says he misses since retiring. He also remembers working with an extraordinary group of colleagues and misses those interactions as well.

However, retirement has not found Pat sitting idle. He and wife Dee have traveled with family to England, Ireland, Alaska, Arizona, Chicago, Oklahoma, and New York. This past year, they traveled to Scandinavia. When at home, he and Dee enjoy getting together with friends and gardening and both have been officers in the Rutherford County Retired Teachers Association. What does he miss least since retirement? Like most faculty members, he does not miss those unproductive meetings and hassles over merit pay, promotion, and tenure. And, believe it or not, he does not miss moving tons of paper to recycle!

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“...she wants all her colleagues to know that the faculty and students at MTSU were great and that she misses all the interactions with both....

...like most former (and present) faculty members, he does not miss committee meetings...”

Where are they? *continued from p. 7*

James Kemp

545 Powell Hollow Rd.
Tullahoma, TN 37388



Mr. Kemp was a member of the biology faculty from 1970 until his retirement in 1995. He taught the nonmajors Topics in Biology course, Bacteriology, and, at one time or another, all the human anatomy

and physiology courses, for which he spent several years as the coordinator. Jim was also responsible for coordinating the summer teaching schedule for the department.

Jim continues to maintain his farm near Tullahoma, raising beef cattle and horses along with the various supportive forages. In addition to his fond memories of his students, Jim enjoyed many of the “fun things” of the department. These activities included campouts, fishing and float trips (usually planned by Jim and wife Lin), and the many social get-togethers sponsored by the department. Jim recalls when the department was much smaller and all the faculty members were very concerned with the life and happenings of each other. Back in the “old days,” faculty knew more about what each other’s families were doing. Jim says that he never really had an assignment or duty that he did not enjoy. He always felt that we had a good administration and working relationships that made the everyday activities enjoyable.

During retirement, Jim has been able to do more trail riding on horseback and to show some spotted saddle horses. Although he’s had some health setbacks, Jim reports that he and his family are doing fine and they miss being able to see everyone more often.

Horace Reed

739 Greenbrier Dr.
Murfreesboro, TN 37130-3175



Dr. Reed came to MTSU in 1964 from Shorter College in Rome, Georgia. While there, he was chairman of the division of natural sciences. He retired from MTSU in 1984. At MTSU, Horace taught Introductory

Biology, Human Anatomy and Physiology, Microbiology, Entomology, Advanced Invertebrate Zoology, Population Biology, Introduction to Graduate Study, and Biological Literature. He also supervised five graduate students in thesis research. His own research centered on the brown recluse spider.

During his service to the department, Horace expanded and organized the entomology collection, identifying many of the specimens to taxonomic family. His efforts in graduate student research led to the development of a 17-page set of instructions for preparing biology theses. These instructions detailed the proper procedure for citing literature using the name-and-year system that is still in use today. This was a considerable deviation from the previously required footnote method used in many departments in the liberal arts.

Since retiring, Horace and his wife, Helen, have traveled extensively. To date, they have visited 32 countries and have participated in many long-distance footraces. Helen earned first place in her age group at the Country Music Half-Marathon held April 29, 2006. Way to go, Helen! Horace, too, continues to walk and run in an occasional race. He reports that they both are doing well and, we are happy to hear, that he is in remission from multiple myeloma. We look forward to seeing them both at departmental functions.

Maria Lourdes de los Reyes

P.O. Box 651357
Miami, FL 33265



Dr. de los Reyes began her service to the department in August of 1981 and continued until her retirement in the summer of 2002. She taught General Microbiology, Immunology, Food and

Industrial Microbiology, and Diagnostic Microbiology. Other duties included responsibility for the microbiology preparation room, making all the media, cleanup, and general prep for all the microbiology courses. This also included supervision of the four to eight students serving as lab assistants. She was also a member and chair of several committees in the department and across campus.

Maria misses working with the students and faculty in microbiology. Her best memories of the department include her work in helping to build a strong program in microbiology. She was instrumental in raising the program to a higher standard. She says that her driving motivation was always “keeping in the front of my mind the quality education which our undergraduate students should leave with upon receiving a degree.” She was known for her high standards in the classroom, and in the long run, our students benefited from those standards.

We are sorry to report that her husband, Gabriel, passed away in 2006. He will be missed by many of us here at MTSU. Often, “Mr. Doctor Reyes,” as he was sometimes called, would stroll into our offices and sit down for a chat. Many faculty members at the south end of the hallway in Davis Science Building enjoyed talking with Gabriel. Maria, however, is keeping active by helping her son expand his nursery and establishing a small medicinal plant nursery. Since retirement and relocation to Miami, Maria is able to spend more time with her family. She is missed here in the department and is spoken of fondly.

Marion Wells

7936 Cainsville Pike
Lascassas, TN 37085
E-mail: Marionwells@comcast.net



Dr. Wells joined MTSU in 1964 and, although he “retired” in 2002, continues to teach half-time as a member of the postretirement program. Current students and faculty often see Marion in the halls

of Davis Science Building and Wiser-Patten Science Hall. For alumni planning to come back to visit the department, call ahead and Marion would be glad to meet with you. In addition to teaching, he continues to train faculty and students on the new scanning and transmission electron microscopes (see related article in the Spring 2006 issue of *BioUpdate*).

Some of Marion’s best memories are of times when classes at MTSU were much smaller and when we had substantially lower enrollments. He also recalls many good memories of working with his colleagues, such as Drs. Chandler, Patten, Fletcher, and Wiser.

During his 39 years in the department, Dr. Wells taught thousands of students and was advisor for 28 master’s theses. Along with his own research over the years and his consulting work with area industries, Marion had a major impact on establishing the research component of the Biology Department. He has been a valued member of the department, and we are glad that he is still actively involved.

...as with most faculty, his best memories are of students...he most enjoyed seeing students develop and grow during their time at MTSU and then moving on to professional schools and into careers...

C. Wymer Wiser

814 Minerva Drive
Murfreesboro, TN 37130
E-mail: Profcw@comcast.net



Dr. Wiser joined MTSU in 1956 and continued to serve the University and the department until he retired in 1995. During his 39 years, he taught General Biology, Embryology, Comparative Anatomy,

Ecology, Radiation Biology, and General Physiology. He contributed to the Graduate Committee, the Social Committee, and the Pre-Professional Advisory Committee. He was an advisor for medical technology students, biology majors and Beta Beta Beta Biological Honor Society. He directed research for six master’s theses, along with numerous graduate student term papers in the pre-thesis days.

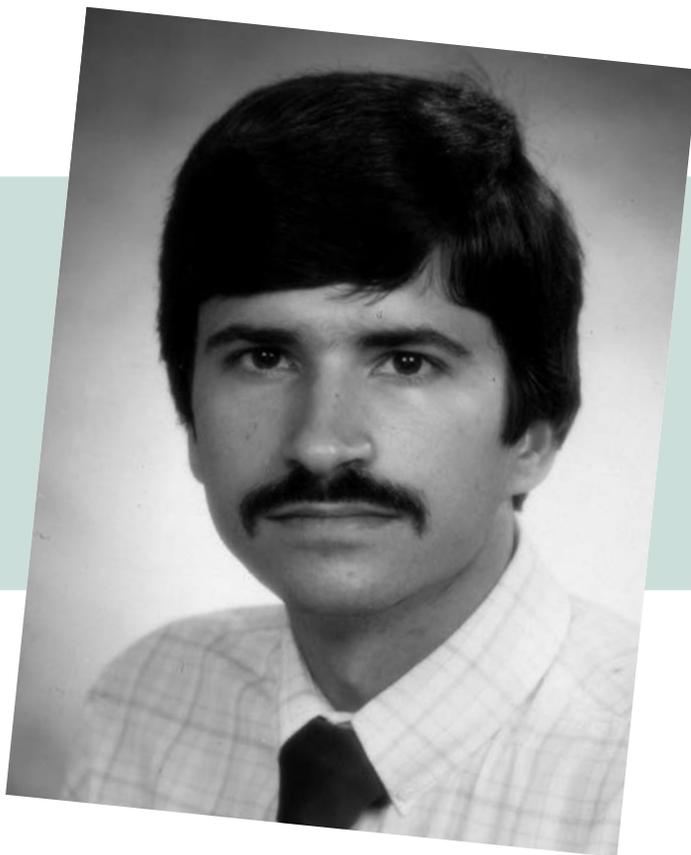
Although he has retired, Wymer continues his dedicated service to the community. He speaks at different churches in the area when invited, conducting funerals and weddings, and he spends considerable time visiting sick and shut-in people in nursing homes and hospitals. He has spent some time as a patient himself, suffering a heart attack and back surgery. However, we are glad to report that he has recovered from his medical setbacks and is back to keeping busy with his community work and his hobby of gardening.

