

# RESEARCH BRIEFS

## Researching *Rubus*

Dr. Larry Alice, Department of Biology, has received a National Science Foundation grant for \$211,592 entitled "Molecular Phylogenetics and Allopolyploidization in *Rubus*." To address questions concerning the evolution of plants, Alice will reconstruct the evolutionary history of the genus *Rubus*, a member of the Rose family. *Rubus* species are found in temperate regions on all continents except Antarctica. The genus is economically and ecologically important as fruit crops (raspberries, blackberries, cloudberries), ornamentals, food for wildlife and indigenous peoples, and as invasive weeds. *Rubus* is a challenging group with regard to species identification and classification due to hybridization, diversity in external form, and multiple sets of chromosomes. No comprehensive study of the species' diversity has been done for nearly a century. The outcome of the study will contribute valuable information to scientific, academic, and public communities.

The project has three principal goals. Alice will clarify the evolutionary relationships within *Rubus* and

elucidate the origins of the biologically complex subgroups including the economically important species. Hypotheses of plant speciation itself will be researched by examining the origins of several North American and European blackberry species. Alice's results will contribute information toward the classification of plants within an evolutionary framework. Finally, he and his students will construct a *Rubus* web site to disseminate the results of the works.

Three undergraduate students and

one graduate student are funded by the project and will participate in all of its phases. Their experiences will give them insights into scientific research methods and provide them with highly marketable molecular and bioinformatics (recording and analyzing biological data to facilitate transference) skills. The students will present their results at international and regional professional meetings. Their research with Alice will be useful to plant breeders, natural resource managers and field biologists.



*Blackberries are considered a distinct subgenus of Rubus and readily form complex hybrids.*

## Educating EMTs

Lee Brown has received a grant for \$120,000 from the Kentucky Board of Emergency Medical Services to improve rural accessibility to hospitals. The grant will enable her team to assess overall learning needs and deficiencies of pre-hospital emergency care workers in medically underserved counties of Kentucky. It will then provide continuing education to enable a high level of pre-hospital care to victims by providing

paramedic education to certified Emergency Medical Technicians and degree completion courses to licensed Paramedics through the University's associate degree program. The grant provides administrative continuing education to Emergency Medical Service (EMS) directors.

The grant team developed a Learning Needs Assessment tool and administered it to random service directors, medical directors, and rank-

ing staff in identified counties. The project will provide continuing education courses in patient assessment, airway management, shock, general pharmacology, trauma, medical emergencies (respiratory, cardiovascular, nervous system), and obstetrics/gynecological/neonatal problems.

This project will provide a big boost for underserved medical personnel in our state and save lives.



*Dr. Kinchel Doerner*

## Battling Bacteria

Dr. Kinchel Doerner, Department of Biology, has received a grant for \$51,222 from the National Institutes of Health through the University of Louisville Research Foundation to detect and track bacterial-resistant genetic elements in human sewage. The implications for our

environment are significant. Doerner will use modern molecular ecological methods to identify and track these germs. The project will employ undergraduate research students to retrieve samples for the Bowling Green sewage treatment plant, extract DNA, and analyze each sample for the

presence of all known bacteria. Doerner will analyze the samples using a Genetic Analyzer to identify the elements present, and will perform serial dilutions of the samples prior to DNA extraction.

Students will prepare the data and deliver oral and poster presentations at regional meetings, and they will write a manuscript for submission to a research

journal in applied and environmental microbiology under Doerner's editorship.

The outcome of the research will be to determine better methods of fighting a number of bacteria-related problems that face many of us. Some of these are urinary tract infections and neonatal sepsis. The research is made more important because there are no effective pharmaceuticals to neutralize vancomycin resistant enterococci (VRE). This project will clarify risks inherent in the movement of pathogens from farm to food to patient, and in so doing it will cut down on health costs. Funds from the project will enable Doerner to travel to microarray technology workshops at the University of Louisville to establish collaborations with the U of L team and become familiar with appropriate approaches to array design, data analysis, and corresponding hardware and software to increase research at Western.

## Evaluating Education

After first-year funding of \$97,551, Drs. Tony Norman and Bill Pfohl have received a second year continuation grant of \$52,000 from the Mississippi Department of Education as part of a larger effort to develop observation instruments and training materials for an audit team that will be used during school visits to improve Mississippi public schools. This set of instruments will evaluate schools in the areas of personnel, school management, curriculum, school board operation, school community involvement, school resource allocation, safe and orderly school environment, and public relations. Norman and Pfohl are developing the safe and orderly schools evaluation instrument.