Wymer recalls a time when MTSU was a smaller institution, where everyone knew faculty in all departments. Unfortunately, this is no longer the case with the rapid growth of our University. Having taught several different courses over the years, Wymer recalls all the new preparations those courses required. Although this was very time-consuming, he remembers it as some of the best time he spent in the department. Ironically, as we prepare designs for our new science facilities (see article in this issue of *BioUpdate*), Wymer recalls his excitement in helping to design what would be the physiology area of Davis Science Building. Maybe we can get him to come back and help with the design of the new facility! As with most faculty, his best memories are of students. He most enjoyed seeing students develop and grow during their time at MTSU and then moving on to professional schools and into careers. Many of his former students returned to MTSU to serve on the faculty, including Gerald Parchment, Ralph Sharp, Patrick Doyle, Eugene Strobel, and Jim Kemp. Drs. Bob McGhee, Sarah Barlow, Padgett Kelly, Gore Ervin, and Kim Sadler were all former students of Dr. Wiser. Other former students include several science and math teachers in Rutherford County schools and elsewhere, including several at colleges and universities throughout Tennessee and the U.S. He mentored a brother and a nephew, who, along with many other students, went on to become physicians and dentists, many practicing here in Murfreesboro.

Dr. Wiser left a lasting impression here at MTSU and continues to do so throughout the middle Tennessee community. He has shown us that retirement does not mean slowing down! He says that he is as busy now as he was when he served on the faculty and doesn’t know how he found the time to do all the things he did back then. He does, however, spend time with his seven grandchildren and five great grandchildren. Wymer also finds time to attend some of the department’s social activities.

FEATURED FACULTY

The majority of faculty members in the Biology Department are not natives of middle Tennessee. Relocation for one's career is a fact of life for most employed at the college and university level. Relocation has had a particularly profound impact on the life and career of **John Zamora**, this year's Featured Faculty member.



John was born in Havana, Cuba, and at the age of three, relocated with his family to New York. His father, Manuel, moved his family to the U.S. seeking a position in academia at Syracuse University. Manuel held a degree in engineering and had been a faculty member at the University of Havana. Although he was unsuccessful in getting a position at Syracuse, he did find employment in New York City, using his engineering skills in construction in the private sector.

John became a U.S. citizen and grew up in New York. After high school, John attended Columbia University, where he majored in biochemistry and minored in mathematics. He graduated with a B.A. degree in 1979 and continued his studies in graduate school at Auburn University. His Ph.D. major was in microbiology with a minor in biochemistry. John completed his doctorate in 1984 and followed that with a three-year postdoctorate research position at St. Jude Children's Research Hospital in Memphis. Although he left Auburn University, he still holds season tickets to the home football games — *go Tigers!*

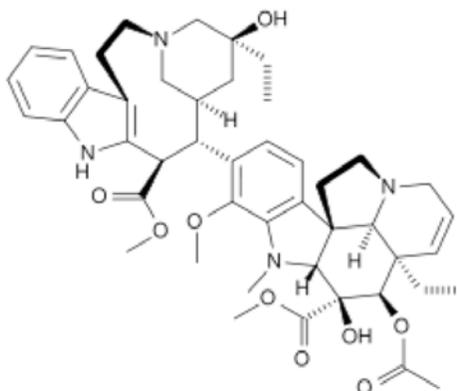
At St. Jude, John worked in the pharmacology department on biologically active chemicals

from plants. Many such chemicals hold promise as anticancer drugs and other medicines. Specifically, he worked with vinblastine and vincristine, both isolated from the Madagascar periwinkle (*Catharanthus roseus*, formerly *Vinca rosea*). They bind to tubulin, thereby inhibiting the assembly of microtubules. In the M phase of the cell cycle, microtubules form the mitotic spindle and the kinetochores, which are required for the separation of chromosomes during anaphase. The binding of these alkaloids to the tubulin dimers causes the disassembly of microtubule structures, and hence, interrupts the process of mitosis, especially in rapidly dividing cells like those found in cancer tumors. Today these chemicals are used in chemotherapy regimens in combating non-Hodgkin's lymphoma.

John relocated to MTSU in 1987 to begin his career in academia. He

has taught a long list of courses, including the nonmajors Topics in Biology (now Exploring Life), Pathophysiology, Histology, and General Virology. Most recently, his teaching has been in the microbiology field including Microbiology, Molecular Genetics, Environmental Microbiology, and the Food and Industrial Microbiology courses. He prefers the upper-level courses because the classes are smaller. John says he most enjoys the interaction with students, which can occur more readily in smaller classes. John has continued his biochemical research here at MTSU looking at the antimicrobial and antiviral properties of various biologically active compounds. To date, he has mentored 27 graduate student theses, most of which focus on antimicrobial chemicals. His most recent master's students were December 2006 graduates Stacie Jefferson and Christy Nelson.

Many such chemicals hold promise as anticancer drugs and other medicines. Specifically, he worked with vinblastine and vincristine, both isolated from the Madagascar periwinkle (*Catharanthus roseus*, formerly *Vinca rosea*).



As if teaching and research were not enough to keep him busy, John has played a very important role in community service. Since 2000, he has been working with the Tennessee Alcoholic Beverage Commission (TABC) holding workshops for restaurant servers on the responsible consumption of alcohol. In Tennessee, as in most states, restaurant servers who work in establishments that serve alcohol must become certified to serve alcoholic beverages. In order to achieve that certification, they must complete a five-hour workshop that teaches how to recognize intoxicated patrons and to curtail serving them before they are over the limit for alcohol intoxication. Successful completion of this workshop means passing the certification exam. John has taught more than 2,800 servers in almost 300 workshops. More important, John is one of only two such instructors in Tennessee to offer workshops in Spanish. With the increasing number of Mexican restaurants in middle Tennessee, it is important that the servers, many of whom understand Spanish better than English, can pass the certification exam. Not only does John teach the workshops in Spanish but he has also worked with the TABC by help-

ing translate their workshop materials and the certification exam into Spanish. Although he is not teaching as many workshops each year as he has in the past, John still presents, on average, 20–24 workshops per year.

John has twice been nominated for the MTSU Foundation's Public Service Award (2004 and 2005). In 2006, John was nominated for the John Pleas Faculty Award, given annually to a minority faculty member in recognition for demonstrated excellence in teaching, research, and public service.

He received the Carolyn Taylor Carr Award for meritorious achievement in research in 1985 and was included in Outstanding Young Men of America in 1990.

In recognition of his service in the Responsible Consumption of Alcohol workshops, John received TIPS (Training for Intervention Procedures) Trainer Awards in 2000, 2001, and 2002. In 2002, John was elected as a Fellow to the Tennessee Academy of Science.

John's favorite hobby is carpentry. Over the years, he has built several arbors, tables, and decks and has tackled just about every kind of project that involves woodworking. He and his wife, Nancy, recently moved to a house just outside Murfreesboro, where he will be able to have his own stand-alone workshop. He is in the process of setting up that workshop and hopes that the floor will soon begin to fill with sawdust.

John and Nancy are both strong advocates for the rescue of abandoned dogs. They have been able to adopt dogs from the Tennessee Bearded Collie Rescue and Tennessee Dachshund Rescue programs. The Zamoras have two bearded collies, a sheltie, and three dachshunds. It appears that both John and Nancy really like to take walks!

Recently, they built a second home at Center Hill Lake near Smithville, and they both love to spend weekends there when the weather is warm. With the beautiful scenery of the hillsides and the lake, it is a wonder how they are able to return to Murfreesboro! It is their plan eventually to retire to that home. When that happens, we certainly hope they are ready to receive guests! •



Student Internships

Spring 2006

Holly Broyles, Animal Care Veterinary Hospital (Murfreesboro, Murphy)

Marybeth Flaschner, Orchid Cellmark (Nashville, Seipelt)

Lacey Myhand, Orchid Cellmark (Nashville, Seipelt)

Andrea Overcast, Orchid Cellmark (Nashville, Seipelt)

Matthew Pagni, Vanderbilt Medical Center (Nashville, Seipelt)

Mary Swan, Nashville Zoo (Nashville, Murphy)

Wendy Webster, Cumberland Swan (Smyrna, Seipelt)

Summer 2006

Emily Morrow, Esoterix Center for Innovation (Brentwood, Seipelt)

Fall 2006

Shain Gilliam, Orchid Cellmark (Nashville, Seipelt)

Erika Hall, Cumberland Swan (Smyrna, Seipelt)

Shelayla Smith, Orchid Cellmark (Nashville, Seipelt)

BioUpdate

George G. Murphy,
department chair

John DuBois, editor

Key contributors to this issue are Cynthia Allen, Virginia McKnight, Cindi Smith-Walters, Nicole Welch, and Stephen Wright.

www.mtsu.edu/~biol/

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Department Welcomes New Faculty and Staff

The Biology Department is pleased to announce the hiring of a new faculty member and a new staff member. Dr. Andy Brower joined the department fall 2006 as associate professor. Ms. Andrea Emberton joined the department in summer 2006 as secretary.

Andrea Emberton



Andrea lives in Cannon County with her husband, Chris, and their son, Braden. She holds a bachelor's degree in marketing from MTSU. She joined the staff

of the Biology Department in May 2006.

Andy Brower



Andy Brower is a native New Englander, born in Northampton, Massachusetts. He lived in Durham, New Hampshire, during his high school days. Andy received

his B.A. in biology and his master's in environmental studies from Yale University. In 1994, he received his Ph.D. in ecology and evolutionary biology from Cornell University. His Ph.D. dissertation was titled "Systematics and Biogeography of Heliconius Butterflies." Starting the year before he received his doctorate, Andy began what would become a four-year postdoctoral position at the American Museum of Natural History in New York. In March 1997, he began an internship at the Smithsonian Institution in Washington, D.C., which lasted only until fall 1997, when he became assistant professor in the ento-

mology department at Oregon State University in Corvallis. A reorganization of departments at OSU resulted in a merger of the entomology and zoology departments and, unfortunately, Andy's services were no longer required. However, MTSU was fortunate to hire Andy as associate professor of biology this past fall.

Andy's research focuses on the theoretic systematics of butterflies (Coleoptera). Since *Heliconius* butterflies are a neotropical group, he has made collecting trips to the Andes and throughout South America including Chile, Peru, Ecuador, and Columbia. His research utilizes molecular systematics along with traditional morphological characteristics. His research and collaborations have enabled Andy to be part of a rather large group of researchers contributing to the Tree of Life Web project. You can view the project at tolweb.org/tree. To see some of the latest contributions from Andy, go to tolweb.org/Pieridae/12176. In addition, Andy serves as an associate editor for the journal *Cladistics*, the international journal of the Willi Hennig Society, published by Blackwell Publishers.

Andy is married to Darlene Judd, who is also an entomologist. She is now at Oregon State University and hopes to move to middle Tennessee this summer. Andy and Darlene enjoy raising, and occasionally showing, Oldenburg horses. Oldenburg horses were, at one point, Germany's most popular coach horses. Andy and Darlene own nine horses, which they had transported from Oregon to middle Tennessee last November. •

Biology Department Scholarship Winners, 2006

Each year the biology faculty is honored to be able to work with some outstanding students. These students have excelled in the classroom, presented papers at scientific meetings, performed exceptionally well on national standardized tests, and conducted independent research. To recognize these students, the Biology Department is pleased to offer a number of scholarships. Although these scholarships include monetary awards, their intention is to show recognition of students for their efforts above and beyond the expected. The biology faculty congratulates each and every student recipient.

Clay M. Chandler Outstanding Freshman Award

Megan Hodorowicz
Alexander Wright

Outstanding Nonmajors Freshman Award

Matthew Sullivan
Antoinette Roche
Lora Lee Hortert

Ralph E. Sharp Outstanding Sophomore Award

Nickolas Tyler Walker

Philip M. Mathis Outstanding Junior Award

Michelle Drury

Peter I. Karl Outstanding Senior Award

Andrea Larsen
Jodie Stowell

George Davis Scholarship

Andrew Lasiter
Victoria Woodyard

Elliott Dawson/BioVentures Biotechnology Scholarship

Richard Sharpe
Katherine Powell
Andrew Lasiter

Maria de los Reyes Microbiology Scholarship

Erin Archer

C. W. Wiser Medical/Allied Health Award

Wendy Webster

Eugene F. Strobel Scholarship

William Cushman

Charles R. McGhee Scholarship

Victoria Woodyard
James R. Kemp Scholarship
Lara Stringfield

Sarah H. Swain Undergraduate Research Scholarship

Joy Young

George G. Murphy Research Scholarship

Andrew McElwain

John D. DuBois Scholarship

Marta Rolig
Marsha Wallace

Sarah F. Barlow Scholarship

Stanton Belford

Kurt E. Blum Botany Research Scholarship

Elizabeth Reed

William H. Butler Jr. Graduate Research Scholarship

Sheri Mersch

Thomas E. Hemmerly Graduate Research Scholarship

Kyle Sykes

John M. Zamora Graduate Research Scholarship

Jason Palmer
Jessica Rader

Mary C. Dunn Graduate Scholarship

Andrew McElwain
Sheri Mersch

J. L. Fletcher Graduate Scholarship

Jon Paul Johnson

Charles Holland Biology Club Scholarship

Timothy Worrall

J. Gerald Parchment Biological Field Station Scholarship

Stanton Belford

John A. Patten Scholarship

Stanton Belford

Outstanding Graduate Teaching Assistant

Elizabeth Reed
Victoria Woodyard

Marion R. Wells Graduate Research Scholarship

Jordan Brianne Begley

Mary C. Dunn Freshman Scholarships

Jessica Webb
Julie Royal

Patrick J. Doyle Freshman Scholarship

Sarah Schott

Faculty News and Happenings

Sarah Barlow serves as editor of the math and science section of the *Journal of the Tennessee Academy of Science*.

George Benz has been busy on the public lecture circuit over the past year and a half. George presented "Sharks Under Ice" in October 2005 at the University of Connecticut, in November 2005 at the Tennessee Aquarium in Chattanooga, and in February 2006 at the Monterey Bay Aquarium in California. He also presented "Metazoan Parasites of Elasmobranchs" and "Parasites and Pathogens" at the Shark Reef Fish Medicine Seminar February 2006 in Las Vegas.

William Butler was highlighted in the January 4, 2007, *Daily News Journal* for his work in the Murfreesboro community. His neighborhood association, the South Maney Community Development Coalition, lobbied Habitat for Humanity to replace seven houses on Sevier Street. Those replacements, William says, helped rid his neighborhood of about 80 percent of its crime. Butler has been a strong advocate of change in the South Maney neighborhood, serving as president of the coalition. The organization has been able to work with the city of Murfreesboro to effect positive change and make the neighborhood a better place to live. William also serves as president of the Community Anti-Drug Coalition Across Tennessee and chairman of the Community Anti-Drug Coalition of Murfreesboro.

Bruce Cahoon received a College of Basic and Applied Sciences Excellence in Teaching Award for the 2004–2005 academic year.

Vince Cobb serves as vice president of the southeastern divi-

sion of the American Society of Ichthyologists and Herpetologists and as publications secretary for the Tennessee Herpetological Society.