The first year has involved developing instruments and materials for use in training evaluators in observation, data collection, and analysis related to safe and orderly schools. Also, after initial training, evaluators have field tested this instrument, as well as the others created

at this time. Improvements have been made to instruments and training materials based on this initial testing.

The second year has included two days of training for the audit team leaders in team management and operation, and seven more days of training for audit team leaders and members in how to use

the data collection instruments and procedures. It has also included additional pilot testing in a sample of schools, analyzing collected data for instrument improvement, and setting standards through a standard-setting panel of 20 persons representing educators who will be affected by the standards. Completion of the grant will include scoring the instruments from participating schools and production of a final set of instruments that will make up the Mississippi Department of Education's Mississippi School Level Accountability System.



*Dr. Tony Norman*



*Dr. Bill Pfohl*

## Technology Transfer and Commercialization Committee

To assist Western Kentucky University's faculty, staff, and students with inventions and copyrights resulting from their research and instructional endeavors, President Gary Ransdell established a Technology Transfer and Commercialization Committee (TTCC) beginning in the fall semester 2002. It is a small group that represents key areas of the campus from which technology and commercialization products are spawned; and its mission is to cut down the time period from disclosure to licensing. The TTCC exists as another service arm of the Office of Sponsored Programs.

The mission of the TTCC is to create appropriate policies and procedures to facilitate the movement of campus technology to the workplace and to commercialize the intellectual properties of WKU, through its agent, the Western Kentucky University Research Foundation, Inc., whenever and wherever possible.

The outcomes of the TTCC's activities benefit academic programs and provide financial assets for programmatic development. The TTCC educates industry about academic goals and values and, at the same time, enables industry to educate the University. The TTCC works through the Office of the President, the Division of Academic Affairs, the University Senate, and the colleges and other units to further the campus transformation.

Presently, the TTCC is planning to alert the campus about its mission while continuing to review intellectual property disclosures and to market

properties. An administrative database designed by Microcomputing and Sponsored Programs employees was successfully marketed to a nearby university; and a toolkit developed through the College of Education and Behavioral Sciences to prepare teachers for Education Professional Standards Board certification has been approved. Royalty payments help fund the creators, fiscal affairs, the originating

procedures, and incentives to effectively transfer technologies created in classrooms and labs to the marketplace. It recruits private sector collaborators to work with particular university programs to enhance technology transfer and commercialization.

The results of the committee's work will enable Western Kentucky University to fully realize the commercial value of research, instruction, and public service activities for the public good. The TTCC will help university inventors and industry to transform scientific progress into products and services. It will not only mine university research, but it can pursue patents, negotiate licenses, and market inventions. Technology transfer benefits the public by contributing to new product creation and new economic opportunities to attract and retain superior faculty.

TTCC faculty committee members are Michael Seidler, professor, Department of Philosophy and Religion; Blaine Ferrell, dean of the Ogden College of Science and Engineering; Shivendra Sahi, director of the Biotechnology Center; and Phil Womble, director of the Applied Physics Institute. In addition, WKU's patents and copyrights attorney, Laura Hagan of Kerrick, Grise, and Stivers, is a TTCC member.

The base document behind the TTCC is the WKU Intellectual Property Policy. The revised policy was recently approved by the Board of Regents. It can be found on the Web at [http://www.wku.edu/Dept/Support/SponsPrg/grants/pols/ip\\_main.htm](http://www.wku.edu/Dept/Support/SponsPrg/grants/pols/ip_main.htm).



*The Mobile Mercury Monitoring Laboratory, which monitors mercury emissions at regional coal-burning power plants, is a product of the Western Kentucky University Combustion Laboratory.*

department or unit, and the WKURF. Several other properties have been disclosed, including a student property.

Funding may be available to support faculty, staff, and student creations. Depending on the completeness of the disclosure, the TTCC can make a decision within a month. The TTCC can advise about and fund copyright matters such as registering copyrights with the U.S. Patents and Copyrights Office.

Concurrent objectives of the TTCC are designed to market our intellectual property. The TTCC creates policies,