John DuBois was invited to present the seminar "Writing a Paper, Getting It Published" in March 2006 as part of the StepMT student research program. John continued his service with the Tax Counseling for the Elderly (TCE) program as an income tax counselor at the St. Clair Street Senior Center in Murfreesboro. In January of 2006 and 2007, John also was an instructor for training other TCE counselors in middle Tennessee.

Mary Farone received a Best OWL (Older and Wiser Learners) Professor Award for 2006. Mary also gave a television interview to Nashville's WKRN Channel 2, "Increase in Clostridium difficile Infections in Hospitals," which aired on two newscasts February 15–16, 2006. She served as a Science Olympiad coach for middle school students at St. Rose of Lima. The team placed fourth at the MTSU Regional Competition, February 16, 2006. In addition, Mary serves as treasurer for the Kentucky-Tennessee branch of the American Society for Microbiology.

Thomas Hemmerly continued his participation in the Annual Wildflower Pilgrimage at Cedars of Lebanon State Park by serving as a field trip leader April 28–29, 2006.

Sandra Johnson recently served as a panelist in biological sciences for the National Science Foundation to evaluate the merit of over 70 biological research proposals. Sandra also participated in the Fall 2005 Research Alliance in Math and Science Faculty Mentor Workshop at Oak Ridge National Laboratory (ORNL) in December. The goal was to foster collaborative

partnerships between academia and ORNL to better prepare students for careers in science.

Padgett Kelly was elected to the National Marine Educators Association board of directors. The association is a 1,200-member body with 16 state chapters including Puerto Rico and Hawaii. The appointment is a three-year term until 2009. Padgett also received the Tennessee Educators of Aquatic and Marine Science's Outstanding Aquatic Educator Award for 2006. He was invited to address the first Statewide Environmental Education Conference at MTSU.

Charles McGhee has been busy on a taxonomic review and revision of the Arachnid genera *Leiobunum* and *Hadrobunus*. He also remains very active by contributing his expertise in the identifications of brown recluse spiders, beetle larvae, and other insect and spider specimens in middle Tennessee. In January 2006, he gave a presentation on the topography, soils, sinkholes, and potential water contamination at the BFI landfill in Water Hill at a public hearing held at Walter Hill School. Along with **Anthony Newsome**, he recently published "Trypanosoma cruzi in Triatomes from an Urban and a Domestic Setting in Tennessee" in the *Journal of the Tennessee Academy of Science*.

Brian Miller received a College of Basic and Applied Sciences Excellence in Presentations Award for the 2004–2005 academic year. Brian serves as a board member for the Discovery Center at Murfree Spring in Murfreesboro.

Wayne Rosing published "Myxomycetes of the Radnor Lake State Natural Area, Davidson County, Tennessee" in the September 2006 of *Castanea*. Wayne also received the TriBeta Corpus Callousm Award for spring 2006.



MTSU Photographic Services

Always Learning—Biology professor Dr. Kim Cleary Sadler, left, gives visiting Japanese teachers Kouzi Kudo and Masanori Shirai a chance to look at vinegar eels with a computer-assisted microscope. Kudo and Shirai spent a day learning about U.S. K-8 educational techniques under Sadler's guidance with the help of Cynthia Jones, an MTSU alumna and fourth-grade teacher at Murfreesboro's Bellwood Discovery School.



Jeffery Walck, Siti Hidayati, and their son, Edwin, with Tetsuya Kondo, plant ecologist from Hokkaido University, after a day of fieldwork visiting Otaru City, Japan. This city was once the major port for herring and glassmaking, and now the old warehouses have been turned into shops.

Michael Rutledge received a College of Basic and Applied Sciences Excellence in Research Award for the 2004–2005 academic year.

Kim Cleary Sadler cofacilitated a field trip with Kevin Fitch (Tennessee Department of Environment and Conservation) for the Ecological Society of America to Flat Rock Cedar Glades in Murfreesboro and the May Prairie in Manchester August 5–6. Kim and graduate student Karen Metius-House presented a poster, “Changes in Elementary Student Knowledge and Attitude about Cedar Glades through Field Ecology Experiences,” August 10 at the Ecological Society of America Annual Meeting in Memphis. Kim and Karen also presented a poster, “Hands-On and Hypothesis-Based Learning in the Middle Tennessee Cedar Glades,” October 10 at the Fourth NAAEE (North American Association for Environmental Education) Research Symposium in St. Paul, Minnesota. Kim is a member of the NAAEE Research Commission. In collaboration with Laurie Katz (Ohio State) and Dorothy Craig (MTSU Educational Leadership), Kim published “Science Professors Serve as Mentors for Early Childhood Preservice Teachers in the Designing

and Implementation of Standards-Based Science Units” in the *Journal of Elementary Science Education*. Kim hosted Kouzi Kudo and Masanori Shirai, visiting teachers from Japan learning about K-8 educational techniques in the United States. Kim received two awards from the College of Basic and Applied Science in 2006: the Overall Excellence Award and the Excellence in Grantsmanship Award.

Judith Shardo presented “CSI for EYH Workshop” at the Expanding Your Horizons in Science and Mathematics Conference at MTSU in 2005.

Michael Thompson presented “Arginyl Aminopeptidase-like 1 (RNPEPL 1) Is a Ubiquitously Expressed, Alternatively Processed Metallopeptidase with Preference for Neutral and Aromatic Amino Acids” at the 2006 Annual Meeting of the American Society for Cell Biology in San Diego.

Cindi Smith-Walters received the Tennessee Environmental Education Association (TEEA) Distinguished Service Award during the TEEA annual meeting September 23 at Montgomery Bell State Park in Burns.

Jeffrey Walck and his wife, Siti, spent a month during summer 2006 visiting Japan and Indonesia. They were invited to Japan to visit the laboratory of their research collaborator, Tetsuya Kondo, in the Department of Environmental Horticulture and Landscape Architecture at Hokkaido University in Sapporo. While there, Jeff gave a seminar titled “North America and Asia—Our Shared Natural History from a Seed Perspective,” which was translated by Dr. Kondo. The Walcks also went on many field trips. The forests in Japan are very similar to those in Tennessee, with the biggest difference being the presence of short bamboo (called sasa). They also had the chance to see in the wild some of the plants on which they have done seed germination studies, such as sweet cicely. While in Indonesia, the Walcks visited family and colleagues at the University of Bengkulu and Gadjah Mada University to establish research collaborations. They had a chance to see their field sites at Palak Siring Nature Preserve, home of the Sumatran tiger, and Taman Hutan Raya Nature Preserve, site of Rafflesia (the world’s largest flower and parasitic plant). They reported that it was a wonderful experience

continued on p. 23

Full-Time Temporary and Adjunct Faculty Numbers Continue to Grow

With increased enrollment come more courses. The need for instructors for these additional class sections is met primarily by full-time temporary and adjunct faculty. This academic year, the department has hired eight full-time temporary and three adjunct faculty members. These numbers represent a record for the Biology Department. Four of the eight temporary hires hold the doctoral degree, and the other four hold master's degrees. They are teaching Human Anatomy and Physiology, Exploring Life (nonmajor biology), Microbiology, Genetics, Life Science for Elementary Teachers, Radiation Biology, and Environmental Regulations and Compliance. Considering the expertise of each of these instructors, their students are obviously getting a great education. Their service to the department not only helps fill instructor roles in an ever-increasing number of course sections but also covers for research faculty members who have received grants and/or contracts that include release time. The department is grateful for their help.

Full-Time Temporary

Rebecca Conner, B.S., 1984, Western Kentucky University; M.S., 1986, Western Kentucky University Ph.D., 1996, Texas Women's University. Teaching: Biology 2010, Human Anatomy and Physiology I.

Steve Edwards, B.A., 1973, Ph.D., 1980, University of California–San Diego. Teaching: Biology 2010, Human Anatomy and Physiology I.

Angela Malone, B.S., 1998, UT–Martin; M.S., 2002, MTSU. Teaching: Biology 1030, Exploring Life; Biology 2230, Microbiology.

Mary Penuel-Matthews, B.S., 1992, and M.S., 2002, MTSU. Teaching: Biology 2010 and Biology 2020, Human Anatomy and Physiology I and II.

David Powell, B.S., 1999, and M.S., 2002, MTSU. Teaching: Biology 2230, Microbiology; Biology 3250, Genetics; Biology 3000, Life Science for Elementary Teachers.

Teresa Stegall-Faulk, B.S., 1997, and M.S., 2000, MTSU. Teaching: Biology 2020, Human Anatomy and Physiology II.

Michael Thompson, B.S. 1993, University of Louisville; Ph.D. 2000, University of Kentucky. Teaching: Biology 2010, Human Anatomy and Physiology I; Biology 3250, Genetics.

Letha Woods, B.A., 1991, Fisk University; Ph.D., 2001, Meharry Medical College. Teaching: Biology 1030, Exploring Life; Biology 2010, Human Anatomy and Physiology I.

Adjunct Faculty

Bipin Agarwal, B.Sc., 1975, Bareilly College, Agra, India; M.E., 1981, University of Virginia. Teaching: Biology 4150, Radiation Biology.

Stephen Maloney, B.S., 1971, and M.S., 1974, MTSU. Teaching: Biology 3220, Environmental Regulations and Compliance.

Walter Ponath, B.S., 1973, and M.S., 1983, MTSU. Teaching: Biology 1030, Exploring Life.

Students Accepted to Medical School, Fall 2006

We're pleased to announce the acceptance of 15 biology majors into medical programs for Fall 2006. These students are in programs leading to the M.D., O.D., D.O., D.D.S., Pharm.D., and D.C. degrees. Congratulations and best wishes to all!

Jacob Acton, College of Medicine, University of Tennessee–Memphis

Terry Banaszak, West Virginia School of Osteopathic Medicine

Keith Beckman, College of Pharmacy, University of Tennessee–Memphis

John Cheesebrew II, College of Medicine, University of St. Louis

Greg Feucht, Virginia College of Osteopathic Medicine

Sarah Hayes, College of Medicine, University of Tennessee–Memphis

Neemisha Master, Palmer College of Chiropractic

Amy Mauritson, College of Medicine, University of Tennessee–Memphis

Katie McClure, College of Pharmacy, University of Tennessee–Memphis

Chance Mysaphone, College of Pharmacy, University of Tennessee–Memphis

Derek Rice, College of Dentistry, University of Tennessee–Memphis (deferred entrance until fall '07)

Felicia Scales, Philadelphia College of Osteopathic Medicine (Atlanta)

Kathryn Summar, College of Dentistry, University of Tennessee–Memphis

Wendy Webster, Nuclear Medicine, Vanderbilt University Medical Center

Shannon Woods, College of Pharmacy, University of Tennessee–Memphis

Theses Completed, 2005–2006

The Biology Department is pleased to have had 14 graduates in the master of science program in biology over the past year (December 2005 to December 2006). Nationwide, MTSU is a leader in producing master's level graduates. Thesis topics have included research on bacteriophages, bacteria, dinoflagellates, angiosperms, ticks, spiders, amphibians, reptiles, and birds. Students investigated pollution, morphology, floral and faunal diversity, physiology, seed germination, enzymology, and antimicrobial activity. Students, their graduation year, thesis titles, and faculty advisors are below. A complete list of all 271 theses completed to date in the Biology Department can be found at www.mtsu.edu/~jddubois/3230/theses.html.

Acklin, Kimberlyn J. 2006. Antimicrobial and allelopathic properties of *Morinda citrifolia* (John Zamora, advisor)

Anderson, Justin B. 2005. The use of terminal restriction fragment length polymorphism (t-RFLP) as an effective method of fecal source tracking (Frank Bailey, advisor)

Coleman, Dwayne. 2006. Seasonal changes in herb layer cover and species composition in Table Mountain Pine (*Pinus pungens* Lamb.) forests in Tennessee (Nicole Welch, advisor)

Glorioso, Brad M. 2006. Population ecology and feeding activity of the Stinkpot Turtle, *Sternotherus odoratus* Latreille (Kinosternidae), at Reelfoot Lake, Lake Co., Tennessee (Vince Cobb, advisor)

Jefferson, Stacie N. 2006. Allelopathic and antimicrobial properties of *Tabebuia impetiginosa* (John Zamora, advisor)

Naquin, Stephen B. 2006. The isolation and identification of antimicrobial-producing organisms (John Zamora, advisor)

Nelson, Christina L. 2006. Antibacterial, antiviral, and allelopathic effects of Ayurvedic herbs (John Zamora, advisor)

Niemiller, Matthew L. 2006. Systematics of the Tennessee Cave Salamander complex (*Gyrinophilus palleucus*) in Tennessee (Brian Miller, advisor)

Palmer, Jason F. 2006. Amoebae products promote *Listeria* multiplication (Anthony Newsome, advisor)

Phillips, Julie B. 2006. Influence of season and ACTH on corticosterone I female Eastern Fence Lizards (*Sceloporus undulatus*) (Matthew Klukowski, advisor)

Richardson, Danielle M. 2006. Establishing methods for the molecular genetic analysis of Chlorarachniophytes (Matthew Elrod-Erickson, advisor)

Rolfe, Melissa. 2006. Coordinate expression levels of duplicated yeast genes are not correlated with evolutionary relatedness as measured by amino acid similarity (Rebecca Seipelt, advisor)

Scales, Felicia L. 2006. Antimicrobial and allelopathic properties of *Hydrastis Canadensis* (John Zamora, advisor)

Wilson, Trevor E. 2006. Prevalence of the nematode parasite *Baylisascaris procyonis* in raccoons (*Procyon lotor*) in Southern and Middle Tennessee (Anthony Newsome, advisor)

Wyckoff, George R. 2006. Migratory patterns and demographics of a diverse Ambystomatid community at Arnold Air Force Base, Tennessee (Brian Miller, advisor)

Yawn, Charles A. 2006. The isolation and identification of pectin-degrading microorganisms (John Zamora, advisor)

Young, Krystel M. 2005. Reovirus induction of cytokines in a human monocyte cell line (Mary Farone, advisor)

Biology Club

Officers for 2006–2007

President: Bahareh Tahriri

Vice President: Amanda Gray

Secretary/Treasurer: Sana Shaikh

Activities Coordinator: Ryan Sheehan

Former club members have gone on to further their education or enter promising careers. **Kimber Logan** is attending physician's assistant school; **Jesse Carter** has started the Ph.D. program at Vanderbilt; **Felicia Scales** has started osteopathy school; and **Christina Nelson** has started medical school at UT–Memphis. **Rick Kurtz** is working at Walker Library; **Rebecca McWhirter** is working at Vanderbilt; and **Latoya McGinister** is working as a microbiology technician at Abbott Laboratories.

Biology Club members continue to participate in local and national presentations describing their research activities.

The following members presented at the November 2006 Annual Meeting of the Tennessee Academy of Science:

Efua Adetona, "Matricaria Recutita: Antimicrobial and Allelopathic Properties"

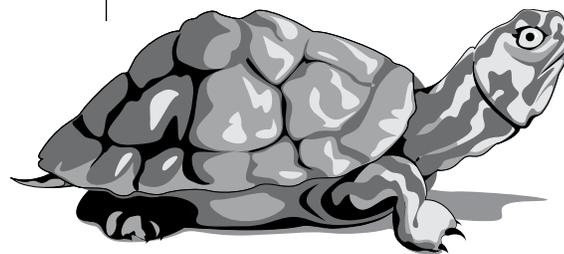
Andrea Overcast, "Antimicrobial and Allelopathic Properties of *Yucca Schidigera*"

Prima Patel, "Prodigiosin-Production and Lipid-Degradation Analysis of *Serratia Marcescens* in the Presence of Motor Oil"

Sana Shaikh (poster), "A Comparison of the Antimicrobial Activity of Natural and Commercial Disinfectants"

Nicholas Zeger, "Antimicrobial and Allelopathic Properties of Muscadine Grape Extract"

Charles Yawn II presented "The Isolation and Identification of Pectin-Degrading Microorganisms" in May 2006 at the American Society for Microbiology National Meeting in Orlando. •



TAMP in 2006!

The very successful Tennessee Amphibian Monitoring Program (TAMP), a cooperative effort of the MTSU Center for Environmental Education and the Tennessee Wildlife Resources Agency (TWRA), continued to grow in 2006. This past year saw the addition of 14 new county records that were approved and assigned catalog numbers by Dr. Floyd Scott of Austin Peay State University since July 2005. Many of those have now been published in *Herpetological Review*. This could not have been done without the work of dedicated volunteer “frog-loggers” running 26 active routes statewide. Their data are recorded in Tennessee and sent to the North American Amphibian Monitoring Program (NAAMP) for inclusion in a database. Information includes a separate chart for occurrences for each species statewide and the maximum calling index for each species on each route.

Of use to frog-loggers and others interested in amphibians is the new online frog and toad quiz. On the NAAMP Web site, volunteers may take a listening quiz featuring native Tennessee species. The quiz randomly selects from hundreds of recordings so volunteers never take the same test twice. All TAMP volunteers are required to take the online quiz and achieve a minimum score to acquire and continue certification.

Probably the most outstanding TAMP accomplishment is a completely revised CD version of the cassette tape *Vocalizations of Tennessee Frogs and Toads*, completed this past August with funding from TWRA and an MTSU Public Service Committee Grant. The CD features all-digital sound recordings, new sound quizzes supplied by LEAPS, all-new narration by Don



King of TWRA, updated nomenclature, and a new section called “Similar Sounding Species.” A hypothetical species, Southern Toad, was added, as this species has been reported just over the Alabama border at the “Walls of Jericho.” If funding can be found, a second CD is planned to include the entire TAMP workshop sight and sound program. This two-CD set will be given to TAMP volunteers, and, along with the online NAAMP quiz, will allow volunteers to “self-certify” themselves for a TAMP route.

If you want to know more about TAMP, become a “frog logger,” or ask a question about Tennessee frogs and toads, you can go to the TAMP page featured on the MTSU Center for Environmental Education Web site at www.mtsu.edu/mtsucee. This page includes general information, a frequently asked questions section, and a link to contact the center. •

Beta Beta Beta, Kappa Delta Chapter

Nicole Turrill Welch
and Judy Shardo,
faculty advisors

Officers for 2006–2007 are
Sweeti Bhakta, president
James Borton, vice president
Kristina Baker, secretary

The Kappa Delta Chapter of Beta Beta Beta National Biological Honor Society enjoyed continued fun and scholarship in the 2005–2006 academic year. Our membership reached an all-time high thanks to the excellent quality of students pursuing their B.S. and M.S. degrees in biology and the visibility of our organization. Many members conducted research with faculty and presented their findings at local, regional, and national scientific meetings.



Beta Beta Beta Seminar Series

Our seminar series entered its third year and brought six nationally recognized researchers to campus. Speakers for spring 2006 were Larry Zwiebel, Vanderbilt University (“The Molecular Biology of Olfaction and Host Preference in Disease Vector Mosquitoes”); S. Ash Bullard, Gulf Coast Research Laboratory and the University of Southern Mississippi (“Pursuing the Mysterious Lives of Parasites”); and Susan Straley, University of Kentucky (“What Makes the Plague Bacterium So Lethal?”). The Department of Biology and the MTSU Student Fees Committee lend support to the series. We are actively raising money to continue the series, and we welcome donations from alumni. Those interested in supporting our seminar series may mail checks payable to Beta Beta Beta, c/o Dr. Nicole Turrill Welch, Department of Biology, Box 60, Middle Tennessee State University, Murfreesboro, TN 37132.

Beta Beta Beta Art Show

Creativity shone at the first Beta Beta Beta Art Show for Science Majors in April 2006. Members titled the art show *Corpus Callosum: When Left Brain*

Meets Right Brain. College of Basic and Applied Sciences students and faculty members displayed works of art ranging from photography, oil painting, and poetry to pottery, watercolors, and more. Musical talent was also featured! Attendees were asked to donate \$2.00 and participate in a silent auction. There also was the Crazy Lab Coat Contest. Members decorated a lab coat with objects and images representing different disciplines in the biological sciences (DNA, a bird’s nest, fake fur collar, feather trim, etc.). The lab coat was displayed at the art show and attendees were invited to place cash in the beaker of the faculty member worthy of wearing the lab coat. Dr. Wayne Rosing was the winner and a good sport. The \$250.00 raised by this event will help support the 2006–2007 seminar series.

Much is underway for 2006–2007—another six seminars and an active tutoring program for introductory biology courses. We enjoy hearing from Tri Beta alumni! Drop us a line by mail or e-mail (tribeta@mtsu.edu).

TAS holds 116th Annual Meeting

The 116th annual meeting of the Tennessee Academy of Science (TAS) was held November 16–17, 2006, at Austin Peay State University in Clarksville. The Biology Department once again showed strong support for TAS by having a number of students and faculty members present papers and serve as officers and committee chairs.

Faculty officers included Stephen Wright, past-president; Sarah Swain, secretary; and Gore Ervin, managing editor of the academy's journal. Faculty serving as committee chairs during the past year

included Cindi Smith-Walters, education committee; Stephen Wright, long-range planning and nominating committees; and Charles McGhee, fellows committee. Former graduate students Karen Kendall-Fite and Mandy Carter-Lowe chaired the membership committee and publicity and research committee, respectively. Additional service on committees included George Murphy (necrology committee) and Kim Cleary Sadler (education and publicity and research committees). Kim also presided over the science and math teaching session at the meeting.

The opening symposium, Science and Global Security, included the presentations "Global Security—A Frontier of Science?" and "Ecoterrorism: Real-Time Event Detection Challenges" and "GIS and Rural Counties." The 2006 plenary address was delivered by Governor Phil Bredesen. His address was "Science Education and the State of Tennessee."

Papers and posters presented are listed below with student authors or coauthors designated with an asterisk (*) and student presentation awards given in parentheses.

Papers

Efua Adetona* and **John Zamora**, "Matricaria recutita: Antimicrobial and Allelopathic Properties."

Nicholas Zeger* and **John Zamora**, "Antimicrobial and Allelopathic Properties of Muscadine Grape Extract."

Andrea Overcast* and **John Zamora**, "Antimicrobial and Allelopathic Properties of *Yucca schidigera*."

Erin Archer*, **Rebecca Seipelt**, and **Michael Thompson**, "Interaction of Tryptophan³⁵⁶ and Asparagine³⁶² with Tyrosine²⁴⁴ in the Proteolytic Mechanism of *Saccharomyces cerevisiae* Leukotriene A4 Hydrolase."

Prima Patel* and **John Zamora**, "Prodigiosin-Production and Lipid-Degradation Analysis of *Serratia marcescens* in the Presence of Motor Oil." (third place, microbiology section)

Andrew McElwain* and **George Benz**, "Reconsidering Phylogeny within Sphyriidae (Siphonostomatoida, Copepoda)."

Judith Shardo, "Hatching Strategies in Teleost Fishes."

Kyle Sykes* and **Matthew Klukowski**, "Effects of Confinement on Plasma Levels of Corticosterone in the Northern Watershake (*Nerodia sipedon*)."
(second place, zoology II section)

Karen Metius-House* and **Kim Sadler**, "Changes in Elementary Student Knowledge..." (first place, science and math teaching section)

Posters

Sana Shaikh* and **John Zamora**, "A Comparison of the Antimicrobial Activity of Natural and Commercial Disinfectants." (second place, microbiology section)

John Lewis* and **Mary Farone**, "The Identification of a Novel Amoeba-Associated Microorganism by 16S rDNA Sequencing and *In Situ* Hybridization." (first place, microbiology section)

Matthew Carver*, **Anthony Farone**, and **Mary Farone**, "Sequencing and Phylogenetic Comparisons of the *rpoB* gene of a Novel Bacterium."

Jason Hailey* and **Judith Shardo**, "Differences in Muscle Alignment Affect Mobility in Quadrupedal and Bipedal Mammals."

Sheri Mersch* and **A. Bruce Cahoon**, "Assessing the Migratory Vigor of *Lolium arundinaceum* in Association with a Novel Endophytic Symbiont Using Microsatellite Markers."

Rick Sharpe* and **A. Bruce Cahoon**, "Preparatory Steps for *Daucus carota* Transformation with an o-Antigen Gene from *Shigella sonnei* for Possible Vaccine Use."

Rick Sharpe* and **A. Bruce Cahoon**, "Q(RT)2PCR for Relative Expression of Selected Genes along the Length of a *Zea mays* Leaf."

*Student authors or coauthors

"The 117th annual meeting will be held at Volunteer State Community College in Gallatin, Tennessee."

Center for Environmental Education

by Cynthia Allen and Cindi Smith-Walters

As in years past, the MTSU Center for Environmental Education (CEE) has focused on bringing environmental education (EE) to the forefront and making it a priority in Tennessee legislation as well as in Tennessee schools and communities. One might ask, “Why environmental education, when you might see issues such as air and water quality, pollution, and land usage as most important?” Environmental education includes all of those, plus more subtle issues dealing with home and school environments and their impact on learning, retention, and development of children and adults. Current research verifies the important role and benefits of nature to children and adults (contact the center for specific reports).

- Children with symptoms of Attention Deficit Hyperactivity Disorder (ADHD) are better able to concentrate after contact with nature.
- Children with views of and contact with nature score higher on tests of concentration and self-discipline. The “greener” they are, the better their scores.
- Exposure to natural environments improves children’s cognitive development by improving their awareness, reasoning, and observational skills.
- Nature buffers the impact of life stress on children and helps them deal with adversity. The greater the amount of nature exposure, the greater the benefits.
- Play in a diverse natural environment reduces or eliminates bullying.
- Children who play in nature have more positive feelings about each other.
- Natural environments stimulate social interaction between children.
- Outdoor environments are important to children’s development of independence and autonomy.

Studies reflect that test scores and, more important, retention, increase when material is presented via EE. The report “Closing the Achievement Gap” (State Education and Environment Roundtable, 1998) includes results of a nationwide study of 40 selected schools that used the Environment as an Integrating Context (EIC) model for learning. Benefits of EIC include

- better student performance on standardized measures of academic achievement in reading, writing, math, science, and social studies;
- reduced discipline and classroom management problems;
- increased engagement and enthusiasm for learning; and
- greater pride and ownership in accomplishments.

With this research in mind, the center hosted the first-ever Environmental Education Summit held at MTSU. In addition we are involved in *Special Habitats of Tennessee*, a study examining statewide use of schoolyard habitats in teaching elementary education and its impact on student learning, retention, and test scores.

Other continuing programs at the center include WaterWorks!, Tennessee Department of Environment and Conservation (TDEC) Used Oil, TAMP, Cedar Glades, and the resource loan program. Additional funding this year will allow the center to continue its mission. The Virtual Tree Trail resulted from an award to sponsor a Web site that allows visitors to travel virtually along a path, stopping at designated tree stations to look around, listen, and learn how the environment changes seasonally and to learn to identify trees by their leaves, twigs, bark, flowers, and fruits. The Improving Teacher Quality Grant with funding from the Tennessee Higher Education Commission encourages training school teachers to incorporate reading into the content area of science and to become more proficient teachers of the subject.

Highlights of the Year: OUTREACH

NEW CENTER WEB SITE

Center consultants Laura McCall and Bob English were the creative minds behind the center's newly redesigned website. This opens a new arena for the center to promote its mission. It highlights opportunities for learning and teaching and updates on various national programs and grant information and availability. The center maintains an extensive collection of educational materials and resources that are available on loan for instructional use. They include an assortment of microscopes and slides, videos, and resource trunks on recycling, bats, and trees. In addition to the educational resources available from the center, the Web site also provides information about programs and grant partnerships. Log on to www.mtsu.edu/~mtsucee and check out our new site!

ENVIRONMENTAL EDUCATION SUMMIT



In keeping with its long tradition of being the leader for environmental education in Tennessee, the center cosponsored the first-ever Environmental Education Summit in April 2006. Supported by a grant from the U.S. Environmental Protection Agency, formal and nonformal educators from across the state convened at MTSU. The summit brought together a diverse group of stakeholders to establish a statewide network and to foster partnerships.

Topics included challenges to environmental education, new legislation (No Child Left Behind), the statewide C.E.N.T.S. program, and projects of partnering with southeastern environmental organizations. Paul Sloan, deputy

commissioner, Tennessee Department of Environment and Conservation, delivered a passionate keynote address and personal mini-documentary at the summit.

The statewide long-range strategic plan includes a new state Web site for EE and continued dialog with summit stakeholders—representatives from environmental groups, education, state agencies, natural resource agencies, and various nonprofit groups across Tennessee.

NATURE LINK



Center secretary and alumnus Cynthia Allen also serves as a consultant for the nonprofit Tennessee Wildlife Federation and conducts NatureLink programs twice a year for inner-city and lower income families. Held at the Land Between the Lakes Brandon Springs facility, NatureLink is the only family-oriented environmental education program of its type offered in Tennessee. The central theme is family togetherness in the great outdoors. It helps families foster appreciation and enjoyment of the outdoors; make a connection between their actions and the consequences to the environment; and, most important, come together through nature, solidifying family bonds. Center executive aide and alumnus Amanda Sherlin and CEE consultant Laura McCall assisted with the April event, which included 66 participants. The September event attracted 44 participants. The most recent event was March 16-18, 2007.

TAMP

Thanks to the insight of Bob English and funding from the MTSU Public Service Committee and Tennessee Wildlife Resources Agency, the compact disc called *Vocalizations of Tennessee Frogs*

and *Toads* has been completed. The disks will be used in training new frog-logging volunteers and educating people statewide about the importance of frogs and toads in our environment. See the "TAMP in 2006" article in this issue of BioUpdate for more details.

EARTH DAY, CRITTERMAN, AND MORE!

Staff at the CEE including Laura McCall, Amanda Sherlin, and Cynthia Allen provided educational information and resources for a number of events including Murfreesboro's Earth Day celebration. Sherlin and Allen represented the center at several programs, meetings, and conferences.

With funding from the MTSU Distinguished Lecture Series in the Office of New Student and Family Programs, Denny Olsen (Critterman), an internationally known award-winning speaker, was brought to campus. Over 600 participants attended his three sessions: "The Unhuggables," "Animals We Love to Hate," and "The Value of Stories." Science, education, recreation, and theater majors as well as the general public enjoyed Critterman's insights.



FACULTY HAPPENINGS

Codirector of the CEE and biology professor **Padgett Kelly** was elected to a three-year term on the National Marine Educators Association (NMEA) board of directors this past year. In addition, he was appointed to a national conference committee. In 2010, Tennessee will host NMEA's national conference. Dr. Kelly also was awarded the Project Learning Tree Facilitator of the Year Award by the Tennessee Forestry Association and collaborated with the New Bedford (Mass.)

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Whaling Museum for their Build a Whale hands-on exhibit. Padgett continues to educate students through his life-size whale program for area schools.

Codirector of the CEE and biology professor **Cindi Smith-Walters** received the Distinguished Service Award at the Tennessee Environmental Education Association (TEEA) conference in September for her long-time contributions to environmental education. This award is given to educators in Tennessee who have contributed "above and beyond" ordinary effort over decades to raise awareness, teach new skills, and promote responsible action toward the environment. Cindi serves on the Keep Tennessee Beautiful board and is a board member for numerous professional organizations including TEEA and the North American Association for Environmental Education. In the upcoming year, Cindi will direct a solid waste study for the Tennessee General Assembly, direct a grant for improving teacher quality, and serve as president-elect of the Tennessee Academy of Science.

Biology professor and long-time CEE advocate **Kim Cleary Sadler** received the MTSU Foundation's Outstanding Public Service Award in August. The award reflects her commitment to teaching life and environmental science in formal and informal settings. Her passion for cedar glades is evident through her work to establish the Center for Cedar Glade Studies at MTSU. This past year, *Green Teacher* published her article "Noxious Neighbors," which included an activity and details on invasive exotic plant species. Sadler also conducts workshops with schoolchildren ages 6 to 16 in which students learn basic microscope skills and examine everyday materials.

Karen Hargrove, the CEE's natural resources coordinator, had a busy year promoting WaterWorks! and the TDEC Used Oil program. Both are represented on the WaterWorks! Web site at www.tennesseewaterworks.com. These state-

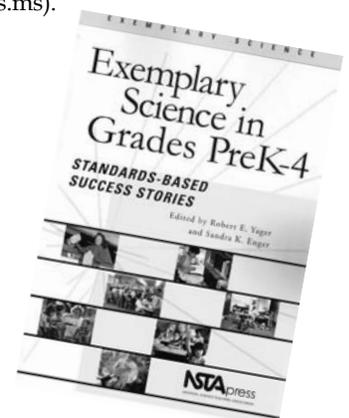
wide public education and outreach programs promote and protect clean water. This past year, Hargrove was a featured presenter at the Arkansas Watershed Advisory Group's 2006 conference. Other presentations included informational sessions at the 35th Annual Tennessee Solid and Hazardous Waste Conference and an MTSU video segment on Channel 5+ and Channel 9 to discuss stream assessment as "citizen science." Karen provides outreach materials in conjunction with TDEC at various events across the state.

Unfortunately Laura McCall, the CEE's solid waste education coordinator, resigned in August to work in private industry. Her enthusiasm and presence is greatly missed, but she continues to work with us as a consultant. Laura promoted environmental awareness at Murfreesboro's Earth Day Celebration on the plaza. Recently, Laura was honored as the Middle Tennessee Educator of the Year by TEEA. Her many talents and work with bird surveys, Project Flying WILD, solid waste education, teacher workshops, and school programs inspire others.



Bob English, CEE consultant, recently completed signage for the Tree-Mendous Tree Trail project. The signs will be posted along the handicap-accessible, self-guided

interpretive tree trail at Barfield Crescent Wilderness Station in Murfreesboro. The signs include seasonal information on 13 different species. An interpretive tree trail booklet was created by center staff as an accompaniment to the trail and is available for checkout at the park. Information in the booklet includes the natural history of each tree and environmental information specific to middle Tennessee. Bob is expanding upon this completed project with the upcoming Virtual Tree Trail. Bob's work with the Tennessee Amphibian Monitoring Program (TAMP) resulted in a new CD, *Vocalizations of Tennessee Frogs and Toads*, and his photography graces the cover. The CD features digital recordings, quizzes, and a new section with similar sounding species. The CDs will be invaluable tools for training frog-logging volunteers and educating people statewide about the importance of frogs and toads in our environment. Bob worked with Laura McCall to redesign the new center Web site and has been providing valuable training and encouragement to Cynthia Allen, the new Webmaster. Bob continues to act as Webmaster for the WaterWorks! site and to work with TAMP and various wildlife and educational initiatives through his own organization, LEAPS (www.leaps.ms).



PUBLICATIONS

Cindi Smith-Walters and Kim Cleary Sadler coauthored a chapter, "Thinking Outside the Box—No Child Left Inside at Campus School," included in the newly published *NSTA Exemplary Science in Grades PreK-4: Standards-Based Success Stories*. The book showcases science programs that engage students and teachers in learning science and connecting it to their lives. ●

Graduate Teaching Assistants for 2006–2007

For the 2006–2007 academic year, the department is able to provide support to 28 outstanding graduate students who serve as graduate assistants or teaching assistants. Seventeen of these students have received their undergraduate degrees from colleges and universities other than MTSU. Eight hold baccalaureate degrees in subjects other than biology (behavioral sciences, chemistry, computer information systems, natural resources management, biomedical science, environmental science and technology, microbiology, and mass communications). However, all have the requisite training in biology to serve as departmental or teaching assistants. Those serving as departmental assistants are assigned to individual faculty members or the Biology Department office. This year's graduate assistants are the most diverse we've ever had with respect to background training.

David A. Adams, B.S. in biology,
Tennessee Technological University

Brock A. Arivett, B.S. in biology, MTSU

Stanton Belford, B.S. in behavioral sciences; B.S. in biology, Martin Methodist College

Carrie A. Casteel, B.S. in natural resources management, University of Tennessee–Martin

Morgan B. Cook, B.S.A. in biological science, University of Georgia

Cynthia G. Gray, B.S. in chemistry,
University of the South

Heather M. Hensley, B.B.A. in computer information systems; B.S. in biology, MTSU

John C. Jackson, B.S. in biology, MTSU

Collin P. Jaeger, B.S. in biology, Western Illinois University

Matthew C. Jarrett, B.S. in biology,
University of Tennessee–Martin

Jon Paul Johnson, B.S. in biology, MTSU

Bryan J. King, B.S. in biology, Lambuth University

Alicja K. Kutyla, B.S. in biology,
Cumberland University

Andrew McElwain, B.S. in biology,
Westfield State College

Sheri M. Mersch, B.S. in biomedical science, Western Michigan University

Christina M. Nicholas, B.S. in biology,
MTSU

David W. Olsen, B.S. in biology, MTSU

Randi L. Paschall, B.S. in biology,
University of Tennessee–Knoxville

Jessica K. Rader, B.S. in environmental science technology, MTSU

Elizabeth G. Reed, B.S. in biology, MTSU

Colleen M. Roden, B.S. in microbiology,
Tennessee Technological University

Haley K. Rush, B.S. in biology, Louisiana State University

Olivia H. Throneberry, B.S. in biology,
MTSU

Brooke R. Villanueva, B.A. in biology,
Maryville College

Victoria A. Woodyard, B.S. in biological sciences/science education, University of Missouri–Rolla

Tim E. Worrall, B.S. in biology, MTSU

Joshua A. Wright, B.S. biology, Tennessee Technological University

Graduate Assistant

Matthew Shea Cofer, B.S. mass communication, MTSU

Faculty News

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to meet students and colleagues and share research experiences and also to see new plants such as tree ferns and huge dipterocarp trees and animals such as the olive-backed sunbird and stork-billed kingfisher. They saw Mt. Merapi in Indonesia exploding and experienced earthquakes. They also tried new foods such as sop kaki kambing (sheep cartilage soup) and zingiskan (lamb barbecue).

Nicole Turrill Welch served as chair of the Eugene P. Odum Award Committee and as secretary/treasurer for the southeastern chapter of the Ecological Society of America in 2005–2006. She coauthored three abstracts on fire-dependent Table Mountain pine forests with her students Dwayne Coleman, Olivia Dees, and Christopher Meyer, and presented the research at the 2005–2006 meetings of the Tennessee Academy of Science, the Association of Southeastern Biologists, and the Ecological Society of America. In August 2006, Nicole and colleagues at the School of Public and Environmental Affairs, Indiana University–Bloomington, had the manuscript “Summer Ground Layer Biomass and Nutrient Contribution to Above-Ground Litter in an Indiana Temperate Deciduous Forest” accepted in *American Midland Naturalist*. Nicole presented hands-on science workshops for middle school girls at Expanding Your Horizons and high school students at Science Olympiad. She reviewed and edited 29 chapters of a new textbook from McGraw-Hill Publishing Company and served on the McGraw-Hill board of advisors for introductory biology textbooks. Nicole was promoted to associate professor and tenured in fall 2006.

Stephen Wright was elected a Fellow of the Tennessee Academy of Science.

Biology Department

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Murfreesboro, TN 37132

Let us hear from you...

If you know alumni who don't receive this newsletter, please ask them to send us their contact information. We also want to continue to feature the accomplishments of alumni, and we encourage you to update us often!

Name _____ MTSU/degree/year _____

Address _____ City/state/zip _____

Telephone _____ E-mail _____

Professional job information _____

Personal news of interest (Example: Names of children, honors received, etc.)
